



Information Letter Series

Farm-Retail Margins for Fluid Milk and Cheese During the Dairy Price Cycle, 2000-2016

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The relationship between farm milk and retail prices is a topic of enduring interest. Updated analyses through 2016 indicate that farm milk price changes are reflected in retail price changes, but the relationship is stronger for fluid milk than for cheese prices.

The relationship between farm milk prices and retail product prices has been a topic of enduring interest for dairy industry stakeholders, particularly when farm margins are low. Key questions include whether reductions in the farm price during low margin periods are reflected in reductions in product prices, although it is also reasonable to examine the response to farm milk price increases. The purpose of this Information Letter is to examine the patterns of change in farm milk and retail prices for fluid milk and cheese during the period 2000 to 2016.

To structure this discussion, it is helpful to define the concept of a marketing margin for dairy products and describe how it has changed during the past 16 years. A simplified marketing margin can be defined as the difference between the retail price for a product and the cost of the milk that was required to produce it. We calculated national-average marketing margins for fluid milk (farm to retail margin) and for cheddar cheese (farm to wholesale and wholesale to retail margins). For fluid milk, we calculated a national average Class I milk value in \$/cwt and divided this by the number of gallons in a cwt of milk (11.862).

¹ The DMaP Team includes Marin Bozic, University of Minnesota, Brian Gould, University of Wisconsin, Charles Nicholson, The Pennsylvania State University, Andrew Novakovic, Cornell University, Mark Stephenson, University of Wisconsin and Christopher Wolf, Michigan State University.

This value was compared to the national average retail fluid milk price for a gallon of whole milk. For cheddar cheese, we calculated the cost of milk per lb of cheese as the Class III price divided by 10, and compared this to the wholesale and retail prices for cheddar cheese reported by National Agricultural Statistics Service (NASS) and the Bureau of Labor Statistics (BLS), respectively².

There are two main challenges to calculating a sensible margin between the farm price of 100 pounds of cow's milk and the wholesale or retail prices of pounds or gallons of a dairy product. The first challenge is that we don't really know the price paid for milk by fluid milk processors and other dairy product manufacturers, although we can usually identify the range into which it falls. The milk price received by most farmers (the "blend price") is not a price that is paid by any buyer. Due to minimum pricing regulations that affect about 90% of the farm milk sold in the US, farmers receive a weighted average price based on the mix of products for which their milk is used. Therefore, the cost of milk going into fluid milk or a manufactured product is similar to the minimum regulated price appropriate for each dairy product ("class prices") instead of the farm price. In most situations, buyers pay more than this minimum regulated price in the form of premiums, but we usually do not know how much more.

The second challenge is that the marketing margin is a GROSS margin, which means that it is not the same thing as profit because it includes the costs associated with processing, packaging, transporting and selling milk and dairy products. Thus, an increase in the marketing margin does not necessarily imply that processors or retailers are making larger profits. Public information about the actual costs of milk processing and retailing costs is much more limited than the information about prices.

How has the marketing margin that we are able to calculate changed over time? Consider two products that together account for the more than half of farm milk use, beverage milk and cheese. The gross marketing margin between farm and retail for fluid milk has increased somewhat over time when viewed as a US national average (Figure 1). However, the gross margin for fluid milk has not increased steadily over time. Rather, it fluctuates, often in the opposite direction of the farm milks price—so, when farm milk prices increase, gross marketing margin decreases (and vice versa). As an example, gross marketing margins for fluid milk fell markedly during the record-high farm-milk prices of 2014, and then

² Our calculations of margins using these approaches is an obvious simplification that assumes given yield factors and that buyers pay the Class I (for fluid) and Class III (for cheese) prices. However, they can be usefully used as approximations of the order of magnitude of gross marketing margins given the consistent definitions. They can indicate likely aggregated patterns of change if not the precise values of the margin.

increased as farm milk prices declined in 2015. This pattern is consistent with retailer behavior described in a number of previous studies where cost changes are not passed along fully or immediately to retail consumers. Changes in farm milk prices tend to be reflected in changes in retail prices in the same direction, but with a delay and not to the same extent (for both increases and decreases; Figure 2). Changes in farm milk prices tend to be less closely reflected in changes retail prices for cheddar (Figure 3). Gross retail margins for cheddar cheese have increased over time, but primarily during periods of increases in milk prices (for example, 2008 and 2011). Since 2012, the trend in retail cheese prices has been slight decreases, but marketing margins decreased during record farm-milk prices of 2014 but increased as milk prices fell in 2015.

We do not know for certain how much of the changes in the marketing margin are the result of increased marketing costs, changes in the specific product mixes that make up the category, or increased net returns (profit). Moreover, we do not know precisely what the costs are profits are within segments of the value chain. For example, farm to cooperative, cooperative to first processor, first processor to final processor, final processor to distributor, etc. We do know that the prices of key and large inputs such as labor, energy and packaging have increased during this time, and the required amounts of these inputs has also increased in some cases.

It is important to note that there IS a relationship between the costs of milk to these buyers of farm milk and the retail prices (and wholesale prices in the case of cheese). There is a common perception that the widening of gross marketing margins over time occurs because when the cost of milk to buyers increases, they increase product prices but when their costs of milk decreases, they do not pass along any of the savings. The data and previous research suggest that this is not the case. As a general rule, retail and wholesale prices DO respond the costs of milk paid by buyers (which again, is not exactly synonymous with the price paid to farmers), although the nature of this response varies by geographic area and the type of retail store. Retailers are observed to “smooth” prices, which means that in general they do not pass along the full cost increases or decreases to consumers. Widening marketing margins do not result from zero “pass-through” of milk cost decreases. One result of price smoothing is that the farm share varies over time (from 30 to 50% during the last decade). Another result is that gross marketing margins are largest when milk costs (and farm prices) are lowest, which appears to be one reason that the topic of marketing margins is most frequently discussed during and shortly after periods of significant financial pain for dairy farmers.

We do not have a definitive answer to the question of whether margins for dairy products are in some sense “too high”, but dynamic systems modeling analyses undertaken previously³ indicate that a permanent 20% reduction in retail margins for fluid milk would have a limited impact on farm milk prices and variability, especially in the long run. We noted in the previous study that consumers would be more affected by such a reduction, as would fluid milk processors and retailers. If we seek to help farmers address problems of volatility and periods of financial distress, changing marketing margins may not be a particularly effective approach. Increased support for farm-level risk management and(or) policies that address the underlying causes of the large variation will be more beneficial.

