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## **The Role of Uncertainty and Oil Price Shocks in Brazilian Commodity Exports**

**Victor Lana and Kassio Mendes**

*Selected presentation for the International Agricultural Trade Research Consortium's (IATRC's) 2023 Annual Meeting: The Future of (Ag-) Trade and Trade Governance in Times of Economic Sanctions and Declining Multilateralism, December 10-12, 2023, Clearwater Beach, FL.*

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## **2023 IATRC Annual Meeting**

Clearwater Beach, FL

# **The role of uncertainty and oil price shocks in Brazilian commodity exports**

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# Introduction

Various domestic and international elements from both the demand and supply sides could exert influence on commodity exports.

Economic uncertainty may generate an unstable environment filled with unforeseen changes that could delay investments, and cause a decline in profitability, possibly affecting the agribusiness sector.

World frictions such as crude oil price shocks, an important agricultural input, could also affect the international trade of commodities, especially in developing, resource-dependent economies.

## Introduction

- Particularly, among emerging countries, Brazil has a prominent role in the agricultural international trade.
- **Soybeans, oils, iron ores, corn, sugar cane, and bovine meat** represent some of the main commodities that make up the Brazilian export basket

This paper aims to understand the role of uncertainty and crude oil price shocks in Brazilian commodity exports from 2010 to 2021



## Empirical strategy

- We begin by defining a gravity model for panel data

$$X_{ijt} = \alpha + \beta_1 \text{uncertainty}_{it} + \mu_j + \rho_t + \varepsilon_{ijt}$$

$$X_{ijt} = \alpha + \delta_1 \ln\_oilprice_t + \mu_j + \rho_t + \vartheta_{ijt}$$

## Data

- Brazilian agricultural exports - **WITS**
  - Aggregate exports of agricultural products comprising all goods coded 01 to 27 in the HS, namely animals, food products, vegetables, minerals, and fuels.
- The economic policy uncertainty [EPU] index for Brazil - **Baker et al. (2016)**
- The Brazilian Economic Policy Uncertainty [BEPU] index - **Ferreira et al. (2019)**
- International crude oil price - **US Energy Information Administration**

# Results

Table 3. PPML estimation results for the role of uncertainty in Brazilian commodity exports

Dependent variable:	Brazilian commodity exports (in thousands of USD)			
	Model 1	Model 2	Model 3	Model 4
EPU	0.0061** (0.0021)			
Lagged EPU		0.0014* (0.0008)		
BEPU			0.0219** (0.0073)	
Lagged BEPU				0.0039* (0.0023)
Intercept	15.4915*** (0.4097)	16.3107*** (0.2939)	13.8804*** (0.8918)	16.0474*** (0.3803)
Importer FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Obs.	2,172	1,991	2,172	1,991
Wald chi2	92074.63	90279.20	92074.63	90279.20
Prob > chi2	0.0000	0.0000	0.0000	0.0000
Pseudo R <sup>2</sup>	0.9648	0.9684	0.9648	0.9684

Note: Standard errors in parentheses. \*\*\*p<0.01, \*\*<0.05, and \*<0.10. Figures rounded to two decimal places.

Source: Research results.



# Results

Table 4. PPML estimation results for the impact of oil prices changes in commodity exports in Brazil

Dependent variable:	Brazilian commodity exports (in thousands of USD)	
	Model 1	Model 2
Oil price	-5.0531** (1.6876)	
Lagged Oil price		-0.3457* (0.1997)
Intercept	38.1791*** (7.2680)	17.9503*** (0.8741)
Importer FE	Yes	Yes
Year FE	Yes	Yes
Obs.	2,172	1,991
Wald chi2	92074.63	90279.20
Prob > chi2	0.0000	0.0000
Pseudo R <sup>2</sup>	0.9648	0.9684

Note: Standard errors in parentheses. \*\*\*p<0.01, \*\*<0.05, and \*<0.10. Figures rounded to two decimal places.

Source: Research results.

## Conclusions

- We find a **positive** yet minor effect of uncertainty on these exports, attributed to the relatively inelastic nature of the traded goods, which grants Brazil a competitive edge in agricultural exports
- We uncover a **negative** effect of oil price fluctuations on commodity exports, impacting Brazil's agricultural sector
- Future research could delve into categorizing commodity goods, unveiling intricate variations in the relationships among uncertainty, oil prices, and exports across different commodities.

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Thank you for your attention!



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