

Trade Barriers and Functional Foods – What are the Foregone Benefits?

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CATPRN WORKSHOP PROGRAM

Westin Harbour Castle Hotel - Toronto, Ontario, February, 2008



Outline

- **Introduction to Functional food**
- **Market situation**
- **Trade barriers**
- **Trade models**
- **The next steps**
- **Conclusion**

Introduction to Functional foods

■ Definition

Functional foods are food components that look similar to a conventional food that is being consumed as part of a usual diet, and is able to demonstrate physiological benefits and/or reduce the risk of chronic disease beyond basic nutritional functions (Health Canada, 1999).

Introduction to Functional foods

■ nutrients

natural components

- △ Lycopene in tomatoes,
- △ Omega-3 fatty acids in seafood,

formulated to include nutrients

- △ Orange juice fortified with calcium,
- △ Cereals with added vitamins/minerals , etc.

■ Health benefits

eating foods with functional benefits as part of daily diet can help reduce the risk of, or deal with, a number of health hidden problems including :

- ◇ cancer,
- ◇ heart and cardiovascular disease,
- ◇ gastrointestinal health,
- ◇ menopausal symptoms,
- ◇ osteoporosis,
- ◇ eye health, etc. (NYSOFA)

Market situation

- Functional food products represent a value-added growth opportunity for the Canadian agri-food industry, both domestically and internationally.
 - The world market for functional foods is estimated to be large and growing with over US \$50 billion (Rodriguez , 2002).
 - Canada's functional food sector has large potential to take advantage of the large and growing global market for functional foods.
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Trade barriers

- However, the agri-food sector is one of the most heavily protected sectors in the global economy (Gaisford and Kerr, 2001). While the trade barrier in place could be a tariff, non-tariff barriers are also common in agriculture (Hobbs, 2007)
 - Existing trade barriers in agriculture often preceded the development of functional foods. Thus, those who made the decision to impose the barriers did so without information relating to the benefits associated with functional foods.
 - Food products normally face two broad types of non-tariff barriers. One set of non-tariff barriers acts like an import ban — prevents any imports. Other non-tariff barriers raise the cost of exporting so that imports still take place but at lower levels — the effect is similar to a tariff (Kerr, 2007).
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Trade barriers

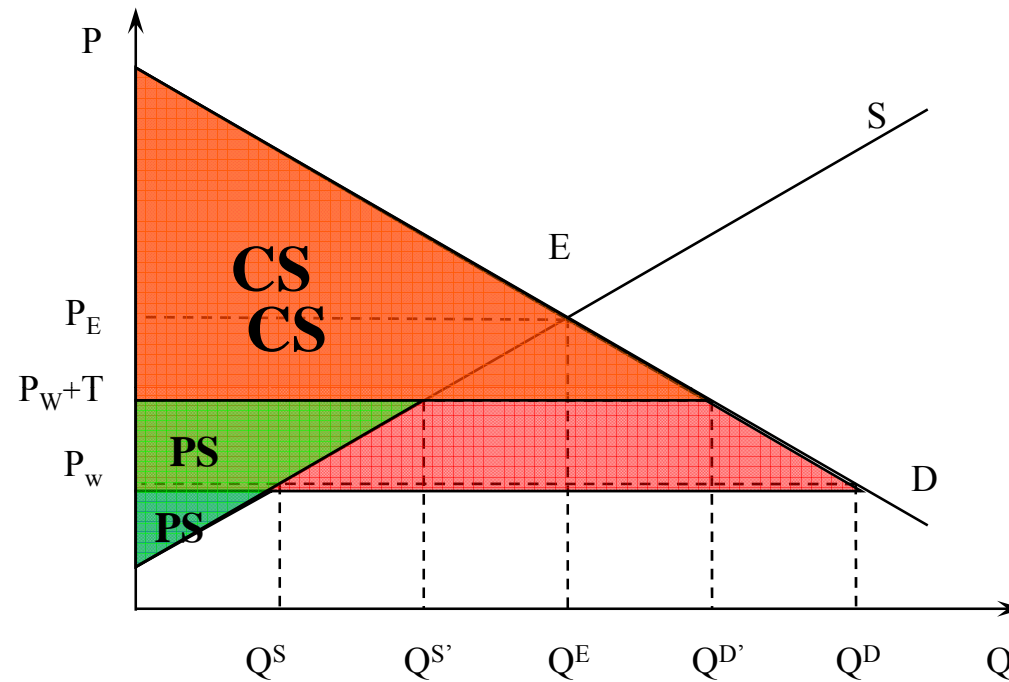
- Given that there may be additional benefits foregone from the existence of trade barriers, with better information, those responsible for trade policy may wish to alter their decisions to impose trade barriers on individual food products.
 - Therefore, I would like to develop a theoretical framework to illustrate the potential welfare benefits foregone from the existence of trade barriers when a traditional food becomes a “functional food”.
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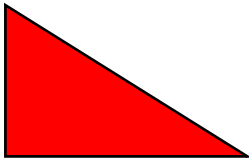
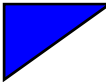
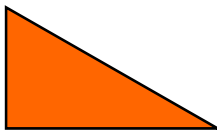
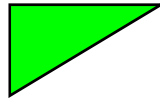
Model

