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Reducing Trans Fats Consumption in Canada:

Voluntary/Mandatory Labeling System or Trans Fats Ban?

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The Issue

In response to growing concerns about coronary heart disease, the government of Canada has recently taken policy measures to reduce Canadian trans fatty acid (TFA) consumption. The mandatory labeling of trans fat content in foods began in December 2005. The House of Commons also established a task force in November 2004 to develop a set of regulations to ban the sale of food products with a TFA content greater than 2%.

The issue here is whether the mandatory content restriction has economic merit. While mandatory TFA reductions could reduce heart disease and improve the health of Canadians, they also have the potential to increase economic costs faced by all aspects of the Canadian food oil complex, from primary producers to consumers.

The goal of this policy brief is to summarize the results of a recent economic study by Gray, R., S. Malla, and K. Perlich, (2005) which examined the economic impacts of a mandatory reduction of trans fat content by estimating the potential health benefits and potential adverse economic impacts on the agri-food sector.

Policy Implications and Conclusions

We have shown that a ban on industrial trans fats would create health benefits in an order of magnitude larger than the increase in food cost associated with the ban. As long as significant health care costs are paid for through private or public health care insurance, TFA labeling alone will not provide adequate incentives for a reduction in TFA consumption. It is estimated that several billion dollars in benefits would be forgone if TFA reduction is encouraged through labeling alone. A ban of trans fats in Canadian food products would be very beneficial from a health and health care cost perspective, with relatively small costs of implementation and compliance. The present value of health cost savings of a ban to Canadians would exceed $19 billion. Oilseed growers, whose price is set in the global market, would be largely unaffected by a ban. As of 2004, many foods in Canadian diet contained significant amounts of TFA that elevated the incidence of coronary heart disease and imposed significant costs on the health care system.

Mandatory labeling allows consumers to make more informed decisions and has already begun to reduce TFA consumption. However, we also show that as long as significant health care costs are paid for through private or public health care insurance, TFA labeling alone cannot provide adequate incentives for the reduction of TFA consumption.

Our calculations reveal that voluntary labeling, mandatory labeling, and a ban of trans fats in Canadian food products would be very beneficial from a health and health-care cost perspective with relatively small costs of implementation and compliance. We estimate that voluntary labeling alone would result in a present value of health cost savings exceeding $7 billion. Mandatory labeling would increase

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the saving to over $12 billion. With a ban present value of health cost savings Canadians would exceed $19 billion. In all cases the total food costs of reducing TFA would be less that $1 billion. Oilseed growers, whose price is set in the global market, would largely be unaffected by a ban. Generally, the increase in cost would occur at the crusher and food processor sectors through the cost of product reformulation and the substitution of higher cost HO Canola and soybean oils. These costs would ultimately be passed on to consumers, resulting in very modest increases in consumer expenditure. The overall result would be a large economic gain over a range of plausible scenarios.

Background

Canadian consumers have always been mindful of food costs, though societal changes and a greater awareness of health impacts and environmental issues now play greater roles in the choices that consumers make. Consumers in much of the developed world have moved toward healthier eating habits, at least to the extent that their busy lifestyles allow. Lower fats, less sugar, and more fibre are some of these recent changes.

The relationship between fat consumption and heart disease has been a subject of concern for decades. Research in the late 1950s and 1960s found a correlation between animal fat consumption and heart disease (e.g., Ahrens et al, 1957; Keys, Anderson, & Grande, 1965; Hegsted, McGandy, Myers, & Stare, 1965). This spurred a growth of vegetable oil production and consumption. Mounting evidence that vegetable oil's high saturated fatty acids also increased the risk of coronary heart disease prompted food manufacturers and food service groups to begin evaluating alternative fats and oils (e.g., Malla, Hobbs, & Perger, 2005). This spurred a move away from tropical oils toward the use of soybean, canola, and other vegetable oils. These non-saturated vegetable oils are hydrogenated to create solid fats and give the oils stability in frying and baking processes (Dow Agroscience, 2005; List, 2004). The process of hydrogenation created trans fatty acids in these products.

Recent research has demonstrated that not only do these industrially-produced TFAs increase levels of low-density lipoprotein (LDL)-cholesterol in the blood, they also lower the beneficial high-density lipoproteins (HDL)-cholesterol levels, leading some researchers to conclude that, gram for gram, TFAs pose a higher risk for coronary heart disease (CHD) than saturated fatty acids (e.g., Ross, Schouten, Scheek, van Tol, & Katan, 2002; Sundam, French, & Clandinin, 2003; Muller et al, 1998). This new health information regarding the deleterious effects of TFA is already causing a shift away from the use of hydrogenated oils.

