



**AgEcon** SEARCH

RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

*No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.*

**Impacts of the Food Safety Regulations on Trade Flows: An Application to the Almond and Hazelnut Industries**

**Muhammet Yunus Sisman**

**PhD Candidate, Applied Economics Program, Auburn University**

[sisman@auburn.edu](mailto:sisman@auburn.edu)

**Selected Poster prepared for presentation at the 2015 Agricultural & Applied Economics Association and Western Agricultural Economics Association Joint Annual Meeting, San Francisco, CA, July 26-28**

Copyright 2015 by [authors]. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies

**Muhammet Yunus Sisman**

*Department of Agricultural Economics and Rural Sociology*

*Email: sisman@auburn.edu*

## Introduction

- Food safety regulations become increasingly important as trade instruments. The domestic sanitary regulations stringent than international standards raise question on protectionist exercise of regulations in agricultural trade.

**Table 1. Worldwide Aflatoxin Standards for Tree-nuts\***

Country	Processed (mg/kg)	Unprocessed (mg/kg)
Australia	15	15
USA	20	20
<b>International Standards (Codex)</b>	<b>15</b>	<b>10</b>
EU-2002	10	4
EU-2010	15	10
Switzerland and Norway	EU	EU

\*Aflatoxins (B1,B2,G1,G2) for hazelnut, almond, Brazil nut, pistachio

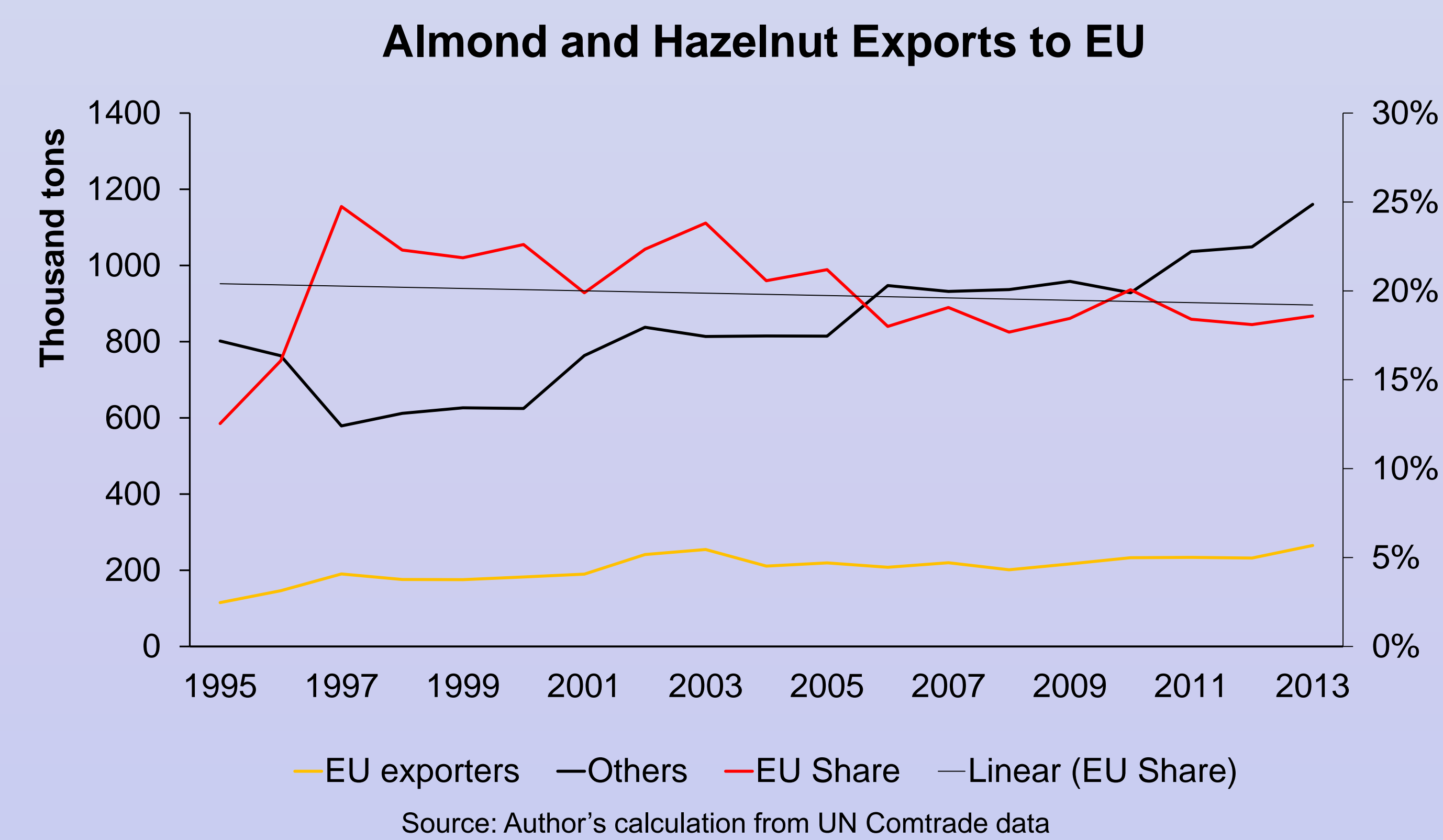
- Aflatoxin regulations are primarily important for nuts trade (FAO, 2004). Majority of the border rejections (94%) for nut products in EU is due to mycotoxins versus 14 % in USA between 2002 and 2008 (Henson and Olale, 2010)
- EU harmonized food standards for all member countries to more restrictive levels than Codex. Yet, harmonization significantly relaxed the standards for the majority of the member states including Germany, France, and UK as the top nuts consumers imposing much restrictive levels prior to harmonization. In 2010, EU aligns harmonized aflatoxin levels for certain tree-nuts to the international standards.

