

# The Demand for Milk Components

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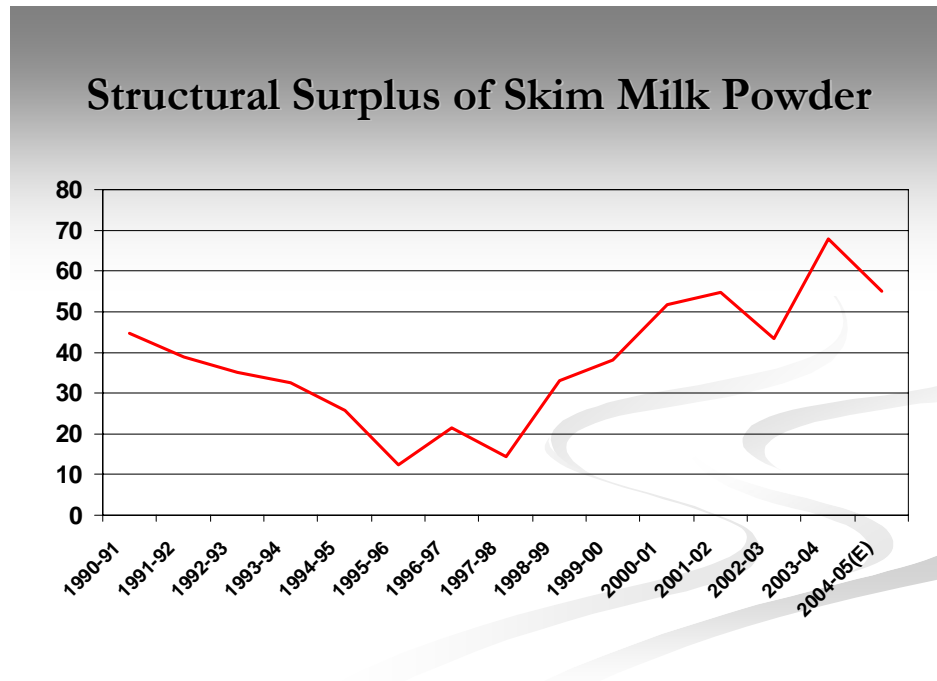
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## ■ Take Home Message

- The demand for solids-non-fat (SNF) is growing at a much slower rate than the demand for butterfat, creating a surplus of skim milk powder.
- New markets must be found for surplus skim milk powder (SMP) and farmers must have incentives to reduce the production of SNF relative to butterfat on the farm.
- Where possible, regulatory changes should be implemented to reduce the availability or use of substitutes (e.g. product standards) and increase the demand for SNF (e.g. fortification of milk).

There is a strong sense of déjà vu all over again in preparing this paper. One of my first projects at the Canadian Dairy Commission was to prepare a paper in 1990 on the butterfat surplus for the Canadian Milk Supply Management Committee (CMSMC). The industry was very afraid that the health concerns over fat and calories associated with butterfat along with substitution for vegetable oils would curb demand. These concerns were strong enough that there was active discussion on when a crossover would occur and solids non fat (SNF) would replace butterfat as the determinant of milk demand.

In the next five years, there was still some cause for concern about butterfat consumption. The structural surplus of skim milk powder bottomed out at about 12,000 t. in the 1995-1996 dairy year (Figure 1). However, the boom in exports during the same period arising from over-quota milk meant that there was flexibility in the domestic system and few supply problems occurred (with the exception of the butter imports at Christmas, 1997). The CMSMC established a Plan B for milk powders and the Concentrated Milk Assistance Program to assist companies in managing seasonality of supply of solids non fat. Most importantly, the ability to export allowed the industry to deal with any surpluses which emerged whether from over-quota milk, planned exports or the structural surplus.

