



FRAGMENTATION AND COMMODITY MARKETS: RISKS AND VULNERABILITIES

OCTOBER 2023 – TOKYO

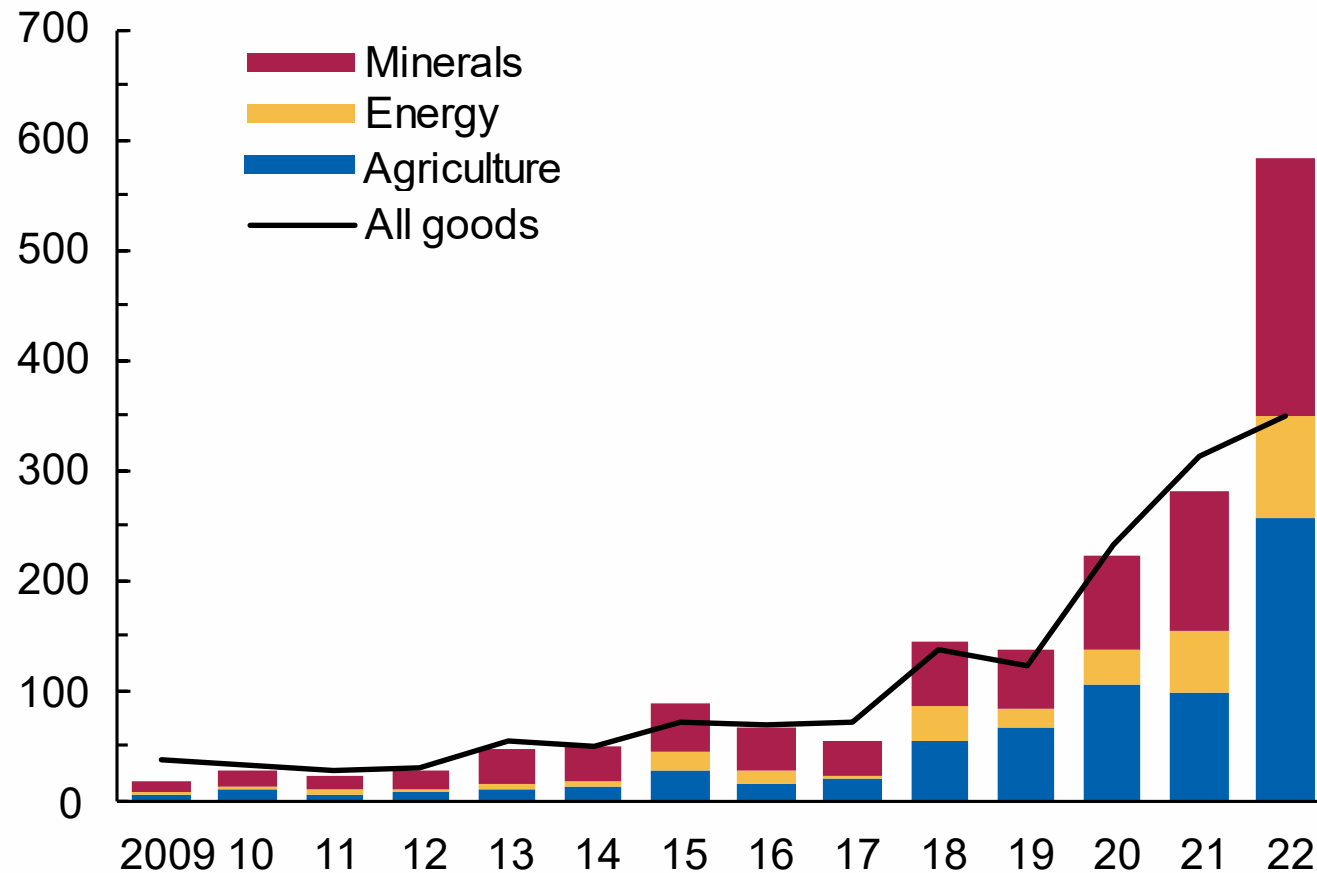
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New Barriers to Commodity Trade Doubled in 2022

New Trade Interventions, by Sector

(Indices, 2016-2019=100 for All Goods and All Commodities)



Sources: Global Trade Alert Database (adjusted for reporting lag); and IMF Staff calculations. Note: Trade-liberalizing interventions are excluded from the calculations.

Questions and key takeaways

1. What makes commodity markets vulnerable in the event of fragmentation?
→ Highly concentrated production due to natural endowments.
2. Which commodities are most vulnerable to disruptions in international trade?
→ Minerals and some agricultural goods most vulnerable.
3. What are the potential economic impacts from commodity market fragmentation?
→ Price volatility, uneven GDP impacts, Low-Income Countries most affected.
4. What are the implications for the green transition?
→ Green transition more costly.