Conceptual Framework

Modeling the effects of a TFA ban requires consideration of both the costs and benefits of compliance. The analysis is further complicated by consideration of the impacts of labeling and the prevalence of public health insurance. Figure 1 shows the market viewed at the consumer level. The supply curve *SS* represents products containing TFA. The Demand Curve *DoDo* represents that of consumers, oblivious of any adverse impacts of TFA. In this situation, private firms will supply the TFA product, and the quantity demanded will be equal to *Qo*.

The curve *MBsMBs* represents the social marginal benefits, which is equal to the private demand curve minus health costs. The vertical distance includes both the private and external health costs associated with TFA product consumption. The area *abcd* represents the total health costs of consumption and the shaded triangle *gab* represents the dead weight loss (dwl) from socially excessive consumption. If dwl exceeds the area economic surplus *cfg*, then a trans fat ban would increase an economic surplus even if non-TFA substitutes were unavailable.

The impact of consumer information without TFA substitutes is also illustrated in Figure 1. If consumers are perfectly informed about the health effect of TFA consumption, are aware of the TFA content in their food, and there were no non-TFA products available, then the informed consumer demand would shift inward to *DiDi*. The new market equilibrium quantity would shift to *Qi*, reducing socially excessive consumption. Unfortunately, even in this case consumers would consume more than the socially optimal amount due to the health care externality.

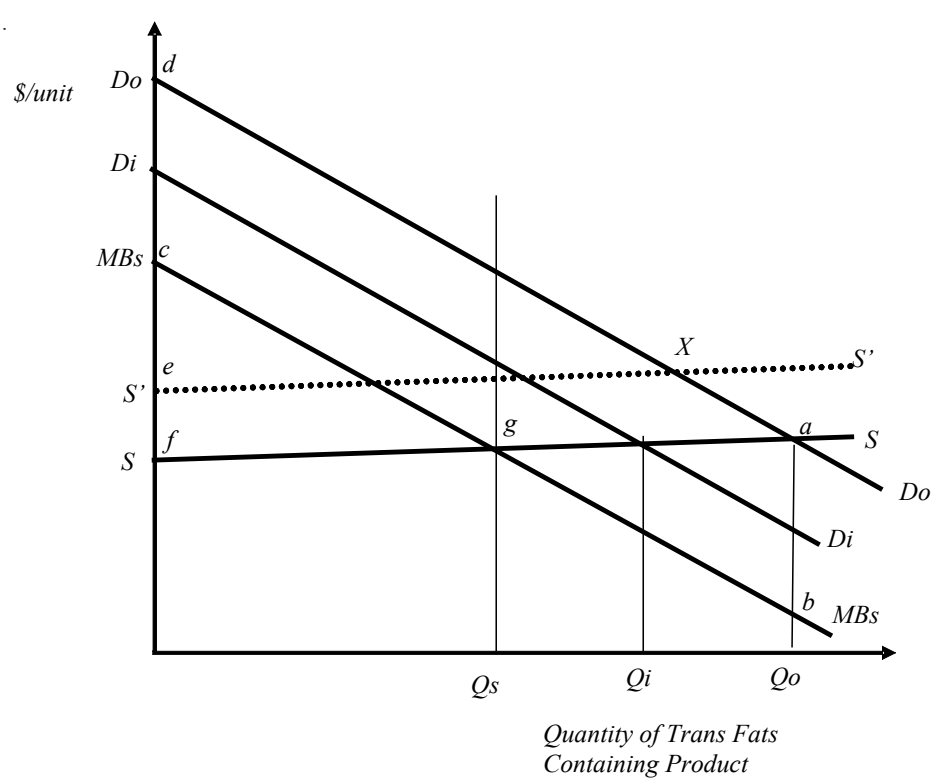

Figure 1: The Market for Trans Fats Containing Product

Now consider the case where a trans fat ban was introduced and a "non-TFA product" (one that does not contain TFA but with exactly the same functional and taste properties) is produced on a supply curve *S'S'*, with the vertical difference above *SS* representing the additional marginal cost of production. Independent of any consumer knowledge, if a TFA ban was introduced in the presence of the TFA substitute the new market equilibrium would be at point *X*. At this point, both upstream producer surplus and market consumer surplus are reduced but health care costs are eliminated, generating a net economic surplus equal to area *Xed*.

If TFA substitutes exist the impact of consumer information and labeling becomes considerably more complex. Some informed consumers might be willing to pay a sufficient enough premium for non-TFA that the industry would find it profitable to shift to these higher cost non-TFA products. Even in this case, however, voluntary labeling would differ from compulsory labeling in effectiveness. With voluntary labeling, firms wishing to differentiate their non-TFA products would label in an attempt to capture a greater market share, while firms with TFA products would have no incentive to label. This lack of labeling would leave consumers of these products ignorant of the TFA content. Thus one would expect a more widespread adoption of non-TFA products under a mandatory labeling scheme. Even with mandatory labeling, if either the private health costs are too small to warrant non-TFA production or there are some consumers who remain ignorant, then a private market for some TFA products would persist and continue to generate health care costs.

