

Implications of Transatlantic Trade and Investment Partnership and Trans-Pacific Partnership for Food Processing Sector

PD: Jeff Luckstead, University of Arkansas

Co-PD: Stephen Devadoss, Texas Tech University

USDA-NIFA AFRI Project Directors Workshop
Economics, Markets, and Trade

Outline

- 1 Overview of Project
- 2 CETA and Processed Food
- 3 Introduction
- 4 Model
- 5 Simulation and Results
- 6 Conclusions

Goal and Objectives

Goal:

- Comprehensively analyze the effects of regional trade liberalization on the value-added food and beverage sector.

Objectives

- 1 formulate a theoretical model characterizing
 - 1 the monopolistic competition and firm-level heterogeneity in food processing, and
 - 2 MNEs to assess the effects of cross-border FDI in the food processing sector;
- 2 quantify the effects of regional trade agreements on production, productivity, consumption, trade, and welfare
- 3 draw policy implications from these trade liberalization analyses and provide recommendations for future trade agreements to policy makers and food producers.

Studies

Jeff Luckstead and Stephen Devadoss “Impacts Of The Transatlantic Trade And Investment Partnership On Processed Food Trade Under Monopolistic Competition And Firm Heterogeneity” *American Journal of Agricultural Economics*, 98(5): 1389-1402.

Mahalingam Dhamodharan, Stephen Devadoss, and Jeff Luckstead (2016) “Imperfect Competition, Trade Policies, and Technological Changes in the Orange Juice Market” *Journal of Agricultural and Resource Economics*, 41(2): 189-203.

Stephen Devadoss and Jeff Luckstead “Implications of the Comprehensive Economic and Trade Agreement for Processed Food Markets” revise and resubmit at *Canadian Journal of Agricultural Economics*.

Implications of the Comprehensive Economic and Trade Agreement for Processed Food Markets

Stephen Devadoss and Jeff Luckstead

Introduction

Industrial organization of food processing firms

- Economy of scale & differ in size
- Highly differentiated food products & monopolistic competition
- Operate only domestically or also export

Introduction

Industrial organization of food processing firms

- Economy of scale & differ in size
- Highly differentiated food products & monopolistic competition
- Operate only domestically or also export

Sustained growth (domestic sales & exports) on both sides of the Atlantic

Introduction

Industrial organization of food processing firms

- Economy of scale & differ in size
- Highly differentiated food products & monopolistic competition
- Operate only domestically or also export

Sustained growth (domestic sales & exports) on both sides of the Atlantic

In Canada, the processed food and beverage industry

- employs more workers than any other manufacturing industry
- exports support more than 180,000 jobs
- over 200,000 producers
- thousands of small- to medium-sized agri-food entrepreneurs

Canada's Agri-Food Industry

Success of agriculture in Canada depends on trade

- Canada exports about half the value of agri-food production

Canada's Agri-Food Industry

Success of agriculture in Canada depends on trade

- Canada exports about half the value of agri-food production
- Reliance on exports:
 - 90% of all Canadian farms
 - 80% of commercially-oriented farms

Canada's Agri-Food Industry

Success of agriculture in Canada depends on trade

- Canada exports about half the value of agri-food production
- Reliance on exports:
 - 90% of all Canadian farms
 - 80% of commercially-oriented farms
- Estimated land equivalents for ag. and processed food exports
 - 65% of the cultivated area and 40% of pasture land.

Canada's Agri-Food Industry

Success of agriculture in Canada depends on trade

- Canada exports about half the value of agri-food production
- Reliance on exports:
 - 90% of all Canadian farms
 - 80% of commercially-oriented farms
- Estimated land equivalents for ag. and processed food exports
 - 65% of the cultivated area and 40% of pasture land.
- Value-added directly attributable to exports
 - 33% of the value-added in agriculture
 - 22% of food and beverage manufacturing

Canada's Agri-Food Industry

Success of agriculture in Canada depends on trade

- Canada exports about half the value of agri-food production
- Reliance on exports:
 - 90% of all Canadian farms
 - 80% of commercially-oriented farms
- Estimated land equivalents for ag. and processed food exports
 - 65% of the cultivated area and 40% of pasture land.
- Value-added directly attributable to exports
 - 33% of the value-added in agriculture
 - 22% of food and beverage manufacturing

Canada is a top-five agri-food exporter and exports result in new records every year

Canada, EU, and US

Only 25 percent of EU tariff lines on Canadian goods are duty-free.

	Processed Food Trade (\$ Mil.)			Tariffs		
	Ca	EU	US	Ca	EU	US
Ca	0	4,490	17,762	-	19.16%	2.01%
EU	1,349	0	7,914	18.05%	-	3.21%
US	17,372	21,282	0	14.17%	10.74%	-

Canada, EU, and US

Only 25 percent of EU tariff lines on Canadian goods are duty-free.