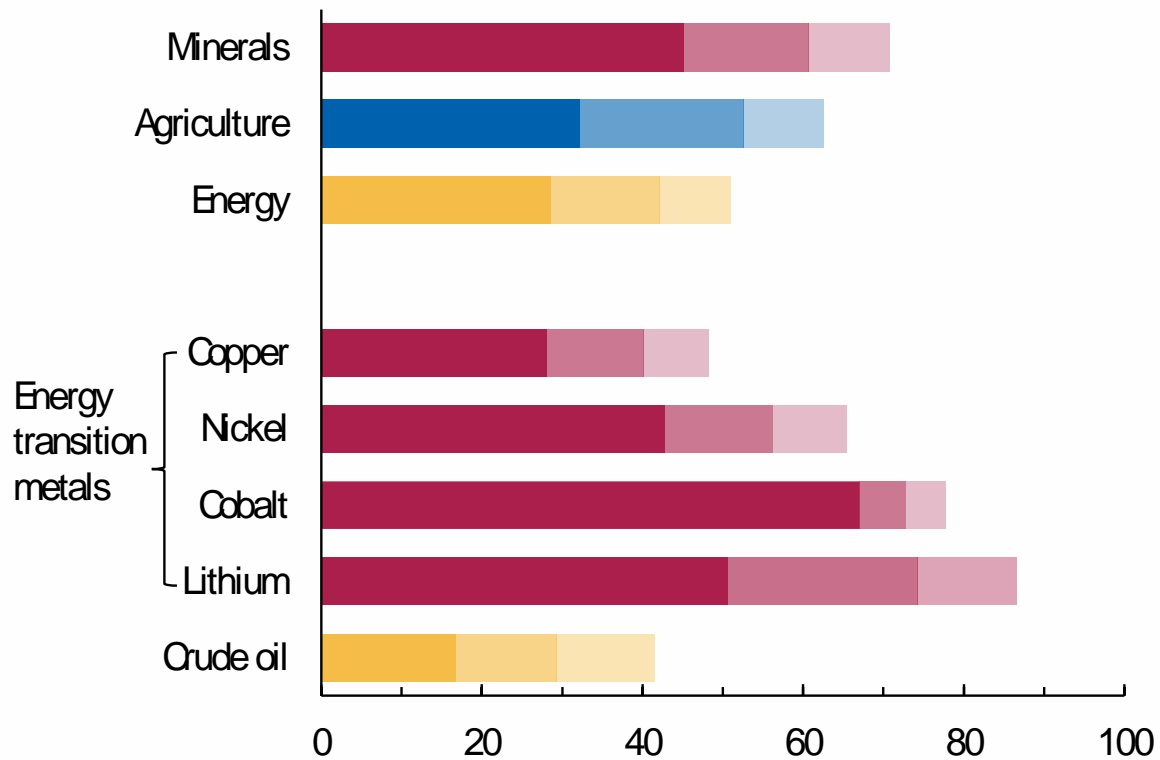
Scope and Research Design

- **Focus:** 48 commodities across three different types: energy, agriculture and minerals.
- **Commodities selection** based on:
 - Among the most largely traded in their category
 - Identified as critical for the green transition or key technologies by the EU or US
- **Research Design:** Empirical analysis and combination of model simulations.
- **Geoeconomic fragmentation:** Any policy-driven reversal of integration.
- **Simulations:** Hypothetical fragmentation into two blocs along 2022 UN vote on Ukraine.

