

# **POSITION PAPER ON THE DAIRY SECTOR'S STRUCTURAL SURPLUSES**

## **A NEW PATH TOWARDS AN ENHANCED MARKET**

**AUTHOR: RICARDO VARGAS**

**Student, Masters in Rural Economy**

**Laval University**

### **INTRODUCTION**

This paper focuses on the issue of viability. It presents a different perspective, or rather a new way of looking at structural surpluses in the dairy sector in Canada, considering them not as a problem but rather as an opportunity to enhance milk as a commodity while improving the viability of the Canadian dairy sector. Presently, the milk solids non-fat (MSNF) surpluses are de-stocked as skim milk powder (SMP). These surpluses are sold through the animal feed and export products markets under product categories 4(m) and 5(d). They are generally priced at a discount and the revenue loss is borne by the dairy producers. This position paper will briefly describe the present situation regarding the structural surpluses in the dairy sector as well as possible alternate uses for MSNF, in particular that of protein in a value-added milk ingredients market.

Ideas presented in this position paper are drawn from:

- SCULLION, Erin, *Canadian Dairy Commission. 40 years of history*, Ottawa, Canadian Dairy Commission, 2006, 264 p.
- Studies conducted by le Centre de recherche STELA et le Département d'économie agroalimentaire et des sciences de la consommation, Laval University, on Outlooks for the dairy ingredients industry and market.

The paper starts by briefly describing the origins of structural surpluses; it outlines the reasons behind the need for a policy shift regarding de-stocking surpluses, and then proposes a new approach for de-stocking MSNF.

### **BACKGROUND**

The issue of the dairy sector's structural surpluses became apparent with the introduction of the supply management system as part of the dairy policy in Canada. This policy came into effect in the early 1970s. It is based on three broad principles.

The first concerns production quotas that are based on the milk fat requirements of the domestic market. In fact, the supply management system is the main means of ensuring adequate milk production to meet the needs of the domestic market. This system is run by the Canadian Milk Supply Management Committee (CMSMC) with the support and under the direction of the Canadian Dairy Commission (CDC).

Each year, the CMSMC sets a target milk production level using market sharing quotas (MSQ) allowing milk processors to stock up on raw materials. The MSQs are set in milk fat (MF) kilograms.

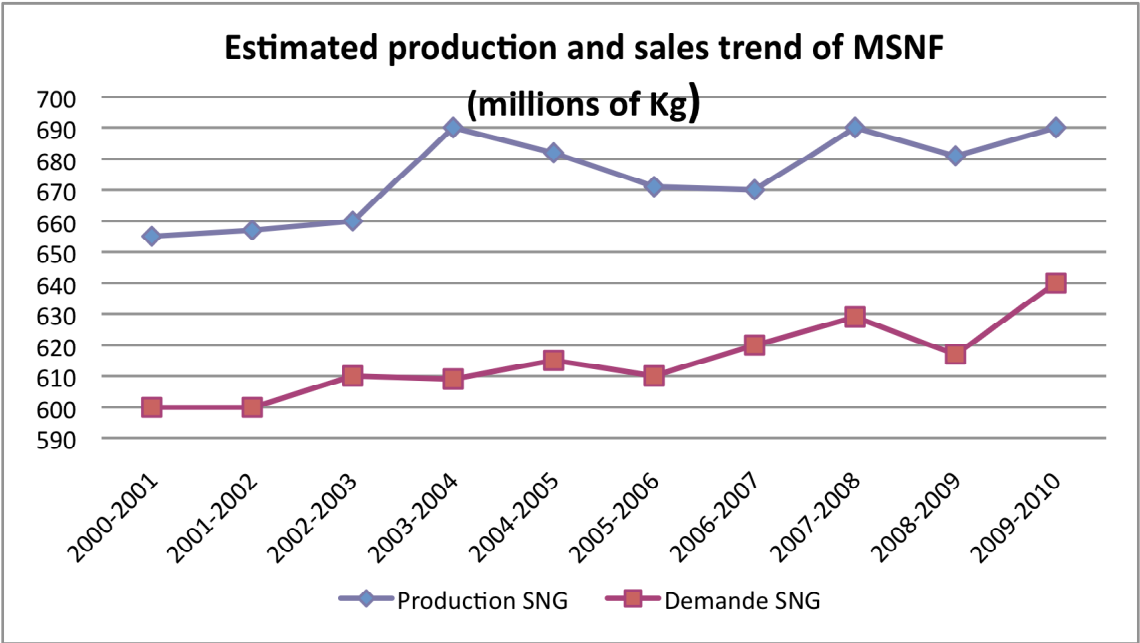
Once the MSQs are established, the CMSMC distributes the allocated quotas to the provincial marketing boards which, in turn, apply their own quota allotment policies amongst provincial dairy producers. These boards also act as sole intermediaries between producers and processors, and are responsible for negotiating with processors the production price based on the guaranteed price set by the CDC.

The adoption of a guaranteed price leads to the second principle of the Canadian dairy policy, which is that price is based on production cost. In fact, the CDC sets the price or revenue target by guaranteeing producers cost recovery and investment profitability. The CDC also sets the guaranteed price for the purchase and sale of skim milk powder (SMP) and butter. These floor prices act as a reference price on the wholesale market of all processed dairy products, by including the price set by provincial marketing boards.

Guaranteed prices are also used by the domestic production and marketing management programs for dairy products. They enable CDC to avoid dairy product shortages by buying MSNF and butter surpluses when consumption falls, and by selling back inventory to processors when it rises, in order for surpluses to be de-stocked on the domestic market first and, as a last resort, on the export market.

With regards to MSNF, Canada is experiencing an historic surplus. Milk fat (MF) self-sufficiency implies that the amount of MSNF produced is higher than that required by the Canadian dairy industry.

Chart 1.



MSNF Production MSNF Demand

Source : Canadian Dairy Information Centre, Quebec Industrial Milk Producers' Marketing Board, and author's calculations

In other words, a Canadian policy focused on MSNF self-sufficiency directly generates MSNF surpluses that are eventually disposed of as SMP.

According to the calculations illustrated in Chart 1, the spread between production and sales of MSNF for the dairy year 2001-2002 was 55 million Kg. For the period 2005-2006, the spread was 61 million Kg., and for dairy year 2009-2010, it was 50 million Kg.

The CDC de-stocks SMP in two ways. It does so first through exports and then through SMP sales to the animal feed sector. It is important to note that both approaches involve discounted sales compared to the guaranteed price as set by the CDC.

Incidentally, Canada has always relied on the export market to dispose of its SMP through a number of programs created by CDC. However, these export practices have been disputed by the US and New Zealand through the World Trade Organization (WTO). The latter considers such practices as a form of sectoral subsidy policy that translates into a difference between the world price and the domestic price, or guaranteed price, of SMP. At the same time, the WTO stated that Canada exceeded its obligations in terms of export subsidies according to the Uruguay Round agricultural agreement. The undertakings referred to have to do with a 21% reduction of quantities exported as well as an increase in export subsidies of 36% compared to 1986-1990 levels. Canada therefore had to decrease its exports to the authorized levels. Consequently, as of 2003, the WTO has compelled Canada to limit its exports both in terms of quantities and in terms of the dollar value of its export subsidy. The following chart shows the Canadian SMP exports as per its WTO pledge for year 2007-2008.

Table 1. Pledge and notices to WTO by Canada regarding SMP export subsidy for the year 2007-2008.

|                         | Pledge in volume (ton) | Last notice (ton) | Pledge in money ('000\$) | Last notice ('000\$) |
|-------------------------|------------------------|-------------------|--------------------------|----------------------|
| <b>Skim Milk Powder</b> | 44 953                 | 16 404            | 31 149                   | 31 148               |

Source : WTO

Thus, of the 44,953 tons of SMP that Canada could have exported, only 16,404 were de-stocked on the international market because they had reached their maximum dollar value of \$31,149 million as pledged.

In this regard, the quantity of SMP not exported increased and thus raised supply levels. It is worth noting that under the domestic butter and SMP management program, the usual ownership costs such as storage, transportation and supply insurance are passed through to the consumer. But when supply grows beyond normal levels, increases in ownership costs are paid by the producers.

Given this background, it is important to describe the national marketing plan's third principle. It refers to the dairy producers' economic responsibility for the disposal of surpluses and for the marketing programs of the CDC. In fact, as indicated above in reference to the CMSMC marketing plan, the value of MSNF surplus sales in the form of SMP is considerably less than the purchase cost. Canadian producers thus have to incur these price differences in a fair manner plus their ownership costs.

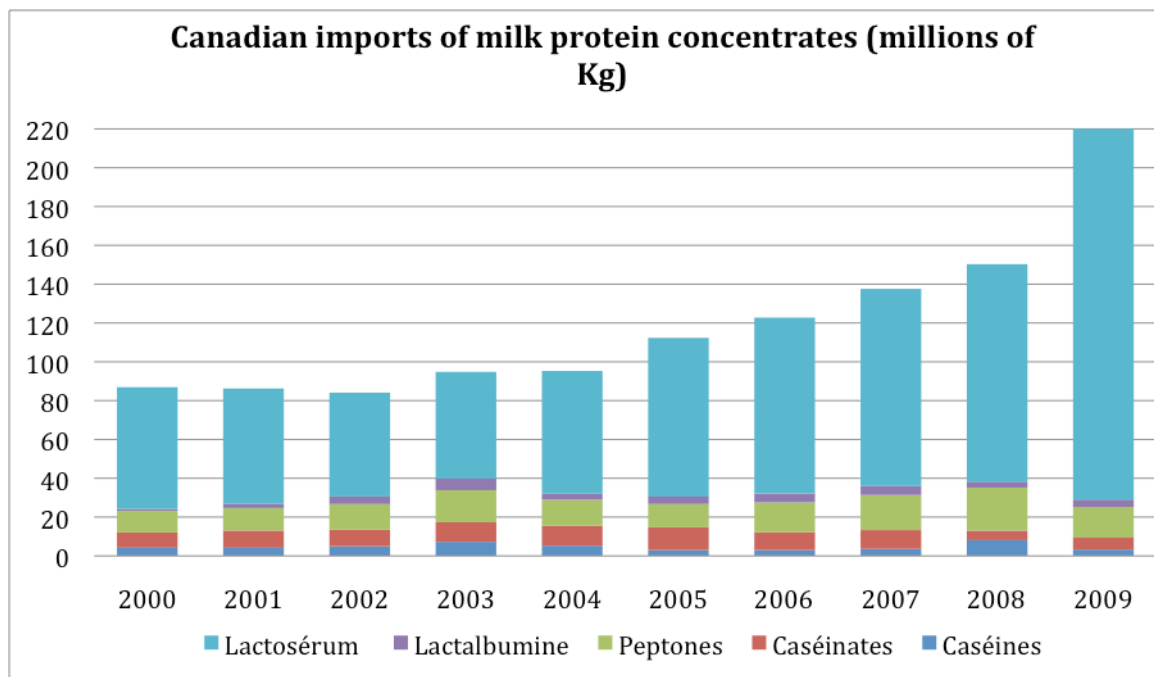
## THE CASE FOR LOOKING AT SURPLUS DISPOSAL IN A DIFFERENT WAY

According to the CDC there are two types of surpluses in the Canadian dairy industry: in-quota and non-quota. The latter refers to the quota overrun of an individual producer who generates MF and MSNF surpluses de-stocked as butter and SMP respectively. Individual producers are simply not compensated for this production overrun. As far as in-quota surplus is concerned, it refers to the quantity of MSNF resulting from MSQ that is not needed for the domestic market (see chart 1). As described above, this excess production is de-stocked as SMP.

Obviously, MSNF surpluses have a negative impact on producers' revenues. Export opportunities are limited and the selling price of SMP on the animal feed market offers the weakest valuation. Also, the WTO considers the export price of Canadian SMP as an export subsidy. At the same time, this organization is attempting to eliminate such a mechanism, which adds to the uncertainty within the Canadian dairy sector. In other words, the very viability of the Canadian dairy system is at stake.

In fact, since 1998, imports of concentrated milk proteins have substantially increased, notably caseins, peptones and whey that have replaced Canadian MSNF in the formulation of processed products such as ice cream and cheese. These products have a high milk fat content and their production requires all of the milk constituents.

Chart 2.



Whey Lactalbumin Peptones Caseinates Caseins

Source : Statistics Canada

Chart 2 illustrates the increase in milk protein imports in Canada. The data comes from Statistics Canada based on a system of harmonized designation and coding for commodities (harmonized system or HS). This international system uses a six-digit identity code for products.

The codes for each milk protein concentrate imported in Canada are: caseins (350110), caseinates and other caseinate derivatives (350190), lactalbumin including concentrates of two or more whey proteins (350220), whey, modified or not and even concentrated, naturally sweetened or otherwise (040410) and peptones and their derivatives (350400). It is worth mentioning that the six-digit HS database is not detailed, quite the contrary, it is very general. Therefore in the case of whey (040410), it also includes whey protein concentrates, powdered whey and condensed or evaporated whey. However, for the year 2000, imports of those concentrates were at 86.9 million Kg. For the year 2005, imports of milk protein concentrates rose to 112.3 million Kg. and finally for year 2009, imports rose to 237.8 million Kg. In other words, over the last decade, imports of milk protein concentrates increased by 151 million Kg. In particular, whey accounted for the highest imports and rose from 68.7 to 208.8 million Kg.

It is important to note that these countries are the largest exporters in the international milk ingredients market. In the case of peptones and whey, the US is a major supplier to Canada.

Given that perspective, Canadian MSNF surpluses, more specifically protein, should compete with imported milk protein concentrates and supply the local market.

In a nutshell, the elimination of structural surpluses is a fundamental basis to ensure supply management stability. However, the disposal of MSNF surpluses at a loss has a harmful impact on producers' revenues. Also, the export of SMP by way of class 5(d) is greatly limited by the WTO since the mechanism is regarded as an export subsidy. Consequently, the dairy sector must change the way it de-stocks its MSNF surpluses by entering into a more lucrative market, as that of the milk proteins, in order to compete with imports and simultaneously improve the system's *viability*.

## **NEW TAKE ON THE DISPOSAL OF STRUCTURAL SURPLUSES**

### *A new definition proposal for structural surpluses*

Given that in the MSNF market protein is the component that has the highest valuation of the dairy sector, it is important to consider the price evolution for each of the different classes of the harmonized classification system for milk.<sup>1</sup> Generally speaking, class 1 includes milk and cream for human consumption, class 2 covers ice cream and yogurt, class 3 refers to cheese, classes 5 are special classes that supply basic ingredients to the secondary processing sector. Thus in class 5(a), we find cheeses used as ingredients, class 5(b) covers all dairy products other than cheese used as milk ingredients and class 5(c) includes all dairy ingredients used by the confectionery sector. Class 5(d) refers to export products and class 4(m) to animal feed.

Chart 3 shows that based on the protein valuation the classes can be broken down into three groups.

The first group includes classes 3(a) and 3(b) (cheese products) with an average price of 12.30 \$CAN/Kg. respectively.

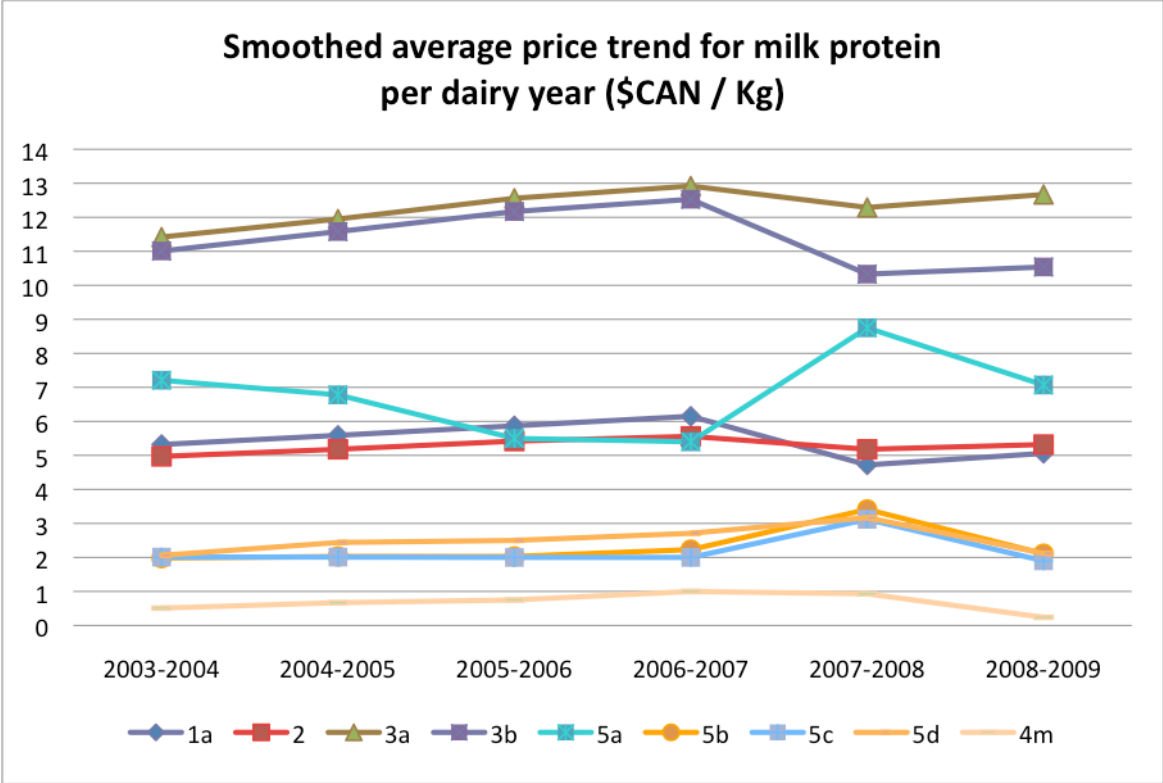
A second intermediate group includes class 1(a) (milk for human consumption), class 2 (fresh products) and class 5(a) (cheeses used as ingredients) with an average price between 4.72 \$CAN/Kg. and 8.75 \$CAN/Kg.

---

<sup>1</sup> Canadian Dairy Commission, *Harmonized Milk Classification System* [on line], <http://www.cdc-ccl.gc.ca/CDC/index-eng.php?id=3811> [site visited 18 November 2010]

In the third group, during that whole period, class 5(d) shows an average price of 2.5 \$CAN/Kg. Class 5 (b) and 5 (c) (dairy ingredients) have a very similar pattern as that of class 5 (d). Class 4 (m) has always been below the 1\$CAN price point.

Chart 3.



Source : Canadian Dairy Information Centre

This chart reveals a certain concept related to structural surpluses. This concept shows that a devaluation of MSNF is actually required to facilitate its disposal. Thus, we propose to define the Canadian dairy sector’s structural surpluses as the quantity of MSNF, notably the protein, which is valued at less than 4.50 \$CAN. In this regard, we clearly define classes 5 (b), 5 (c), 5 (d) and 4 (m) as users of structural surpluses. This definition also includes the entire quantity of MSNF not required by the domestic market and that has to be stored as SMP.

Given this outlook, we must succeed in changing our view of structural surpluses, from a completely devalued product to a product where value has to be added to the Canadian milk protein in order for it to compete with imported milk protein concentrates. Therefore we have to identify a specific market for SMP where value can be added to skim milk powder, or produce milk protein concentrates rather than processing MSNF surpluses directly into SMP. In other words, the only choice left for the Canadian dairy sector is to enter the value added milk ingredients market.

According to the Paquin study (2004)<sup>2</sup> “large quantities of protein ingredients are used by a number of Canadian industries (82,343 tons) and these quantities could increase if these ingredients were manufactured and marketed in Canada at competitive prices. Also, this study

<sup>2</sup> PAQUIN, Paul, *Étude du potentiel de marché des ingrédients laitiers protéiques au Canada*. Québec, Centre de recherche STELA, 63 p.

shows that the three major manufacturers of milk ingredients in Canada are the dairy sector's largest processors: Agropur, Parmalat Canada and Saputo Inc. They provide the Canadian market with ingredients like skim milk powder, whey powder, whey protein concentrates (35% protein), whey protein isolates, lactose, etc. These ingredients are used in the following sectors: bakery, chocolate making, delicatessen, animal feed (veal and pork) and dairy product manufacturing. Paquin also points out that the dairy processing industries in the US, New Zealand, and European Community countries, notably France, Germany, the Netherlands and Denmark, are already producing ingredients like  $\alpha$ -milk albumin, tagatose, milk minerals, lactose, lactoferrin, and others.

The list of products from Canadian dairy processors studied by Paquin reveals that Canada is presently involved in first and second-generation milk ingredients production while other countries he reviewed are producing second and third-generation ingredients.

Milk ingredients can be classified according to their technological evolution. In that regard, the *Revue laitière française*<sup>3</sup> has published the following classification:

1. First-generation ingredients (basic products): Skim milk powder, whole milk powder, whey powder. 1940 to 1970 technology.
2. Second-generation ingredients (regular): Lactose, milk minerals, milk/whey protein concentrates, milk/whey protein isolates, caseins, etc. 1970 to 1990 technologies.
3. Third-generation ingredients (nutrition and health specialties):  $\alpha$ -milk albumin, tagatose, lactulose, peptides, lactoferrin,  $\beta$ -lactoglobuline, etc.

In his presentation « État de lieux et perspectives de l'industrie laitière mondiale et québécoise, les perspectives 2008<sup>4</sup> » Doyon (2008) indicates that the consumption tendency in Canada is moving toward bio-products, functional foods and milk ingredients. He points to opportunities for the Canadian dairy sector related to the development of a third-generation milk ingredients market (functional ingredients). Also, Doyon confirms that the demand for functional and nutraceutical foods, including milk ingredients, is under considerable expansion.

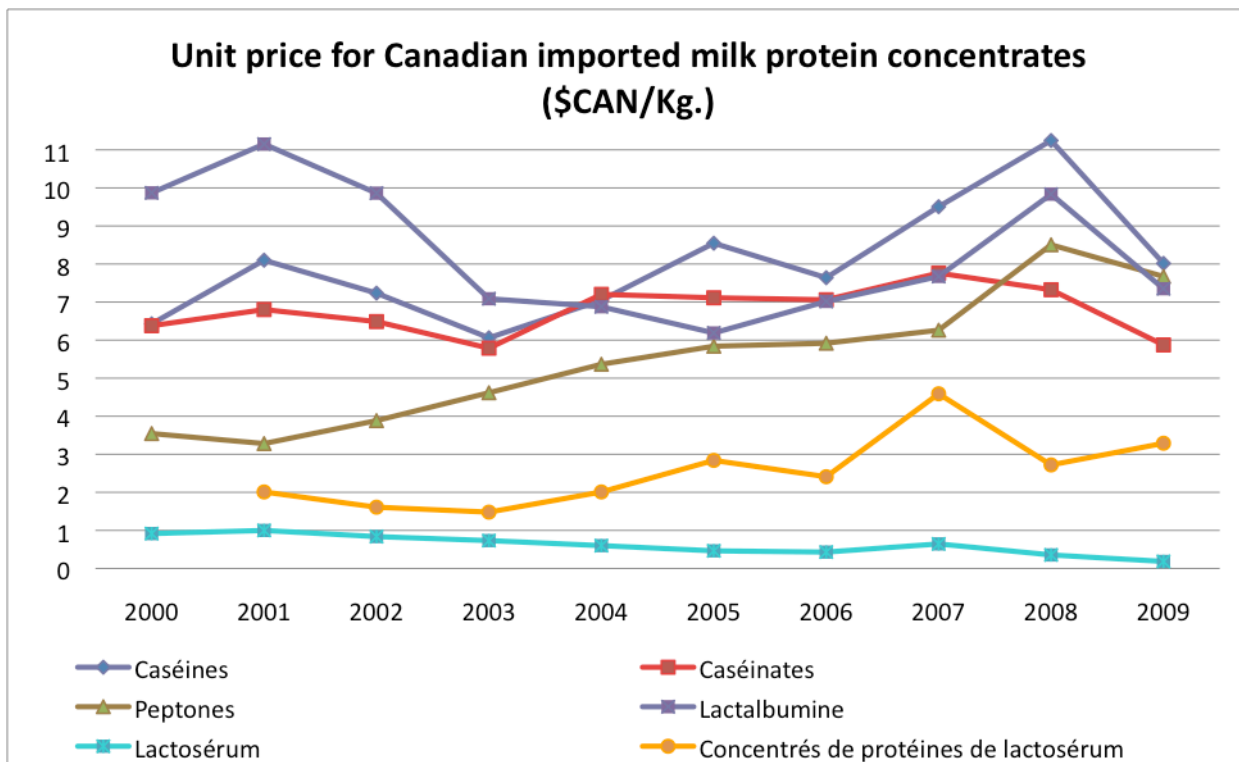
In that respect, milk producers' revenues could improve if MSNF, particularly undervalued proteins in the present consumer classes' structural surpluses, were to be redirected into milk classes geared toward the production of second and mainly third-generation milk ingredients. It so happens that most prices for these types of milk ingredients imported in Canada are more attractive than those of the specialty classes. Chart 4 illustrates this situation.

Chart 4.

---

<sup>3</sup> REVUE LAITIÈRE FRANÇAISE, «Le lait source de nouvelles promesses», in *Revue laitière française*, n° 657 (December 2005), p.32-35.

<sup>4</sup> DOYON, Maurice, *État de lieux et perspectives de l'industrie laitière mondiale et québécoise, els perspectives 2008*, [en ligne] [http://pub.craaq.qc.ca/persp\\_2008/PPT/Doyon\\_Maurice.pdf](http://pub.craaq.qc.ca/persp_2008/PPT/Doyon_Maurice.pdf) [Site visited on November 18 2010]



Caseins  
Peptones  
Whey

Caseinates  
Milk albumine  
Whey protein concentrates

Source : Agriculture and Agri-Food Canada, Statistics Canada, tables 990-0004, 990-0035 and author's calculations

Chart 4 illustrates the price history for the most popular milk ingredients imported into Canada. Whey represents the lowest value. In fact, whey is “a cheese manufacturing residue.” It is therefore a cheap protein source readily available in large quantities.”<sup>5</sup> Whey's (040410) unit price is the lowest of all milk protein concentrates. Since 2000, its unit price has always been less than 1 \$CAN/Kg, at an average of around 0,61 \$CAN/Kg, circumstances that explain its exceptional increase during the period under review (ref. Chart 2.)

However, upon examination of milk protein based specific products referenced in the HS ten-digit codes used in the Canadian duty tariffs, one realizes that the import price of second-generation ingredients such as whey protein concentrates (0404101000) shows an upward trend since 2003. Therefore, one assumes that whey powder, first-generation ingredient, is the most prevalent ingredient within the whey imports category (040410). Average prices for the other second and third-generation ingredients are within a range of 5.48 \$CAN/Kg to 8.29 \$CAN/Kg.

It is obvious that market stakeholders will have to develop a production and marketing strategy for second and mostly third-generation milk ingredients. In that respect, Paquin<sup>6</sup> suggests that “the first move should be to make available a milk volume earmarked for new

<sup>5</sup> AGÉCO, *Perspectives pour l'industrie de la transformation laitière québécoise*. Québec, Agéco, April 2007, p.34

<sup>6</sup> PAQUIN, Paul, *Étude du potentiel de marché des ingrédients laitiers protéiques au Canada*. Québec, Centre de recherche STELA, 2004, p 57-58.

milk ingredients production.” The second recommendation, in the context of a new added-value ingredients market, is to “follow through with a proper client technical support service” and “maybe that an organization like CDC could become the focal point of a beefed-up marketing strategy for competent technical services.”

Given this prospect, should the Canadian Dairy Commission add new classes to its Harmonized Milk Classification System that could be used for the production of first, second and third-generation milk ingredients? For example:

- Class 6(a): Protein and other non milk fat solids for the manufacturing of first-generation milk ingredients.
- Class 6(b): Protein and other non milk fat solids for the manufacturing of second-generation milk ingredients.
- Class 6(c): Protein and other non milk fat solids for the manufacturing of third-generation milk ingredients.

Such a harmonized milk classification system would have three classes of milk utilization. Those that are already established, like the milk for human consumption (class 1) and processed milk (classes 2 and 4(d)), and an added third class for milk ingredients production (class 6).

As far as classes 5(a) and 5(b) are concerned, prices are based on the prices applied to US classes 3 (cheese) and 4 (butter/skim milk powder). For class 5(c), prices are negotiated between CMSMC and the Canadian confectionery industry. The class 4(g) MSNF prices are negotiated between the permit holder for this class and his supplier according to components' prices as indicated on the permit.

In the case of the new classes 6, a price setting study should be carried out whose objective would be to enable milk producers to increase the value of their MSNF production by attaining the price of international value added milk ingredients (Chart 4). In other words, the price for a hectolitre of milk for the new classes 6 has to be evaluated.

In order to maximize the milk producers' profit, the level of activity of classes using structural surpluses should be reduced and MSNF should be de-stocked through the new classes 6, while noting that priority would be given to classes 6(b) and 6(c) that will add value to MNSF surpluses. Generally speaking, then, for the short term, milk producers' revenues would result from the weighted price of consumption milk (class 1) in addition to the weighted price of processed milk (classes 2 to 4 (d)), plus the weighted price of special classes and finally, the weighted price of milk used for milk ingredients production (classes 6). Afterwards, and in order to maximize the milk producers' profit, the special classes should be eliminated.

In reference to Paquin's second recommendation, one could consider the CDC to be responsible for the marketing strategy of the new valued milk ingredients production. The challenges for the Commission will be to acquire the technology required for their production and to develop the strategies for their promotion and distribution.

## CONCLUSION

- The dairy supply management policy is responsible for the production of milk solid non fat (MSNF) surpluses that ultimately have to be disposed of in the form of skim milk powder (SMP) by the Canadian Dairy Commission. That SMP is labeled structural surplus.
- The Commission disposes of structural surpluses at a loss through the animal feed and export markets. The bottom line is that producers have to absorb the disposal cost.
- Due to World Trade Organization restrictions, Canada can only export SMP at a level that is insufficient for the needs of the structural surpluses disposal program.
- SMP stockpiling adds costs to producers.
- This paper proposes a change from the current approach to structural surpluses toward a more concrete definition of the present devaluation of proteins in classes 5(b), 5(c), 4(m) and 5(d). This new approach would allow proteins to be considered as a component for the second and preferably third-generation ingredients market.
- An adjustment of the harmonized milk classification system is proposed including the creation of milk classes dedicated to milk ingredients production.
- Existing literature confirms that the Canadian milk ingredients market is undergoing major growth.
- The responsibility for developing this new value added MSNF market lies with market stakeholders.
- The average unit price for imported whey powder (040410) has been under 1 \$CAN/Kg., a factor that adds to the structural surpluses complexity, notably as it relates to the competition with protein concentrates imports. Unfortunately, this paper can only pose the following question: How can Canada compete with the import of whey powder?
- To ensure the *viability* of the supply management system, stakeholders of the Canadian dairy market must adopt a new vision. We have no other choice but to think of a better way to add value to our raw materials.

N.B. The author is presently carrying out thesis related research into structural surpluses usage in the dairy sector. An analysis of the potential to add value to the Canadian MSNF surpluses is under way.