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# Discussion: Future Domestic and International Competitiveness of the Southern Fruit and Vegetable Industry

**Esendugue G. Fonsah and Sebastain Nde Awondo**

Remarkable changes have occurred over the years in the domestic and international economic environment of the fruit and vegetable industry. These changes are partly driven by the North American Free Trade Agreement, nutrition policies, and development and enforcement of new food safety standards. The articles in this invited session examined the effect of these drivers and their implication on the future competitiveness of the southern fruit and vegetable industry.

*Key Words:* food safety, fruits and vegetables, import demand, LGMA, structural changes, supply response

**JEL Classifications:** F14, Q11, Q13, Q17

Most southern states of the United States are top producers of major fruits and vegetables in terms of total harvested acreage and value of used production (USDA-NASS, 2011). In 2010, total used value of production from the southern states (excluding Kentucky and Oklahoma) for fresh-market apples, blueberries, peaches, snap beans, tomatoes, cabbage, cucumber, bell peppers, sweet corn, and all squash amounted to \$2.3 billion (USDA-NASS, 2011). The three articles in this invited session investigated changes in the domestic and international economic environment and their implications on the future competitiveness of the southern fruit and vegetable industry in relation to import demand and supply responses (Seale, Zhang, and

Traboulsi, 2013), North American Free Trade Agreement (NAFTA) and U.S. nutrition policies (Palma, Ribera, and Bessler, 2013) and the development and implementation of the Leafy Green Marketing Agreement (LGMA) and the evolving food safety standards (Paggi et al., 2013). This discussion summarizes the three papers with comments.

## **U.S. Import Demand and Supply Response**

Seale, Zhang, and Traboulsi (2013) estimated import demand elasticities and supply response for individual fruits and vegetables and examined how both increasing demand for and increasing import share of these produce affect domestic producers. The motivation for the study, as stated by the authors, was based on the existence of few elasticity estimates for individual fruits and vegetables, most of which are outdated and may not account for recent technology, trade policies, and food safety standards. Moreover, these estimates can be

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used in theoretically based economic models developed to investigate the impact of existing or new policies (such as free trade agreements, food safety standards, and nutritional guidelines). They estimated a demand system and derived conditional expenditure; Slutsky-own price; and Slutsky cross-price elasticities for fresh tomatoes, cantaloupes, green onions, oranges, and spinach. In the second section of the article, acreage, yield, and quantity supply elasticities were separately estimated for the same crops using an error correction model. The models used are widely accepted in the literature.

Most of the results obtained were expected. Conditional expenditure showed Mexico with the largest marginal share of U.S. total import of fresh tomatoes, Canada with the largest marginal share of U.S. total import of green onion, and Australia for fresh oranges. However, the conditional expenditure for green onion was found to be inelastic for Canada as opposed to Mexico and Australia where the estimates were elastic for fresh tomatoes and fresh oranges, respectively. Cantaloupe was found to converge to long-run equilibrium fastest after supply shocks caused by a change in acreage. This was followed for fresh tomatoes and green onions. Finally, increase in U.S. import of fresh tomatoes during 1960–1987 was found to negatively affect U.S. production. However, beyond this period, the growth in U.S. production of fresh tomatoes was not affected by an increase in its imports. The authors attributed the noneffect in the later years to the marketing agreement between U.S. and Mexico producers (VanSickle, Evans, and Emerson, 2003).

Five individual fruits and vegetables were considered by the authors in their analysis. Are these the most imported fruits and vegetables, most relevant with regard to enacted nutritional guidelines, and food assistance programs; or are they simply the ones with outdated or nonexistent elasticities? The authors used time-series data of total volume of U.S. imports and corresponding prices for fruits and vegetables. Why should inferences based on the data also hold for the southern fruits and vegetable industry, which is the focus of the session? One of

the main reasons of the study was to update elasticities of the individual fruits and vegetables. How different are the new estimates from existing ones? For example Tshikala and Fonsah (2012) found cantaloupe to be less price-inelastic ( $-0.77$ ) compared with the estimates ( $-0.52$ ,  $-0.05$ ,  $-0.18$ , and  $-0.16$ ) derived by the authors. However, this difference is more related to the fact that Tshikala and Fonsah used aggregated U.S. import data, whereas the authors used U.S. imports disaggregated by the individual countries from which the U.S. is importing.

### **Leafy Green Marketing Agreement and the Food Safety Modernization Act**

Increasing frequency of disease outbreaks linked to the consumption of contaminated produce during recent years has attracted the attention of multiple stakeholders. This has resulted in the creation and enforcement of more stringent food safety standards for both domestic and international producers, handlers, and suppliers. In this article, Paggi et al. (2013) provided a detailed description of the evolution of food safety standards in the fresh produce industry paying attention to government and private sector advocates as well as producers and retailers. The implications of the increasing cost for meeting newly established food safety standards on profit margins are also examined.

The authors highlighted the existence of multiple food safety standards in the fruit and vegetable industry, which differ in several aspects (such as food safety plans or risk assessments, traceability and recall programs, audits, corrective actions, and worker education), and are difficult to harmonize. Specific examples illustrating the limitation of third-party certification are also outlined. The authors referenced producer commodity and farm organizations such as the Good Agricultural Practices and LGMA as the major players in developing and promoting food safety standards along with government agencies. They predict the continuous growth and influence of similar groups in the absence of a universal food safety standard. By pointing to the growing influence of private-sector participants in promoting food safety

standards, the authors rightfully cited the possibility of market failures resulting from addressing food safety issues instead of a comprehensive strategy. In addition, the authors pointed out the increasing role of the federal government in developing and enforcing food safety standards that has culminated with the Food Safety Modernization Act (FSMA). This comes with increased cost to taxpayers and private cost of compliance with potentially negative effect on profit margins. Finally, the authors discussed potential effects of FSMA on imported produce with particular attention to Mexico and Latin America.

