Trade liberalization effects in the egg sector

By **Simon Rodrigue, Lota D. Tamini and Maurice Doyon**

Introduction

Canada is in the midst of numerous bilateral and multilateral trade talks that can impact agricultural trade. For example, in the last months of 2013, Canada has signed a trade agreement with Europe, while one came into effect in early 2015 with South Korea. Canada is also part of the current Trans-Pacific Partnership (TPP) trade talks. These new developments generate questions for various agricultural sectors and by the fact of, a renewed interest in agricultural trade modeling.

The egg sector is of interest from a Canadian point of view, given its high level of tariff protection in Canada and the fact that egg trade occurs in various form such as table eggs (perishable) and egg products with long shelve life (e.g. egg powder). These various levels of perishability are likely to affect the number of trading partners as well as the value of international trade. With this in mind, we developed a model to analyze trade liberalization effects in the egg sector.

Empirical framework

The usefulness of trade models is correlated with their capacity to capture complex phenomenon. For instance, data on international trade of agricultural products suggest that a large majority of partners do not trade with one another and that trade growth, where it has occurred, generally involved growth of trade volume between existing trading partners rather than the development of new trade relationships (Villoria and Hertel, 2011). This phenomenon, called trade persistence, can result in spurious estimation of the effect of trade barriers if not controlled for in trade models (Olivero and Yotov, 2012). The underlying reason for the observed trade persistence in agriculture is that exports to a given destination incur fixed and variable costs. The fixed costs are associated with the learning curve by firms historically active in the markets, which give them an advantage over potential new entrants because of institutional ties, transport infrastructure, and underlying preferences.

Our framework assumes that trade flows result from: (i) decision to export and (ii) the chosen level of exports. The estimation strategy follows the two decision paths. At the first stage, a dynamic random effect Probit model is used to analyze the decision to sell in the foreign market. In doing so, we take into account the path-dependency of export market

participation. At the second stage, given the persistence in trade flow, we use a panel dynamic gravity[i] model when estimating the value of trade (Raimondi et al., 2012).

Data sources

Trade volumes were obtained from the UNCOMTRADE database and data for trade policies was collected from the TRAINS dataset; they account for preferential trade agreements between countries/regions.[ii] The domestic support measure is taken from the WTO database, and reflects compilation of various (trade-distorting) domestic support measures, converted to *ad valorem* equivalent rates.[iii] This avoids possible double-counting, particularly when domestic policies are combined with border policies (as in the case of administered prices).

Total egg production is provided by the Food and Agriculture Organisation (FAO) Statistical Yearbook. Gross Domestic Product (GDP) statistics are collected from the International Monetary Fund (IMF) World Economic Outlook Database. The dataset of distances, other trade preferences and trade resistance factors is based on a compilation by the Centre d'Études Prospectives et d'Informations Internationales (CEPII). The final data, once adjusted for missing data and outliers, consisted of a dataset of 69 countries and from 1995 to 2010.

Response to change in trade policies

The impact of a liberalization process reflects two adjustments: the number of trading partners and the value of trade both within a dynamic setting. To quantify each type of response we simulate imports' reactions to a permanent change in trade policies and track the evolution of the probability to export and the value of trade for 10 years.