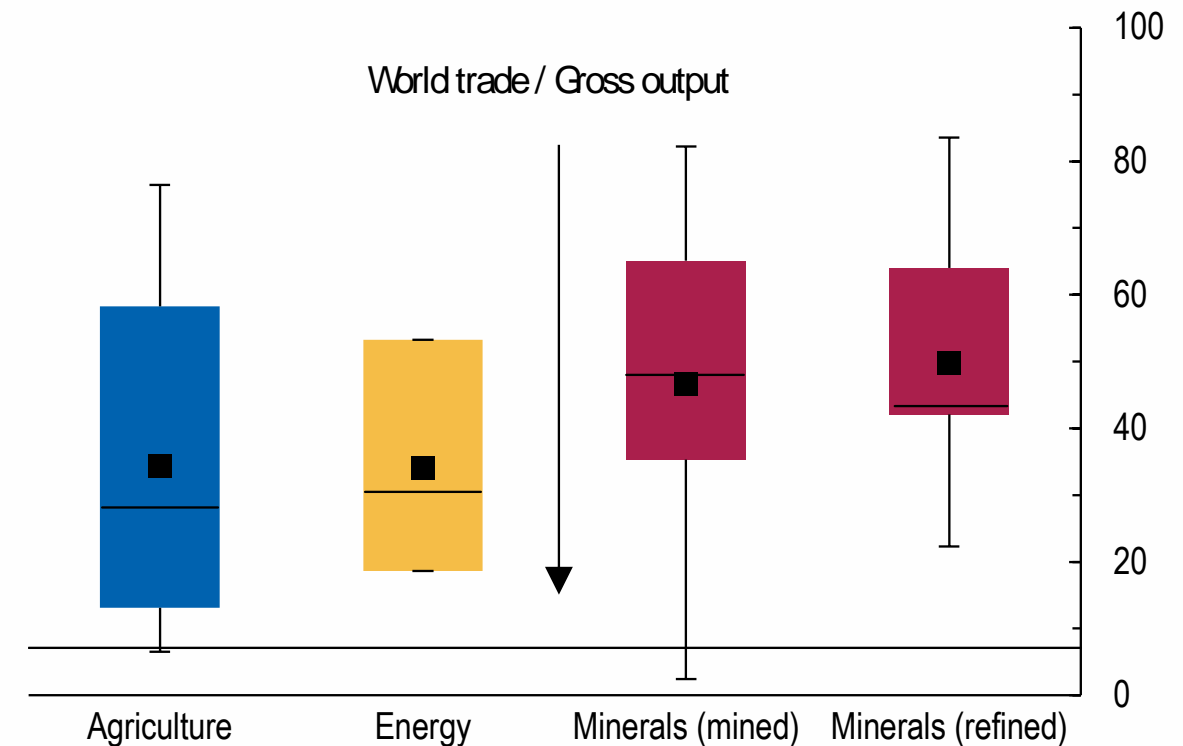
What makes commodities vulnerable to fragmentation?

Concentrated production, and high tradability

Share of Top 3 Countries in World Production
(Percent, 2019)



Share of World Production that is Traded
(Percent of production quantity, 2019)



Sources: BACI; British Geological Survey; US Geological Survey; Food and Agriculture Organization of the United Nations; International Energy Agency; and IMF staff calculations.

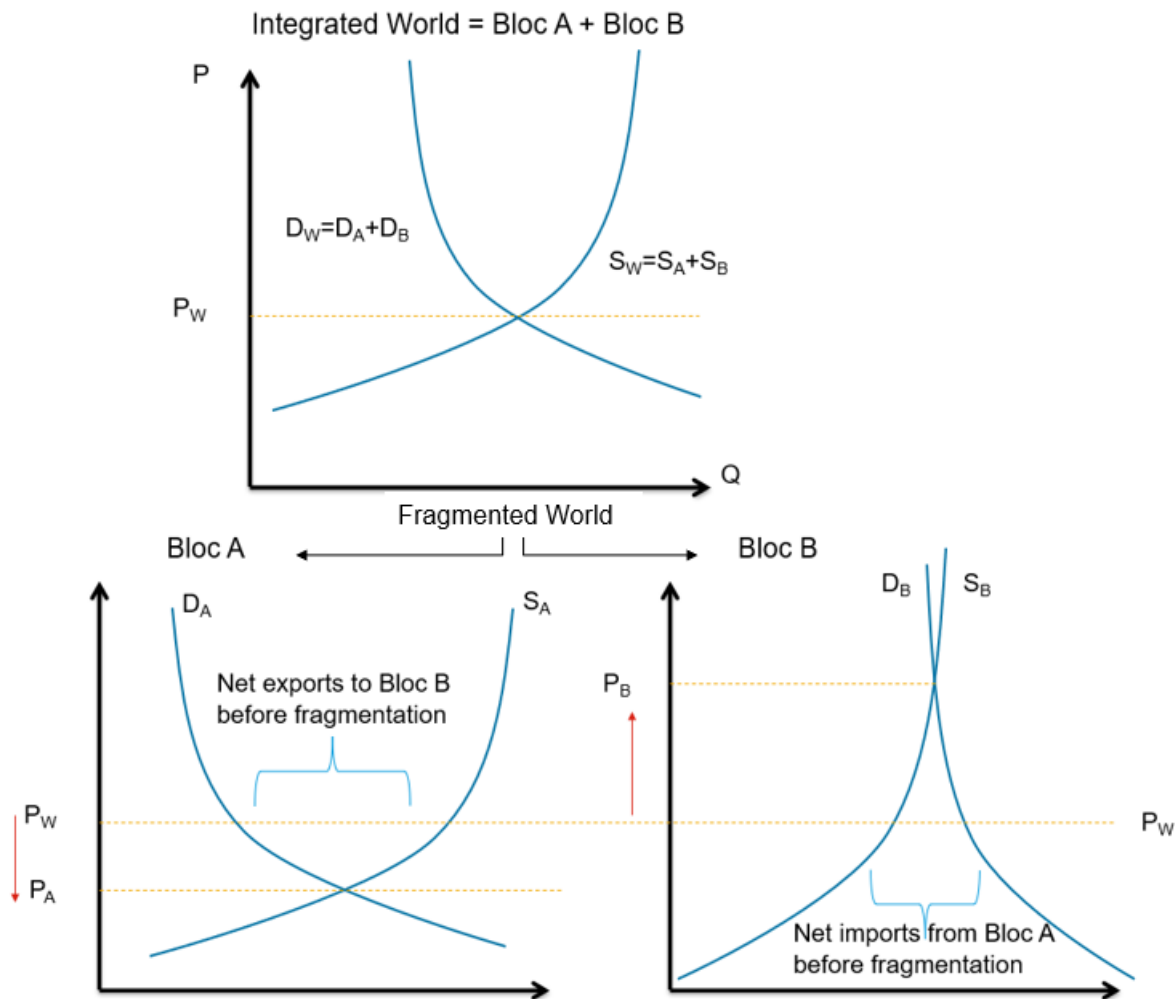
Note: Energy refers to coal, natural gas and crude oil. The top panel of the chart depicts the simple average across commodities in the group.