	Processed Food Trade (\$ Mil.)			Tariffs		
	Ca	EU	US	Ca	EU	US
Ca	0	4,490	17,762	-	19.16%	2.01%
EU	1,349	0	7,914	18.05%	-	3.21%
US	17,372	21,282	0	14.17%	10.74%	-

US and EU is an important market for Canadian exports

US and EU are two the world's largest markets for food exports

- TTIP is in a stalemate
- CETA could have negative implication for US

Canada, EU, and US

Only 25 percent of EU tariff lines on Canadian goods are duty-free.

	Processed Food Trade (\$ Mil.)			Tariffs		
	Ca	EU	US	Ca	EU	US
Ca	0	4,490	17,762	-	19.16%	2.01%
EU	1,349	0	7,914	18.05%	-	3.21%
US	17,372	21,282	0	14.17%	10.74%	-

US and EU is an important market for Canadian exports

US and EU are two the world's largest markets for food exports

- TTIP is in a stalemate
- CETA could have negative implication for US

Canada, EU, and US key players in the world processed food market

- About a third of global trade in this market

Comprehensive Economic & Trade Agreement

CETA was signed on 30 October 2016:

Comprehensive Economic & Trade Agreement

CETA was signed on 30 October 2016:

- eliminate tariffs on virtually all of our agri-food exports
 - almost all tariff reduction occurs immediately, no longer than seven years.

Comprehensive Economic & Trade Agreement

CETA was signed on 30 October 2016:

- eliminate tariffs on virtually all of our agri-food exports
 - almost all tariff reduction occurs immediately, no longer than seven years.
- CETA does not cover NTBs
 - all imports from Canada have to satisfy EU rules and regulations

Comprehensive Economic & Trade Agreement

CETA was signed on 30 October 2016:

- eliminate tariffs on virtually all of our agri-food exports
 - almost all tariff reduction occurs immediately, no longer than seven years.
- CETA does not cover NTBs
 - all imports from Canada have to satisfy EU rules and regulations
- Preferential quotas access remains for
 - sensitive products (beef, pork, sweetcorn for EU and dairy for Canada).
- poultry and eggs are not covered under CETA

Objectives and Contribution

Objectives

- Develop a multi-regional trade model with
 - monopolistic competition
 - heterogeneous firms
 - endogenous operating decisions

Objectives and Contribution

Objectives

- Develop a multi-regional trade model with
 - monopolistic competition
 - heterogeneous firms
 - endogenous operating decisions
- Calibrate the model to Canadian, EU, & US processed food sectors

Objectives and Contribution

Objectives

- Develop a multi-regional trade model with
 - monopolistic competition
 - heterogeneous firms
 - endogenous operating decisions
- Calibrate the model to Canadian, EU, & US processed food sectors
- Simulate the effects of trade liberalization under CETA on prices, bilateral trade, number of firms, productivity, and welfare.

Objectives and Contribution

Objectives

- Develop a multi-regional trade model with
 - monopolistic competition
 - heterogeneous firms
 - endogenous operating decisions
- Calibrate the model to Canadian, EU, & US processed food sectors
- Simulate the effects of trade liberalization under CETA on prices, bilateral trade, number of firms, productivity, and welfare.

Contribution

- Analyze impacts of CETA by accounting for
 - imperfect competition
 - productivity differences among firms
 - cross hauling

Model

Four-region model

- Canada, European Union, United States, and ROW
 - Monopolistic competition
 - Firm heterogeneity
 - Accounts for differences in
 - preferences across countries
 - firm-level production technologies
 - regional sizes
 - trade policies: tariffs and NTBs

Model

Dixit-Stiglitz Preferences

- Exogenous income

Model

Dixit-Stiglitz Preferences

- Exogenous income

Production

- Maximize profits subject to consumer's demand
- Productivity differences are Pareto distributed
- Transport costs, tariffs, and NTBs

Model

Dixit-Stiglitz Preferences

- Exogenous income

Production

- Maximize profits subject to consumer's demand
- Productivity differences are Pareto distributed
- Transport costs, tariffs, and NTBs

Operating Decision: domestic and export markets

Model

Dixit-Stiglitz Preferences

- Exogenous income

Production

- Maximize profits subject to consumer's demand
- Productivity differences are Pareto distributed
- Transport costs, tariffs, and NTBs

Operating Decision: domestic and export markets

Market clearing conditions

- Output markets
- Composite input

Data and Sources

Main data source: sectors 19-26 from GTAP 9 Data Base for 2011

- Aggregate processed food
 - domestic production, inputs, imports, exports, transport costs, and tariffs

Data and Sources

Main data source: sectors 19-26 from GTAP 9 Data Base for 2011

- Aggregate processed food
 - domestic production, inputs, imports, exports, transport costs, and tariffs