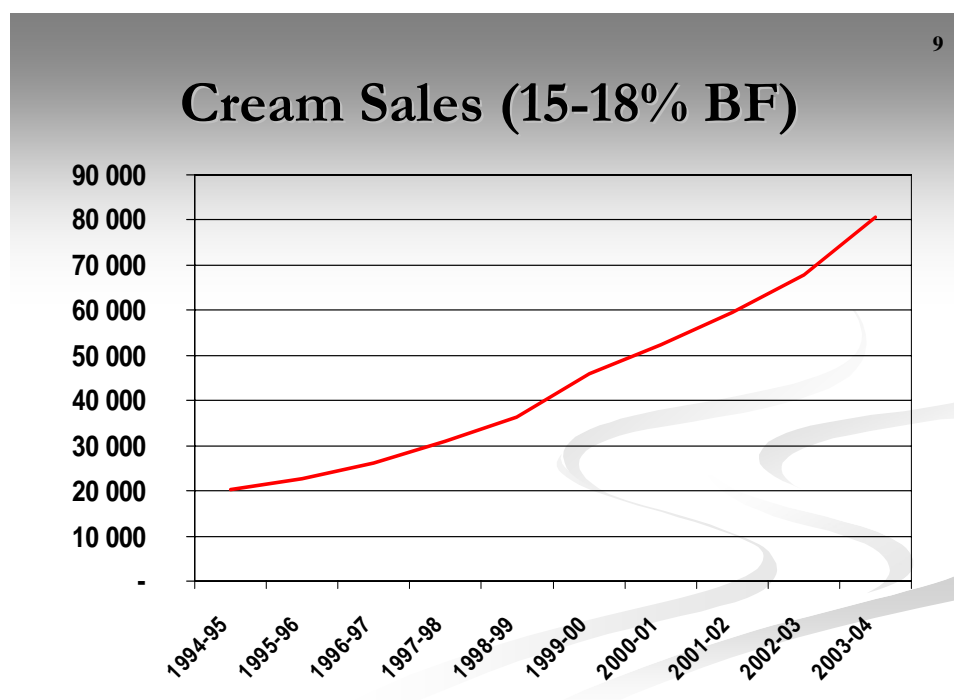


**Figure 1. Structural Surplus of Skim Milk Powder (shown in increments of 10,000 tonnes).**

During this period, there was a proposal from a district in Quebec that the industry consider a dual quota system because of the increasing importance of protein. However, most people in the industry did not favour this approach and it was dropped. The main reasons for opposing this proposal then were twofold:

- it would add a lot of complexity to regulating the market; and
- it was better for market functioning, to encourage protein production by paying producers under Multiple Component Pricing (MCP) for protein while regulating deliveries using a butterfat quota. The market operated better with a surplus of SNF since this would stimulate cheese production and surplus SMP could be exported.

During the latter part of the 90's, the market began to change. Likely the most important adjustment was the demand for coffee cream as shown in Figure 2. Today the words, "Double Double", start most Canadians to salivate (in some urban markets one can substitute "Capucchino grande" and raise the price by a dollar). But, in addition to the coffee market, restaurants, gourmet ice cream makers and food manufacturers were and are using butterfat to provide flavour, mouth feel and texture.



**Figure 2. Consumption of Cream in Canada (tonnes).**

In addition to this, butterfat is the benchmark for product standards. Products must state their butterfat content and cheeses require a minimum of butterfat content. While product definitions set general benchmarks on the protein side, no such fixed percentage is in place for protein. As a result, substitution and technology aimed at reducing protein costs are having an effect on protein utilization.

“Filled” products (where vegetable oils or animal fats are substituted for butterfat) are not yet an issue, although they are getting nearer in Ontario. Small amounts of butter blends are sold in the west but they are not legal in Quebec and are a question mark in Ontario. Imitation cheese remains a threat but is not yet a large part of the market. Frankly, many Canadians are fussy about taste and quality and are willing to look for real dairy content.

