

# Terms-of-trade shocks are not all alike

Federico Di Pace   Luciana Juvenal   Ivan Petrella

2nd WE\_ARE\_IN Macroeconomics and Finance Conference

September 2022

Discussion by Evgenia Passari

# Terms-of-trade shocks and business cycle fluctuations

- **Low-income** countries vulnerable to terms-of-trade (TOT) fluctuations. Swings responsible for:
  - Changes in **trade balance**, **current account** (CA) and **output**.
  - Large **external debt** and difficulties in CA **deficits financing**.
  - Large shocks in **business cycle fluctuations** in emerging markets.
- **Disagreement** in **importance** of TOT shocks for countries' main macroeconomic fundamentals:
  - *Terms of trade **disconnect** puzzle*
  - **Theory**: Business cycle models: 30-50 percent of the variance of output driven by TOT shocks [Mendoza, 1995; Kose, 2002].
  - **Empirical evidence**: TOT shocks explain around 10 percent of the variance of output [Schmitt Grohé and Uribe, 2018].

# The paper

→ Terms-of-trade shocks are **not** all **alike**.

- TOT shocks could result from shifts in **export prices** or **import prices** [or from not perfectly offsetting movements in both].
- Economy does not respond **symmetrically** to increases in export prices and declines in import prices.
  - **Exportable** and **importable** sectors have different weights in the economy.
  - Shocks have **different channels of transmission**.
- Build **export** and **import** price **indices** using **commodity** and **manufacturing** price data matched with **trade shares** and separately identify export price, import price, and global economic activity shocks.

# Methodology

**Separate** transmission of export and import price shocks:

- Time series of country-specific **export** and **import** price indices.
  - Calculate indices using individual **commodity** and **manufacturing** prices combined with time-varying sectoral export and import shares.
- **Identify** export price, import price and global economic activity shocks imposing **sign restrictions** on the impulse responses of subset of variables [Canova & De Nicoló, 2002; Uhlig, 2005] with **narrative restrictions** [Antolín-Díaz & Rubio-Ramírez, 2018].
- Narrative restrictions built from **historical documents** and **newspapers** to identify episodes of significant commodity price changes, orthogonal to macroeconomic developments [natural disasters, geopolitical events].
- **Variance decomposition** to assess importance of each shock for business cycle fluctuations.

# Findings

- **Export** price and **import** price shocks explain **20-40%** of **output** on impact and at a 10-year horizon.
- **Global economic activity shocks** explain up to 32% of the variation in export prices and 41% of the variation in import prices but account for 25% of TOT variation.
  - **Asymmetric effects** of export and import prices.
- Following **export price shocks**, larger effects on real economy for countries with bigger **commodity export share**.
- **Output** of richer countries more responsive to **export price shocks**.
- The response of output following **import price shocks** is more **homogeneous** across countries.

# Contribution

- Very **important** topic, convincing **results**, room for **significant contribution** to the literature.
  - **Disaggregating** the information in TOT variable yields a plethora of **insights** and helps **resolve discrepancies** between theoretical and empirical findings in the literature.
- **Rich** paper in terms of **data** and **methodological** treatment.
  - Measures of export prices, import prices, and terms of trade include **manufacturing** beyond primary commodities: **big improvement**, less prone to measurement error!
    - Not accounting for manufacturing share overstates volatility of export and import prices and yields less volatile TOT.

# Issues to consider (I)

## Paper's main message

Is the decomposition picking **different TOT shocks** or **different shocks to TOT**?

→ Is it that the economy does not respond **symmetrically** to increases in export prices and declines in import prices?

...or that different shocks hit the TOT and by disaggregating export from import shares you **uncover** some of these dynamics?

Some stylized facts:

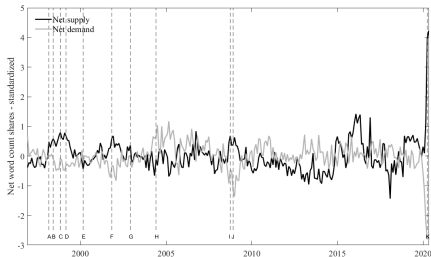
- Exporters and importers react differently to shocks.
- **Energy** exporters and importers have **higher elasticity** w.r.t. global economic activity.

→ Countries' **trade balance** and **commodity export share** vs **mix of commodities** a country exports and imports.

# Issues to consider (I) (cont.)

## Different drivers of commodities

- Major oil developments react to business cycle (OPEC supply cuts). [Mouabbi, Passari and Rousset Planat, 2022].



