



**International Dairy Foods Association**  
Milk Industry Foundation  
National Cheese Institute  
International Ice Cream Association

## **A Look at Dairy Market Price Volatility and Options for Dairy Policy Reform**

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### **Executive Summary**

This paper considers the growth trends in the U.S. milk supply, the commensurate growth in the U.S. share of global dairy trade and proposed options for reducing the milk price volatility that results from participating in global markets. The analysis reveals that the relationship between domestic dairy prices and global dairy prices has fundamentally changed because of increased U.S. commercial dairy exports. Instead of being insulated from global markets, U.S. domestic prices are now following global price changes.

This greater vulnerability to wider price fluctuations in the U.S. dairy market has prompted some to consider new U.S. domestic dairy policies with the goal of reducing domestic milk price volatility. This paper reviews other analyses that note the many shortcomings of such policies used by Canada and the European Union. Recently, the National Milk Producers Federation (NMPF) has proposed a new, mandatory government program to control farm milk growth called the “Dairy Market Stabilization Program,” or DMSP. The paper points to recent analyses of the DMSP by the Food and Agricultural Policy Research Institute (FAPRI) and Informa Economics, which show that the DMSP, if implemented, would decrease U.S. dairy exports and increase domestic market price volatility.

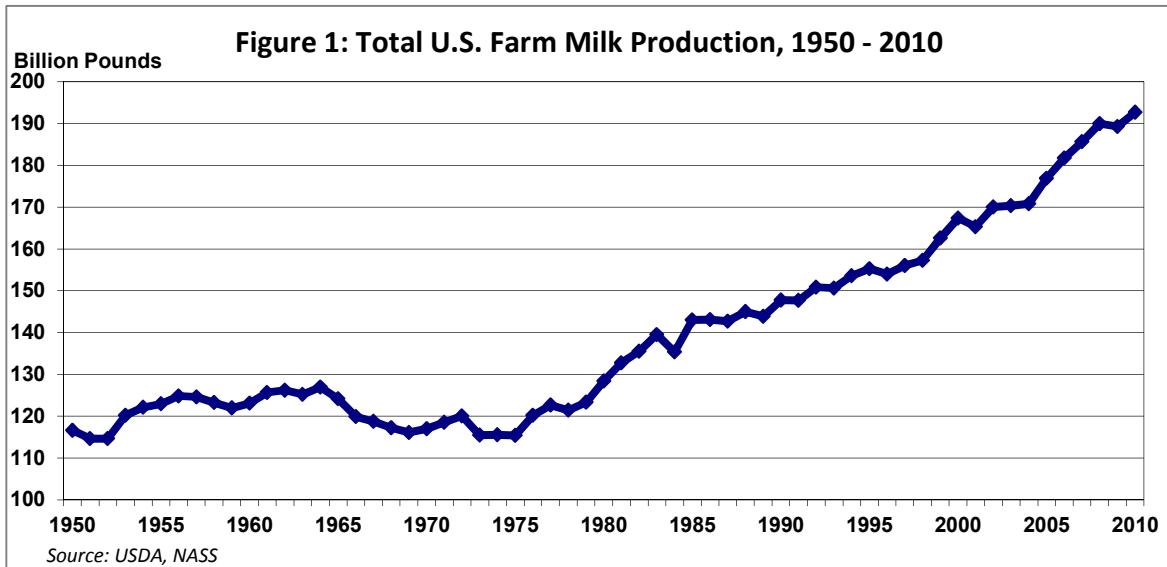
IDFA concludes that dairy policies designed to help farms and firms manage milk price volatility are preferable to policies that attempt to insulate the United States from global dairy price fluctuations. Policies that attempt to manage volatility would limit industry growth and reduce U.S. dairy exports at a cost of thousands of U.S. jobs. Policies that enable dairy producers to manage business risk are consistent with the approach adopted by other U.S. agricultural sectors and would help support a growing U.S. dairy industry.