Taking a participatory approach in developing and enforcing food safety standards is a sound practice. However, is it feasible to come up with a universally acceptable food safety standard for all fruits and vegetable producers and handlers? To what extent are existing food safety standards good enough or too much? What should be done to prevent private-sector participants promoting the development of food safety standards from using it to create market power? Given that fundamental differences exist in the production and supply chain of some produce, developing a universal standard will be difficult to achieve. However, universal sets of guidelines can be identified that form the basis of individual food safety standards, whereas local producer commodity organizations are left with the task to fully develop specific-based standards. Finally, I will suggest private-sector participants promoting the development of food safety standards should increasingly be scrutinized by regulating agencies.

### **U.S. Trade Agreements and U.S. Nutrition Policies**

Palma, Ribera, and Bessler (2013) investigated the effect of NAFTA on trade flows in the fresh produce industry and potential implications for U.S. nutrition policies by examining historical decomposition functions from estimating a non-structural vector auto regression (VAR) model. Data used for the analysis was annual time series from 1970–2011 of per-capita domestic quantity, imports, exports, income, and average prices aggregated over selected fresh fruits and fresh vegetables. Nonstructural VAR is a suitable

model for identifying shocks and how they are transmitted through the system and therefore a suitable choice made by the authors for this analysis. However, its application for causal inferences as used by the authors may not be convincing enough, because the identified structural breakpoints cannot be linked to a specific policy (e.g., trade agreements) with certainty. This can only be true when the model accounts for all possible counterfactuals. As one of the major findings from the study, the authors found structural break points in 1993, which correspond to the year NAFTA was implemented. Although the authors found signs of demand-driven change in the fruit and vegetable industry around 1999–2000, they could not establish that Dietary Guidelines for Americans introduced in 2000 caused a change in consumption. Aggregation bias resulting from using aggregated data can significantly reduce variability inherent in unit-level data leading to biased estimates and misjudged inferences. A similar analysis using disaggregated data is worthwhile.

Together all three articles investigated changes in the domestic and international economic environment of the southern fruit and vegetable industry. This is in relation to import demand and supply responses, NAFTA, food safety, development and implementation of the LGMA, nutrition guidelines, and their implications on the future competitiveness of the southern produce industry. All three articles are related and the findings stemming from them potentially have serious implications on the future domestic and international competitiveness of southern fruits and vegetables.

The increasing complexity of food supply chains coupled with more frequent outbreaks of contaminated produce necessitates the development and enforcement of higher food safety standards with participation from all stakeholders. However, increasing costs of compliance to new food safety standards will probably translate into rising prices of domestic and imported fruit and vegetable produce. Own-price elasticities estimated by Seale, Zhang, and Traboulsi (2013) are all negative and inelastic, meaning everything being equal, little or no changes will be observed in the volume of U.S. imports for fruits and vegetables. Assuming fruits

and vegetables are normal goods, other indicators such as per-capita income may have to change for consumers to maintain or increase current consumption without loss in consumer surplus. Such increased consumption is encouraged by nutritional guidelines and food assistance programs. A more comprehensive approach to investigate potential impact of new policies or regulations will involve a simulation approach that makes use of estimated elasticities in a general equilibrium model such as that used by Zahniser et al. (2012).

The challenge forward will be finding policies and regulations that promote free trade, provide and enforce sufficient universal food safety standards, and yet encourage an increase in consumption of fruits and vegetables consistent with the Dietary and Nutritional Guidelines Act.

## References

- Paggi, M.S., F. Yamazaki, L. Ribera, M. Palma, and R. Knutson. "Domestic and Trade Implications of Leafy Green Marketing Agreement: Type, Policies, and the Food Safety Modernization Act for the Southern Produce Industry." *Journal of Agricultural and Applied Economics* 45,3(2013):453–64.
- Palma, M.A., L.A. Ribera, and D. Bessler. "Implications of U.S. Trade Agreements and U.S. Nutrition Policies for Produce Production, Demand, and Trade." *Journal of Agricultural and Applied Economics* 45,3(2013):465–80.
- Seale, J.L., L. Zhang, and M.R. Traboulsi. "U.S. Import Demand and Supply Response for Fresh Tomatoes, Cantaloupes, Onions, Oranges, and Spinach." *Journal of Agricultural and Applied Economics* 45,3(2013):435–52.
- Tshikala, S.K., and E.G. Fonsah. "Estimating the U.S. Import Demand for Melons: A Dynamic Analysis Approach." *Journal of International Food & Agribusiness Marketing* 24(2012):306–20.
- USDA-NASS. *Fruits and Vegetables Crops Statistics and National Rankings 2010*. USDA National Agricultural Statistics Service, 2011. Internet site: [http://www.nass.usda.gov/Statistics\\_by\\_State/New\\_Jersey/Current\\_Releases/2010%20NJ%20Fruit&Veg%20Rankings%20book.pdf](http://www.nass.usda.gov/Statistics_by_State/New_Jersey/Current_Releases/2010%20NJ%20Fruit&Veg%20Rankings%20book.pdf).
- VanSickle, J.J., E.A. Evans, and R.D. Emerson. "U.S.–Canadian Tomato Wars: An Economist Tries to Make Sense Out of Recent Antidumping Suits." *Journal of Agricultural and Applied Economics* 35(2003):283–96.
- Zahniser, S., T. Hertz, P. Dixon, and M. Rimmer. "Immigration Policy and its Possible Effects on U.S. Agriculture and the Market for Hired Farm Labor: A Simulation Analysis." *American Journal of Agricultural Economics* 94(2012):477–82.