USDA

## Friday, February 19, 2010

# Dairy Outlook


www.usda.gov/oce/forum/

# Situation and Outlook for the U.S. Dairy Industry

Jerry Cessna
Senior Agricultural Economist
USDA Agricultural Marketing Service, Dairy Programs

## A Look Back Over Two Decades

To understand the context of the U.S. dairy industry situation and outlook, it is helpful to examine some history. U.S. milk production increased from 147.7 billion pounds in 1990 to 189.3 billion pounds in 2009, an average increase of 1.3 percent per year. Milk cow numbers declined from an annual average of 9,993 thousand head in 1990 to 9,151 thousand head in1998; increased in some years and declined in others before reaching a low of 9,010 thousand head in 2004; increased 4 consecutive years to reach 9,315 thousand head in 2008; and then decreased to 9,200 thousand head in 2009. Gains in milk per cow over the period were impressive, increasing from 14,782 pounds per year in 1990 to 20,572 pounds in 2009, an average increase of 1.8 percent per year.

U.S. domestic dairy consumption has grown over the last 20 years, with increases in population and per capita consumption of dairy products. The U.S. population has increased from 250.1 million people in 1990 to 307.2 million people in 2009, an average increase of 1.1 percent per year. USDA's Economic Research Service has estimated that per capita consumption of dairy products on a milk equivalent (m.e.) fat basis has increased from 568 pounds of per year in 1990 to 604 pounds of per year in 2008, an average increase of 0.4 percent per year.

U.S. dairy trade has grown substantially over the last 20 years. As measured in nominal terms using a standard USDA aggregation[1], the value of dairy imports rose from $891 million in 1990 to a peak of $3,142 million in 2008 and then dropped to $2,533 million in 2009. The value of dairy exports rose from $353 million in 1990 to $1,887 million in 2006, rose sharply for 2 year to reach a peak of $3,818 million in 2008, and then dropped to $2,313 million in 2009. With the exceptions of 1993, 2007, and 2008, the U.S. has been a net importer of dairy products. (U.S. Census Bureau data aggregated by USDA Foreign Agriculture Service—Census and FAS) While the largest categories of U.S. dairy imports have been dairy ingredients and cheese, the largest categories of U.S. dairy exports have been nonfat dry milk (NDM)[2] and dry whey products.

---

[1] Measurement of dairy imports and exports depends upon the scope of the products included in the measurement. The standard measurement used here is the Foreign Agricultural Trade of the United States (FATUS). Some imports and exports of products that include significant proportions of milk ingredients are not included in the measurement.

[2] Skim milk powder is similar to nonfat dry milk with one major distinction: skim milk powder has been standardized for protein content. Nonfat dry milk is made from drying skim milk, but the resulting product's protein level varies between 34 and 37 percent. Nonfat dry milk is then mixed with another dry dairy product such as lactose powder to standardize the protein level at 34 percent creating skim milk

The dairy industry has experienced a remarkable increase in price volatility over the last two decades. During the 1990s, the annual average all-milk price fluctuated within a range of $3.19 per hundredweight (cwt), with a low of $12.27 in 1991 and a high of $15.46 in 1998. During the 2000s, the annual average all-milk price range was $7.03 per cwt, with a low of $12.18 in 2002 and a high of $19.21 in 2007. (NASS) Since 1998, milk prices have been cyclical, reaching peaks every three years. The cyclical nature of dairy prices in recent years is not well understood, although there has been some speculation that the cycles are related to a combination of dairy producers' responses to returns and the cow life cycle.

**A Review of the 2009 Dairy Situation**

The all-milk price fell precipitously from $17.10 per cwt November 2008 to $11.60 in February 2009. It then stayed below $12.00 until beginning a rise in August. There are a number of reasons to explain why prices dropped precipitously in the first part of 2009. The global recession was the chief culprit.

According to the National Bureau of Economic Research, the U.S. recession began in December 2007. Downturns in other economies soon followed. According to the April 2009 *World Economic Outlook* of the International Monetary Fund (IMF), advanced economies faced mild recessions in the middle quarters of 2008, but emerging and developing economies grew "at fairly robust rates by past standards." However, the global situation deteriorated after "the dramatic blowout of the financial crisis in September 2008." A year after the financial "blowout," at a Brookings Institution Forum in September 2009, Federal Reserve Chairman Ben Bernanke stated that the U.S. recession was "very likely over." However, the recovery is likely to be anemic. Bernanke stated, "Even though from a technical perspective the recession is very likely over at this point, it is still going to feel like a very weak economy for some time as many people still find their job security and their employment status is not what they wish it was."