### **U.S. Dairy Market Trends**

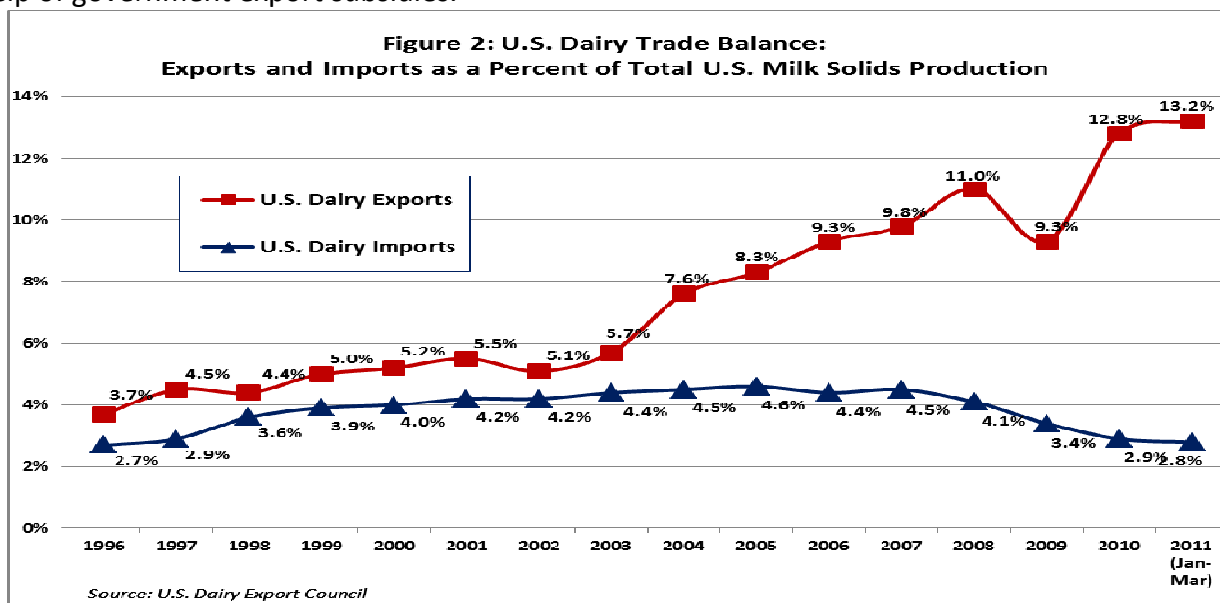
The U.S. dairy market has shown strong and steady growth over the past several decades. Farm milk production in 2010 was 192.8 billion pounds, a record high, providing 1.8% more milk than

the prior year, 67% more than 35 years ago in 1975, and 24% more than just 15 years ago in 1995 (source: USDA's National Agricultural Statistics Service).

This production growth, shown in Figure 1, allowed the industry to meet increased demand for milk and dairy products, not just domestically but internationally as well. In the decade prior to 2004, U.S. dairy exports averaged less than 5% of U.S. farm milk production and that level was only achieved largely due to export subsidies under the federal Dairy Export Incentive Program.



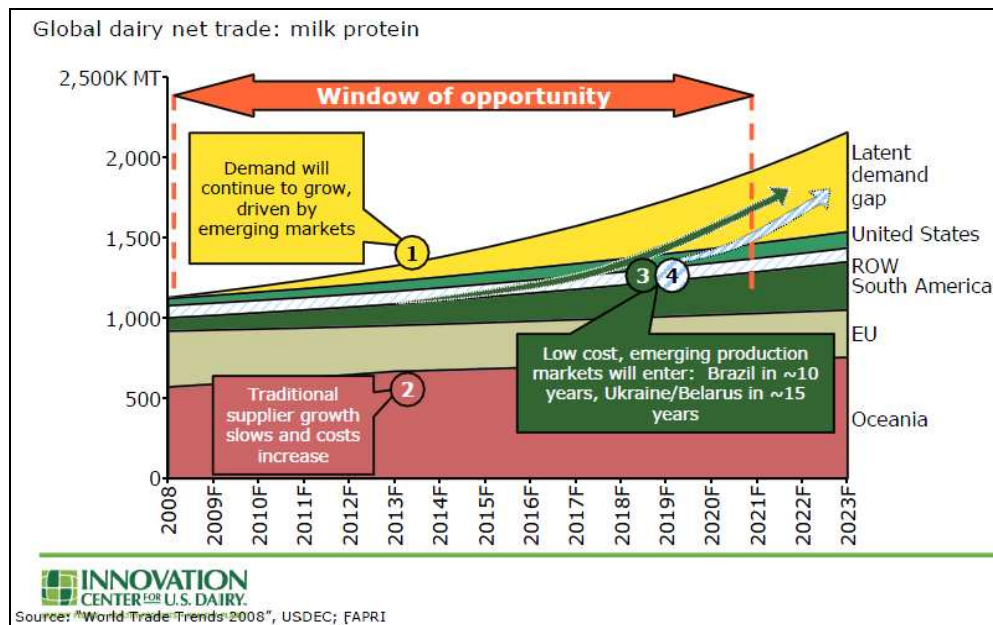
The U.S. dairy industry's position in international markets since 2003 has grown significantly, as shown in Figure 2. During the past five years, the United States exported on average more than 10.2% of farm milk production – more than double the average amount in previous years – and exports accounted for a record 12.8% of farm milk production in 2010 (source: U.S. Dairy Export Council). And, unlike prior to 2004, nearly all these U.S. dairy product exports occurred without the help of government export subsidies.



By value, dairy exports have increased from about \$1 billion in 2000 to over \$3.5 billion in 2010, an increase that has continued so far in 2011. Although job creation numbers are difficult to quantify, the Foreign Agriculture Service of the U.S. Department of Agriculture recently estimated that 8,400 jobs are created for every \$1 billion increase in agriculture exports. Applied to the increase in dairy exports, this formula estimates that more than 20,000 new jobs were created in the last decade by dairy export growth.