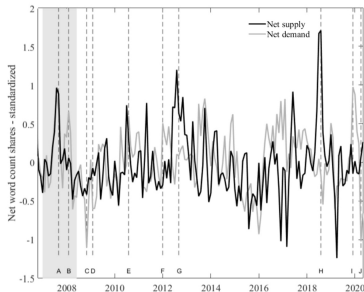
Note: This table plots the standardized net supply and demand indicators for the period between 1997 and 2020. The bars map a number of well-known oil sector developments. These events are: [A] 104th Extraordinary Meeting of the OPEC Conference – Production Cut (Asian Crisis), [B] 105th Ordinary Meeting of the OPEC Conference – Production Cut (Asian Crisis), [C] 106th Ordinary Meeting of the OPEC Conference (Asian Crisis), [D] 107th Ordinary Meeting of the OPEC Conference – Production Cut (Asian Crisis), [E] 109th Ordinary Meeting of the OPEC Conference: Production Increase Decision, [F] 118th Extraordinary Meeting of the OPEC Conference – Emergency OPEC Meeting after 9/11, [G] 122nd Extraordinary Meeting of the OPEC Conference – Production Cut, [H] 131st Extraordinary Meeting of the OPEC Conference: Production Increase, [I] 150th Extraordinary Meeting of the OPEC Conference – Production Cut (Global Financial Crisis), [J] 151st Extraordinary Meeting of the OPEC Conference – Production Cut (Global Financial Crisis), [K] 9th & 10th Extraordinary OPEC and non-OPEC Ministerial Meeting: Production Cut (COVID-19 Crisis).



# Issues to consider (I) (cont.)

## Different drivers of commodities

- ...while major agricultural developments coincide with natural disasters (almost orthogonal to business cycle).

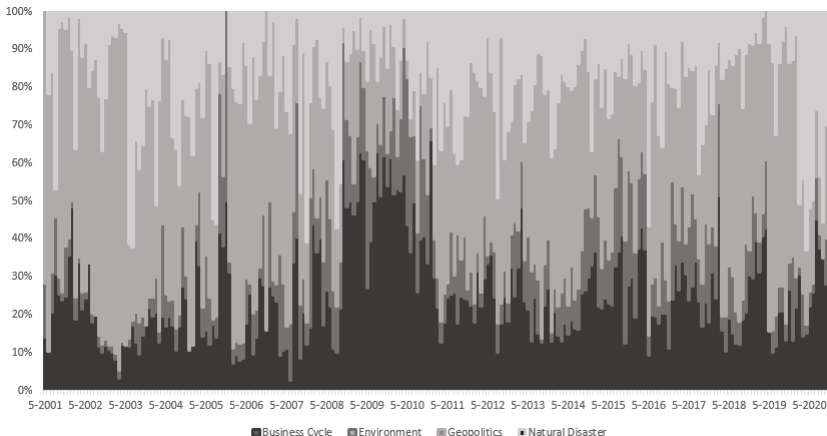


Note: This table plots the standardized net supply and demand indicators for the period between 2001 and 2020. The bars map a number of important developments in the wheat sector. These events respectively are: [A] 2007-2008 World Food Price Crisis, [B] International supply shortages following large purchases from Japan and Egypt, [C] Replenishing of wheat stock and favorable global crop prospects, [D] Production of wheat is higher than utilization, [E] Drought in Russia and disruptive rainfall, [F] Projected utilization exceeding production, [G] Russian crop failure, [H] Major downward revisions in production projections due to heatwave across Russia, Australia, and EU countries, [I] Global wheat production is down with smaller crops in Russia and Australia more than offsetting larger crops in the European Union, [J] COVID-19.

# Issues to consider (II)

Commodity specific drivers are themselves time-varying

- As shocks of different nature hit specific commodities we should also expect to observe a different impact on macro variables.



# Issues to consider (III)

External validity of results for larger country sample

Interesting to replicate analysis for **advanced economy panel**.

- Important implications for large economies.
- As share of manufacturing goods will shrink in countries' import shares: **useful benchmark** for current analysis.  
→ *Establish which component of TOT is causing discrepancies.*

# Overall

Very **promising** topic, **solid** and **thorough** work, important **insights**.

- Can we dig **deeper**?
- Commodity **mix** and commodity **drivers** should matter.
- Very interesting question for **advanced economy** country sample too.
- Looking forward to seeing more!