■ Basic Model

To examine the effects of the introduction of functional foods that provided consumers with positive health benefits when pre-existing trade restrictions are in place, a partial equilibrium model is developed in this section.

Model



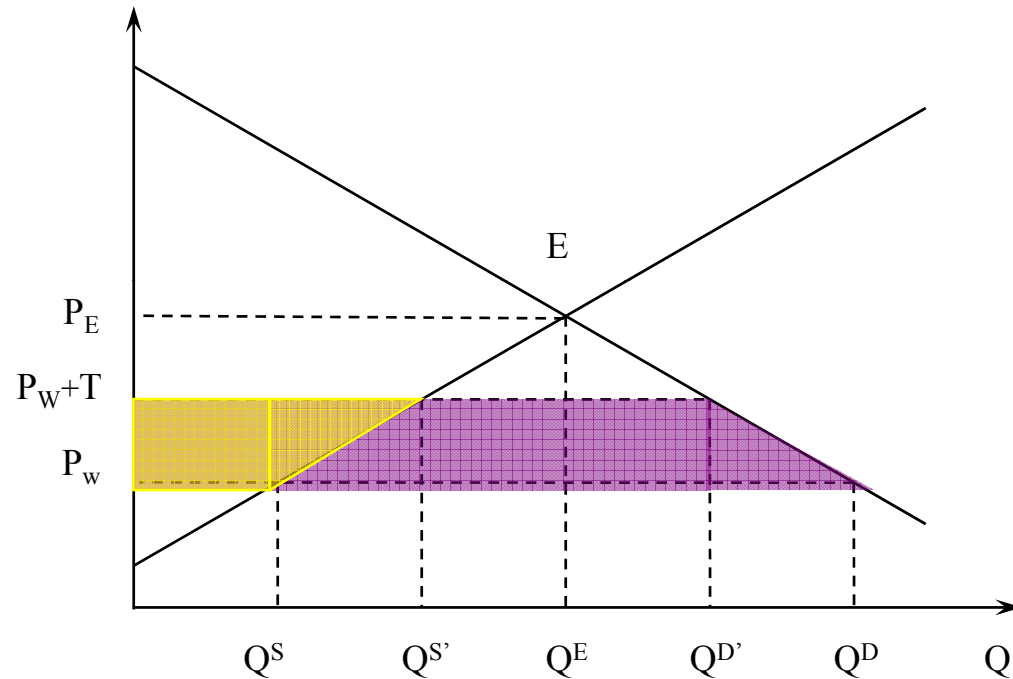
- At P_w : consumer surplus is  ; Producer surplus is  .
- At P_w+T : consumer surplus is  ; Producer surplus is  .

Model

- Let us denote η as the ratio giving decision makers weighting of the changes in consumer surplus and producer surplus arising from the imposition of a protectionist policy.

$$\eta = \frac{\Delta \text{ consumer surplus}}{\Delta \text{ producer surplus}}$$

