CULTIVATOR PRESENTATIONS

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JENNA WICKS

MODERATOR

PROGRAM MANAGER,
FARM FOUNDATION

2023 January Cultivators

Kelli Wicks
Oklahoma State University

Milosh McAdoo
North Carolina A&T
State University

Taís de Menezes
Colorado State University

Carlos Zurita
Purdue University

Maria Filipa Seara e Pereira
Purdue University

Prayash Pathak Chalise
University of Georgia

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PRAYASH PATHAK CHALISE

UNIVERSITY OF GEORGIA

International trade consequences of weather shocks: A gravity model estimation

Cultivator: Prayash Pathak Chalise

Introduction:

- In this study, we empirically study the effect of weather variations on bilateral international trade flows with specific focus on agricultural trade.
- Weather and climatological conditions are the fundamental drivers of comparative advantage in agriculture (Tekce & Deniz, 2016).
- Understanding how the variation in climate patterns across or within a country affects production, consumption and trade of agriculture and food product is a critical research question.
- Several literatures have identified international trade of agricultural goods as a viable adaptation and mitigation strategy against these extreme weather events (Jones & Olken, 2010; Schenker, 2013).
- But agricultural trade itself is also likely to respond to these anticipated climate change scenarios and these responses will reveal its capability to act as an effective climate change adaptation strategy (Gammans et al., 2022).

Objectives:

- The main objective of this study is to quantitively assess the effect of weather shocks on monthly trade flow of four major food crops- rice, wheat, maize and soyabean- from 2010 to 2019.
- Along with this, we also study the effect of extreme temperature events on bilateral trade flow.

Method/model:

- Empirically, I use the following reduced gravity model framework:

$$Exp_{ijptm} = \exp(\theta_{ijtp} + \alpha_p W_{itm} + \beta_p W_{jtm} + \mu_{ij} + \varepsilon_{ijtpm}), \text{ where } p \in \{1,2,3,4\}$$

Exp_{ijptm} is the bilateral monthly trade flow from exporter i to importer j for product p at time t. W_{itm} and W_{jtm} represent calculated weather shocks which is the key variable of interest.

- Additionally, we expand this model to include indicators for extreme temperature (heat/cold) events.

$$Exp_{ijptm} = \exp(\theta_{ijtp} + \alpha_p D_{itm} + \beta_p D_{jtm} + \mu_{ij} + \varepsilon_{ijtpm})$$

where, $D_{i,jtm}$ is defined as the number of days in a month when minimum and maximum temperatures are below or above the bottom 5 percent and top 5 percent of the daily minimum and maximum temperature distribution in each country.

Data Source:

- Weather shocks and temperature events is computed from CRU TS database made publicly available by the University of East Anglia (Harris et al., 2020).
- Bilateral monthly trade data for each country from 2010-2019 for the four crops can be obtained from the UN COMTRADE database. Global trade data for bilateral export values can be obtained from IMF's Direction of Trade Statistics (DOTS).

Expected outcomes:

- Weather shocks of high magnitude to have a significant effect on bilateral trade values (Gammans et al., 2022).
- Temperature in the exporting country to be the primary weather-based factor affecting bilateral agricultural trade (Vital et al., 2022).

Reference:

- Dallmann, I. (2019). Weather Variations and International Trade. *Environmental and Resource Economics,* 72, 155–206. DOI: 10.1007/s10640-018-0268-2
- Dall'Erba, S., Chen, Z., & Nava, N.J. (2021), U.S. Interstate Trade Will Mitigate the Negative Impact of Climate Change on Crop Profit. *American Journal of Agricultural Economics*, 103: 1720-1741. DOI:10.1111/ajae.12204
- Gammans, M., Nes, K., Schaefer, K.A., & Scheitrum, D. (2022). The effect of increased weather volatility on Agricultural Trade, Working Paper. DOI: 10.22004/ag.econ.322305
- Jones, B.F., & Olken, B.A. (2010). Climate Shocks and Exports, No. 15711. Working Paper. DOI**:** 10.3386/w15711
- Tekce, M., & Deniz, P. (2016). The impacts of climate change on Agricultural Trade in the MENA Region. *Research in World Economy,* 7(2).
- Vital, M.T., Dall'erba, S., Ridely, W., & Wang, X. (2022). What do the 235 estimates from the literature tell us about the impact of weather on agricultural and food trade flows?*Global Good Security*, 35. DOI: 10.1016/j.gfs.2022.100654.