Sources: BACI; British Geological Survey; US Geological Survey; Food and Agriculture Organization of the United Nations; International Energy Agency; and IMF staff calculations.

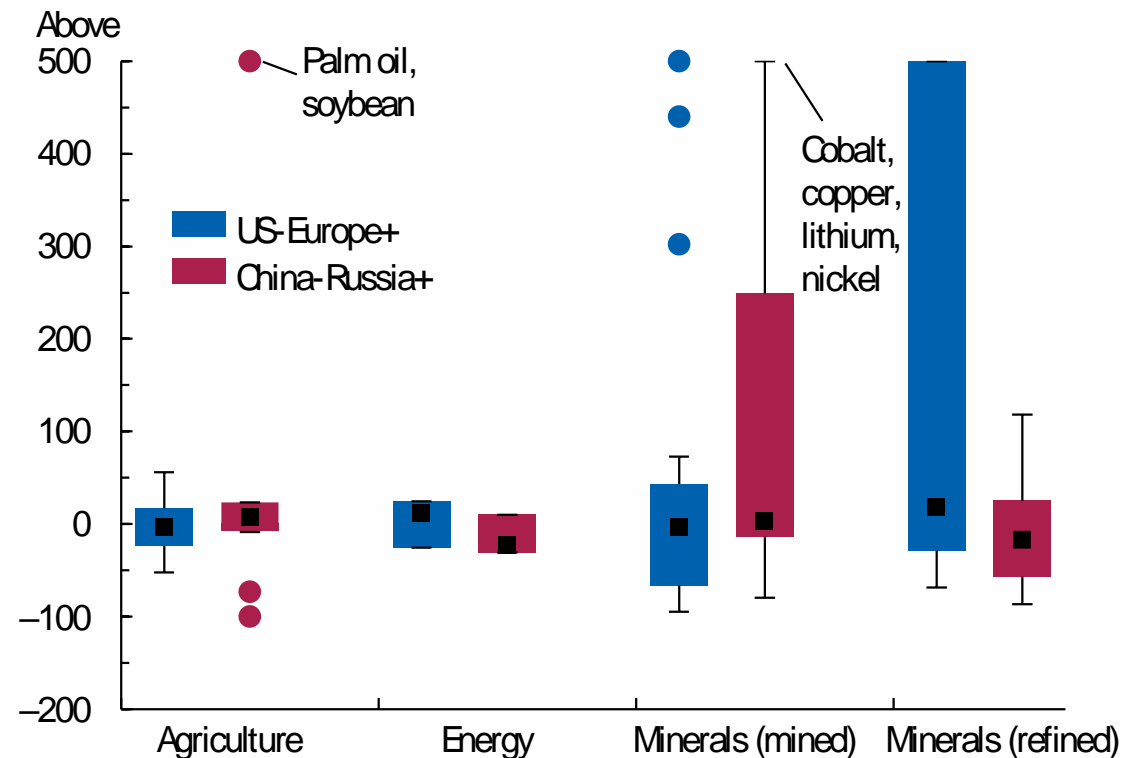
Note: Energy refers to coal, natural gas and crude oil. The horizontal lines in the bars represent the median, the cross the average, the bars the interquartile range, while the whiskers reflect the min and max value across commodities in the group.

Which commodities are most vulnerable to disruptions in trade?

