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Managing Feed Price Risk

Sara Dorland
Ceres Dairy Risk Management LLC
PO Box 2440
Sun Valley, ID 83353
(206) 216-1918

INTRODUCTION

Risk management programs, whether for feed or milk, should reflect what is happening on the farm, not an activity done in isolation. The best risk management practices are part of an organization's culture and are integral to daily business. But, more importantly, everything an organization does is a form of risk mitigation – or done to understand risk. Frequently, risk management discussions focus on the negative impacts on earnings, but improving earnings and being incapable of consistently repeating that activity is equally risky to a farm's profitability as earnings can be haphazard. Here is a meaningful definition of business risk, "represent[ing] the notion that a firm may experience events or circumstances that create a threat to its ability to continue operating."[1] That definition goes well beyond financial threats and mitigating market ups and downs – it goes to the heart of understanding a farm's operations, how it generates revenue, what drives costs, and how external actors/events can impact results. Certainly, underlying milk and feed costs are at the heart of a farm's profitability; however, farms capable of understanding and knowing what drives revenue and expenses – namely, what affects output gains, waste, and activities that create costs without commensurate revenue, to name a few are better prepared to plan and deploy more effective risk management measures and understand how to take advantage opportunities.

Most importantly, risk management relies on data, trends, and analysis, implying it requires data and evaluation to deploy effective strategies. Without data and understanding of revenue or cost drivers, trading likely creates risk and can have a haphazard impact on earnings. Without data, risk management may fail to achieve its ultimate objective of creating consistent earnings streams that increase the likelihood that the farm will remain in business. Sustaining profitability is more important than hitting home runs every few years – it is also more challenging as it requires tenacity, data collection, structure, and discipline to create and follow a plan. While challenging, once a farm adopts that level of understanding, the outcropping will likely improve operations due to an in-depth understanding of what drives profitability.

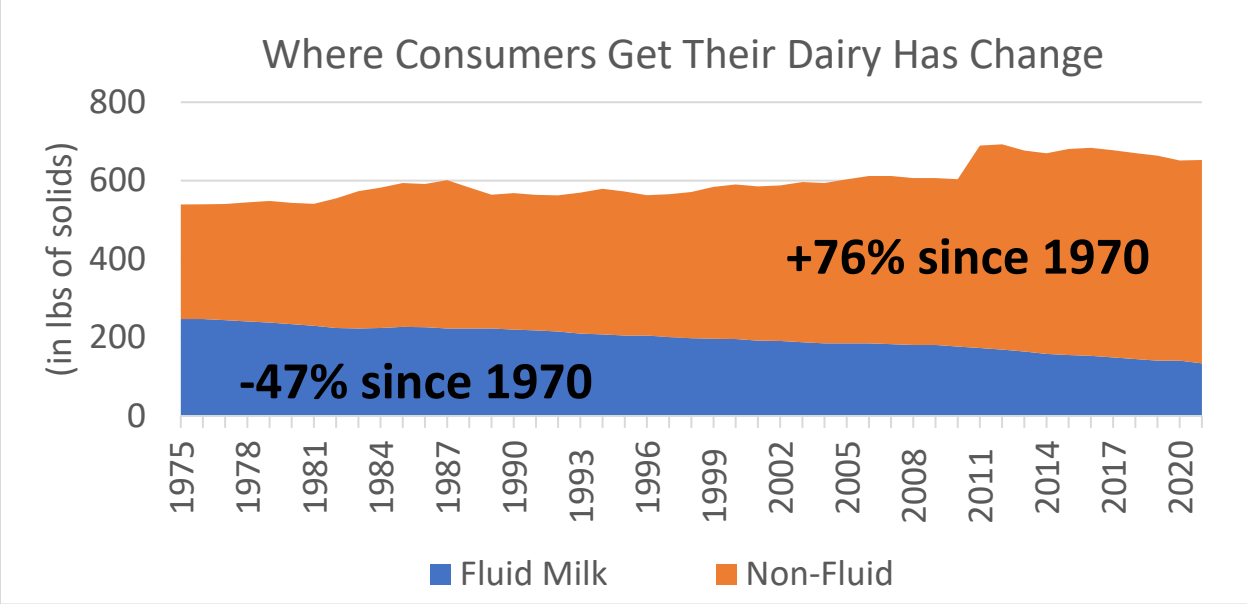
[1] Peterdy, K. (n.d.). What is Business Risk? Retrieved from corporatefinanceinstitute.com https://corporatefinanceinstitute.com/resources/career-map/sell-side/risk-management/business-risk/#:~:text=What%20is%20Business%20Risk?%20*%20Business%20risk,employs%20significant%20debt%20in%20its%20capital%20structure.