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MILOSH MCADOO

NORTH CAROLINA A&T

Cultural Competence and International Agriculture Development:

Contextualizing Burkina Faso

Milosh McAdoo
Animal Science (Animal Industry)
North Carolina Agricultural and Technical State University

Cultural Competence

“

The ability to think and interact appropriately and effectively across cultural settings.

(Deardroff, 2011; Hammer et al, 2003)

Elements

- Collaboration and communication
- Languages
- Diverse perspectives
- Civic and global engagement

Positive Implications

- Enhanced sustainability and longevity in development work
- Increased economic infrastructure
- Strengthened international trade relations

(US Department of Education)

(International Work Group for Inidgenous Affairs, 2021)

(United States Agency for International Development)

Burkina Faso

Context

- Developing country in West Africa
- Predominantly subsistence farming
- Over 60 different ethnicities
- Expansive investment in agriculture development
- Opportunities for unique cash crops

Opportunities

Integration of cultural competence curriculum in post-secondary agriculture programs

Investment in women and other socially underprivileged groups

Hiring individuals within Burkina Faso to carry out development initiatives

Implement cultural competence training for development workers


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TAÍS DE MENEZES

COLORADO STATE UNIVERSITY

Taís Menezes

PhD student, Agricultural and Resource Economics Department
Colorado State University, USA

Amanda M. Countryman, Colorado State University, USA

Joaquim Bento S. Ferreira Filho, University of São Paulo, Brazil

Fernando Ferreira, University of São Paulo, Brazil

Farm Foundation Round Table
January 12, 2023

Effects of animal diseases on international trade: A case study for foot-and-mouth disease in Brazil

FULBRIGHT

Colorado State University

Introduction and Contextualization

1st cattle herd
2nd beef producer } 14% World Production
1st beef exporter → 15% World Exports

4th swine herd
5th pork producer
7th pork exporter

2005/2006

- Last FMD outbreak in Brazil
- 58 countries imposed trade restrictions on Brazilian beef and pork (represented around 87% of Brazil's beef export market)

2018

- Brazil internationally recognized as an FMD-free country

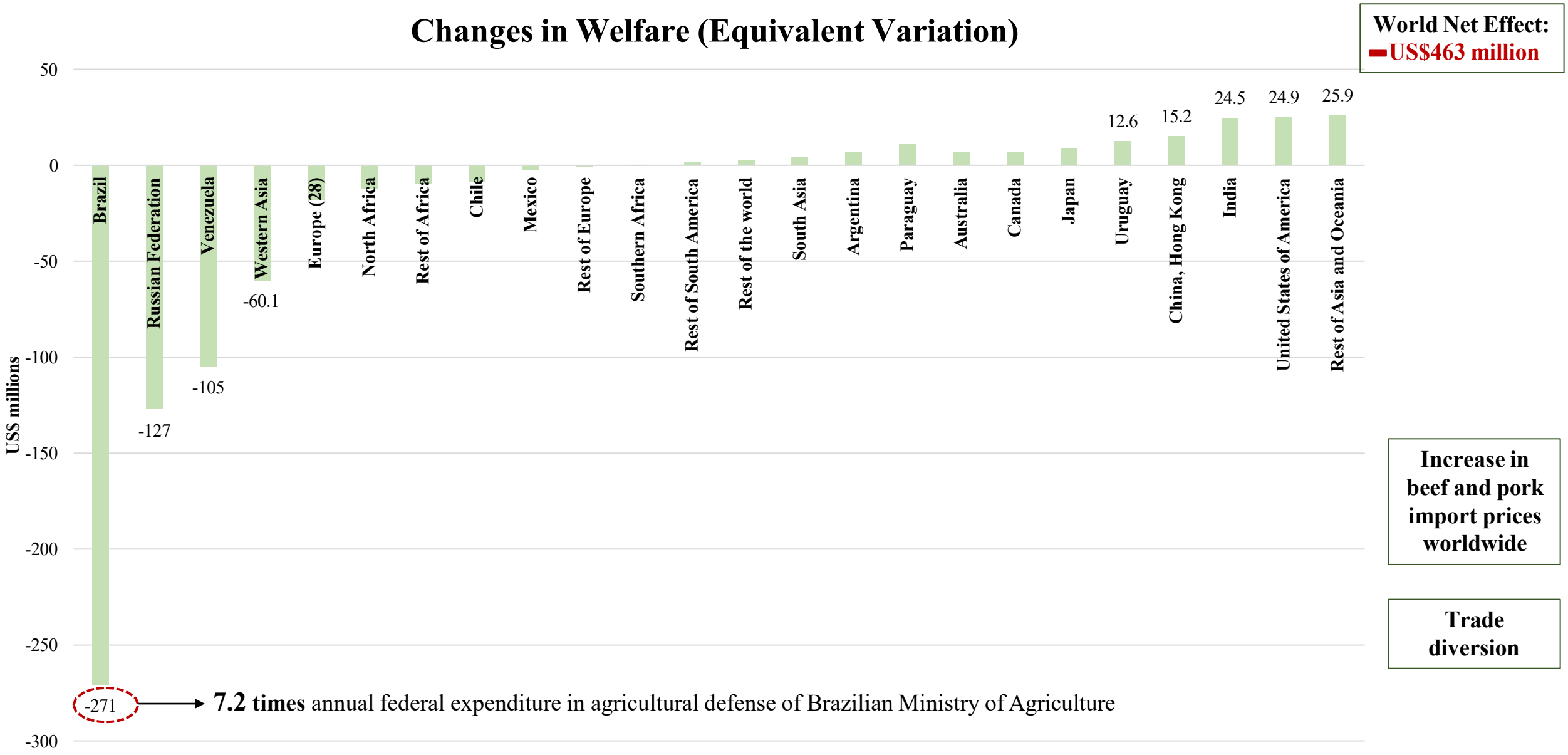
2019-2023

- Suspension of vaccination against FMD in Brazil

<u>Research Question</u>: What are the economic effects of FMD outbreaks in Brazil?

Source: IBGE/ComexStat/ FAOSTAT/COMTRADE (2022)

