# Understanding Producer Milk Price Variation and Volatility

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Milk price variation refers to up and down price movements over time. Milk price variation is a normal consequence of the counter-seasonal peaks of milk supply and demand. Price variation signals to dairy producers and other industry participants what the market thinks about the current production and consumption levels. In this sense, variation is necessary to signal and direct current and future actions.

In contrast, milk price volatility refers to sudden and extreme price movements. Volatility can be detrimental to production and markets because it can send incorrect signals to participants. Producers may decrease or increase milk production based on temporary or even wrong signals. Because dairy production involves large investments to change production level, reacting to wrong signals can have long-term detrimental effects on dairy producers. Similarly, consumers may alter purchasing habits resulting in short or even long-term market effects.

The dairy markets have witnessed an increasing amount of volatility in recent years with $4-6 per cwt. (or more) price changes which have led to cooperative and government sponsored risk management programs. Understanding the variation in the milk price can facilitate risk management decisions that are appropriate to your operation.

In Federal Milk Marketing Orders (Michigan is in the Mideast Order) minimum producer milk prices are set depending on the products made. There are four classes of use: Class I is beverage use; Class II is soft products (things you eat with a spoon such as ice cream and yogurt); Class III is milk used to make cheese; and Class IV is milk used to make butter and non-fat dry milk powder. Class III and IV prices are set using the wholesale prices of cheese, butter, dry whey and nonfat dry milk, which are converted back to a farm-level price. Class I prices are essentially set using the higher of the Class III or IV prices from the previous month plus a differential. Class II price is set using the Class IV price.

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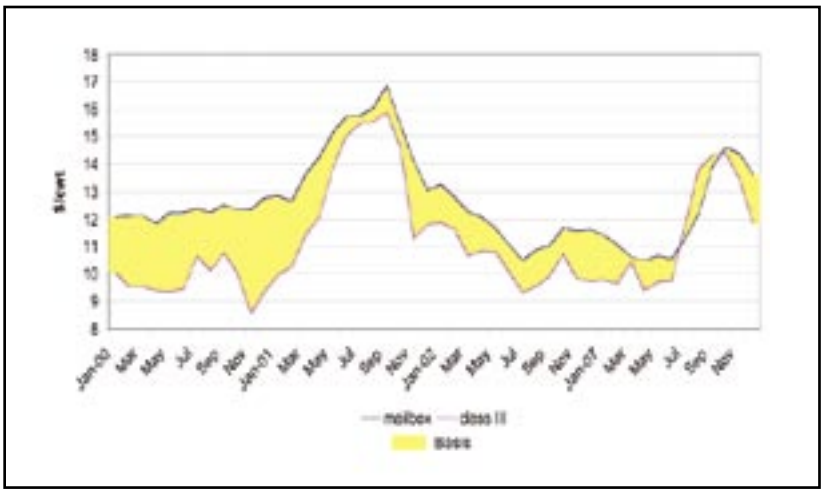
The producer milk pay price – the mailbox price – can be thought of as having four parts: Class III, the producer price differential (PPD), premiums, and deductions.

The Class III price is a national price for milk used in making cheese. It is derived from wholesale cheese, butter and dry whey prices that are converted back to producer level prices. The Class III price is announced on the Friday on or before the fifth of the following month (for example, the May Class III price will be announced on June 4). The Chicago Mercantile Exchange offers a Class III contract that cash settles (meaning there is no delivery), which can be used to manage price risk.

The producer price differential (PPD) is an accounting creation. In Federal Milk Marketing Orders,



the entire pool of classes – I, II, III and IV – is valued to an average (uniform) price. The PPD is the difference between the Class III price and the uniform pool price. In general, we would expect the PPD to be positive because the Class I price is usually higher than the Class III price. However, that is not always the case. The PPD can be negative if the Class III price increases so quickly that the Class I price using last month's Class III price is smaller than the current Class III price. This happened in the summer of 2003 and again in the spring of 2004. When the Class III price falls quickly, the PPD becomes positive and gets large. In this way, the PPD tends to smooth out large changes in Class III price in your mailbox price—for better or worse.

There are two types of price premiums: those specific to the farm and those that cooperatives obtain from the market. Quality premiums such as somatic cell, raw and PI bacteria, and the component factors of butterfat and protein are specific to the farm. Cooperatives bargain to obtain the superpool over-order premium in Michigan, which tends to move counter to the Class III price and takes variation out of your mailbox price. Superpool deductions tend to be fairly constant and therefore do not contribute to price variation.

USDA calculates a 'typical' Michigan mailbox price that we can graph (shown at left) with the Class III price. The Class III price is the largest single portion of the milk check and also the source of a majority of the price variation most months. This makes the Class III price a natural for use in price risk management. The difference between the Class III and mailbox prices is defined as the "basis."

The graph shows a negative basis last summer and early fall. When the USDA releases the numbers, the same should be true for April and possibly May 2004. This is not a normal occurrence and is caused by the overwhelmingly negative PPD exacerbated in some cases by depooling of Class III milk. Another trend that can be observed from the graph is that the basis was fairly large in 2000 and has since been shrinking. This is a direct consequence of outside milk pool-riding on the Mideast Order.

I will discuss these and other issues in future columns.

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