DATA COLLECTION

Today, success is not determined by who knows the answers; it's based on who can get the answers efficiently and cost-effectively. Unlimited amounts of data are available, but converting it to actionable information separates the successful from those who struggle. For dairy producers, reviewing milk production and feed costs is no longer the ante for profitability as more precise information is needed to generate sustainable profits in fast-paced markets. There are several sources of income for dairy farms. This paper will focus on milk and feed, acknowledging that the other income streams are paramount in competitive markets.

First, milk is no longer milk; it is a basket of components – protein, butterfat, and other solids. Most dairy producers are compensated for the components in the milk rather than skim milk delivered to processors. That shift has occurred over decades of slowing per capita fluid milk consumption as consumers choose to eat their dairy rather than drink it.

Chart 1. US Per Capita Fluid Milk and Non-Fluid Milk Consumption

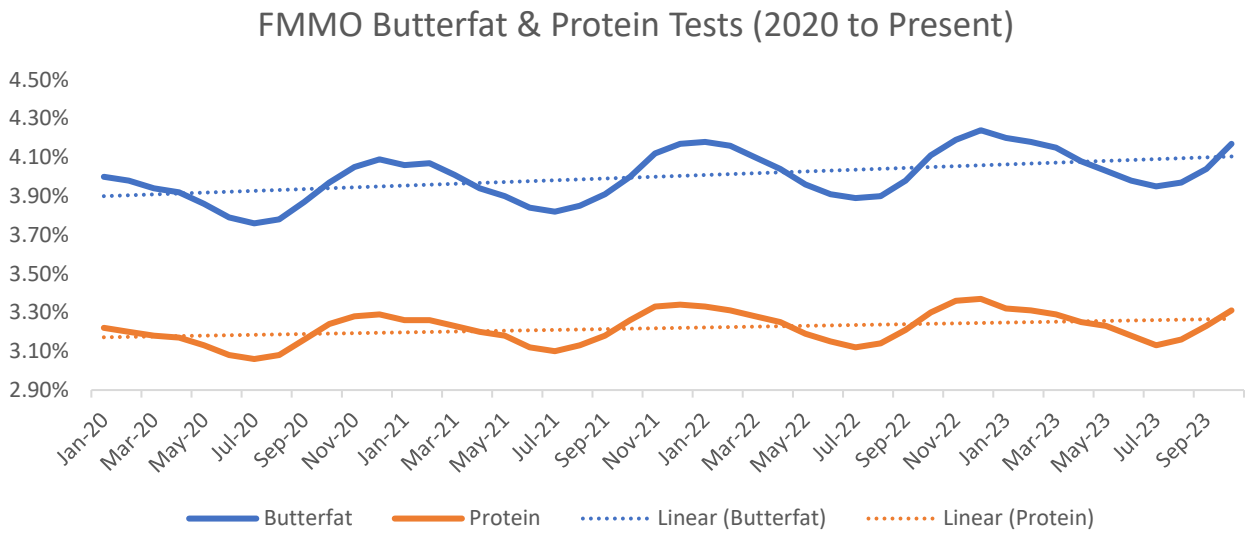


Source: USDA Economic Research Service (ERS), Dairy products: Per capita consumption, United States (pounds) report

Due to the shift in consumption patterns, the water, or 88% of the milk, has little to no value other than the producer-pay price differential (PPD) for dairy producers receiving blend price payments; it has no value for those producers paid via other pricing mechanisms like cheese yield. As a result, dairy producers should focus on increasing components to affect revenue. In 2023, butterfat from milk in federal milk marketing orders (FMMO) averaged 4.08%, compared to 3.92% in 2020, reflecting a 4.1% increase. Similarly, protein through October 2023 averaged 3.24% compared to 3.18% three years ago, a 1.9% increase.