Large price swings in minerals and some agricultural markets

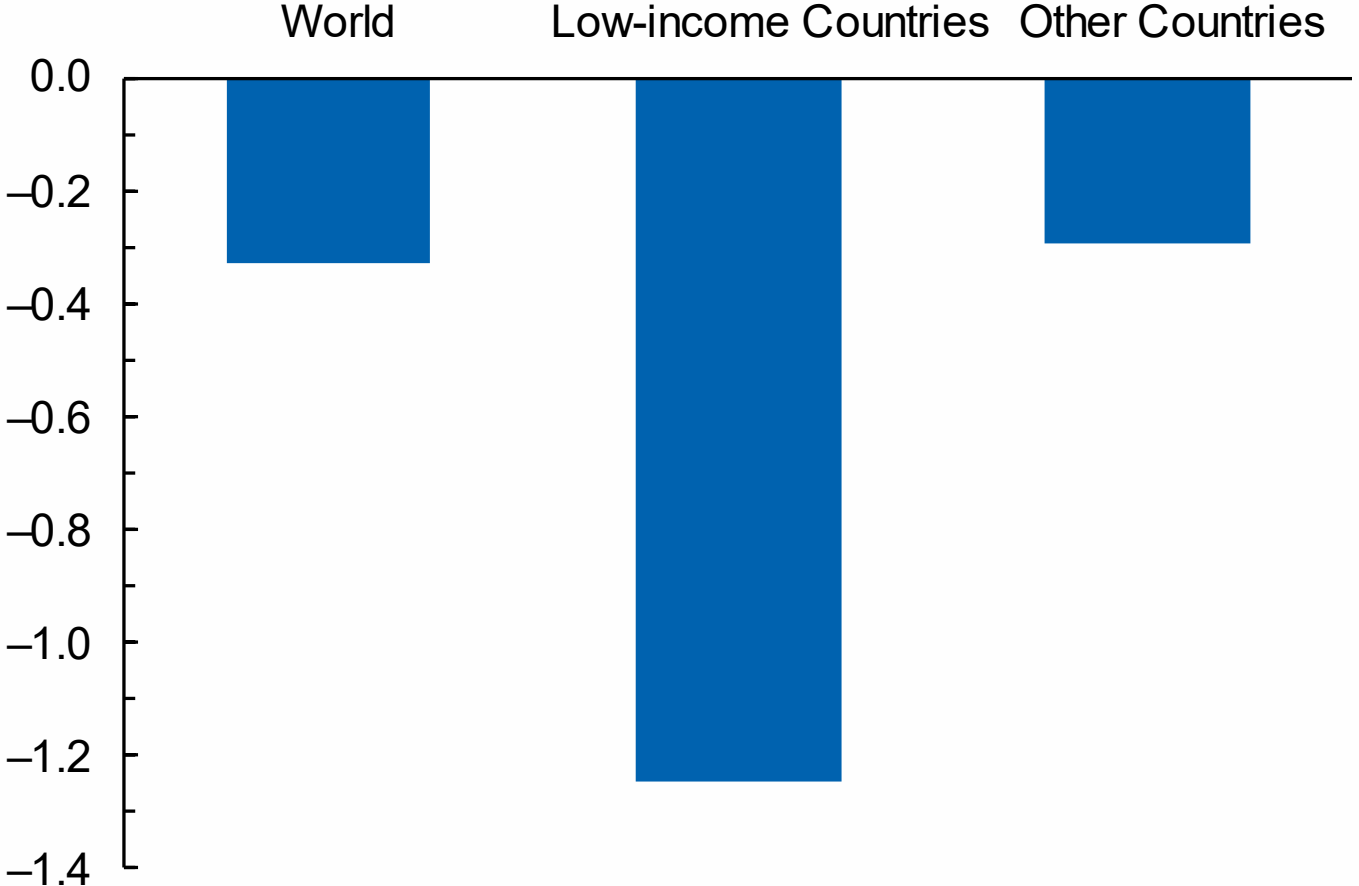


Distribution of price changes by bloc & commodity group (Percent)



What are potential economic impacts from commodity market fragmentation? Modest global GDP impacts but Low-Income Countries most affected