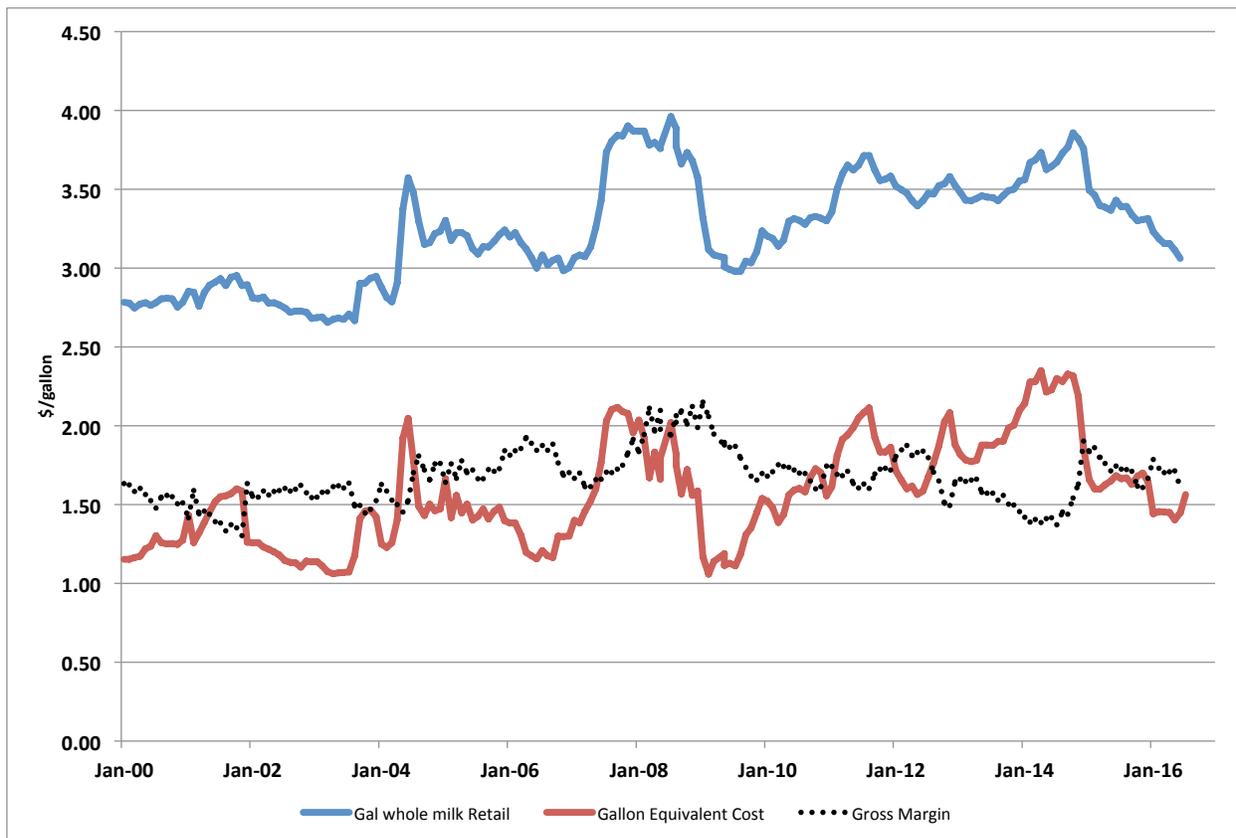


Figure 1. Retail Fluid Milk and Farm-level Equivalent Prices and Gross Marketing Margin, US Average 2000-2016

³ Nicholson testimony at USDA/USDOJ hearing on margins in Agriculture, December 2010.