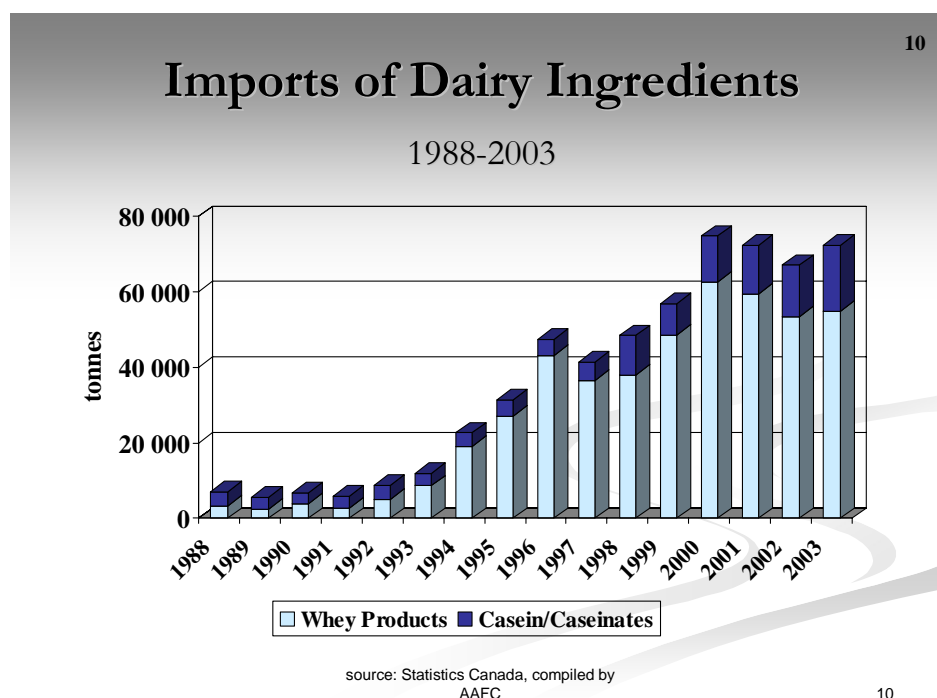
The decline in fluid milk fat content is, in large measure, behind us with 1% milk fully established in the marketplace. The coffee market and its concurrent demand for cream continues to surge ahead. That means less and less skim off to make butter and more and more milk being used to make butter and skim milk powder.

Therein lies our problem. The success we are enjoying in marketing butterfat has led to a growing mountain of SMP because the demand for SNF has not kept pace. This is fundamentally the most important reason for the growing volume of surplus SMP – increases in MSQ to make butterfat without a comparable increase in demand for skim milk - Figure 1.

Perhaps the cream producer has a role to play again. In fact, several recent policy papers have suggested that provinces take a look at allowing on-farm separation. The sad reality is that, at the margin, returns from SNF are barely able to cover transportation and processing costs, if that, given our export restrictions.

The low-fat diet craze and the concern over osteoporosis have not driven big increases in demand for protein. We are barely holding our own in protein demand. It is difficult to quantify the effects of various factors that are contributing to this stable demand for protein while butterfat continues to grow, but here is a list of possible culprits.

- Growth in the use of whey products (Figure 3) as substitutes for domestically priced SNF - whey and its products, whey powder and whey protein concentrate (WPC), are traded, based on world market prices. While imports have largely leveled off, the availability of these imports means that prices within the Canadian market for whey products whether domestic or imported are much lower than domestic SNF prices. As a result, where possible, there is a strong motivation to use whey products. It is also fair to say that progress is being made with adding value to Canadian whey through more sophisticated WPC's and whey powders. Protein needs from raw milk are reduced.
- Improved technology in cheese manufacturing – better filtration, heat treatments and new technologies to trap more whey protein and moisture in cheese has meant higher yields. However, because minimum butterfat standards exist, this means that these increased yields are almost entirely from protein (and therefore industrial skim-off declines). Protein needs from raw milk are reduced.
- Casein imports are rising – this casein is used in making process cheese and other products. Protein needs from raw milk are reduced.
- The SNF-butterfat ratio as illustrated in Figure 4, is rising on farms – this trend is not dramatic on most farms but the use of fat blockers by a few farmers led to concerns that it was going to rise sharply if measures were not taken to reverse this situation. More importantly, policies have to change to reverse this trend because current policy is costing farmers money collectively and significant steps have been taken in the last nine months to change this trend. However, protein supply from raw milk has been increasing.