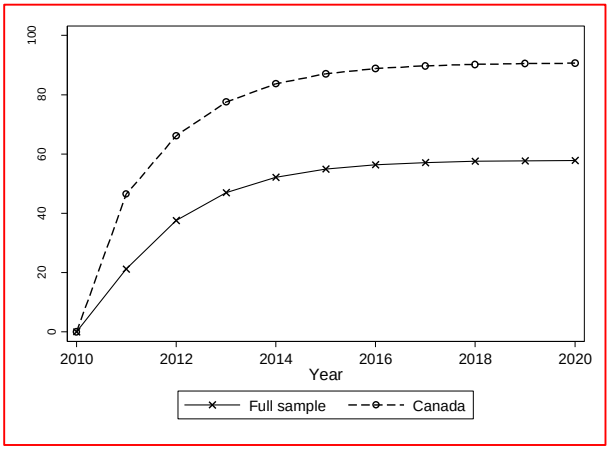
We investigate the changes in number of trading partners and the value of trade following a liberalization scenario that depicts a potential Doha "compromise" outcome (WTO, 2008). It includes tariff cuts of 20 percent when imports are restricted by a TRQ. The implicit assumption is that egg products currently protected by a TRQ are likely to be designated as sensitive, a notion introduced in the Doha Framework Agreement (WTO, 2008), and thus warrants distinct tariff cuts. For developed countries, the scenario includes tariff cuts of 70 percent if initial tariffs are higher than 75 percent and 50 percent in all other instances. For developing countries, the tariff cut is 50 percent in all instances. Given this scenario the mean tariffs across countries goes from 13.15% to 6.61% for shell eggs and from 16.06% to 8.58% for egg preparations.

Simulation impact on the number of trading partners

Trade liberalization would induce a small increase in the probability of non-zero trade. The probabilities of exporting are higher, but for the vast majority of countries, the simulated outcome would not result in an increase of the number of trading partners.

*Simulation impact on the value of trade of **table eggs***

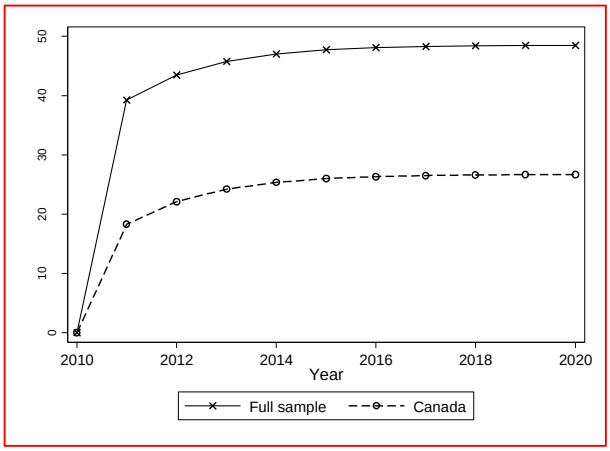
When running a traditional (static) trade model, we found that after 10 years, the value of imports for table eggs increases by 8.27%. However, when using a dynamic model, we observe an increase of 57.84% of the value of imports for table eggs.



For Canada, the change in the value of importations of table eggs following partial liberalization is about 17% when simulations are done using the results of static model while it is of 90.62% under a dynamic model. According to results on the simulation impact on the number of trading partners, this increase in Canadian's imports would be mostly captured by the United States.

*Simulation impact on the value of trade of **egg preparations***

When considering the full sample, by 10 years, the increase in the value of trade for egg preparations is 48.49% under a dynamic model, relative to 3.31% in the static one.



For Canada, the increase in the value of importations of egg preparations following partial liberalization is smaller than for the full sample at 26.70% when considering the dynamic model and 1.01% for the static one. The lower impact when considering Canadian's imports of egg preparations is likely resulting from the relatively small mean of *ad valorem* applied tariffs.

Conclusions

Our results indicate strong difference when using a panel dynamic specification relative to a static one. The dynamic specification indicates that previous estimates of trade impacts might have been underestimated. It also helps explain why trade liberalization does not often deliver on the promises of new trading partnerships but rather increases trade between already trading partners.

References

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[i] By definition, a gravity model states that international trade between two countries is proportional to the size of their economies and is inversely proportional to the distance between them.

[ii] Data on trade and tariffs were collected using World Integrated Trade Solution (WITS) software (See http://wits.worldbank.org/wits/). The ad valorem applied tariff used in estimations is based on the value of the dutiable item and expressed in percentage terms.

[iii] The dataset is built using WTO member notifications, and is restricted to policies classified as trade-distorting.