The recession brought about a shift in domestic food demand. Statistics from USDA Economic Research Service indicate that by 2009, the recession had a negative effect on food sales compared to 2008, down by 2.3 percent for food at home and 2.2 percent for food away from home. An indicator of restaurant demand is the National Restaurant Association's *Restaurant Performance Index* (RPI). Their website states, "The RPI is constructed so that the health of the restaurant industry is measured in relation to a steady-state level of 100. Index values above 100 indicate that key industry indicators are in a period of expansion, while index values under 100 represent a period of contraction for key industry indicators." For November 2007, the RPI "stood at 99.0..., down 1.0 percent from October and its lowest level since February 2003." The RPI reached a record low in December 2008 at 96.4. The RPI rebounded in the latter part of

---

powder which is typically traded in international markets. In recent years, as the U.S. has produced and exported significant quantities of skim milk powder as it has become more active in international markets.

2009, reaching 98.7 in December 2009, its highest level in nearly two years. Although the RPI was increasing, it continued to indicate contraction through the end of 2009.

The global recession had pronounced effects on total U.S. agricultural exports, falling from a peak of $10.6 billion in October 2008 to a low of $7.3 billion in September 2009 before rising back to $10.0 billion in December 2009. Commercial Dairy export quantities followed a pattern to similar to other agricultural export commodities. On a m.e. skim-solids basis, dairy exports reached a peak of 7.6 billion pounds in the 2nd quarter of 2008, sank to a low of 5.1 billion pounds in the 1st quarter of 2009, and then rose to 6.3 billion pounds in the 4th quarter of 2009. On a m.e. fat basis, dairy exports reached a peak of 2.5 billion pounds in the 2nd quarter of 2008, sunk to a low of 0.8 billion pounds in the 3rd quarter of 2009, and then rose to 1.2 billion pounds in the 4th quarter of 2009

The growth of the U.S. dairy herd from 2005 through 2008 can be explained as a response to growing demand, partly from international markets. With the increase in global demand and lack of sufficient milk supplies abroad, global dairy prices rose in 2007. In the second half of 2007, with the all-milk price above $20, the milk-feed price ratio remained above 3 for the months of July through November. Milk production typically responds to profitable conditions after a lag of several months to a year. Milk production in 2008 rose by 2.3 percent over 2007. With milk production rising through 2008, sluggish domestic demand in 2008 and 2009, and falling export volumes in the second half of 2008 and the first part of 2009, a milk surplus developed, driving down prices in the first part of 2009.

The stress of low prices on dairy farmers in 2009 brought about a flurry of U.S. government activity. Some of the activities continue into 2010, and some have implications for the future of the industry.

- The Milk Income Loss Contract (MILC) program was very active due to the low prices of 2009. As of January 20, 2010, nearly $915 million had been paid to dairy operations.
- On March 26, 2009, U.S. Agriculture Secretary Tom Vilsack announced a disposition plan for about 200 million pounds of the NDM held by CCC. Under the plan, NDM would be bartered for other commodities or donated, mostly for the benefit of domestic feeding programs. These operations, which began in 2009, continue to be implemented in 2010.
- Following the reintroduction of dairy export subsidies by the EU in January 2009, on May 22, 2009, Secretary Vilsack announced allocations under USDA's Dairy Export Incentive Program (DEIP) for the July 2008 through June 2009 period. Allocations were in accordance with the rules of the World Trade Organization. USDA rolled over these commitments for the July 2009 through June 2010 period. USDA accepted bids for 37.2 thousand metric tons (82.0 mil. pounds) of NDM, 17.4 thousand metric tons (38.4 mil. pounds) of butterfat, and 1.8 thousand metric tons (4.0 mil. pounds) of cheese through November 16, 2009.

- On July 31, 2009, Secretary Vilsack announced temporary increases in the Dairy Price Support Program (DPPSP) prices for products produced from August through October 2009. The temporary change raised the price paid for nonfat dry milk from $0.80 per pound to $0.92 per pound, the price paid for cheddar cheese blocks from $1.13 per pound to $1.31 per pound, and the price of cheddar cheese barrels from $1.10 per pound to $1.28 per pound. Since October 2008, the Commodity Credit Corporation (CCC) has purchased 270 million pounds of NDM under the DPPSP.
- The Agricultural Appropriations Act for fiscal year 2010 provided for $290 million in direct payments to dairy operations that produced milk in the United States and commercially marketed the milk between February and July 2009. The same act provided for $60 million in cheese and cheese products to be purchased by the CCC for using in domestic feeding programs through USDA's Food and Nutrition Service.
- During FY 2009, FSA provided 1,813 direct loans to dairy producers totaling approximately $108.6 million (including 164 loans for approximately $9.8 million from American Recovery and Reinvestment Act funding).
- During FY 2009, FSA provided a significant number of guaranteed loans to dairy producers. (The number of loans cannot be determined due to system limitations.)
- On August 25, 2009, Secretary Vilsack announced that he was moving forward on establishing a Dairy Industry Advisory Committee and requested nominations. On January 6, 2010, the Secretary announced the appointments of 17 members to serve on the committee. Over the next two years, the Committee will review the issues of farm milk price volatility, dairy farmer profitability, and consolidation, and offer suggestions on ways USDA can best address the needs of a struggling dairy industry.

The National Milk Producers Federation also responded to the crisis through its Cooperatives Working Together (CWT) program. According to information provided on their website, over the last 6 months of 2009, the CWT herd retirement program contributed to the reduction in the U.S. dairy herd by removing about 201,000 cows.

After four consecutive years of herd expansion, the U.S. dairy cow herd was reduced from 9,315 thousand head 2008 to 9,200 thousand head in 2009. Milk production was reduced from 190.0 billion pounds in 2008 to 189.3 billion pounds in 2009, a reduction of 0.4 percent. As milk production was reduced during the year, the all-milk price began to recover, rising from $11.30 per cwt in July 2009 to $16.50 in December 2009.

**The Outlook for 2010**

Given the 3-year cyclical nature of milk prices since 1998 and the increasing peaks of 2004 and 2007, one might expect an average all-milk price which exceeds the prior peak of $19.21 per cwt. Although prices are expected to rise from their lows of 2009, there are fundamental reasons to believe that exceeding the prior peak is not the most likely scenario.

Given forecasts for recovery of the U.S. economy with continued high unemployment, a moderate increase in domestic commercial disappearance of dairy products is expected. In 2010, domestic commercial use is expected to increase 1.4 percent on a m.e. fat basis and 1.1 percent on a m.e. skim-solids basis.

At the global level, the macroeconomic outlook is also mixed. According to an IMF *World Economic Outlook Update* of January 26, 2010, "In most advanced economies, the recovery is expected to remain sluggish by past standards, whereas in many emerging and developing economies, activity is expected to be relatively vigorous, largely driven by buoyant internal demand." Gross domestic product for 2010 is expected to grow 2.1 percent for developed economies and 6.0 percent for developing economies.

The outlook for U.S. dairy exports is generally optimistic although there are some limiting variables to consider. Australian milk production is expected to decrease by 1 percent following a severe drought and high input costs. New Zealand milk production is expected to grow about 2.5 percent, slightly higher than the 5-year annual grown rate of 2003-2008. EU milk production is expected to grow marginally as producers recover from the low prices of 2009. In the latter part of 2009, Oceania (Australia and New Zealand) dairy export prices rose for all of the major dairy products, a positive sign for U.S. dairy exports. However, prices have fallen somewhat since the beginning of the 2010. There is some concern about how the EU will dispose of intervention stocks—76.4 thousand metric tons (168.4 mil. pounds) of butter and 259.3 thousand metric tons (571.7 mil. pounds) of NDM as of December 10, 2009. In the U.S., the CCC holds 27.1 thousand metric tons (59.8 mil. pounds) of uncommitted NDM stocks.

USDA expects U.S. commercial dairy exports to increase significantly in 2010 over 2009, from 4.1 to 4.8 billion pounds on a m.e. fat solids basis and from 22.7 to 25.7 billion pounds on a m.e. skim-solids basis. However, given the mixed signals concerning the global economic recovery and signals indicating a possible leveling out of international export prices, dairy exports are not expected to reach the levels that existed in 2008 when exports were 8.7 billion pounds on a m.e. fat basis and 26.6 billion pounds on a m.e. skim-solids basis.

The U.S. milk supply is expected to continue to decrease in 2010 as a lagged response to the low milk prices of 2009. The number of milk cows is expected to decline from an average of 9,200 thousand head in 2009 to an average of 9,015 thousand head in 2010, a decrease of about 2 percent. Milk per cow is expected increase from 20,572 pounds in 2009 to 20,950 pounds in 2010, an increase of 1.8 percent. Milk production is expected to decrease from 189.3 billion pounds in 2009 to 188.9 billion pounds in 2010, a 0.2 percent reduction.

Given the extremely low prices of 2009, one might expect milk production to fall at an even greater rate in 2010. However, the January 1, 2010, inventory of dairy replacement heifers, 500 pounds and over, that are expected to calve reached 2,941 thousand head. This is 1 percent more than the 2,909 thousand head reported for January 1, 2009.

(NASS) The availability of these animals should moderate herd decline. Moreover, for the 2009/10 marketing year,[3] the farm price of corn is expected to average $3.45 to $3,95 per bushel and the soybean meal price is expected to average $270 to $320 per ton. While these feed prices are relatively high by historic measures, they are substantially lower than the prices reached in the 2007/08 marketing year when corn averaged $4.20 per bushel and soybean meal averaged $335.94 per ton. (WAOB) Milk-feed price ratios for 2010 are expected to average above 2008 and 2009 levels. The uptick in milk-feed price ratios in the second half of 2009 and the higher milk-feed price ratios expected for 2010 are not likely sufficient to encourage expansion, but they are expected to dampen the rate of decline in 2010.

Ending stocks for 2009 were high, especially for cheese. Cheese stocks in cold storage ended the year at 967 at million pounds, a 13.5 percent increase over those reported for the end of 2008. On a m.e. fat basis, 2009 ending commercial stocks for all reported products were 11.3 billion pounds. This is an increase of 12.5 percent over the 10.0 billion pounds reported for the end of 2008. On a m.e. milk skim-solids basis, 2009 ending commercial stocks for all reported products were 11.2 billion pounds. This is an increase of 3.4 percent over the 10.9 billion pounds reported for the end of 2008.

In summary, these are the supply and demand conditions the U.S. dairy industry faces for 2010:

- a moderate increase expected in domestic demand;
- a significant increase expected for export demand, though not to 2008 levels;
- a decreasing milk supply expected, though at a lower rate of decline than for 2009; and
- high beginning stocks for dairy products

With these supply and demand conditions, prices are expected to increase significantly in 2010, but generally not to the levels seen in 2007 and 2008. The prices of cheddar cheese, butter, and nonfat dry milk are expected to rise though the year while the price of dry whey expected to remain fairly steady. The average Class III price is expected to average $14.90 to $15.60 per cwt over the year, and the average Class IV price is expected to average $13.95 to $14.75. USDA expects an average all-milk price of $16.20 to $16.90 per cwt.

**A Few Words Concerning Long-Term Projections**

Each year, usually in February, USDA publishes long-term projections. For its current-year estimate in that publication, USDA uses the *World Agricultural Supply and Demand Estimates* (WASDE) report that is published in November of the previous year. USDA's current outlook numbers for 2010, as presented in the latest WASDE report, are a little different than shown in USDA *Agricultural Projections to 2019*, but they are in the same general ballpark.

[3] The marketing year begins September 1for corn and October 1 for soybean meal.

U.S. milk production increases at an average rate of 1.1 percent over the projection period. After a drop of 2.6 percent in 2010, cow numbers generally decline at a decreasing rate until 2017 and remain flat thereafter. The average rate of decline from 2011 to 2017 is 0.3 percent, not as steep as the 0.7 percent average rate of decline from 1990 to 2004. After increasing at a rate of 1.8 percent in 2010 and 2.9 percent in 2011, milk per cow increases at an average rate of 1.3 percent. Without a significant price advantage, U.S. exports remain relatively flat over the projection period, averaging 4.1 billion pounds per year on a m.e. fat basis and 24.0 billion pounds per year on a m.e. skim-solids basis.

The all-milk price increases to $16.50 per cwt in 2010, falls to $15.60 in 2011, and then rises through the projection period, reaching $18.50 by 2019. In line with the long-term trend of most agricultural commodities, farm-level milk prices in real terms generally decline over time. Following a fluctuation that lasts until 2012, real all-milk prices decrease for the remainder of the projection period.

Additional information about USDA dairy projections is available at:

World Agricultural Supply and Demand Estimates
http://www.usda.gov/oce/commodity/wasde/index.htm

Livestock, Dairy, and Poultry Situation and Outlook
http://www.ers.usda.gov/publications/ldp

USDA Agricultural Long-Term Projections
http://www.ers.usda.gov/Briefing/Baseline

Dairy: World Markets and Trade
http://www.fas.usda.gov/dlp/dairy/dairy.asp