But will this world demand for dairy products continue? A recent study by Bain and Co., commissioned in 2009 by the Innovation Center for U.S. Dairy and funded by the dairy producer check-off program, concluded that it would. In fact, demand in many countries will outstrip the available farm milk supply, creating a demand gap that can only be filled by increasing world trade in dairy products. The study noted that the U.S. dairy industry is uniquely positioned to take the lead in filling the expected gap, which would significantly increase its share of the growing world dairy product trade (Read "The Impact of Globalization on the Dairy Industry: Threats, Opportunities and Implications" here:

<http://www.usdairy.com/Globalization/GlobalImpactStudy/Pages/BusinessCase.aspx>.)



### U.S. Share of World Trade in Dairy Products Is Growing

Prior to 2004, U.S. dairy market prices were often higher than world dairy market prices, which would explain why U.S. dairy exports usually required government export subsidies. Although the higher prices resulted from a combination of factors, some key reasons stand out:

- other countries, especially European Union members, relied heavily on export subsidies,
- domestic dairy policies encouraged large government-owned inventories of dairy products (especially in the European Union and the United States), and
- world trade in dairy products was relatively limited.

So, what has changed? As early as 2003, world demand for dairy products began to outstrip the supply of farm milk, but large government-owned inventories of butter and milk powders, due to intervention dairy policies, temporarily filled the gap. Those government-owned cupboards were empty by late-2006, but the strong demand continued, resulting in record-high farm milk prices around the globe in 2007 and 2008.

Since 2006 nearly all world trade in dairy products has consisted of commercial, not government-subsidized, sales. Government export subsidies were no longer needed. Another benefit of this change, which is rarely cited, is that U.S. dairy market prices are no longer consistently higher than world dairy prices, which has caused a steady decline of imported dairy products into the United States since 2007 (see Figure 2).

The U.S. dairy industry has taken advantage of the opportunity to increase its share of the international commercial market by exporting more dairy products. With a mature domestic market for dairy products, the U.S. dairy industry may find that increasing dairy exports is the only path to significant growth in coming years.

However, the export growth and resulting higher farm milk prices also brought increased price volatility stemming from changes in world dairy market prices. The world financial crisis and the U.S. economic recession, which began in 2008 and battered markets in 2009, hurt U.S. domestic demand for dairy products and curtailed global demand for U.S. exports.

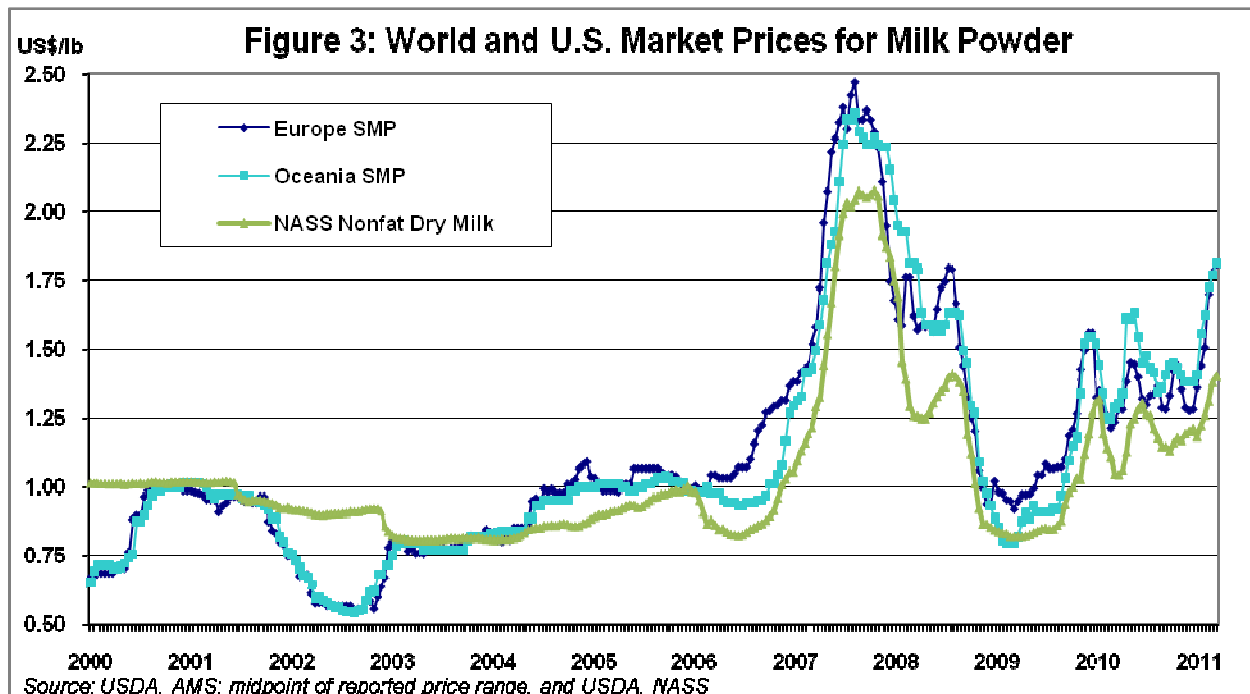
Although U.S. dairy exports dropped in 2009, the decline was only partially due to economic hard times. By the summer of 2009, low milk prices also triggered USDA to begin purchasing U.S. dairy products under the Dairy Product Price Support Program. When world prices dropped below these support prices, U.S. exports dropped as well. Because the government policy manipulated domestic prices to be above world prices for a few months in early 2009, it effectively limited price volatility at the expense of reduced dairy exports.