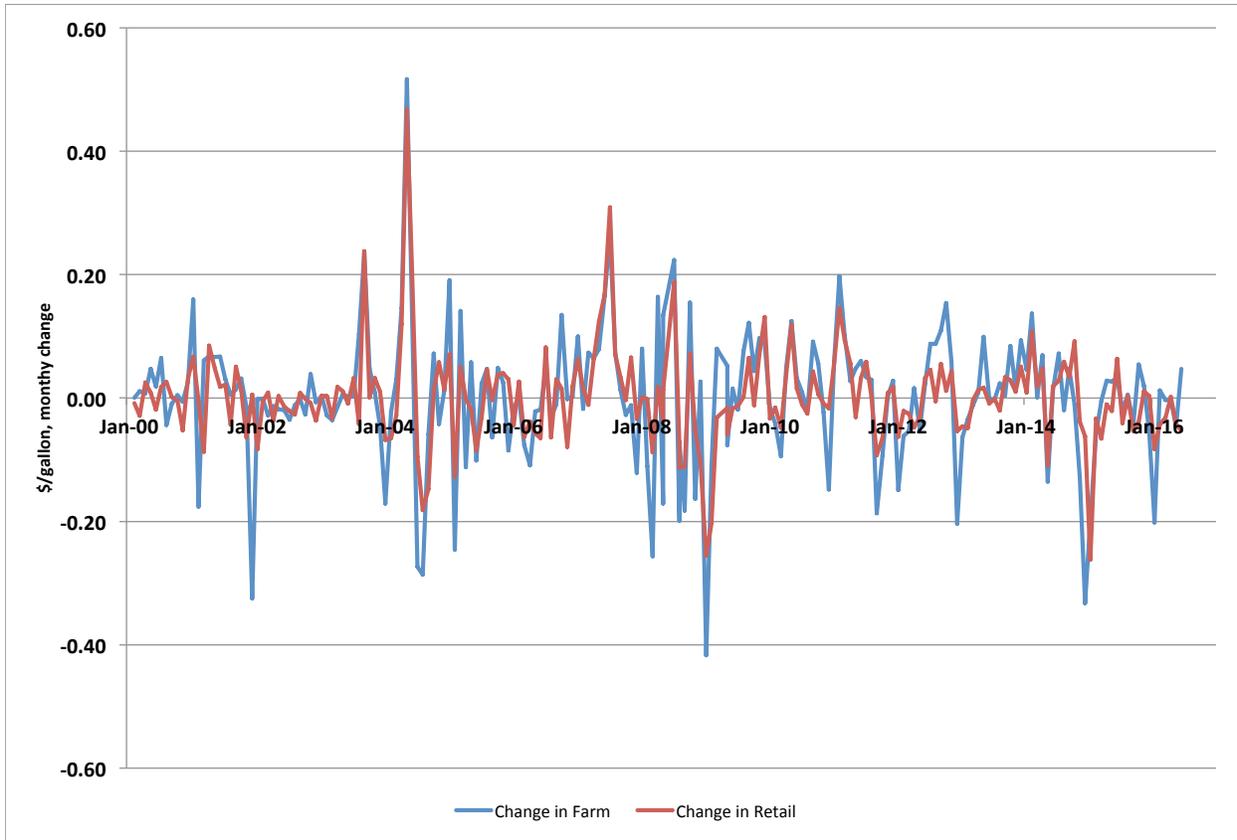


Figure 2. Changes in Retail Fluid Milk and Farm-level Equivalent Prices, US Average, 2000-2016

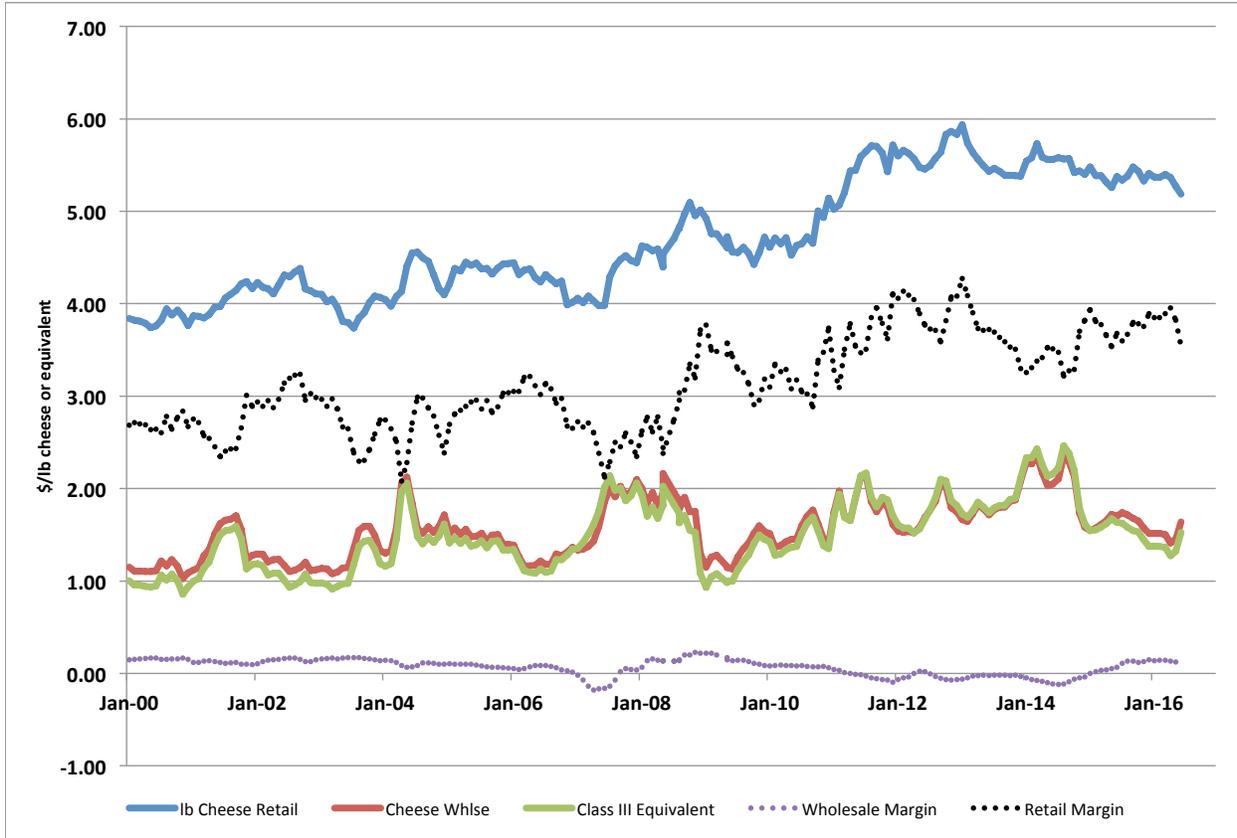


Figure 3. Retail Cheddar Cheese Prices, Wholesale Cheddar Cheese Prices and Farm-level Equivalent Prices and Gross Marketing Margins, US Average 2000-2016