

Workshop "Women in International Economics"

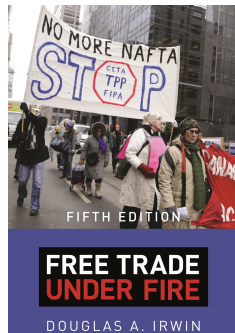
Trade Policies and Trade Integration - Not just an International Issue

Julia Spornberger
University of Hohenheim

08.03.2023

Motivation

- *Contrasting views on trade policy*
- *Effects are a priori unknown*
- *Structural gravity equation as a powerful empirical tool*
- *What do the structural gravity estimates tell us about the impact of trade policies?*



Motivation

Research Question 1: How large is the impact of a bilateral trade policy, i.e. the RTAs?

Research Question 2: How large is the impact of the EU's Single Market on trade and welfare?

Research Question 3: How large is the impact of a trade policy on domestic welfare?

The Structural Gravity Framework

- Analogy to Newton's universal law of gravitation

The Structural Gravity Framework

- Analogy to Newton's universal law of gravitation
- Powerful workhorse model to analyse trade flows and trade policies

The Structural Gravity Framework

- Analogy to Newton's universal law of gravitation
- Powerful workhorse model to analyse trade flows and trade policies
- Gravity equation is founded in microeconomics and has "Universal power"

The Structural Gravity Framework

- Analogy to Newton's universal law of gravitation
- Powerful workhorse model to analyse trade flows and trade policies
- Gravity equation is founded in microeconomics and has "Universal power"
- Its structure allows to calculate general equilibrium and welfare (real income) effects

The Structural Gravity Equation

- Bilateral trade flows from exporting country i to importing country j depend on ...
 - exporter-specific terms (i), i.e. GDP, technology, wages, infrastructure
 - importer-specific terms (j), i.e. GDP, technology, wages, infrastructure
 - bilateral terms (ij), i.e. geographic distance, trade agreements, tariffs, borders

The Structural Gravity Equation

- Bilateral trade flows from exporting country i to importing country j depend on ...
 - exporter-specific terms (i), i.e. GDP, technology, wages, infrastructure
 - importer-specific terms (j), i.e. GDP, technology, wages, infrastructure
 - bilateral terms (ij), i.e. geographic distance, trade agreements, tariffs, borders
- The gravity equation:

$$s_{ij,t} = e^{(d_{ij,t}^{\alpha} + \beta_{i,t} + \gamma_{j,t} + \mu_{ij})} \eta_{ij,t} \quad (1)$$

$s_{ij,t}$	... share of bilateral trade flows
$d_{ij,t}$	... bilateral trade barriers
α	... parameter of interest
$\beta_{i,t}, \gamma_{j,t}, \mu_{ij}$	... fixed effects
$\eta_{ij,t}$	... error term
i, j, t	... exporter, importer, year

The Structural Gravity Equation

Its Strength

$$s_{ij,t} = e^{(d'_{ij,t}\alpha + \beta_{i,t} + \gamma_{j,t} + \mu_{ij})} \eta_{ij,t} \quad (1)$$

- α captures the effect of interesting policies on international trade flows
- The fixed effects $e^{\beta_{i,t}}$, $e^{\gamma_{j,t}}$ and $e^{\mu_{ij}}$ absorb unwanted variation

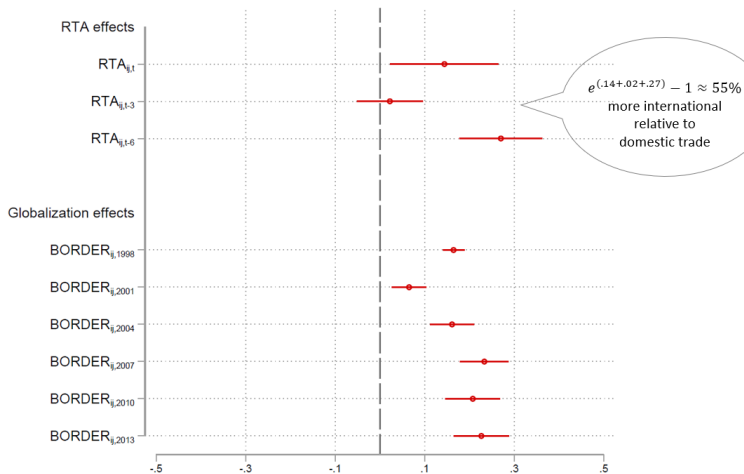
$s_{ij,t}$	... share of bilateral trade flows
$d'_{ij,t}$	... bilateral trade barriers
α	... parameter of interest
$\beta_{i,t}, \gamma_{j,t}, \mu_{ij}$	... fixed effects
$\eta_{ij,t}$	... error term
i, j, t	... exporter, importer, year

Research Question 1:

How large is the impact of a bilateral trade policy, i.e. the RTAs?