### **World Dairy Market Price Volatility Is the Root Cause of U.S. Dairy Price Volatility**

U.S. dairy market price volatility in recent years is not caused by domestic dairy market factors or broader domestic economic conditions. Rather, U.S. dairy market price changes in recent years are almost entirely due to volatility in world dairy market prices. Increased participation in export markets has made the U.S. industry subject to international price swings, which bring higher prices at times and lower prices at times.

This conclusion is supported by data from USDA's Agricultural Marketing Service (AMS), which reports world dairy market prices on a biweekly basis for the major dairy products in world trade for two regions, Europe and Oceania. USDA's National Agricultural Statistics Service (NASS) publishes data each week on the U.S. domestic market prices for four of those major dairy products.

Figure 3 shows these data for milk powder. (Note: Skim milk powder, or SMP, is the standard for international markets, but in the U.S. domestic market the standard is nonfat dry milk, or NFDM.) Prior to 2004, the U.S. domestic market price was often higher than the world market price; in fact, when world market prices fell to low levels, the U.S. domestic market price barely moved. Why? Because the U.S. government stepped in to prevent domestic market prices from moving lower by purchasing NFDM under the Dairy Product Price Support Program. Between 2000 and early 2004, USDA spent on average \$500 million per year buying NFDM.



Beginning in 2004, however, the U.S. domestic market price for NFDM has nearly always been at or below the world market price for SMP. Since then, every time the world market price increases, the domestic market price follows, and when the world market price declines, the domestic price falls as well. The primary reason that the domestic price has been lower since 2004 is that dairy importing nations are geographically closer to competitors in Europe and Oceania (Russia and the Middle East for the former, the growing economies in Southeast Asia for the latter), so transportation costs are greater for U.S.-sourced product. With some variation in the trends, this same pattern exists for other dairy products traded internationally as well.

### Implications for U.S. Dairy Policy

Although the dairy industry’s ability to use its vast resource base to increase milk production emerged in the mid-1970s, the record growth in the past five years stemmed from increased global demand and new overseas market opportunities for U.S. dairy products. Without this growth, the significant climb in U.S. milk production would not have occurred.

The United States now has transitioned from a dairy importer to a major dairy exporter. In addition to one key benefit – increased sales – what are the implications of this evolution?

Price volatility in the U.S. domestic market is inextricably tied to price volatility in the world dairy market. Therefore, it is important to consider how dairy policies that are designed to reduce or eliminate domestic price volatility would affect the industry's ability to continue to be a major exporter.

Here are two examples.

1. The European Union has, for the past few decades, controlled domestic markets with farm milk quotas while remaining a major dairy exporter. The EU's policies allowed commercial exporters to sell their products at much lower world market prices by implementing extensive export subsidies, known as variable levies, to make up the price difference. The EU is now phasing out these programs, and the United States could not adopt similar ones without violating international trade obligations under the World Trade Organization (WTO).
2. The strict farm milk quota system enforced in Canada offers another method for insulating the domestic dairy industry from world price volatility. While the system has reduced, but not eliminated, dairy price volatility in the Canadian domestic dairy market, it has harmed industry growth. A recent study conducted for IDFA by Informa Economics found that farm milk quotas in Canada led to much higher consumer dairy product prices, lower per capita consumption of dairy products, fewer exports of dairy products and more imports of dairy products. (Read "An International Comparison of Milk Supply Control Programs and Their Impacts" here:  
[http://www.keepdairystrong.com/files/Informa\\_International\\_Comparison\\_Supply\\_Control\\_Impacts\\_0910.pdf](http://www.keepdairystrong.com/files/Informa_International_Comparison_Supply_Control_Impacts_0910.pdf).)

The National Milk Producers Federation (NMPF) has proposed another option, called the Dairy Market Stabilization Program (DMSP), with the goal of moderating domestic price volatility. In its explanation of the DMSP, NMPF asserts that one of its key guiding principles is that the program will “not encourage imports or negatively affect exports.” Later NMPF directly claims that the DMSP will actually “encourage exports” and “discourage imports.” Recent analyses, however, show that the DMSP is not consistent with NMPF's guiding principles and claims. Let's look at the data.

A recent study by the Food and Agricultural Policy Research Institute (FAPRI) analyzed the DMSP proposal in a report first published in early March. (Read "The Economic Impact of the Dairy Market Stabilization Program on 2009 Dairy Markets" here:  
[http://www.fapri.missouri.edu/outreach/publications/2011/FAPRI\\_MU\\_Report\\_04\\_11.pdf](http://www.fapri.missouri.edu/outreach/publications/2011/FAPRI_MU_Report_04_11.pdf).) This study predicted the month-to-month impact on the U.S. dairy industry if the DMSP had been enacted prior to 2009. However, the only study results included in the report focused on the impact of the program on farm milk prices. Following a request by IDFA, the authors later added a

link to an appendix table with additional data that presented quite a different picture. (View "Appendix Table 1. Effects of DMSP on 2009 Dairy Product Markets" here: [http://www.fapri.missouri.edu/outreach/publications/2011/FAPRI MU Report 04 11 Appendix.pdf](http://www.fapri.missouri.edu/outreach/publications/2011/FAPRI_MU_Report_04_11_Appendix.pdf).)

The original FAPRI study was widely touted by NMPF as confirming the positive benefits of the Dairy Market Stabilization Program for the U.S. dairy industry. A closer look at some of the other results in the appendix table, however, reveals negative aspects of the DMSP. The appendix table also is attached to this report as Appendix 1.

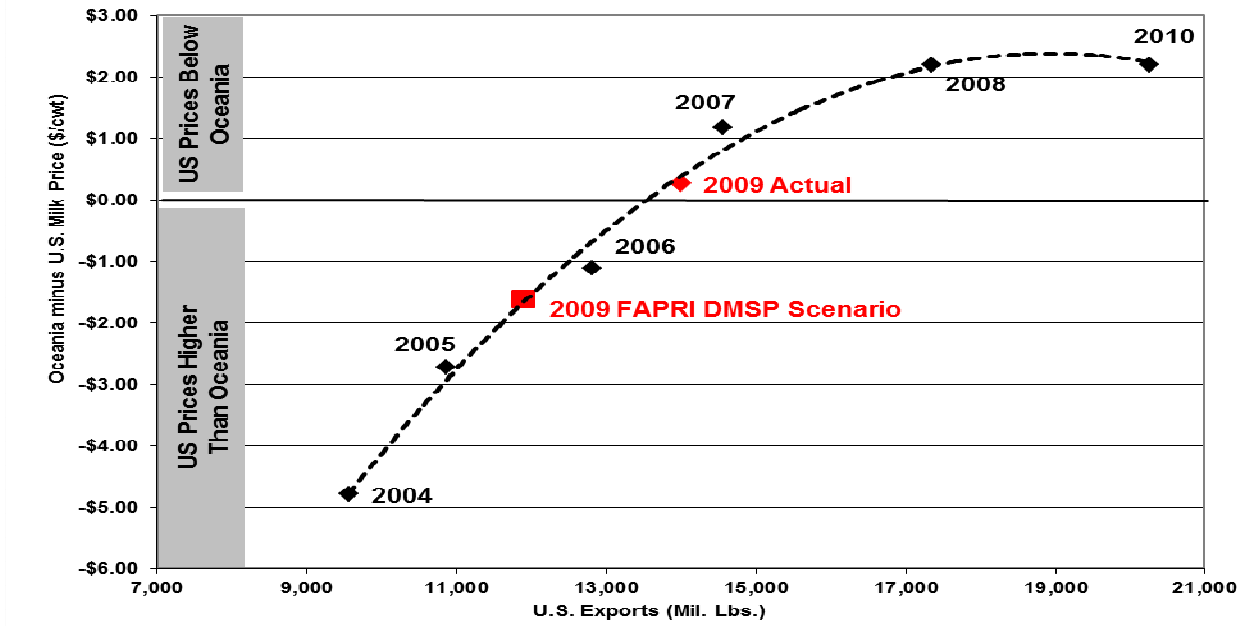
### **Stabilization Program Would Reduce U.S. Exports**

Contrary to NMPF's claim that the program would encourage exports, the additional FAPRI appendix data directly predicts that U.S. dairy exports would have dropped significantly if the DMSP had triggered limits to farm milk production during the dates reviewed. Study results from the appendix table show that during three months – March, April and May of 2009 – U.S. exports of nonfat dry milk would have fallen by 38%, butter exports by 16.4% and American cheese exports by 8%.

In addition, the FAPRI data likely underestimates the impact of the DMSP on U.S. exports. In recent years, the domestic dairy market prices for these products have rarely been higher than world market prices. The last time the actual U.S. market price for NFDM was more than 3 cents above the world SMP price per pound was in the fall of 2003 (see Figure 1). The FAPRI study of the DMSP program indicates that domestic prices could be as much as 50 cents above the actual world price (and for three full months could remain at least 9 cents above the price for SMP sourced out of Oceania) and only result in a decline in U.S. exports of 38%. FAPRI study results for butter and cheese similarly indicate that U.S. domestic prices could rise far higher above world market prices than seen in recent years, yet the report estimates only a modest impact on U.S. dairy product exports.

It is likely that the program would have caused even greater declines in U.S. milk powder exports if it had been in place in 2009. A recent analysis by Informa Economics for IDFA analyzed the difference between world and domestic U.S. dairy market prices and its relationship to the level of U.S. dairy product exports. That analysis concluded that, given the impact on domestic dairy market prices reported in the FAPRI appendix table, U.S. dairy product exports would have fallen by more than a two-billion-pound milk equivalent (a drop of over 14%) if the DMSP had been in place as dairy policy in 2009. (See next page for Figure 4, taken from "Response to Criticisms of Informa's DMSP Study," which is available here: <http://www.keepdairystrong.com/files/IDFA%20Response%20to%20Criticism%20of%20Informa%20DMSP%20Study.pdf>.)

**Figure 4: U.S. Milk Equivalent Exports vs Price Spread to Oceania**

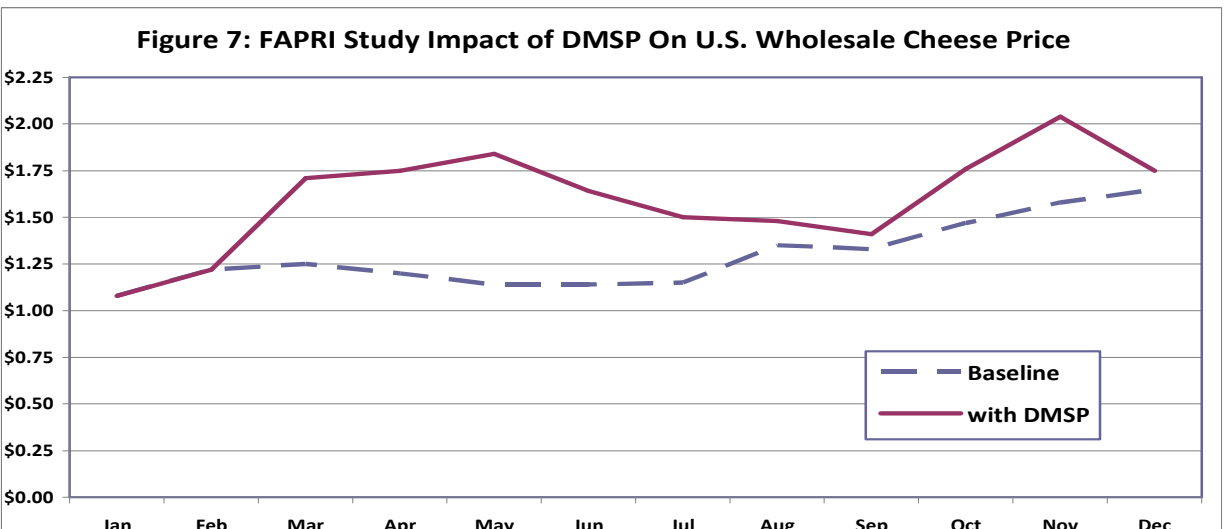
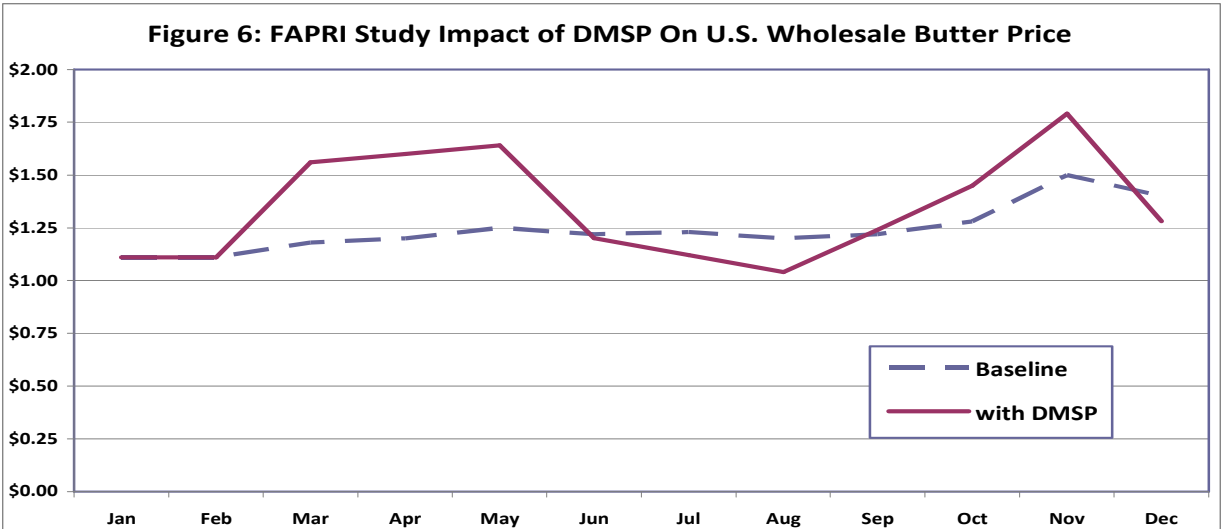
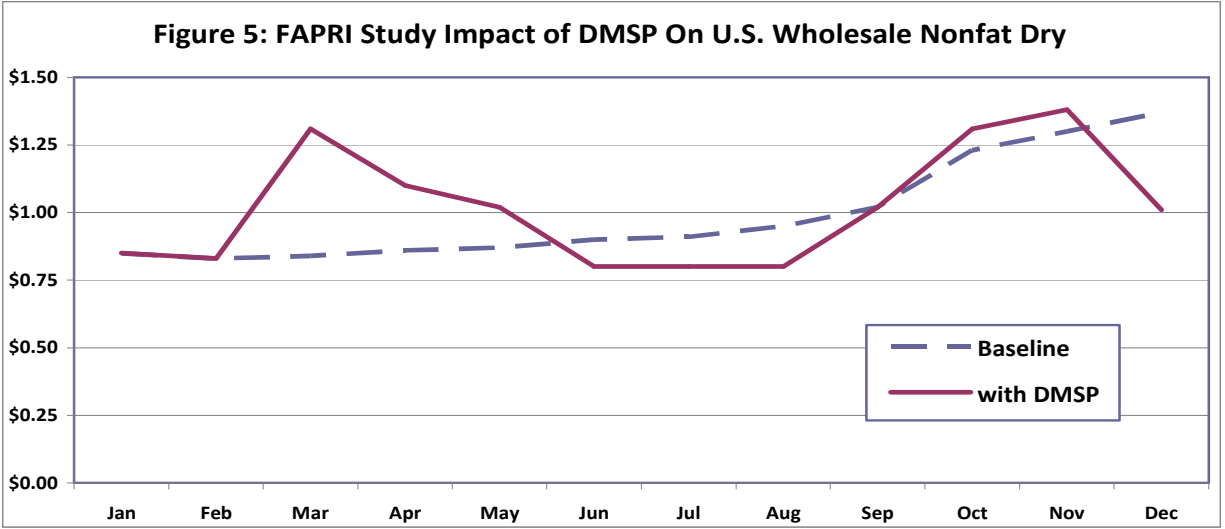


Source: Informa Economics

Although the FAPRI data alone would translate to U. S. job losses in the hundreds, a 14% decline in exports in 2009 would have resulted in losses of more than \$300 million in dairy exports and a loss of nearly 2,000 jobs. More important, the inability of U.S. dairy exporters to be reliable and consistent would have encouraged importing nations to look elsewhere, likely causing a long-term systematic reduction in dairy exports. It's clear that the DMSP would discourage investment in processing capacity in the United States with similar long-term results in export capacity, particularly if program regularly triggered off and on, as expected.

**Stabilization Program Would Increase Domestic Price Volatility**

Another key finding noted in the FAPRI study appendix table shows that U.S. dairy market prices would be much more volatile when the DMSP would trigger actions to limit farm milk production. This program, intended to stabilize prices, actually would work to destabilize them. Figures 5 to 7 show the appendix table data measuring the impact of the DMSP on wholesale dairy product prices in the United States.



## **A Better Dairy Policy Option: Risk Management Tools for Producers**

Dairy programs that attempt to limit price volatility by controlling milk production – regardless of whether they are called quotas or stabilization or growth management – clearly would have a negative impact on U.S. dairy exports. And, because they manipulate domestic prices above international prices, these programs also could add to domestic milk price volatility. If such programs were adopted in the United States, they would remove the industry's primary opportunity for growth at a loss of potentially thousands of U.S. jobs and likely hasten the consolidation of production into fewer and fewer facilities.

There are, however, more-effective and less-intrusive policy options available and in use by other industries today. Risk management tools, widely accepted and successfully utilized by other commodities, for example, are underutilized by the U.S. dairy industry.

In fact, a recent report, "[Price Volatility in Food and Agriculture Markets: Policy Responses](#)," authored by a collaboration of international agencies<sup>1</sup>, concurs that government efforts to control volatility have significant negative impacts. The report notes that agricultural policies designed to insulate domestic prices from world markets actually “increase world price volatility” and that “policies that distort production and trade in agricultural commodities potentially impede the achievement of long run food security.” The report recommends policies offering a broader set of fiscal risk-management services, including facilitating commodity hedging, providing risk-management education and offering disaster or catastrophic risk insurance.

IDFA concludes that dairy policies and programs designed to enable dairy producers to better manage milk price volatility are preferable to policies that attempt to insulate the United States from global price variation. Risk-management policies are consistent with the approach adopted by other U.S. agricultural sectors to expand U.S. trade and support a growing production base.

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<sup>1</sup> FAO, IFAD, IMF, OECD, UNCTAD, WFP, the World Bank, the WTO, IFPRI, and the UN HLTF. Available here: <http://ictsd.org/downloads/2011/05/finalg20report.pdf>

Appendix Table 1. Effects of DMSP on 2009 Dairy Product Markets

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
<b>Cheese Wholesale Price</b>													
	(Dollars per Pound)												
Baseline	1.08	1.22	1.25	1.20	1.14	1.14	1.15	1.35	1.33	1.47	1.58	1.65	1.30
Scenario	1.08	1.22	1.71	1.75	1.84	1.64	1.50	1.48	1.41	1.76	2.04	1.75	1.60
Change	0.00	0.00	0.46	0.54	0.70	0.50	0.35	0.13	0.08	0.29	0.46	0.10	0.30
<b>Butter Wholesale Price</b>													
Baseline	1.11	1.11	1.18	1.20	1.25	1.22	1.23	1.20	1.22	1.28	1.50	1.40	1.24
Scenario	1.11	1.11	1.56	1.60	1.64	1.20	1.12	1.04	1.24	1.45	1.79	1.28	1.34
Change	0.00	0.00	0.39	0.39	0.39	-0.03	-0.12	-0.16	0.02	0.16	0.29	-0.12	0.10
<b>Nonfat Dry Milk Wholesale Price</b>													
Baseline	0.85	0.83	0.84	0.86	0.87	0.90	0.91	0.95	1.02	1.23	1.30	1.37	0.99
Scenario	0.85	0.83	1.31	1.10	1.02	0.80	0.80	0.80	1.02	1.31	1.38	1.01	1.02
Change	0.00	0.00	0.47	0.24	0.15	-0.10	-0.11	-0.15	0.00	0.08	0.08	-0.35	0.03
<b>Class III Price</b>													
	(Dollars per Cwt)												
Baseline	10.78	9.31	10.44	10.78	9.84	9.97	9.97	11.20	12.11	12.82	14.08	14.98	11.36
Scenario	10.78	9.31	12.75	15.79	15.99	15.84	14.04	13.45	13.09	14.61	17.77	17.72	14.26
Change	0.00	0.00	2.31	5.01	6.15	5.87	4.07	2.25	0.98	1.79	3.69	2.74	2.91
<b>Class IV Price</b>													
Baseline	9.59	9.45	9.64	9.82	10.14	10.22	10.15	10.38	11.15	11.86	13.25	15.01	10.89
Scenario	9.59	9.45	12.48	14.52	13.45	11.19	9.31	9.04	10.22	12.62	14.92	14.23	11.75
Change	0.00	0.00	2.84	4.70	3.31	0.97	-0.84	-1.34	-0.93	0.76	1.67	-0.78	0.86
<b>U.S. All Milk Price</b>													
Baseline	13.30	11.60	11.70	11.90	11.60	11.30	11.30	12.10	13.00	14.30	15.40	16.50	12.83
Scenario	13.30	11.60	13.19	15.83	16.40	15.10	13.47	13.04	13.31	15.12	17.52	18.19	14.67
Change	0.00	0.00	1.49	3.92	4.79	3.79	2.17	0.94	0.31	0.82	2.12	1.69	1.84
<b>Butter Exports</b>													
	(Million Pounds)												
Baseline	2.63	2.69	2.12	2.44	3.19	2.52	1.18	1.49	4.78	7.97	10.69	7.75	49.45
Scenario	2.63	2.69	1.83	1.99	2.66	2.26	1.12	1.58	4.81	7.87	10.43	7.70	47.58
Change	0.00	0.00	-0.29	-0.45	-0.53	-0.26	-0.05	0.09	0.03	-0.10	-0.27	-0.06	-1.87
<b>American Cheese Exports</b>													
Baseline	5.20	4.91	5.07	4.68	5.08	6.17	5.51	5.88	5.34	5.47	5.88	7.78	66.98
Scenario	5.20	4.91	4.80	4.30	4.58	5.75	5.20	5.73	5.26	5.29	5.57	7.65	64.23
Change	0.00	0.00	-0.28	-0.39	-0.51	-0.42	-0.30	-0.15	-0.08	-0.19	-0.31	-0.13	-2.75
<b>Nonfat Dry Milk Exports</b>													
Baseline	48.36	27.84	34.68	39.64	44.66	44.95	62.11	62.61	43.60	64.54	43.70	31.89	548.57
Scenario	48.36	27.84	21.70	23.46	28.61	35.78	58.19	63.73	44.34	62.81	40.14	38.81	493.77
Change	0.00	0.00	-12.97	-16.18	-16.05	-9.17	-3.92	1.12	0.74	-1.73	-3.56	6.92	-54.81

Source: FAPRI.

#### About the Author:

Robert Dean Yonkers, Ph.D., Vice President and Chief Economist, oversees the research and analysis of the economic impact of marketing conditions, government regulations and alternative policies on the U.S. and international dairy industries. Before joining IDFA, Yonkers was a tenured faculty member at The Pennsylvania State University, where he conducted research and developed educational programs on the profitability and economic sustainability of the state's milk producing, marketing and processing sectors. Yonkers serves on the Agricultural Technical Advisory Committee for Animals and Animal Products, an advisory body that provides information and advice to U.S. cabinet officials. An active member of the International Dairy Federation's Standing Committee on Dairy Policies and Economics, he was elected chairman in 2009. Yonkers also serves on the Agricultural Advisory Committee to the U.S. Commodity Futures Trading Commission and the Board of Directors for the Council on Food, Agricultural and Resource Economics.

#### About IDFA

The International Dairy Foods Association (IDFA), Washington, DC, represents the nation's dairy manufacturing and marketing industries and their suppliers, with a membership of 550 companies representing a \$110-billion a year industry. IDFA is composed of three constituent organizations: the Milk Industry Foundation (MIF), the National Cheese Institute (NCI) and the International Ice Cream Association (IICA). IDFA's 220 dairy processing members run more than 600 plant operations, and range from large multi-national organizations to single-plant companies. Together they represent more than 85 percent of the milk, cultured products, cheese and frozen desserts produced and marketed in the United States.