Analysis and Results

We estimate the potential costs and benefits of three different policies: 1) the effects of a voluntary labeling system; 2) a mandatory labeling system; and 3) a ban on foods with greater that 2% TFA (Table 1).[1] The first column contains our "best estimates" which we consider the most realistic given available information and data. In the second column, we deliberately construct a conservative estimate of the B/C ratio, by

limiting benefits and increasing cost estimates. The third column, contains an optimistic assessment.

In each of the three policy scenarios examined, we found a very high benefit to cost ratio. Specifically, for the best (most realistic) scenario, the B/C ratio when mandatory labeling is implemented is 19.1 to one. This B/C ratio is reduced to 2.4 for the low estimate but increases to 47.1 to one for the high estimates. Furthermore, the B/C ratio of voluntary labeling ranges from 2.5 to 40.3 to one (20.4 to one in the best estimates). Finally, the B/C ratio when a ban on foods with greater than 2% TFA is implemented ranges from 2.6 to 51.5 to one (20.8 to one in the best estimates). The consistently high B/C suggests that policies to restrict TFA consumption have a large potential payoff.

To evaluate the net economic benefits of the mandatory labeling system, we compare the benefits and costs of the mandatory labeling to the voluntary labeling system that most likely would exist in the former's absence. For the best estimates (most realistic), the additional cost or cost that firms would incur switching from a voluntary labeling to a mandatory labeling system is equal to $297 million (consisting of $121 million in testing/labeling cost and $176 million in product reformulation cost). Meanwhile, the extra CHD health benefits of the mandatory labeling system are equal to $5.21 billion.

Table 1: The Benefits and Costs of Voluntary/Mandatory Labeling and a TFA Ban

			Results	
Scenario	cost or benefit category	best estimate	low estimate	high estimate
1) voluntary	Testing/labeling $M	66	132	66
	Product Reformulation $M	295	590	117
	Total Cost $ M	361	723	183
	CHD health benefits $M	7,357	1,839	7,357
	Benefit/Cost	20.4	2.5	40.3
2) mandatory	Testing/labeling $M	187	374	93
	Product Reformulation $M	471	943	174
	Total Cost $ M	658	1,316	267
	CHD health benefits $M	12,568	3,142	12,568
	Benefit/Cost	19.1	2.4	47.1
3)TFA ban	Testing/labeling $M	187	374	93
	Product Reformulation $M	754	1,508	317
	Total Cost $ M	941	1,881	410
	CHD health benefits $M	19,541	4,885	21,109
	Benefit/Cost	20.8	2.6	51.5
2 versus 1	Testing/labeling $M	121	242	27
	Product Reformulation $M	176	352	57
	Total Cost $ M	297	594	84
	CHD health benefits $M	5,211	1,303	5,211
	Benefit/Cost	17.6	2.2	61.8
3 versus 2	Testing/labeling $M	0	0	0
	Product Reformulation $M	282	565	143
	Total Cost $ M	282	565	143
	CHD health benefits $M	6,973	1,743	8,541
	Benefit/Cost	24.7	3.1	59.7

Source: Gray, Malla, and Perlich, 2006.

Consequently, the B/C ratio or the net economic benefits of introducing mandatory labeling system in Canada are equal to17.6 to one. This B/C ratio is reduced to 2.2 for the low estimate and increases to 61.8 to one for the high estimates. These results suggest that mandatory TFA labeling is very advantageous for the Canadian economy.

Finally, comparing the effect of a TFA ban to the mandatory labeling system, the ratio of additional benefits and costs is 24.7 to one. The additional CHD health benefits are $6.97 billion as compared to the additional product reformulation cost of $282 million. For the low case scenario the B/C ratio is 3.1 to one, while for the high estimates the B/C ratio is a very high 59.7 to one. This suggests that substantial economic gain would be achieved by moving beyond labeling to a regulatory restriction of TFA use.

Overall Results

We have shown that a ban on industrial trans fats would create health benefits in an order of magnitude larger than the increase in food cost associated with the ban. While voluntary labeling resulted in substantial net benefits, these net benefits were further enhanced with mandatory labeling. The greatest net benefits were generated for the ban on food products with TFA over 2%. Oilseed growers, whose price is set in the global market, would largely be unaffected by a ban. Generally, the increase in cost would occur at the crusher and food processor sectors, through the cost of product reformulation and the substitution of higher cost HO Canola and soybean oils. These costs would ultimately be passed on to consumers, resulting in very modest increases in consumer expenditures. The overall result is a large net gain in welfare over a range of plausible scenarios. These results are consistent with a conclusion that the health costs associated with TFA consumption are significant and can be effectively addressed with non-TFA products given appropriate policies that incorporate information and health externalities.

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Footnotes

[1] For more details, see Gray, Malla, and Perlich (2006).