Main GTAP Model Results



Source: Authors' calculations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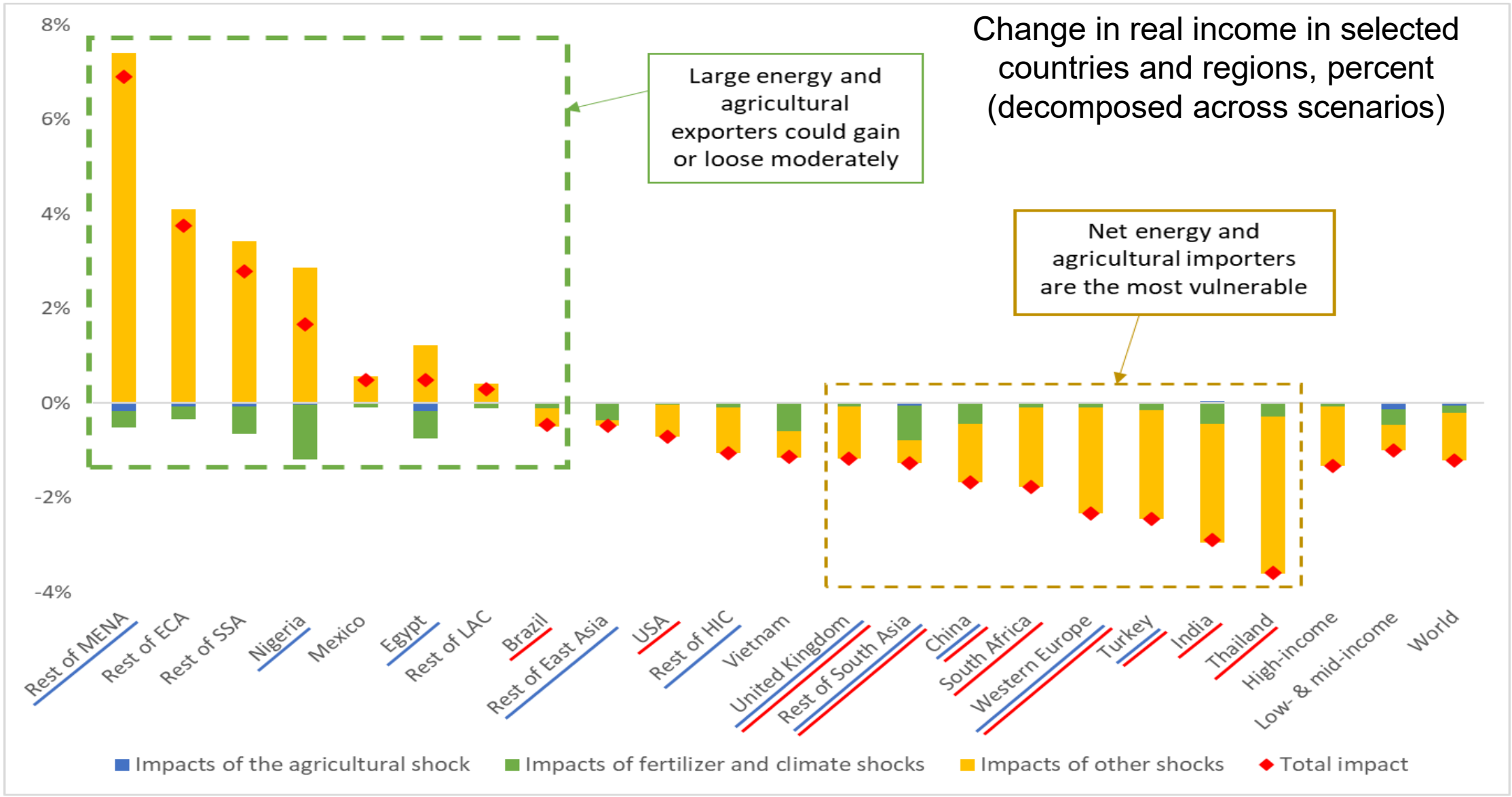
MARIA FILIPA SEARA E PEREIRA

PURDUE UNIVERSITY

The War in Ukraine Disrupts Agricultural Value Chains, but Trade Policy Measures Can Mitigate the Impacts