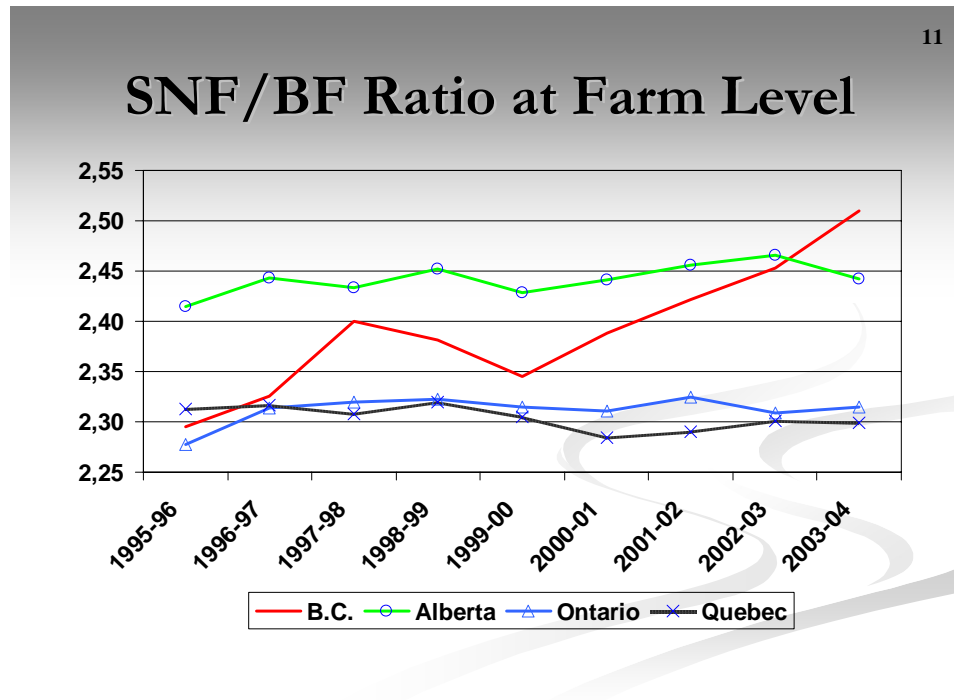


**Figure 3. Imports of Whey Products and Casein**

So where are we going in terms of demand for components? Every indication seems to suggest that butterfat demand will continue to grow gradually but steadily. At present, the same cannot be said for protein. With every price increase, the incentive goes up to substitute whey or soy or moisture for dairy protein. And there are many places where the regulations allow this to occur.

Now there is some modest relief in distant sight with respect to whey – some day, whey will start to become scarcer and the incentive to develop whey will decline. This is because milk refineries will move proteins around and there will be almost no protein in whey in an increasing number of modern cheese plants. But the serum proteins gleaned from this mining will find their way into yogurt or milk beverages or other products. And whey is still going to be world priced, even if that price is firmer.

It must also be noted that the soy industry continues to become more and more sophisticated and aggressive. On the other hand, the calcium in dairy protein is a major selling point as is its digestibility. Skim milk is a valuable and useful commodity in human nutrition with major potential in answering the nutritional needs of an aging baby boomer population concerned about osteoporosis.



**Figure 4. Solids-non-Fat - Butterfat Ratio**

So what is to be done – the Committee has agreed to allow me to speculate on some steps to improve the balance in demand between butterfat and protein.

- ▶ Farmers need to see a direct benefit in their milk cheque from reducing their SNF to BF ratio through feeding and breeding. Many provinces including Alberta are doing this. And we need a policy stick on the side to enforce a reduction in case producers do not get the hint.
- ▶ Milk replacers are usually loaded with whey and often imported. Isn't there some way of getting farmers to keep some skim milk on the farm instead of losing money shipping it to a plant to be dried and put in storage?
- ▶ Regulations need to be examined with processors to try to find ways of stemming the tide of substitution. This is a hard job. It has been looked at many times. An elite committee needs to look at it again with all parties at the table, perhaps with a neutral party such as the CDC as chair.
- ▶ In particular, fortified milk needs to be considered. In my opinion, this will only succeed in any meaningful way with regulation. It would benefit the consumer by increasing protein and calcium intake, it would improve the taste of fluid milk and it would leave everyone on a level playing field while allowing producers to cover costs for the skim solids.

- A research strategy is needed and most of this strategy relates to technology transfer – going out around the world and looking for new skim milk products (hopefully with a minimum in cannibalization of full fat products) and then helping the industry to commercialize these products.
- A marketing strategy is needed. For example, could we partner with Nestlé to promote Nestlé's Quik or Carnation Instant Breakfast? Both of these products are based on SMP and are made to be mixed with fluid milk – a double whammy. Could we partner with a beverage maker to make a relatively long-life drink incorporating skim milk that would be popular with kids and readily adaptable to vending machines? The chicken industry used to have a surplus of wings – now they have to import wings to supply the demand.
- Maybe some skim will have to be sold in bulk to hog farms. There is no point in drying and storing skim that we cannot export or market. We need to do the cost-benefit analysis and act accordingly. Too often, depressed revenues are buried in the national pool and the signals do not get back to the producer.

The preceding picture has some good news and some tough challenges in it. We have faced tough challenges before and have found solutions and we will do it again. After all – how hard can it be to sell skim milk to a population concerned with their nutrition, their waistlines and their calcium intake? So let's get going.