Dairies must understand not only their components vs. total milk; it is critical to understand their ration cost and how it impacts production. Since the 1950s, total mixed rations (TMR) have been the most adopted method for feeding dairy cows a balanced ration to provide the animals with optimal energy to enhance rumen function, boosting milk production per animal[2].

Chart 2. FMMO Butterfat and Protein (True) Tests of Producer Milk (Jan 2020 – Oct 2023)



Source: USDA Agricultural Marketing Services (AMS), Producer Milk Components by Order Reports (2020 to October 2023)

The theory is that the more balanced the TMR, the more dairies can incorporate byproduct feeds – generating cost savings and reducing the overall risk or volatility in one of the most significant expenses, thereby enhancing returns. Furthermore, the exercise of proper measurement, storage, and selective feeding based on age, stage of lactation, etc., not only improves animal health and nutrition but may also help identify waste that can be reduced. The article asserts that "milk production has been shown to be as much as 5 percent higher with a TMR compared to conventional rations" a substantial impact on earnings. Given the additional focus on dairy environmental impact, increasing output-per-cow could provide additional improvements for small to mid-sized dairies still employing conventional rations or those that have not made investments in software, bunkers, or weighing and mixing equipment could further enhance their returns and risk management activities by reducing waste and shrink. Combining that activity with a better understanding of how milk prices are generated and how rations could impact component production could generate additional, sustainable returns.

But, to take advantage of these opportunities, dairies must first track all aspects of milk production and rations. Once there is a baseline, the farm can 1) benchmark, 2) evaluate whether changes to operations and feeding programs could generate revenue or reduce costs,

[2] Penn State Extension. (September 14, 2023). Total Mixed Rations for Dairy Cows. Retrieved from Penn State Extension: https://extension.psu.edu/total-mixed-rations-for-dairy-cows

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and 3) manage market-price risks. Indeed, software support to generate TMR is increasingly essential, but it is also becoming more cost-effective for all dairies. These applications provide farms with a straightforward means of tracking lactation, output, health, activity, production, quality, consumption, etc. Again, awareness of costs, quality, and quantity is vital for dairies in today's volatile milk and feed markets and is necessary to manage price risk exposures.

COST-BENEFIT ANALYSIS

In 2023, milk prices dropped compared to the previous year. There were opportunities for dairies that opted to hedge milk prices early in the year - those prices were lower than in 2022 but ultimately better than spot prices. For instance, on January 3, 2023, CME Class III milk futures for Q2 2023 averaged $18.90/cwt – a far cry from the Q2 2022 average of $24.65/cwt but ultimately better than the actual settlement at $16.51. With hindsight being 20/20, all dairies would have hedged that quarter's milk price and many did. But for those who may not have priced enough milk, it can disrupt plans and earnings forecasts. Lower milk prices can cause unplanned or reactive cost-cutting steps that impact feeding decisions –eliminating or reducing aspects of the ration to minimize potential losses. Before responding, dairies should understand or forecast the impact of the change by performing a cost-benefit analysis. For instance, removing feed additives that boost butterfat production may cause margins to drop faster than retaining the additive in the cows' diet.