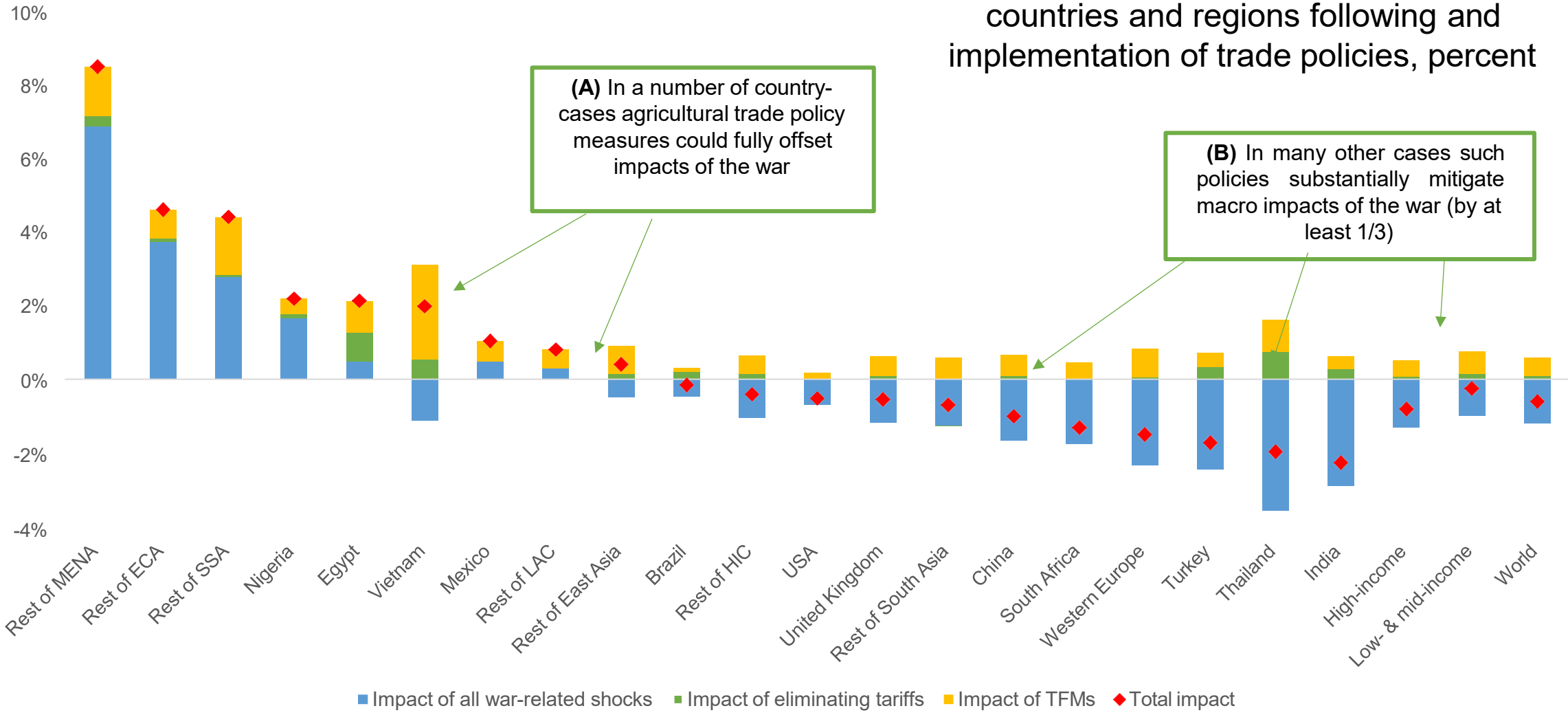
Maksym Chepeliev (Purdue University)
Maryla Maliszewska (The World Bank)
Maria Filipa Seara e Pereira (Purdue University)

Net agricultural and energy importers are hit hardest by the war in Ukraine. While large exporters of energy may benefit from it.



In terms of trade implications, considered trade policies lead to the substantial export expansions, as an overall value of agricultural and food trade increases by over 102 billion USD.

Change in real income in selected countries and regions following and implementation of trade policies, percent

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KELLI WICKS

OKLAHOMA STATE UNIVERSITY

The Nexus of Pork Production, Trade, and Nutrition in the Phillipines

African Swine Fever

- ASF confirmed August, 2019
- 64% backyard production
- Growing need for pork imports

Childhood Stunting

- 1 in 5 children stunted
- Food insecurity/Diet diversity
- Long-term impacts

COVID-19/Russia-Ukraine

- First case January, 2020
- First GDP decline in 22 years
- Inflationary response - EO


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CARLOS ZURITA

PURDUE UNIVERSITY

Carlos A. Zurita

PURDUE UNIVERSITY | Agricultural Economics

- **PhD Candidate** - Agricultural Economics Purdue University **(West Lafayette, IN)**
  - Expected Graduation: August 2023
- **Master of Economics** – University of New South Wales **(Sydney, Australia)**
- **<u>Research:</u>**
  - Gravity Model of Trade as a Power Law.
  - WTO Trade Facilitation Agreement.
  - *In Ecuador:* Logistical Costs in Agricultural Trade.

