

Factors causing fluctuations in All Milk Price Received by U.S farmers

Bob Cropp¹, University of Wisconsin, Madison, Wisconsin, US

Jelle Zijlstra, Animal Sciences Group of Wageningen University and Research Centre, Lelystad, Netherlands

[This document will be part of the research report of the project “Dairy Farming in New Reality”, that will be published around May 2008]

1950-1981 price support system based on Parity Formula

Milk prices received by U.S. dairy farmers have fluctuated considerably from one year to the next, particularly since the mid-1990s. The main factor for increased price fluctuation is a major change in U.S. dairy price support policy. From 1950 to 1981, the government directly supported the price of milk used for manufactured dairy products by standing ready to purchase cheddar cheese, butter and nonfat dry milk at specified prices. Since under federal milk marketing orders the price of milk used for beverage purposes is based off of the manufacturing milk price by adding a differential, the support program indirectly supports all milk prices. The support price for manufacturing use milk was established by a Parity Formula that considered the index of prices paid by farmers in comparison to the index of prices received by farmers. This price support program provided stability to dairy product prices and farm milk prices. The support price placed a floor under milk prices, but also dampened any price increases. When prices increased the government would sell back onto the market earlier surplus stocks of cheese, butter and nonfat dry which dampened price increases.

In 1950, under the parity price support program, the support price was \$3.07 per 100 pounds of manufacturing use milk. Ten years later, 1960 it had not increased but was \$ 3.06. By 1970 the support price had increased \$1.60 to \$4.66. But, double digit inflation in the 1970's increased the support price to \$7.71 by 1975 and to \$13.10 by 1980. Further, improved genetics through artificial insemination and improved feed management resulted in much improved productivity on dairy farms. The parity formula does not take into account changes in farm productivity. The average pounds of milk per cow, which was 9,747 pounds in 1970, increased 22 percent to 11,891 pounds by 1980. Although a structural change was going on in the dairy industry by smaller dairy farmers retiring from dairy and resulting in a decrease in cow numbers, the remaining farmers with more cows and higher milk per cow resulted in a rapid increase in milk production. During the period of 1970 to 1980, cow numbers declined 11 percent but the 22 percent increase in milk per cow netted an increase of almost 10 percent in total milk production. This was more milk than the market could absorb and as a result, the government under the price support program was purchasing more than 10 percent of the milk production in the form of cheese, butter and nonfat dry milk at a cost of about \$2.5 billion. Because of building burdensome stocks of surplus dairy products and at a high cost to the government, U.S. Congress in 1981 abandoned the support level based on parity. From that moment on the support price is set by Congress instead of basing it on a formula.

After 1981: price support system based on Congress decisions

The support price was \$13.10 in 1981. Surplus milk production continued to increase to about 12 percent of milk production, and as a result, Congress reduced the support price to \$12.60 in 1983.

¹ Bob Cropp is now professor emeritus and has been with the University of Wisconsin system for 41 years. During this time he has taught classes, conducted research and provided extension programs on dairy marketing, dairy policy and dairy price risk management.

By 1985 the support price was reduced to \$11.60. Also the 1985 Farm Bill authorized a Whole Herd Buyout program. Under this program dairy farmers submitted bids to slaughter all of their cows and heifers and remain out of the dairy business for 5 years. The number of bids accepted removed from the market from April 1, 1986 to August 31, 1987 about 12.3 billion pounds of milk equaled to 8.7 percent of 1985 milk production. Then in 1988, there was a major drought impacting feed prices the winter of 1988/89 which resulted in dairy farmers reducing cow numbers and total milk production resulting in much higher milk prices in 1989.

Congress continued to lower the support price on manufacturing use milk. By 1987 the support price was reduced to \$11.10, by 1989 to \$10.60, from 1990 to 1995 to \$10.10 and since 1999 to currently to just \$9.90. The \$9.90 support price is well below the cost to produce milk by most dairy farmers. As a result, since the mid-1990s there has not been much surplus milk and government purchases of surplus dairy products has been minimal except for the brief period of 2000 to 2003 when an expansion in milk production resulted in the government purchasing a relatively large amount of surplus nonfat dry milk. Thus, since the mid-1990s market forces and not government programs drive dairy product and farm milk prices. Dairy product and farm milk prices can fall far before the prices support program kicks in and since the government does not have surplus stocks to sell back onto the market, there is no dampening of price increases.

With the support price well below what it costs dairy farmers to produce milk, milk prices are driven by changes in milk cow numbers, milk per cow, total milk production, milk and dairy product sales and the level of dairy stocks. Considering that milk and dairy products are quite perishable, that it takes dairy farmers time to respond to changes in milk prices and that consumers' response to beverage milk and dairy product prices is small, small changes in any of these factors will have a rather big change on dairy product prices and farm milk prices.

From 2002 on: extra price support programs

With fluctuating and low milk prices dairy farmers went to Congress requesting more price protection than what is provided by the \$9.90 support price. The 2002 farm Bill provided for the Milk Income Loss Contract Program (MILC). Under this program dairy farmers would receive a direct payment per 100 pounds of milk anytime the mover (base manufacturing milk price) for Class I milk (beverage milk) fell below \$13.69 per 100 pounds. Payments were retroactive to December 2001. The payment was 45% of the difference from December 2001 through September 30, 2005, and then 34 percent of the difference from October 1, 2005 to December 30, 2007. Payments were limited to 2.4 million pounds of milk produced within a year, the production of about 130 milk cows. About 85 percent of dairy farmers have less than 130 cows. Since larger dairy farms produce a large share of U.S. milk production, payments were made on about 45 percent of all milk produced in the U.S. The Class I mover fell below \$13.69 and MILC payments were made during the following months: December 2001 to September 2003, January 2004 to April 2004, December 2005 to February 2007.

Further, in 2003 the National Milk Producers Federation (NMPF) launched a voluntary dairy herd buyout program and dairy export assistance program called Cooperatives Working Together (CWT). Under CWT dairy cooperatives contributed 5 cents per 100 pounds of dairy farmer member milk to fund the program. Cooperatives funding the program represents about 65 to 70 percent of U.S. milk production. In 2006, the 5 cents per 100 pounds of member milk was increased to 10 cents. Under CWT there have been four dairy herd buyout programs. The number of dairy herds, milk cows

removed and slaughter and the associated pounds of milk for each of these four buyouts were: July 2003 – June 30, 2004, 299 herds, 32,724 cows and 608 million pounds of milk; July 1, 2004 – June 30, 2005, 363 herds, 51,700 cows and 931 million pounds of milk; July 1, 2005 – June 30, 2006, 442 herds, 64,005 cows and 1.2 billion pounds of milk; July 1, 2006 – June 30, 2007, 333 herds, 52,783 cows and 1 billion pounds of milk. Dairy export assistance program has also been active during these time periods. Under this program dairy cooperatives receive a subsidy to export dairy products.

Fluctuations in milk price from 1988 until 2007

Figure 1 shows the fluctuations in milk price in the last 19 years. In this paragraph these fluctuations are explained by analyzing causes. Recognizing that milk sales are fairly stable, most of the change in milk prices may be explained by changes in milk production, which is the result of changes in cow numbers and milk per cow. With this in mind the explanation for changes in milk prices for specific years is provided in table 1.

Figure 1. Fluctuations in US all milk price received by farmers from 1988 until 2007

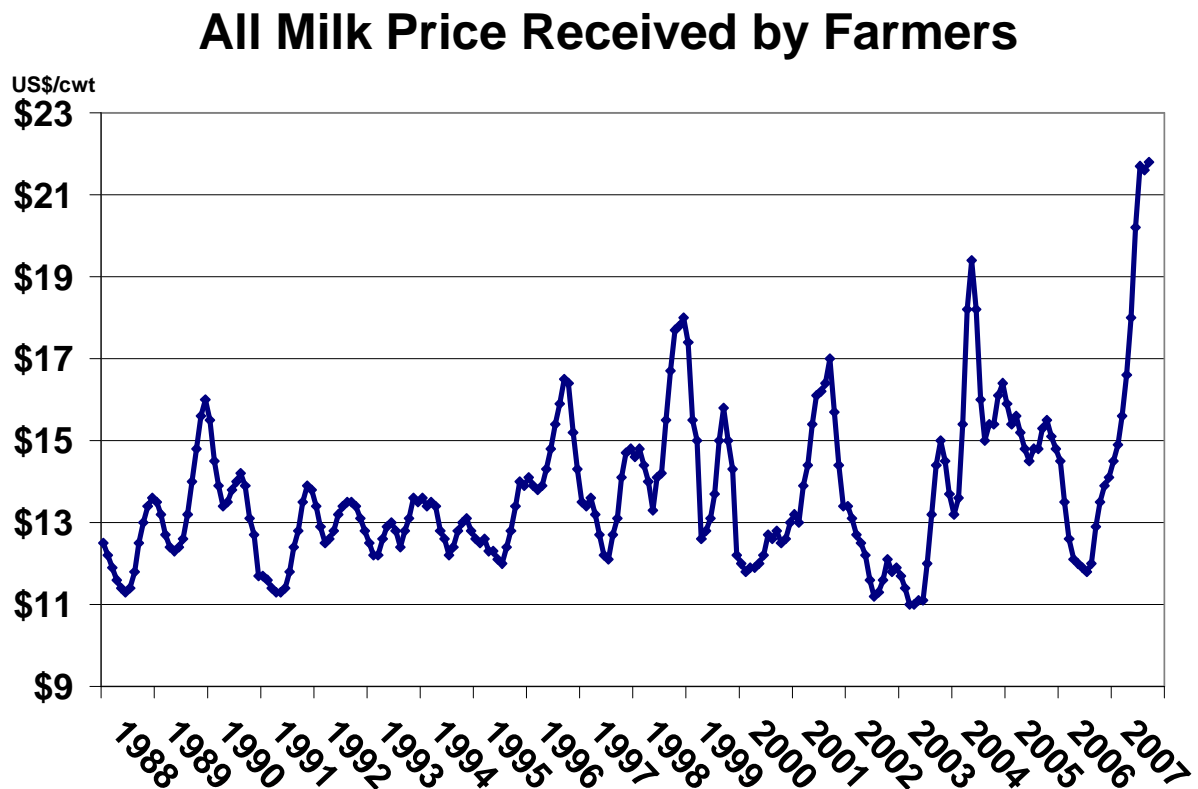


Table 1. Explanation of changes in milk prices

Year(s)	Change in milk price per 100 pounds from previous year	Explanation
1989	+\$1.36	The drought of 1988 increased feed costs and farmers reduced feeding of grain and concentrates; milk per cow was up just 0.7% and farmers reduced cow numbers almost 1% resulting in a decrease in total milk production of 0.6%.
1991	-\$1.44	Although cow numbers continued to decline in 1990 and 1991, lower feed costs resulted in almost a 4% increase in milk per cow in 1990 and 2% in 1991. Total milk production increased 2.4% in 1990 and continued to increase for the first half of 1991.
1992 - 1995	Slight increases and decreases in prices	Milk prices were fairly stable with relatively small increases and decreases in prices, the result of a continued decline in cow numbers with milk per cow either more than offsetting or not offsetting fewer cows and netting rather small increases or decreases in total milk production.
1996	+\$2.14	Stable but rather lower milk prices 1994-1995 resulted in dairy farmers reducing cow numbers almost another 1% in 1996 and adverse weather resulted in milk per cow increasing just 0.2% and netting a 0.8% decline in total milk production.
1997	-\$1.54	Almost 3% increase in milk per cow more than offsetting fewer milk cows netted 1.4% more total milk production.
1998	+\$2.16, which was a record high milk price.	Another dry year reduced feed supplies and increases feed costs winter of 1998/99; milk per cow was 1.9% higher but farmers reduced cow numbers more than 1% resulting in only a 0.8% increase in total milk production.
1999 - 2000	-\$1.14 in 1999 and -\$2.04 in 2000	The record high 1998 milk price followed by relatively high milk price in 1999 along with low feed prices encourage a period of rapid herd expansion, particularly in California and other western states; milking parlors and computer technology allowed for the management of 1,000 plus cow dairies; increases in milk per cow exceeded 2% and cow numbers increased both years; total milk production increased 3.4% in 1999 and another 3.0% in 2000.
2001	+\$2.65	Two years of declining prices put breaks on dairy herd expansion and cow numbers declined 1%; unfavorable hot summer weather reduced the increase in milk per cow to just 0.2%; total milk production declined 1.2%.
2002	-\$2.86	Cheap interest cost spurred on dairy herd expansions again; cow numbers increased 0.3% and milk per cow increased 2.4% resulting in 2.9% more total milk production. Dairy producers received MILC payments which slowed producers' response to lower milk prices by reducing milk production.

2004	+\$3.53 and a new record high for milk prices.	Depressed milk prices of 1999 and 2000, with only some improvement in 2001, followed by low prices in 2002 resulted in cow numbers declining in both 2003 and 2004 and milk per cow was increasing only about 1% resulting in just a 0.3% increase 2004 total milk production. CWT had removed 299 dairy herds and 608 million pounds of milk,(about 0.5% of milk supply). CWT exports assistance program was active.
2005	-\$0.92, but still the third highest milk price.	Prices remained high for the first half of the year, but declined during the second half as farmers responded to the record high milk prices of 2004 and early 2005 by adding cows (up 0.3%) and an increase in milk per cow of 3.2% netted 3.5% more total milk production. The decline in milk prices was dampened some by CWT removing 363 herds and 931 million pounds of milk (about 0.7% of milk supply) early in 2005. CWT export assistance program also dampened the price decline.
2006	-\$2.75	With milk cows increasing the last half of 2005 and into 2006 along with good production per cow, total milk production continued to expand by about 3%. CWT removed 442 herds and 1.2 billion pounds of milk (about 1% of milk supply) which prevented even further price decline. Dairy producers received MLC payments slowing their response in reducing milk production. CWT export assistance program remained active.
2007	+\$6.25 and a new record high for milk prices.	Depressed milk prices in 2006 along with much higher feed costs (higher feed costs were the result of bio-energy production—ethanol and bio-diesel—increasing corn, soybean and hay prices) financially stressed many dairy farmers; dairy farmers responded by increasing slaughter of dairy cows and high feed costs kept increases in milk per cow to about 1%. The result, total milk production for the first half of the year increased only about 1%; a new factor entered the picture starting in 2006 and that is exports of skim milk powder and dry whey along with increases in cheese and butter exports—For 2006, U.S. exported over 9% of its milk supply and for 2007 this will be more than 10%—Due to a change in EU dairy policy, the drought in Australia and strong demand in Asia and other countries for milk proteins and other dairy products has resulted in much higher world market prices, plus the weak U.S. dollar enable these increased exports; the U.S. domestic demand for milk proteins for nutritional enhanced beverage and other food products has also increased; all of which tighten the supply demand situation in 2007; but for the second half of 2007 dairy farmers reduced dairy cow slaughter and have been adding cows month-to-month starting with May, milk per cow has returned to increases over 2% and total milk production since July has been increasing more than 3%; thus, as production continues to increase and dairy stocks rebuild milk prices will once again fall as we move into 2008. Under CWT 333 herds were removed by April representing 1 billion pounds of milk (about 0.7% of milk supply). CWT export assistance program remained active.