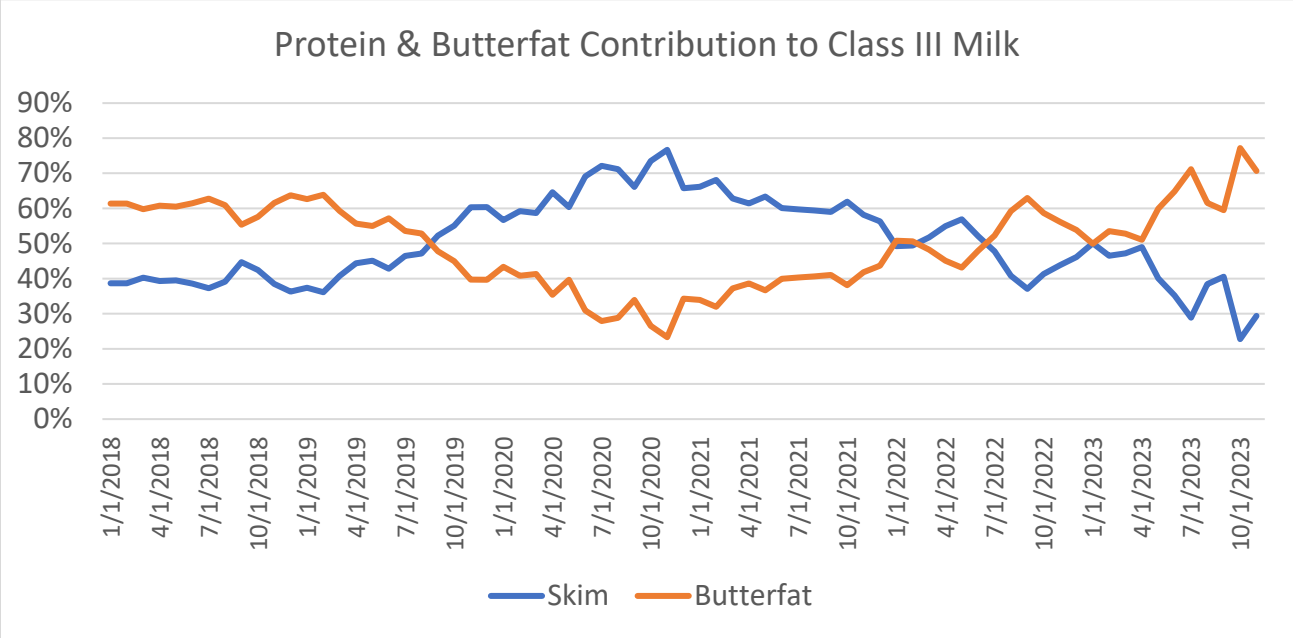
In 2022, the butterfat test for producer milk in federal milk marketing orders (FMMO) was 4.06%. The November 2023 report for 2023 butterfat averaged 4.09%[3] - a 0.7% year-over-year (YoY) increase. For a 500-cow dairy producing 85 pounds per day – the 0.03% increase was worth $13,670 last year. Those same FMMO reports showed average protein at 3.38% through November 2023 and 3.25% in 2022 – a 4% increase. For that same period, incremental protein would be worth $38,419. Managing components, rather than milk, can enhance earnings – meaning reducing component production to manage costs could significantly affect earnings if the incremental revenue was higher than the cost. But that also implies that dairies with components well above the current FMMO standards of 3.1% protein and 3.5% butterfat may leave more milk uncommitted and at risk of price changes than they may realize. Reducing that aspect of revenue could provide more certainty and fewer unplanned events.

Understanding the ration and feed impact on components can help drive additional earnings should the additional cost generate more revenue. Employing futures to forecast the value of those components is a good tool that would facilitate a cost-benefit analysis of the investment. Furthermore, using dairy futures to lock in revenue generated by components above the FMMO averages could support feed costs or additives that may increase the likelihood of achieving the results. The opposite is true when milk prices tumble; a cost-benefit analysis is essential when

[3] US Department of Agriculture, Agricultural Marketing Services (AMS) November 2023 Producer Milk Components by Order. https://www.ams.usda.gov/resources/marketing-order-statistics/producer-milk-components-order

removing feed additives from a ration. Taking it one step further and understanding which components drive milk revenue are also important and necessary to drive profitability. In October 2023, butterfat derived nearly 80% of the Class III milk price – protein was the lowest value since December 2000, implying that last year, if cost-cutting was necessary, protein contributed less to revenue than butterfat. That was very different from October 2019 to October 2021 – a market subtlety that could profoundly impact income if gone unnoticed.

Chart 3. FMMO Butterfat and Protein Contribution to the Class III Milk Price (2018 to 2023)



Source: USDA Agricultural Marketing Services (AMS), Announcement of Class and Component Prices (January 2018 to November 2023)

RISK MANAGEMENT

Let's assume that farms have adopted the data tracking steps recommended above and have access to a nutritionist or advisor who can provide a cost-benefit analysis of the TMR and substitute markets. Most feed costs, excluding additives, are based on corn, soybeans, and alfalfa markets. For instance, canola meal can substitute soybean meal in rations, allowing farms to take advantage of improved basis or availability. Further, using soybean meal futures and options to cross-hedge canola meal provides a viable alternative to relying solely on fixed price quotes. It permits hedging margins when milk and feed markets align.

Table 1: Canadian Canola Meal and Soybean Meal

US$/MT	2018	2019	2020	2021	2022
Soybean Meal	$286	$267	$276	$339	$396
Canola Meal (CA)	$347	$304	$327	$383	$464
Cottonseed Meal	$268	$226	$289	$356	$383

Source: Barcharts Monthly Average Spot Soybean Meal and Cottonseed Meal Prices, Canola Council of Canada Average Export Value of Canola Meal

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The change in soybean meal markets explained 81.3% of the canola meal and 70% of the cottonseed meal prices between 2018 and 2022 (note: 2021, cottonseed and Canadian canola prices moved more than soybean meal, impacting correlations). That implies buying canola on a soybean meal basis directly (hedge) or on a basis to the Canadian market (cross-hedged) can be offset with Chicago Board of Trade (CBOT) soybean meal contracts, with the understanding that cross-hedges will have some hedge inefficiency – meaning some cottonseed or canola prices may move more or less than the soybean meal price. Why would a farm consider cross-hedging related products? In the Pacific Northwest, the proximity to Canadian canola provides a cost-effective alternative to soybean meal that may offer lower basis or costs related to conversion and delivery. This is one example of products like distillers' grains, soy hulls, etc.

Tracking feed precisely allows dairy producers to take advantage of local feedstuffs to provide dairy cows with optimum nutrition and lower-cost rations. Furthermore, these feedstuffs can be hedged or cross-hedged with derivatives familiar to most dairy producers. With the volatility of feed and milk markets in recent years, the ability to use more cost-effective alternatives could positively impact earnings. That is not to suggest that dairy producers should tinker with TMR at every market fluctuation, but rather, develop a long-range plan, collect appropriate data, and work with nutritionists to determine opportunities where they exist and sources of local feedstuff that may be nutritionally equivalent but at a more favorable cost point.

For those looking to develop more extensive risk management programs, the use of options can improve insurance coverage, or it can be used to cap costs should the milk price forecast be below the feed cost necessary to generate returns. But that takes steps to manage contracts by establishing a basis for an underlying commodity market. Further, bifurcating feed costs into the basis, and the commodity price provides more flexibility in establishing feed costs.

CONCLUSIONS

Whether using crop insurance, forward contracting, derivatives, or similar, the need to manage price risk for dairy cow rations has never been more important; however, there are additional complexities that producers should consider when evaluating a risk management plan. Risk management is all-encompassing for dairies, and it starts before trading –the last step that fills in the gaps – it takes care of the mismatch. Selling milk and fixing pricing feed costs are good, but to drive consistent earnings, dairies should be taking additional steps to understand the risks their business face, namely data collection, to get to what drives earnings. Layering on more sophisticated milk price hedging and feed cost mitigation through substitution, hedging, and understanding the impact rations have on revenue are where most dairies should be to generate consistent earnings that increase the likelihood of success.