The Impact of Non-tariff Barriers on Trade: The Gravity Model on Turkish Agri-Food Products

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The Gravity Model on Turkish Agri-Food Products

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INTRODUCTION

- World Trade Organization enables countries to impose measures necessary to protect human, animal or plant life or health.
- Countries secure quality assurance in production, to protect environment, to regulate information transparency and accessibility, as well as to protect consumers against misleading labeling.
- These regulations can be used as political means in bilateral, regional and global trade in place of diminished tariffs and quotas called non-tariff barriers or technical barriers to trade (Maskus et al. 2001).
- Developing countries are mostly affected by these regulations because of the additional expenses to fulfill a mandatory standard (Beghin and Burea 2001).

TRADE DYNAMICS

- Vegetables and fruits imported by EU-27 from Turkey increased three folds while their exports to Turkey increased more than ten folds in the last three decades.
- Vegetable and fruit imported by non-EU trade partners from Turkey increased more than five folds while their exports to Turkey increased around ten folds in the last decade.
- Although the value of vegetable and fruit export to Turkey is low, it has exhibited a significant increase in exports since 2001.
- The imports of spices (including coffee and tea) by EU-27 from Turkey increased only seven folds while their export to Turkey shows a remarkable growth.
- Other trade partners’ import of spices increases five folds in the last decade while their export is almost insignificant.

WELFARE IMPACT

- Specific characteristics of food quality and information asymmetries in the food market cause market failures (Nolte and Rau 2006).
- Food standards lead to a decrease in supply by inducing comply cost - shifts supply curve to the left, decreases the producer surplus.
- Welfare loss for producer country and the shrinking producer surplus is compensated by an increase in the import to fulfill the demand.
- When the small countries cannot comply with these tightened standards, the supply curve shifts left to the demand and the demand increases for higher quality foods resulting a higher world price and creating the entrance barriers for the importer countries.
- These developed countries’ new measures make small countries unprotected against multinationals, replacing small countries producers by eliminating the competitiveness of the small countries’ own producers.
- Although both developed and developing countries are able to comply with the new standards, the welfare impact depends on how quick the developing countries comply with the food standards (Schmitz et al. 2010).

RESULTS

This paper estimates the impacts of technical barriers, institutional structure and infrastructure on Turkish agro-food trade using the gravity model with unbalanced panel data analysis. Truncated OLS estimators are used for parameter. The results for total, agricultural, fruit/vegetable and spice trades for EU-27 and other main trade partners (26 countries from East Europe, Caucasus, Middle East and North Africa) are provided in the table below.

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<th>Total Trade</th>
<th>Agricultural Trade</th>
<th>Fruit/vegetable Trade</th>
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MODEL

This study uses gravity model by combining several implications by Bao and Qui (2010); Francois and Manchon (2007); and Xiong and Beigun (2012).

- The impact of various trade costs on trade flows are measured by the model which demonstrates the effect of the trade costs on the trade flows.

$$
\ln M_{ij} = \alpha_i + \ln GDP_{c_i} + \alpha_j + \ln GDP_{c_j} + \alpha_{i,j} + \ln\text{ Dummy}_E + \alpha_{i,j}\text{ Dummy}_W + \ln NF_{i,j} + \alpha_{i,j}\text{ Dummy}_C + \ln NF_{i,j}
$$

where bilateral trade flow is a function of incomes, populations and distance between trading countries.

The EU (Dummy_EU), and former Comecon membership (Dummy_CMEA) are used as time dummies. Dummies cover country specific EU membership and the Comecon period. Technical barriers to trade is included to the equation with InNTB; and economic freedom index from Fraser Institute is used as a proxy for institutional quality of the country as InEFW; and infrastructure index of exporter country, InINF, is calculated with principle component analysis by using the World Bank indicators (Internet and land/mobile phone membership, roads paved, ATMs, air cargo).

CONCLUSION

- Technical barriers to trade decreases the total and fruit/vegetable trade by 0.30% and 0.69% to the EU-27 while Turkish trade to the other partners decrease by 0.96% and 0.52% for the agricultural and fruit/vegetable trade respectively for a 1% qualitative increase in these measures.
- Results suggest that the quality of the institutional structure and the infrastructure generally increase the trade flow although some of the results shows the negative relationship.
- EU membership increases the trade flow while Comecon had a negative effect on trade.

REFERENCES


