

Monetary Policy with International Sanctions

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24 February 2022: Russian invasion of Ukraine

- ▶ sanctions by 38 governments
 - targeted restrictions on specific agents, entities, sectors, and goods
 - ▶ Unlike traditionally sanctioned economies (e.g., Cuba, Iran, Myanmar, N. Korea, Syria), **Russia** is a globally significant economy:
 - 11th largest by GDP and 13th by exports prior to the invasion
 - one of the world's largest energy suppliers.
 - held the 4th largest foreign currency reserves
- feedback effects
input-output (GVC)
imbalanced capital flows

International economic interdependence and the policy responses it demands become particularly complex during episodes of geopolitical tensions.

This paper investigates the conduct of monetary policy under such conditions.

How do sanctions alter monetary policy transmission/trade-offs?

- ▶ specifically, flatter or Steeper Phillips curve?

Building on our former work Ghironi, Kim, & Ozhan (2025):

- ▶ an **asymmetric** two-region model of international trade & macro dynamics
 - upstream: homo. goods (gas/energy/commodity) Foreign has CA.
 - downstream: diff. goods (consumption good) a la Melitz (2023) Home has CA.
 - incomplete international financial markets: short- and long-run imbalanced capital flows
- ▶ we model sanctions **forced exits at the extensive margin**:
 - commodity sanctions: import ban / price cap
 - final C-good sanctions: prohibition of trade of firms with productivity above a certain threshold
 - financial sanctions: exclusion of a fraction of Foreign households from international bond mkt

A New Keynesian DSGE setting with Ghironi, Kim, & Ozhan (2025)

- ▶ sticky wage (downstream) + monetary policy rule (Taylor rule)

Sanctions reshape the monetary-policy trade-off

Final consumption good trade sanctions

- ▶ shocks widen the extensive margin more. (investment rather than consumption)
 - ⇒ inflation/prices less responsive to activity/policy
 - ⇒ flatter Phillips curve (sacrifice ratio $\uparrow$)

Commodity-trade sanctions

- ▶ upstream costs become more sensitive to shocks
 - ⇒ inflation/prices more responsive to activity/policy
 - ⇒ steeper Phillips curve (sacrifice ratio $\downarrow$)

Sanctions

- ▶ Bachmann et al. (2022); Bianchi and Sosa-Padilla (2022); Ghironi, Kim, Ozhan (2024, 2025); Itskhoki and Mukhin (2025); Korhonen (2019); Lorenzoni and Werning (2022); Sonnenfeld et al. (2022); Strum (2022); Van Bergeijk (2021) and references therein

Effects of nominal rigidities on entry and product variety

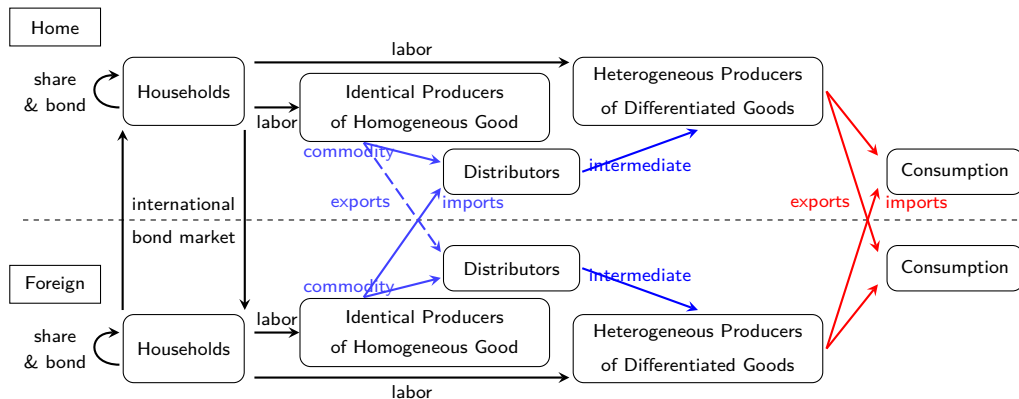
- ▶ Bilbiie, Ghironi, Melitz (2007); Bilbiie, Fujiwara, Ghironi (2014); Bergin and Corsetti (2008); Cacciatore and Ghironi (2021); Lewis and Poilly (2014); Cooke and Damianovic (2021); Hamano and Zanetti (2022) and references therein

Impacts of tariffs/trade policy

- ▶ **monetary policy:** Auray, Devereux, Eyquem (2022, 2024a,b); Barattieri, Cacciatore, Ghironi (2021); Bergin and Corsetti (2023); [Bianchi and Coulibaly \(2025\)](#); Comin and Johnson (2021); Eichengreen (2019); Erceg, Prestipino, Raffo (2023); Jeanne and Son (2024); Jeanne (2021); [Kalemli-Ozcan, Soylu and Yildirim \(2025\)](#) and references therein
- ▶ **inflation:** [Auray, Devereux and Eyquem \(2025\)](#); Alexandria and Mix (2021); [Bai, Jaccard and Stumpner \(2025\)](#); Comin and Jonson (2020); Comin, Jonson and Jones (2024); [Cuba-Borda, Queralto, Reyes-Heroles and Scaramucci \(2025\)](#) and references therein

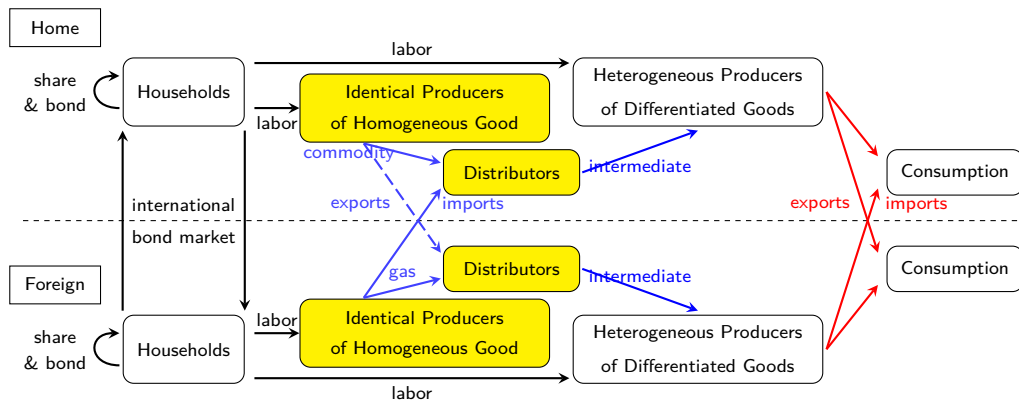
The Asymmetric Two-Country Model

The Model



- ▶ two countries: comparative advantages
- ▶ two industries: upstream (differentiated) and downstream (homogeneous)
- ▶ international bond market: non-zero steady state NFA

The Model: Gas sector: Upstream, homogeneous goods

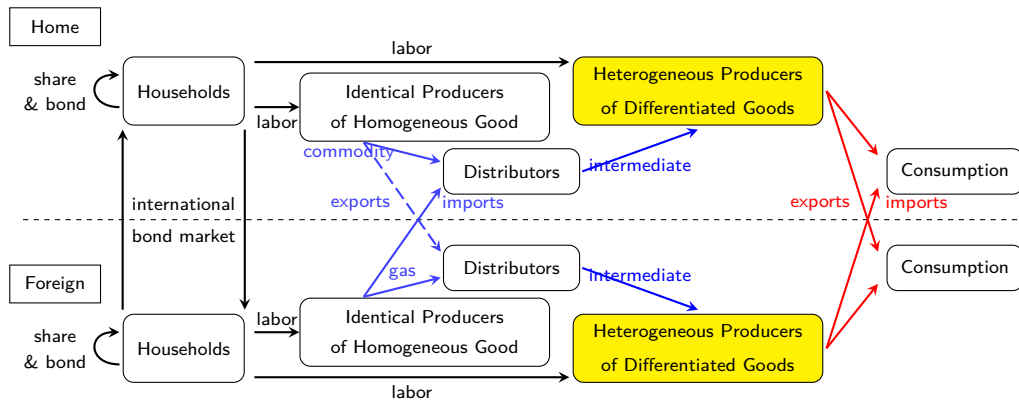


► Cournot competition in each commodity market

- producers: Foreign comparative advantage
- demands: distributors aggregate (domestic) C-good producer's demands for intermediates.

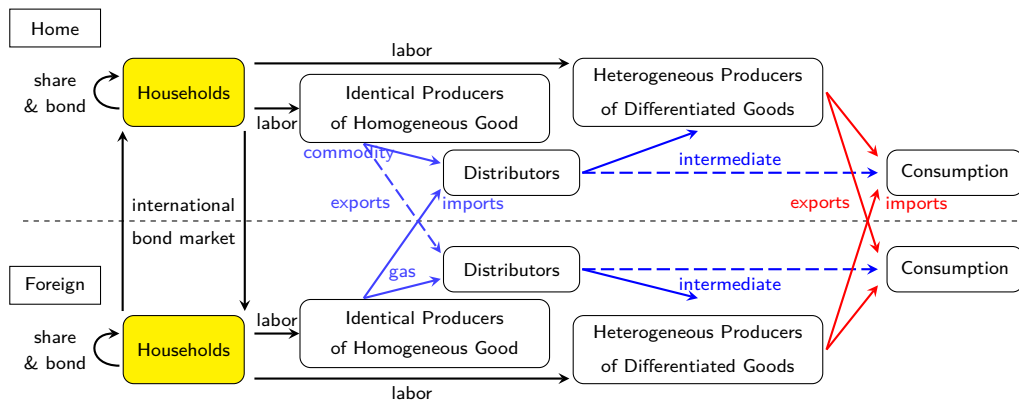
$$(Z^{G*} > Z^G)$$

The Model: Final C-good sector: Downstream, differentiated goods



- ▶ endogenous entry subject to initial sunk cost (free entry condition)
- ▶ firms produce differentiated products with different z (monopolistic competition with CES)
– more productive (larger) firms export (fixed & iceberg trade costs)
- ▶ Home comparative advantage ($Z^Y > Z^{Y*}$)

The Model: Households



- ▶ HHs trade non-contingent bonds with each other (within & between countries): Foreign $NFA > 0$
- ▶ (sectoral) labor supplies: imperfectly substitute ($L_t^Y(h)$ and $L_t^G(h)$)

Monetary Policy

Extensions Ghironi, Kim, & Ozhan (2025, JME) $\Rightarrow$ New Keynesian features

Monetary policy: Taylor rule

$$\hat{i}_t \approx \rho_i \hat{i}_{t-1} + (1 - \rho_i) \left[\rho_{\Pi} \hat{\Pi}_t + \rho_{\text{GDP}} \widehat{\text{GDP}}_t \right] + \varepsilon_{\text{MP},t}$$

Nominal rigidity

► C-good sector: sticky wage with 5% wage markups

– Households supply differentiated labor inputs, which gives them wage setting power:

$$L_t^Y = \left\{ \int_0^1 [L_t^Y(h)]^{\frac{\epsilon^W - 1}{\epsilon^W}} dh \right\}^{\frac{\epsilon^W}{\epsilon^W - 1}} \quad \text{and} \quad W_t^Y = \left\{ \int_0^1 [W_t^Y(h)]^{1 - \epsilon^W} dh \right\}^{\frac{1}{1 - \epsilon^W}}$$

– quadratic cost of adjusting the nominal wage between t and $t - 1$ (Rotemberg, 1982)

$$\frac{\kappa^W}{2} \left(\frac{W_t^Y}{W_{t-1}^Y} - 1 \right)^2 W_t^Y(h) L_t^Y(h)$$

► