CANADIAN INTERNATIONAL TRADE TRIBUNAL

STAFF REPORT

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**DAIRY PRODUCTS BLENDS OUTSIDE THE COVERAGE OF
CANADA'S TARIFF RATE QUOTAS**

POSSIBLE REACTIONS OF DAIRY PRODUCERS TO IMPORTS OF BUTTEROIL/SUGAR BLENDS: FOUR SCENARIOS

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1.   Introduction

The purpose of this paper is to estimate the revenue effects of several alternative responses of Canadian dairy producers to imports of butter oil/sugar blends outside the coverage of Canada's TRQs. The impact on revenues in each scenario has been calculated on a gross revenue basis only. An accounting rather than an economic approach has been used. This means that there are assumed to be no changes in quantities demanded or supplied as a result of changes in prices. It is, as well, a static analysis based on the data shown on page 2.

It should be noted that this paper is in no way intended to be an exhaustive review of all possible responses the dairy industry might pursue. Moreover, the paper does not purport to examine factors other than price which could influence buying decisions. For those scenarios examined, it is merely intended to provide one possible point of departure for discussion by parties.

The four scenarios examined are:

     a) reduce production of milk or milk components in line with the butteroil/sugar blend imports;

     b) maintain production and export any domestic production of milk components that is displaced in the domestic market by the imports of butteroil/sugar blends;

     c) price domestic dairy ingredients competitively with imported ingredients used in the production of ice cream; and

     d) price domestic dairy ingredients used to produce butteroil/sugar blends in Canada for the production of ice cream so that the domestic butteroil/sugar blends are price competitive with the imported blends.

These possible responses are measured against a reference case in which there are no imports of butteroil/sugar blends. In 1997, the imported butteroil/sugar blends represented 24 percent of all butterfat used in the production of ice cream in Canada[1]. The different scenarios are evaluated assuming this level of import penetration. As well, this paper provides estimates of the revenue effects of alternative responses when the

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1. As calculated by Research Staff.

imported butteroil/sugar blends represent 60 percent of all butterfat used in the production of ice cream in Canada.

2.   Data

Conversion ratios

- Butteroil is 99.3 percent butterfat.

- Butter is 81 percent butterfat.

- One hectolitre of standard milk contains 3.6 kg of butterfat and 8.88 kg of solids non-fat (protein and other solids) (CDC).

Imports
- Imports of butteroil/sugar blends in 1997 were 8.752 million kilograms (Mkg) (CITT, Importer's Questionnaire). It is assumed that all blends go into ice cream production.

- By weight, butteroil/sugar blends are 49 percent butteroil and 51 percent sugar.

- Butteroil in 1997 imports: 0.49 x 8.752 Mkg = 4.29 Mkg

- Butterfat in 1997 imports: 0.993 x 4.29 Mkg = 4.26 Mkg = 1.183 MhL of milk containing 3.6 kg of butterfat per hectolitre.

- 1.183 MhL of milk contains 4.26 million kilograms of butterfat, and 10.51 Mkg of solids non-fat.

Production
- Total production of butterfat in Canada in 1997 was 283.8 Mkg, of which industrial butterfat utilization accounted for 203.8 Mkg of butterfat. (CITT exhibit GC-97-001-85.4, Vol. 17C pp.83-85)

- Total butterfat used in Class 2 is 21.6 Mkg (dairy year 1996/97).

- Total domestically produced butterfat used in ice cream production is 64 percent of the total butterfat used in Class 2 (21.6 Mkg x 0.64 = 13.82 Mkg). This is the 1993-94 weighted average share of butterfat for ice cream in class 2, based on shares of 56 percent, 80 percent and 50 percent in Ontario, Quebec and Manitoba respectively, weighted by the production

of ice cream mix in these provinces of 69.4 million litres in Ontario, 40.2 million litres in Quebec and 9.6 million litres in Manitoba. (CITT Exhibit GC-97-001-85.4, Vol.17C pp.83-85)

- Total butterfat in ice cream production is 13.82 Mkg (domestic) + 4.26 Mkg (imported) = 18.08 Mkg (CDC).

- The imported butterfat in 1997 contained in the blends (4.26 Mkg), therefore, represented 2.1 percent of 1997 industrial butterfat utilization, or 1.5 percent of all butterfat production in Canada.

Prices

All of the following dairy prices are averages for first six months of 1997 (CITT Exhibit GC-97-001-33, Vol. 1A p. 53)

- Class 2 price of milk was $54.37/hL.

- Class 2 price of butterfat was $5.4261/kg.

- Class 2 price of protein was $3.9690/kg.

- Class 2 price of other solids was $3.8935/kg.

- Class 2 weighted average of solids non-fat was $3.9213/kg.

- Class 5b price for butterfat was $3.05/kg.

- Class 5d price for skim milk powder was $1.895/kg.

- Class 5e price for milk was $24.45/hL.

- Class 5e price for butterfat was $1.28/kg.

- The domestic price for liquid sugar/sucrose to industrial users is estimated to be approximately $0.50 CDN/kg. This is based on the No. 11 world raw sugar price, for the first six months of 1997, listed on the New York Coffee, Sugar and Cocoa Exchange of $0.114 US/lb or $0.25 US/kg. This equates to $0.35 CDN/kg ($1.40CDN = $1.00US). To this is added a tolling charge of $0.15 CDN/kg which reflects additional expenses including freight charges, refining costs, and a factor for profit.

Revenues

- Total 1996/1997 Net Dairy Farm Cash Receipts: $3,809.9 million, including federal subsidy payments of $144.9 million. These are revenues from milk sales less transportation and handling fees, administration fees, promotion and advertising fees, other fees, and levies where applicable (Statistics Canada -Cat.No.23-001 QXPB).

- Net dairy farm cash receipts, excluding the federal subsidy, were $3,665.0 million (ibid.).

Federal Dairy Subsidy Rate in 1998 (paid on domestic requirements)

- On standard milk basis is $3.04/hL (http://www.agr.ca/cdc)

- On butterfat basis is $0.8444/kg (http:// www.agr.ca/cdc)

3.   Scenarios

a)   Reduce Milk Production

(i)   On a hectolitre basis

The 1.183 MhL reduction in domestic milk production would be valued at 1.183 MhL x $54.37/hL = $64.32 million. There would also be the lost federal subsidy of $3.04/hL x 1.183 MhL = $3.6 million, for a total of $67.92 million.

(ii)   On a components basis

If 1.183 MhL less milk were produced, this means that 4.26 Mkg of domestically produced butterfat and 10.51 Mkg of solids non-fat would also not be produced. The butterfat contained in 1.183 MhL would be replaced with imported butterfat used in ice cream production, but the quantity of domestically produced solids non-fat utilised in ice cream would not change.

The lost revenue from butterfat would equal: 4.26 Mkg x $5.4261/kg = $23.12 million. To this would be added the lost federal subsidy which is paid on butterfat: $0.8444/kg x 4.26 Mkg = $3.60 million. Total revenue lost on the butterfat component would be $26.72 million.

The situation is different for solids non-fat because there is a structural surplus of solids non-fat in Canada which is exported under Class 5d. The reduced solids non-fat production of 10.51 Mkg would not change the domestic utilisation of solids non-fat, but would result in less exports of the product.

The lost revenue, as far as solids non-fat are concerned, under this scenario, would be the value of the exports of solids non-fat that would be foregone: $1.895/kg x 10.51Mkg = $19.92 million. Under this scenario, therefore, total revenue loss would be $46.64 million ($26.72 million + $19.92 million).

It should be noted, however, that the structural surplus of solids non-fat in Canada is declining, and if the current trend continues, would disappear in the near future. Should this happens, the revenues foregone from reduced production of solids non-fat would be larger, but the butterfat revenues foregone would be smaller because butter would be surplus to Canadian requirements and would be valued at the export price.

b)   **Production Maintained, Surplus Exported**

(i)   **On a hectolitre basis**

If 1.183 MhL of surplus milk is exported at the average Class 5e price rather than being utilised domestically, the revenue foregone to producers would be 1.183 MhL x ($54.37/hL - $24.45/hL) = $35.40 million. To this would be added the loss of a subsidy of $3.6 million. Total revenue foregone, therefore, would be $39 million.

(ii)   **On a components basis**

Surplus butterfat production would likely be exported as butter in Class 5e. A total of 4.26 Mkg of butterfat would be sold on the export market at $1.28 per kg.

Revenue foregone on the butterfat component would be 4.26 Mkg x ($5.4261/kg - $1.28/kg) = $17.66 million. Added to this would be the $3.6 million lost subsidy for a total revenue foregone of $21.26 million.

There would be no impact on the solids non-fat because there would be no replacement taking place.

The total loss under this scenario, therefore, on a components basis would be $21.26 million.

c) **Reduce the Price of Competitive Butterfat**

(i) **Reduce to Class 5b price**

Since only the butterfat component of dairy products used to produce ice cream is being imported, it may be possible to make the butterfat component available to ice cream producers at a competitive price while leaving the price of solids non-fat at its current level. The butterfat price in class 5b is $3.05 per kg. Were farmers to make all of the butterfat going into ice cream available at this price, keeping the price of the other components the same as now, their decrease in revenue would be 18.08 Mkg butterfat x ($5.4261/kg - $3.05/kg) = $42.96 million.

(ii) **Match butterfat price of imported blends**

In this case, domestic butterfat for ice cream would be only reduced to a price sufficiently low to make it price competitive with the butterfat in the imported blend.   In 1997, the average import price for the butteroil/sugar blend was $2.51/kg[2]. The domestic price of sugar for industrial uses was about $0.50/kg. All other things being equal, the competitive price of butterfat, therefore, would be $4.60/kg. (See Table 4 for the derivation of the competitive domestic butterfat price.)

The price reduction necessary for this use of butterfat would be $0.8261/kg. The revenue loss in this case would be 18.08 Mkg butterfat x ($5.4261/kg -$4.60/kg) = $14.94 million.

d) **Reduce the Price of Butterfat to allow the Production of Price Competitive Butteroil/Sugar Blends in Canada**

Another possible scenario is for producers to price butterfat to allow the production of price competitive butteroil/sugar blends in Canada for ice cream production. This scenario would offer additional butterfat at a "competitive" price only for the production of butteroil/sugar blends used to produce ice cream. It would avoid the need to reduce the price of butterfat for ice cream that could not use a butteroil/sugar blend.

In 1997, if all existing butteroil/sugar blends imports were used in ice cream, they would have replaced 24% of the butterfat in all ice cream production.

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2. CITT exhibit GC-97-001-80.1,vol. 1E, p.274.

(i)   Butterfat at Class 5b price

The total butterfat in ice cream in 1997 was 18.08 Mkg of which 4.26 Mkg was replaced with the blend. The revenue loss in this case would be 4.26 Mkg x ($5.4261/kg - $3.05/kg) = $10.12 million.

(ii)   Match butterfat price in imported blend

In this case, producers would reduce the price of butterfat to allow the production of domestic butteroil/sugar blends which would match the current price of the imported blends. Canadian producers of the blend pay competitive prices for ingredients plus a factor of 15% which is an assumed cost of manufacturing the blend and a profit margin. The competitive price of butterfat, all other things being equal, would be $3.92/kg with a price of sugar at $0.50/kg and a price of the blend at $2.50/kg. (See Table 5 for the derivation of the competitive domestic butterfat price and Table 6 for calculations based on different blend and sugar prices). Based on the price of blends and sugar used in scenario c)(ii), the price difference for butterfat is $1.5061/kg ($5.4261/kg - $3.92/kg). The value of butterfat would be lower than in scenario c) (ii) because the cost of manufacturing the blend was subtracted. In this scenario, producers would lose $6.42 million ($1.5061/kg x 4.26 Mkg).

4.   Summary

Table 1 gives the results of the different scenarios based on a market penetration of imported butteroil/sugar blends of 24 percent of the butterfat requirements in domestic ice cream production. It is clear that the impact on the industry differs greatly depending on the producers' response. Table 2 provides the detailed underlying calculations, based on the 1997 level of imports of butteroil/sugar blends. In order to provide an estimate of the revenue effects under higher levels of market penetration, Table 3 provides the same information in the case where 60 percent of all butterfat in ice cream is displaced by the imported butteroil/sugar blend.[3]

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3. See "Study on the Potential Market for Dairy Product Blends Outside the Coverage of Canada's Tariff Rate Quotas", Margaret Treloar and Carol Culhane, March 9, 1998, CITT exhibit GC-97-001-81, vol. 1F.

Table 1
Change in Gross Revenue

$ million

	Scenarios			
	Production Reduced	**Surplus Exported**	**Class 2 Price Reduced**	**Produce Butteroil/ Sugar Blends**
Milk basis	-67.92	-39.00		
Components basis	-46.64	-21.26	-14.94 to - 42.96	-6.42 to -10.12

Note:
These scenarios are compared to a base case of no imports. The impact is very sensitive to international prices in Classes 5d and 5e. Should international prices change, the calculated revenue loss would change.

Table 2
Summary of Estimated Effects of Producer Responses - Current Imports
(based on 1997 actual butterfat sourced from the imported blend, 24%)

Producer Response	Estimated Revenue Loss per Unit			Quantity	Estimated Total Revenue Loss
	$/hL	$/kg BF	$/kg SNF		$ million
a) Reduce Production					
i) **Milk Basis**	54.37			1.183MhL	64.32
Subsidy	3.04			1.183MhL	3.60
					67.92
ii) **Components Basis**					
Butterfat		5.43		4.26 Mkg	23.12
Subsidy		0.84		4.26 Mkg	3.60
Solids non-fat			1.90	10.51 Mkg	19.92
					46.64
b) Surplus Exported					
i) **Milk Basis**	29.92			1.18 MhL	35.40
Subsidy	3.04			1.18 MhL	3.60
					39.00
ii) **Components Basis**					
Butterfat		4.15		4.26 Mkg	17.66
Subsidy		0.84		4.26 Mkg	3.60
					21.26
c) Reduce Class 2 Price of butterfat for ice cream					
i) **Reduce to 5b Price**		2.38		18.08 Mkg	**42.96**
ii) **Compete with Imported Blend**		0.83		18.08 Mkg	**14.94**
d) Produce Butteroil Sugar Blend					
i) **Reduce to 5b Price**		2.38		4.26 Mkg	**10.12**
ii) **Compete with Imported Blend**		1.51		4.26 Mkg	**6.42**

Note: Numbers have been rounded and products and sums may not agree with computations.

Table 3
Summary of Estimated Effects of Producer Responses - Higher Imports
(based on higher potential imports of butterfat - 60%)

Producer Response	Estimated Revenue Loss per Unit			Quantity	Estimated Total Revenue Loss
	$/hL	$/kg BF	$/kg SNF		$ million
a) Reduce Production					
i) **Milk Basis**	54.37			3.01 MhL	163.65
Subsidy	3.04			3.01 MhL	9.15
					172.80
ii) **Components Basis**					
Butterfat		5.43		10.85 Mkg	58.92
Subsidy		0.84		10.85 Mkg	9.15
Solids non-fat			1.90	26.76 Mkg	50.84
					118.91
b) Surplus Exported					
i) **Milk Basis**	29.92			3.01 MhL	90.06
Subsidy	3.04			3.01 MhL	9.15
					99.21
ii) **Components Basis**					
Butterfat		4.15		10.85 Mkg	45.03
Subsidy		0.84		10.85 Mkg	9.15
					54.18
c) Reduce Class 2 Price of butterfat for ice cream					
i) **Reduce to 5b Price**		2.38		18.08 Mkg	**42.96**
ii) **Compete with Imported Blend**		0.83		18.08 Mkg	**14.94**
d) Produce Butteroil/Sugar Blend					
i) **Reduce to 5b Price**		2.38		10.85 Mkg	**25.82**
ii) **Compete with Imported Blend**		1.51		10.85 Mkg	**16.38**

Note: Numbers have been rounded and products and sums may not agree with computations.

Table 4
Price of Domestic Butterfat to be Price Competitive with Butterfat Contained in Imported Blends

($/kg)

Price of imported blend	"M"	2.51
Price of a domestic blend to be price competitive[2]	"D"	2.51
Domestic price of sugar	"S"	0.50
Share of sugar in the blends (%)	"s"	0.51
Share of butterfat in the blends (%)	"b"	0.49
Price of domestic butterfat to be price competitive with imported blend[3]	"B"	4.60
Butter price equivalent[4]		3.73

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[2] $D = s*S + b*B$
[3] $B = (M/b) - (s*S)/b$ if $D = M$ which would make the domestic butterfat price competitive
[4] $B * 0.816$ since butterfat makes up 81.6% of the butter content

Table 5
Price of Domestic Butterfat in a Domestic Butteroil/Sugar Blend to be Price Competitive with Imported Blends

		($/kg)
Price of imported blend	"M"	2.51
Price of a domestic blend to be price competitive [2]	"D"	2.51
Domestic price of sugar	"S"	0.50
Share of sugar in the blends (%)	"s"	0.51
Manufacturing costs of domestic blend[3]	"C"	0.33
Share of butterfat in the blends (%)	"b"	0.49
Price of domestic butterfat to be price competitive with imported blend[4]	"B"	3.93
Butter price equivalent[5]		3.20

[2] $D = s*S + b*B + C$
[3] $C = M - M/(1+ 0.15)$ reflecting an assumed factor of 15% over ingredient costs to cover the cost of manufacturing the blend and a profit margin
[4] $B = (M/b) - (s*S)/b - C/b$ if $D = M$ which would make the domestic blend price competitive
[5] $B * 0.816$ since butterfat makes up 81.6% of the butter content

Table 6
Price of Domestic Butterfat in a Domestic Butteroil/Sugar Blend to be Price Competitive
with Imported Blends Under Various Prices
for Sugar and Imported Blends

Sugar Price ($/kg)	Import Price of Blend ($/kg)				
	2.00	**2.25**	**2.50**	**2.75**	**3.00**
0.40	3.13	3.58	4.02	4.46	4.91
0.45	3.08	3.52	3.97	4.41	4.86
0.50	3.03	3.47	3.92	4.36	4.80
0.55	2.98	3.42	3.86	4.31	4.75
0.60	2.92	3.37	3.81	4.26	4.70
0.65	2.87	3.32	3.76	4.20	4.65

Note: Results reflect a factor of 15 percent which is an assumed cost of manufacturing the blend and a profit margin.