## Motivations

- Despite the substantial body of research studying the impacts of food standards on trade, current literature provides very limited information about the trade determinants of tree nuts industry.
- Recent amendments for food safety regulations in EU as the world largest nuts importer, particularly important for tree-nuts exporting nations.
- Inconclusive empirical findings in the previous literature which presents a wide range of estimated impacts from significantly trade impeding to significantly trade promoting (Li and Beghin,2012).

## Research Objectives

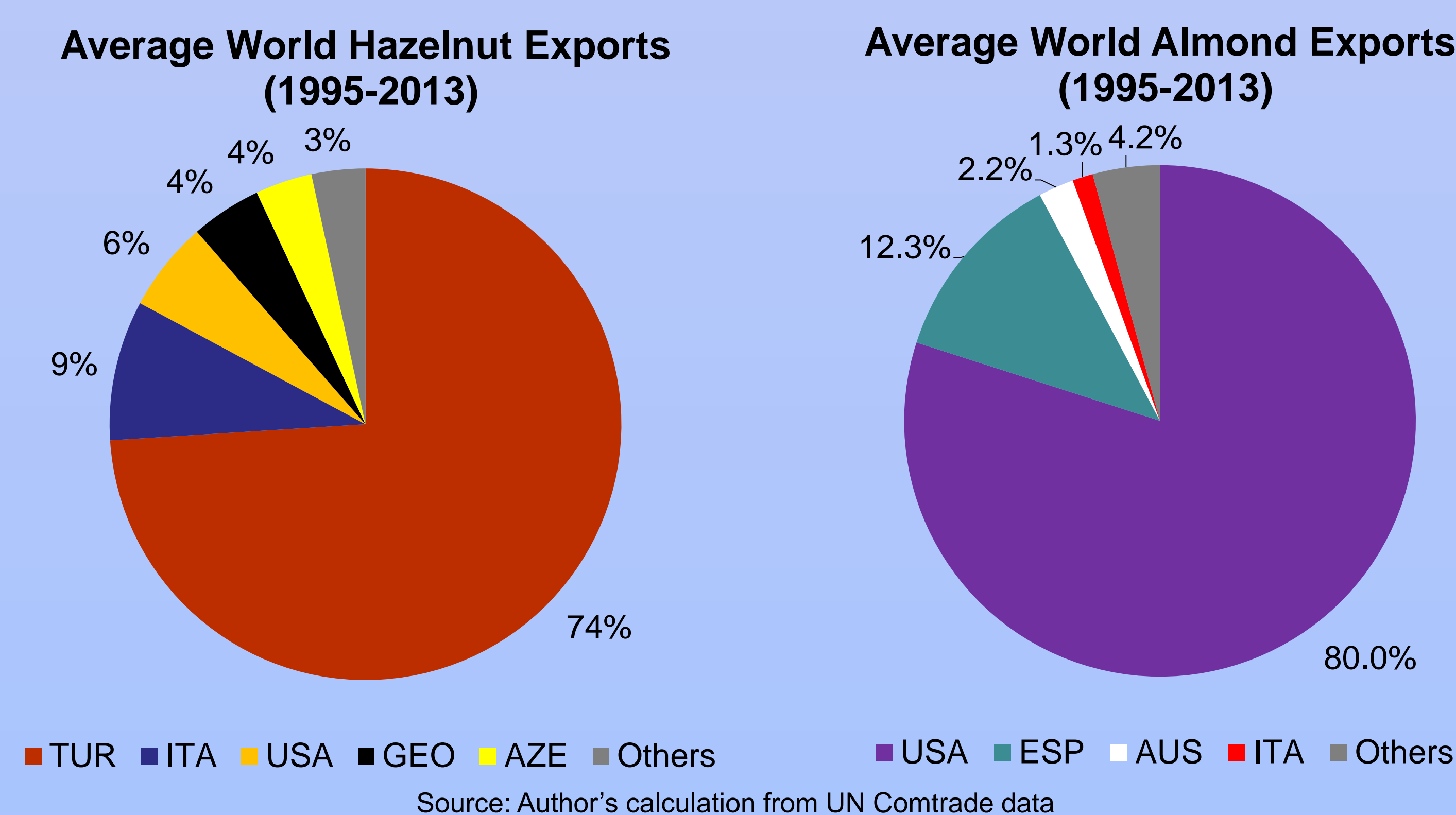
- This study aims to explore the trade restrictiveness of EU phytosanitary measures applied to the almond and hazelnut imports
- A major hypothesis to be investigated is whether the food safety standards act as barriers or catalysts in the EU tree nut market.
- Particular attention would be on the relationship between the standards and existing trade and new trade creation for EU versus non-EU exporters.



## Model Specification and Data

- The gravity model is estimated for the hazelnut and almond imports at the 6 digit HS level to the EU-28, Switzerland, and Norway between 1995-2013.
- Following equation specifies the model that accounts for time, exporter, importer, and product fixed effects.

$$\ln(\text{Import})_{ijpt}^k = \beta_0 + \beta_1 \ln(\text{Distance}_{ij}) + \beta_2 \ln(\text{Supply}_{ikt}) + \beta_3 \ln(\text{MRL})_{jpt} + \beta_4 \text{Colony}_{ij} + \beta_5 \text{Adjacency}_{ij} + \beta_6 \text{RTA}_{ij} + \beta_7 \text{EU exporter} + \beta_8 \text{Lag}(\text{MRL})_{jpt} + \beta_9 \text{Commercial code}_{ij} + \alpha_t + \alpha_i + \alpha_j + \alpha_k + \epsilon_{ijkt}$$



**Table 2. Gravity estimates of the impact of the EU aflatoxin regulations on hazelnut and almond trade flows, 1995-2013**

Dependent Variable	PPML Imports (1)	Heckman ML			
		Coefficient estimates		Marginal effects	
		In(Imports) (2)	Selection (3)	In(Imports) (4)	Selection (5)
In(Distance)	-1.272*** (0.46)	-0.617* (0.32)	-0.181 (0.17)	-0.512** (0.26)	-0.048 (0.04)
In(Supply)	1.147*** (0.08)	1.345*** (0.05)	0.395*** (0.03)	1.115*** (0.05)	0.103*** (0.01)
<b>In(MRL)</b>	<b>1.151*** (0.12)</b>	<b>1.404*** (0.17)</b>	<b>0.322*** (0.07)</b>	<b>1.216*** (0.16)</b>	<b>0.085*** (0.02)</b>
Colony	0.388 (0.33)	0.018 (0.35)	-0.323 (0.28)	0.205 (0.25)	-0.085 (0.07)
Adjacency	-0.040 (0.41)	0.985*** (0.37)	0.672** (0.33)	0.594** (0.29)	0.176** (0.09)
RTA	1.000*** (0.27)	0.789*** (0.30)	0.297*** (0.11)	0.616** (0.28)	0.078*** (0.03)
<b>EU_exporter</b>	<b>-2.341*** (0.83)</b>	<b>-1.163** (0.56)</b>	<b>-0.433 (0.29)</b>	<b>-0.911* (0.47)</b>	<b>-0.114 (0.08)</b>
Lag(MRL)	0.624*** (0.10)	0.732*** (0.15)	0.376*** (0.07)	0.513*** (0.15)	0.099*** (0.02)
Commercial Code	-0.174 (0.16)	-	0.255*** (0.08)	-	0.067*** (0.02)
Estimated corr. coeff.		0.462*** (0.06)			
Estimated selection coeff.		0.848*** (0.03)			
N	12154	12154			
R <sup>2</sup>	0.62				

Standard errors in parentheses.\*\*\*, \*\*, and \* indicate significance at 1%, 5%, and 10% levels, respectively  
Time, exporter, importer, and product fixed effects are not reported.  
Commercial code is the excluded variable in Heckman ML estimation

## Conclusions

- Empirical findings for the impact of the food standards are robust to the estimation methods.
- More flexible standards significantly increase the volume of existing trade and .new trade creation for hazelnut and almond industries.
- Exporters can fully adopt to the policy changes in the following year.
- Policy changes in 2002 and 2010 promote imports from non-EU exporting countries.
- Intra-EU trade adversely affected by the relaxation of the food standards, possibly, due to a higher trade share of non-EU exporters which bears higher compliance costs
- Domestic production factors have significant impacts on trade flows.

## References

- Henson, S., E. Olale. 2010. What Do The Border Rejections Tell Us About Trade Standards Compliance Of Developing Countries? Analysis of EU and US Data 2002-2008. *UNIDO Working paper*
- Li, Y., J.C. Beghin. 2012. A Meta-analysis of Estimates of The Impact of Technical Barriers to Trade. *Journal of Policy Modelling* 34:497-511