Test of Chaney (2018) Model in Colombian Data

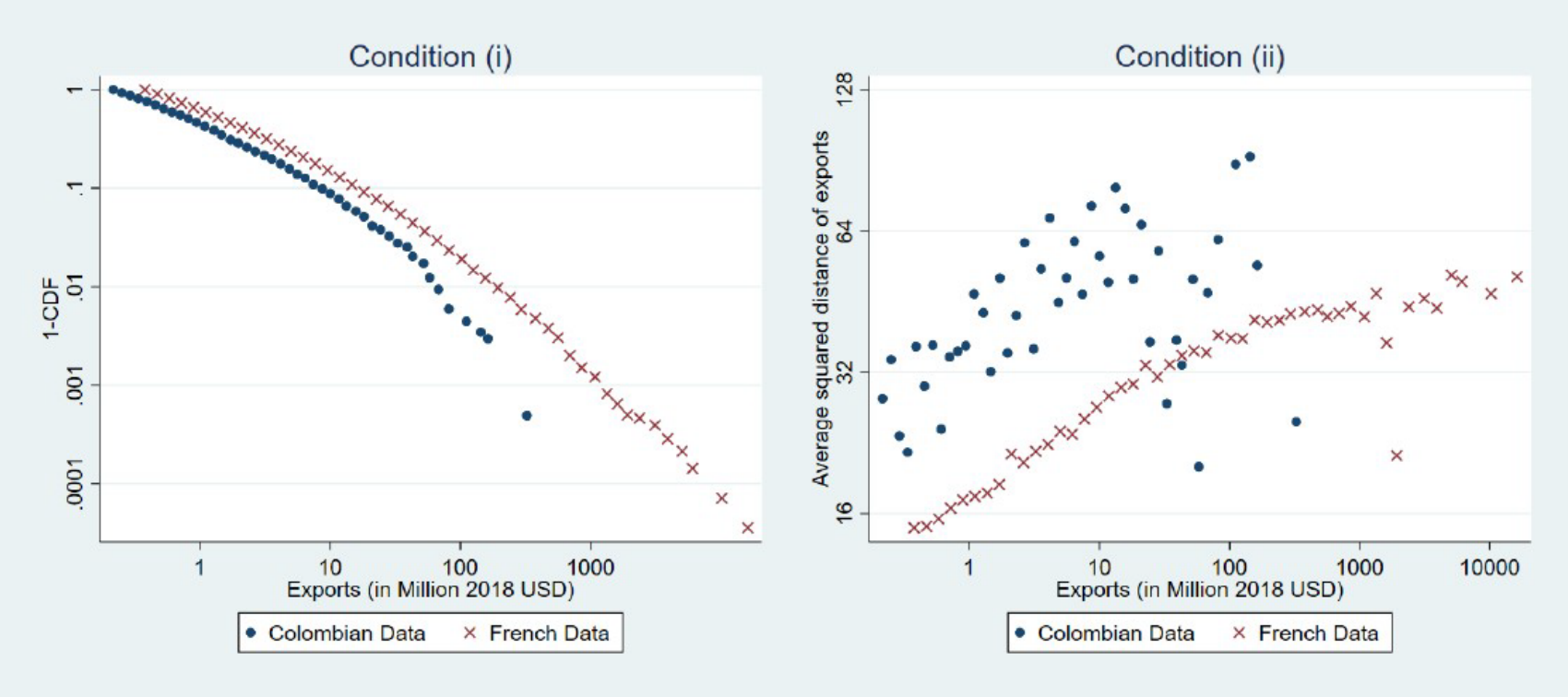

Figure 1. Conditions (i) and (ii) in Colombia and France

Data Source: DANE, CEPII, Chaney (2018)


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QUESTION AND ANSWER

MILOSH MCADOO
NORTH CAROLINA A&T

TAÍS DE MENEZES
COLORADO STATE UNIVERSITY

PRAYASH PATHAK CHALISE
UNIVERSITY OF GEORIGIA

MARIA FILIPA SEARA E PEREIRA
PURDUE UNIVERSITY

KELLI WICKS
OKLAHOMA STATE UNIVERSITY

CARLOS ZURITA
PURDUE UNIVERSITY

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