RTAs

Figure 1: The effect of RTAs on international trade



Research Question 2:

*How large is the impact of the EU's Single Market
on trade and welfare?*

Specific RTAs: The EU' Single Market

Overcoming Limitation 1

$$s_{ij,t} = e^{(d'_{ij,t}\alpha + \beta_{i,t} + \gamma_{j,t} + \mu_{ij})} \eta_{ij,t} \quad (1)$$

- α captures the deepening integration of newly joining members (**time-varying**)
- μ_{ij} absorbs the deep trade integration on existing members (**time-invariant**)

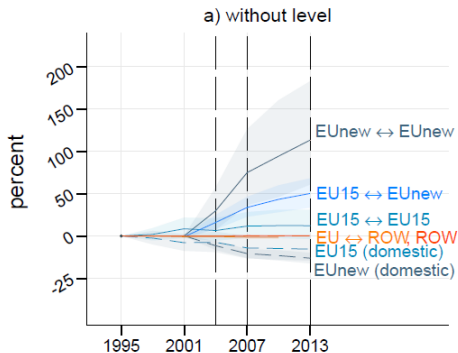
$s_{ij,t}$	... share of bilateral trade flows
$d'_{ij,t}$	... time-variant trade barriers
α	... time-variant parameter of interest (ATE)
$\beta_{i,t}, \gamma_{j,t}, \mu_{ij}$	... fixed effects
$\eta_{ij,t}$	... error term
i, j, t	... exporter, importer, year

Method

- Two-step estimation (Honoré and Kesina, 2017):
 1. Estimate the **time-varying** effect of EU integration of newly joined countries
 2. Estimate the **time invariant** effect of EU integration "old" Europe
- Calculate general equilibrium (GE) effects
- Calculate Welfare (real income) effects

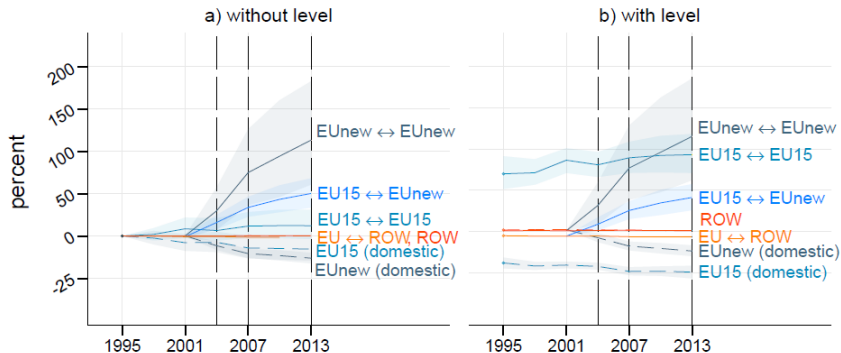
Results Trade

Figure 2: The effect of EU integration on trade



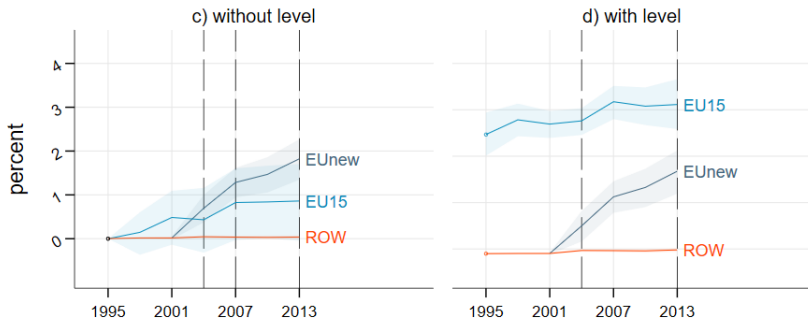
Results Trade

Figure 3: The effect of EU integration on trade



Results Welfare

Figure 4: The effect of EU integration on welfare (real income)



Research Question 3:

*How large is the impact of a trade policy on domestic welfare, i.e.
Deep Trade Agreements (DTA)?*

Domestic Impacts

Overcoming Limitation 2

$$s_{ij,t} = e^{(d'_{ij,t}\alpha + \beta_{i,t} + \gamma_{j,t} + \mu_{ij})} \eta_{ij,t} \quad (1)$$

- α captures the effect of DTAs on **international** trade
- $\gamma_{j,t}$ absorbs the effect of DTAs on country j 's **domestic** trade

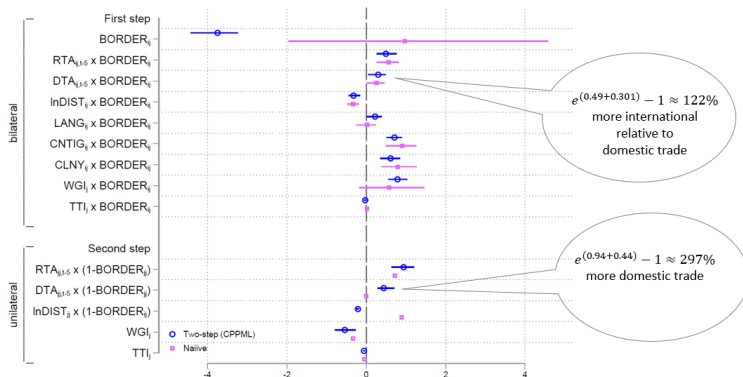
$s_{ij,t}$	... share of bilateral trade flows
$d'_{ij,t}$	... time-variant trade barriers
α	... time-variant parameter of interest (ATE)
$\beta_{i,t}, \gamma_{j,t}, \mu_{ij}$	... fixed effects
$\eta_{ij,t}$	... error term
i, j, t	... exporter, importer, year

Method

- Two-step estimation
 1. Estimate **bilateral** effects of trade costs on **international** trade
 - Calculate general equilibrium (GE) effects
 2. Estimate **unilateral** effects of trade costs on **international** and **domestic** trade
- Calculate welfare (real income) effects

Preliminary Results

Figure 5: Coefficient estimates of bilateral and unilateral trade costs



Conclusion

- Structural gravity is a powerful tool that still hides some interesting insights to show a more comprehensive picture
- RTAs increase international trade on average by 55%
- This can be different for specific RTA, i.e. EU ~ 100% more international trade
- Trade policies, i.e. DTA's, influence international as well as domestic trade

Thank you for listening.

I look forward to your questions.