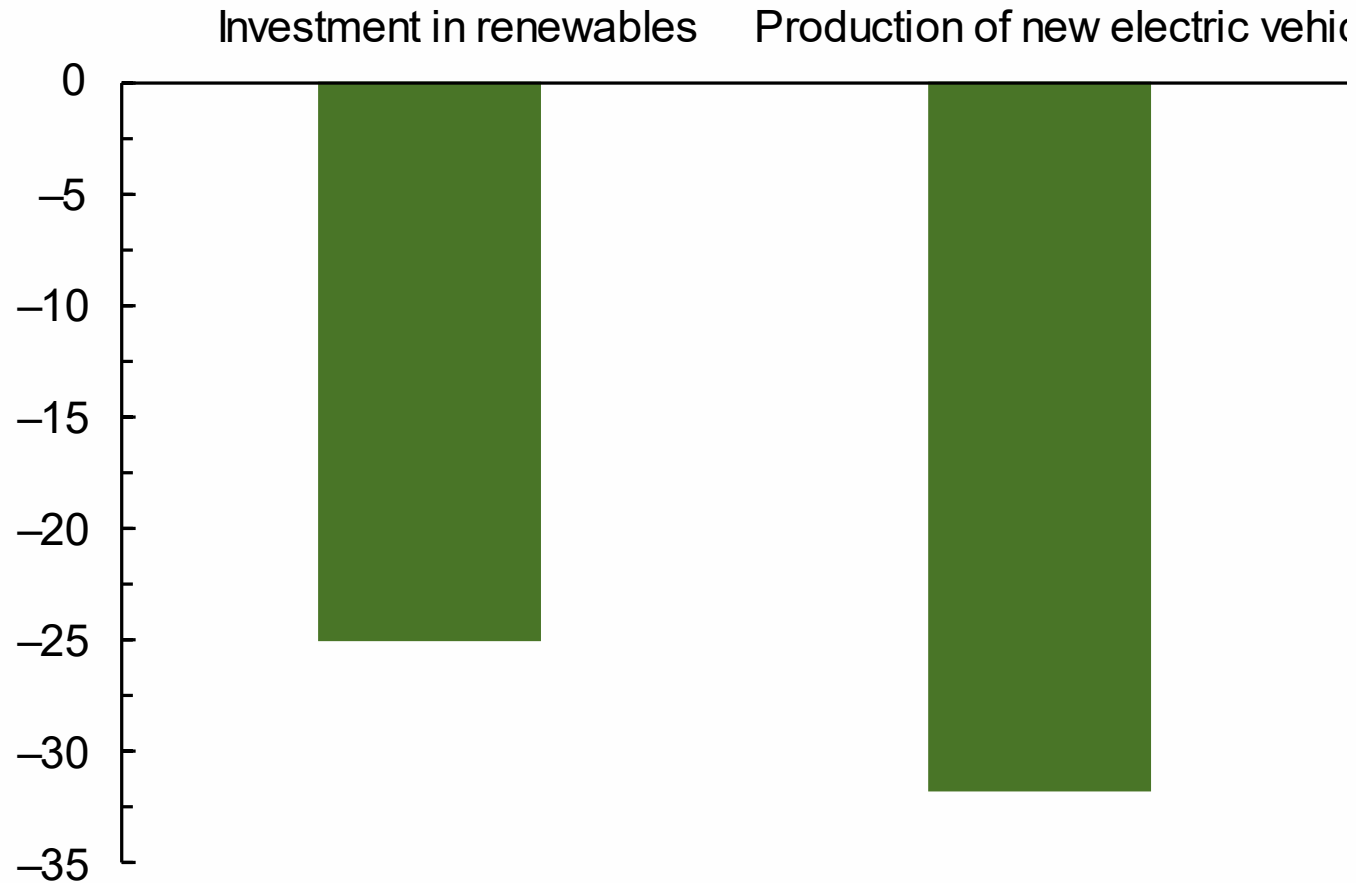
Long-Term Impact on GDP
(Percent deviation from baseline)



Notes: The bars represent the losses in GDP relative to baseline from eliminating trade in groups of commodities across hypothetical blocs. Country-level losses are aggregated using weights based on GDP at PPP.

What are the implications for the green transition? Decarbonization more costly, reducing green investment

Fragmentation of Critical Mineral Markets Impact on Energy Transition
(Percent deviation from integrated markets scenario in 2030)



Notes: The bars report the change in real investment in renewables and EVs due to fragmentation relative to IEA's net zero emission scenario with integrated copper, nickel, lithium and cobalt markets. Country-level variables aggregated using GHG weights.

Policy Implications

First best

- Prevent fragmentation through multilateral cooperation

Second best

- Establish a “green corridor” for critical minerals and a “food corridor”

International data sharing on mineral markets



World Economic Outlook October 2023

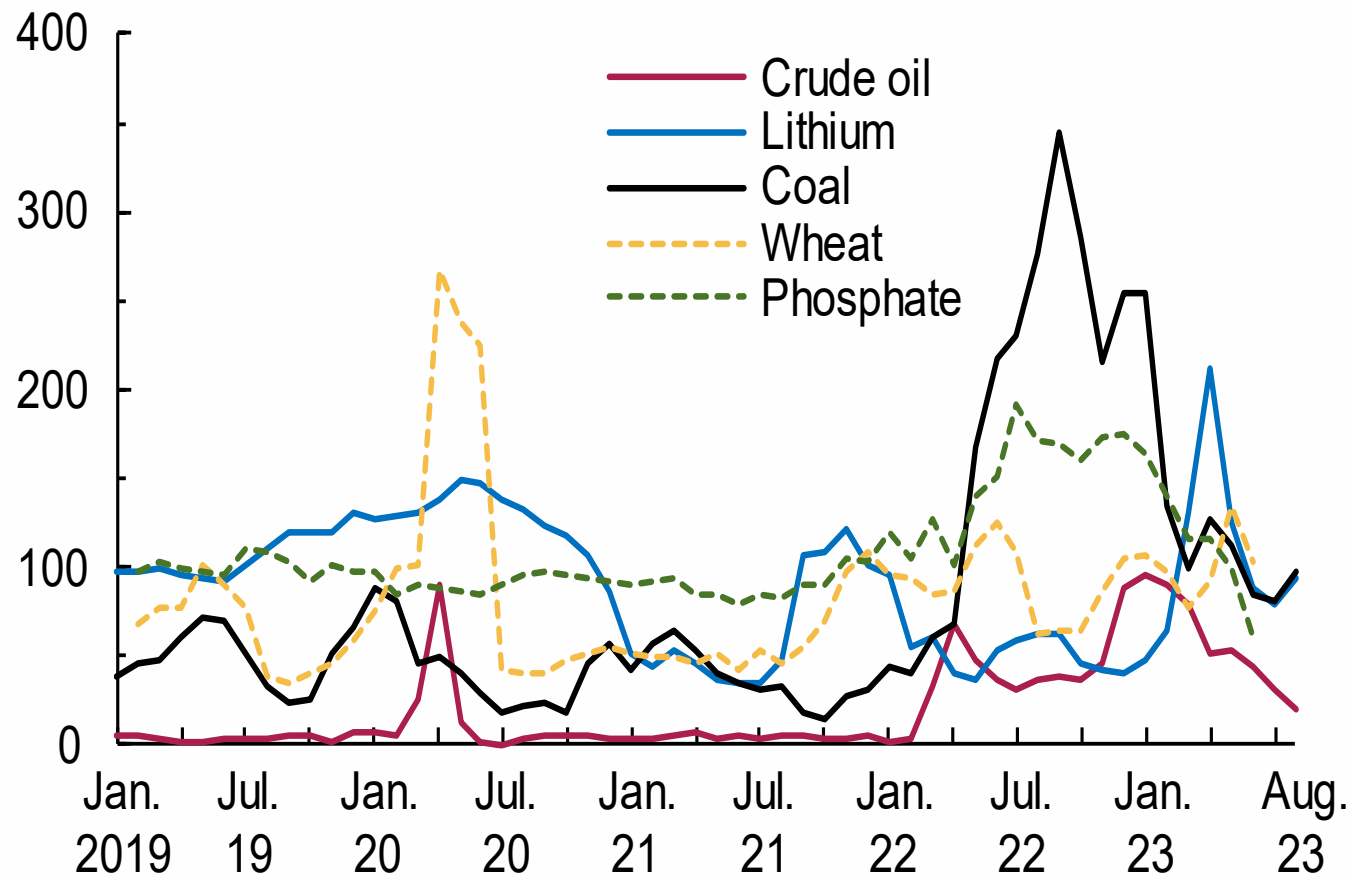
THANK YOU!