Model



Compared to the situation before the tariff, consumers suffer a loss of area



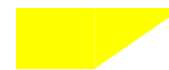
and producer gain area



Thus,



$\eta =$



which is larger than 1

Model

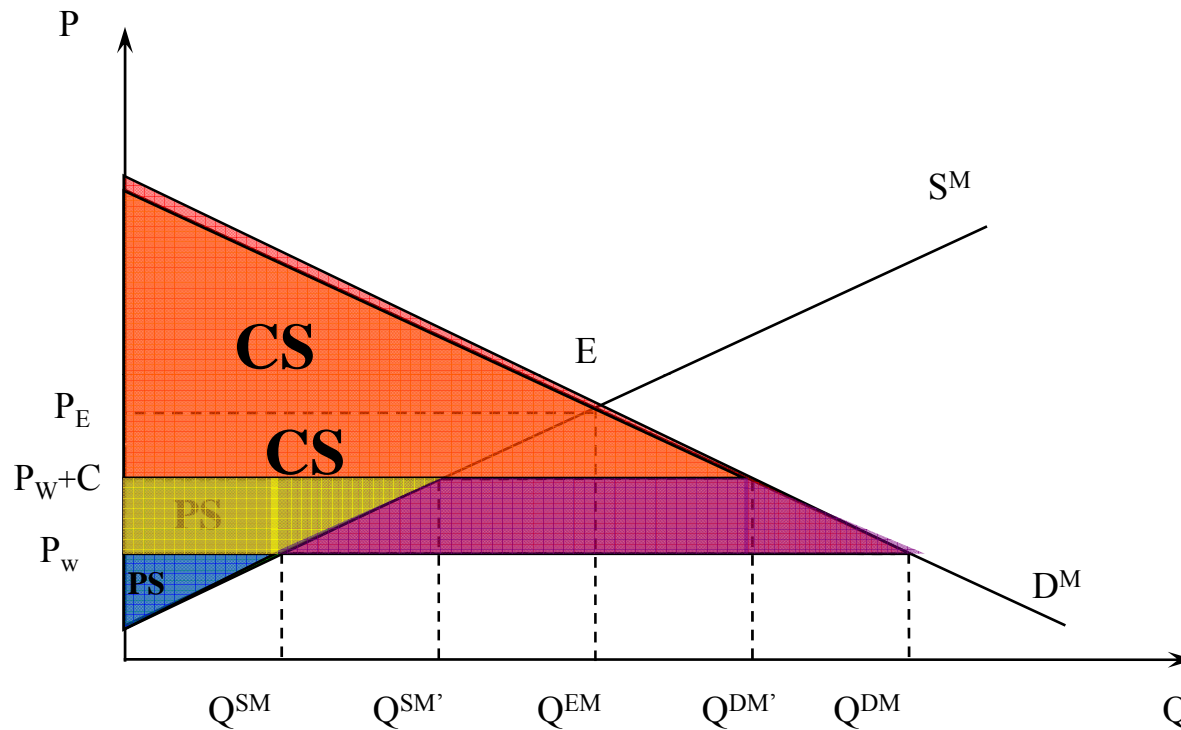
- According to different trade barriers and accompanied welfare changes, four different cases pertaining to import restrictions on functional foods can be examined.

Trade policy Supply of Functional foods	Cost increasing regulation	Import prohibition
Domestic production or imports	Case 1	Case 2
Imports only	Case 3	Case 4

Model

- Case 1 and Case 3 are based on the same trade policy but different assumptions regarding the ability to produce.
 - ◆ Case 1 — Products can be supplied by domestic producers and obtained from the international market.
 - ◆ Case 3 — functional food version of the product can only be acquired from the international market.
 - Case 2 and Case 4 the supply choices are the same as above but the market is constrained by the more restrictive policy such that imports are effectively banned.
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Model-Case 1



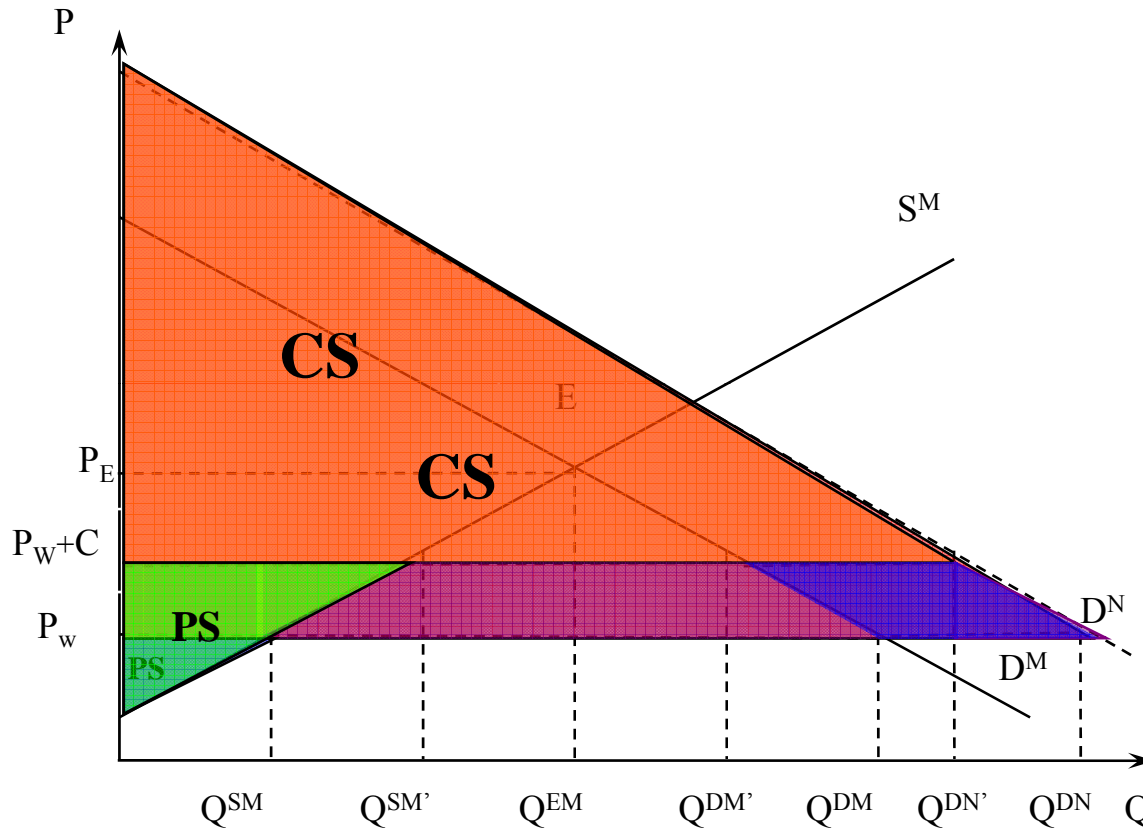
Market for product M:

At P_w : consumer surplus is  ; Producer surplus is .

At price $(P_w + C)$: consumer surplus is  ; producer surplus is .

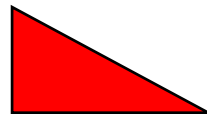
- A a loss of  in consumer surplus and a gain of  in producer surplus

Model-Case 1

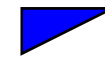


- new product N coming into market:

At P_w : consumer surplus is



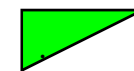
; Producer surplus is






At price $(P_w + C)$: consumer surplus is



; Producer surplus is



- A a loss of  in consumer surplus and a gain of  in producer surplus
- A extra loss of  in consumer surplus is appeared due to new product N coming into market.

Model-Case 1

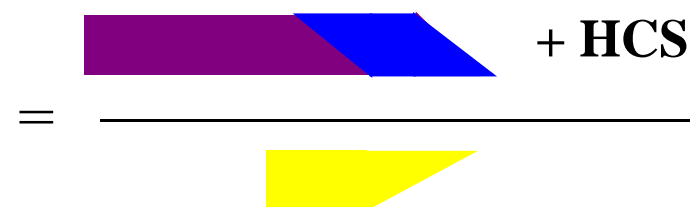
- Before the new product coming into market:

$$\eta = \frac{\Delta \text{ consumer surplus}}{\Delta \text{ producer surplus}}$$



- After the new product coming into market:

$$\eta = \frac{\Delta \text{ consumer surplus} + \mathbf{HCS}^*}{\Delta \text{ producer surplus}}$$



As a result, political decision makers may wish to revisit their decision to impose a trade barrier.

*savings in health care costs for the government as a result of the consumption of the functional food. We assume for the moment that these cost savings are a positive constant denoted HCS .

The next steps

■ Case studies

- From the potential list of functional foods
Cholesterol reducing oils and margarines,
Fruit juices with added supplements/vitamins,
Yoghurts with *Acidophilus* cultures/probiotics,
Milk and eggs with added supplements.
 - Counties with the significant existing barriers to trade will be identified.
 - Examples using different cases from the theoretical model will be sought.
 - Empirical estimates of the potential losses in welfare and health care savings will be made.
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The next steps

Methodologies similar to:

- ★ **Berger, M. C., G. C. Blomquist, D. Kenkel and G. S. Tolley. 1987.** Valuing changes in health risks: A comparison of alternative measures. *Southern Economic Journal* 53 (4): 967–84.
- ★ **Gyrd-Hansen, D. 2003.** Willingness to pay for a QALY. *Health Economics* 12 (12): 1049–60.
- ★ **Stavroula Malla, Jill E. Hobbs and Orsolya Perger. 2007.** Valuing the Health Benefits of a Novel Functional Food. *Canadian Journal of Agricultural Economics* 55 115–136.

will be used.

- I would be pleased if anyone has suggestions for products or countries that could be used for case studies.
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Conclusion

- Still a work in progress
 - The question of benefits foregone from existing trade barriers as product characteristics change has not been previously studied.
 - The theoretical model has yielded some interesting results that may suggest changes in trade policy.
 - Hopefully the empirical results will be useful for trade policy makers.
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Thank you

Questions?