Bilateral NTBs based on estimates from Berden et al. (2009) & Dean et al. (2009)

Data and Sources

Main data source: sectors 19-26 from GTAP 9 Data Base for 2011

- Aggregate processed food
 - domestic production, inputs, imports, exports, transport costs, and tariffs

Bilateral NTBs based on estimates from Berden et al. (2009) & Dean et al. (2009)

Elasticity of substitution: σ_i

- 3.4 for Canada, 3.5 for EU, & 3.6 for US

Data and Sources

Main data source: sectors 19-26 from GTAP 9 Data Base for 2011

- Aggregate processed food
 - domestic production, inputs, imports, exports, transport costs, and tariffs

Bilateral NTBs based on estimates from Berden et al. (2009) & Dean et al. (2009)

Elasticity of substitution: σ_i

- 3.4 for Canada, 3.5 for EU, & 3.6 for US

Elasticity of supply (ε_i) for the composite input: 0.5

Data and Sources

Main data source: sectors 19-26 from GTAP 9 Data Base for 2011

- Aggregate processed food
 - domestic production, inputs, imports, exports, transport costs, and tariffs

Bilateral NTBs based on estimates from Berden et al. (2009) & Dean et al. (2009)

Elasticity of substitution: σ_i

- 3.4 for Canada, 3.5 for EU, & 3.6 for US

Elasticity of supply (ϵ_i) for the composite input: 0.5

Pareto shape parameter α_i (Rau, 2009): 4 for Canada, EU, & US

Data and Sources

Main data source: sectors 19-26 from GTAP 9 Data Base for 2011

- Aggregate processed food
 - domestic production, inputs, imports, exports, transport costs, and tariffs

Bilateral NTBs based on estimates from Berden et al. (2009) & Dean et al. (2009)

Elasticity of substitution: σ_i

- 3.4 for Canada, 3.5 for EU, & 3.6 for US

Elasticity of supply (ε_i) for the composite input: 0.5

Pareto shape parameter α_i (Rau, 2009): 4 for Canada, EU, & US

Measure of firms: n_i normalized to one

Calibration

Given the above data and parameters, we calibrate

- fixed operating cost: f_{ij}
- scale parameter, Pareto dist: μ_{ij}
- scale parameter, supply function: γ_i

Simulation

Baseline simulation - Replicates GTAP 9 data

Simulation

Baseline simulation - Replicates GTAP 9 data

Alternate scenarios:

- 1 Canadian-EU tariff elimination
- 2 Canadian-EU tariff elimination and 40% reduction in NTBs

Trade Liberalization Results

Bilateral Trade Flows

Elimination of Canadian tariff of 18.05% and EU Tariff of 19.16%

	Ca	EU	US	ROW
Ca	-14.419	55.975	-6.394	-6.295
EU	49.859	-1.685	0.571	0.677
US	-8.226	-1.871	0.380	0.486
ROW	-8.562	-2.231	0.013	0.118

Trade Liberalization Results

Cutoff Productivity and Operating Firms

	Cutoff Productivity $\bar{\omega}_{ij}$				Measure of Op. Firms \bar{n}_{ij}			
	Ca	EU	US	ROW	Ca	EU	US	ROW
Ca	4.76	-14.24	1.67	1.64	-16.96	84.86	-6.42	-6.29
EU	-12.57	0.62	-0.14	-0.17	71.12	-2.46	0.54	0.68
US	2.94	0.67	-0.09	-0.12	-10.95	-2.64	0.35	0.49
ROW	3.04	0.76	0.01	-0.03	-11.28	-2.99	-0.02	0.12

Trade Liberalization Results

Aggregates and Welfare

Aggregate Price Index and Output (% Change)				
	Ca	EU	US	ROW
Y_j	-0.67	0.59	-0.08	0.01
P_j	-2.97	-0.78	-0.03	0.01
Welfare (\$ Millions)				
Changes in	Ca	EU	US	ROW
Prod. Surplus	1,581.84	-1,013.87	-378.28	-339.03
Cons. Surplus	3,123.34	6,063.18	170.12	-143.13
Gov't Revenue	-3,735.93	-4,832.38	-14.88	-303.11
Net Welfare	969.25	216.93	-223.04	-785.27

Conclusions

Lowering of trade barriers through CETA brings more competition:

- Highly efficient foreign firms force inefficient domestic firms out
- Domestic market: low productivity firms exit and average productivity increases
- Export market: firms enter and average productivity declines

Conclusions

Lowering of trade barriers through CETA brings more competition:

- Highly efficient foreign firms force inefficient domestic firms out
- Domestic market: low productivity firms exit and average productivity increases
- Export market: firms enter and average productivity declines

In all three regions, aggregate price index decreases

Canada and EU:

- Net increase in production
- Domestic sales decline
- Bilateral trade flows expand
- Consumption increases
- Welfare gain