Back-up Slides

Price Dispersion Increased in 2022

Price Dispersion

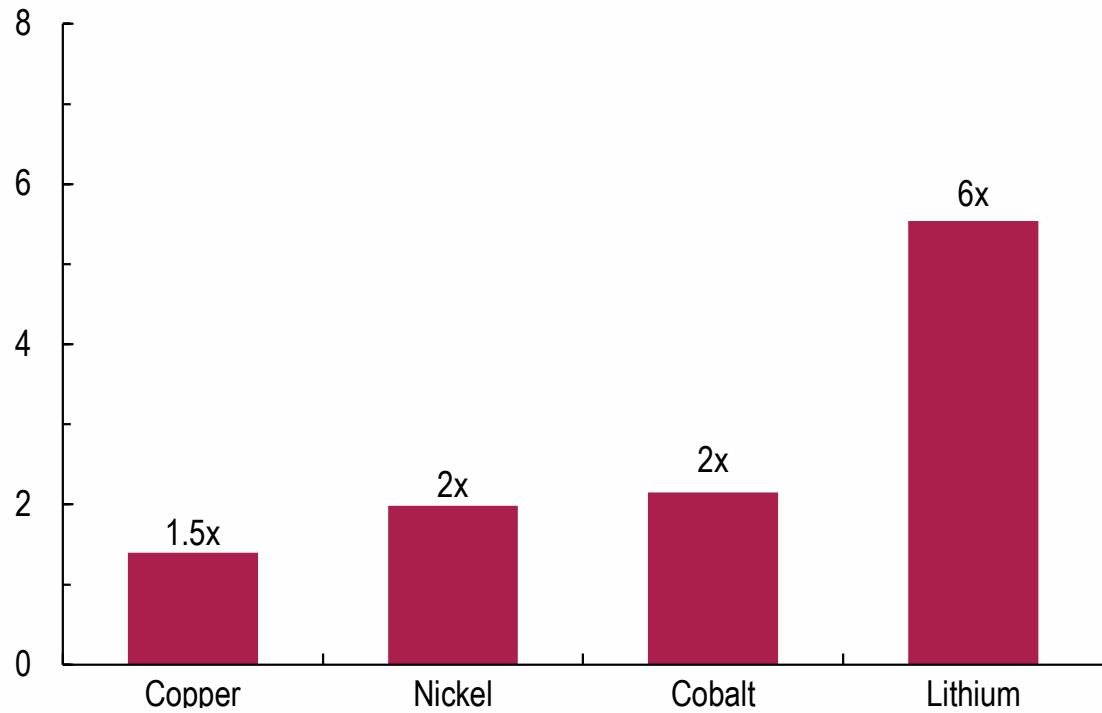
(Difference between max and min as percent of min price across regions)



Sources: Bloomberg Finance L.P.; and IMF staff calculations.

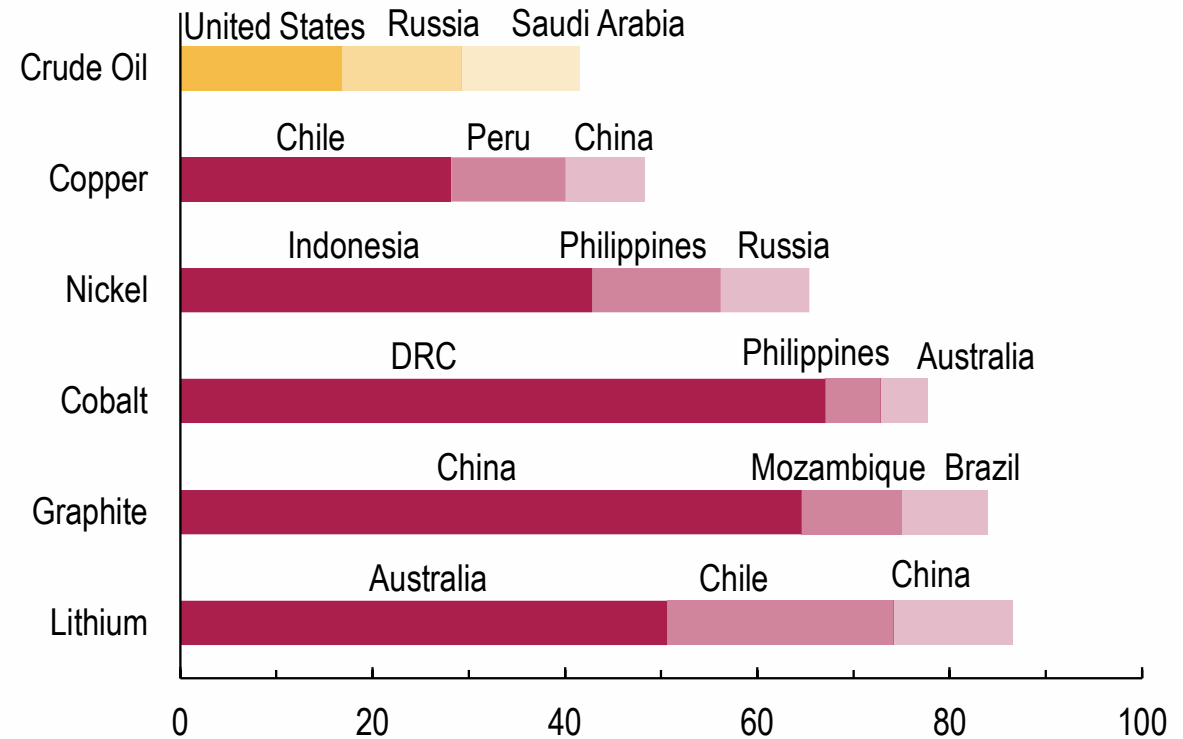
Steep demand increases could hit highly concentrated markets

Demand Increases for Critical Minerals until 2030
(Index, 2020 = 1, Net Zero Emissions Scenario)



Sources: International Energy Agency; and IMF staff calculations.

Share of Top 3 Producing Countries
(Percent of World Mine Production)



Sources: British Geological Survey; US Geological Survey; and IMF staff calculations.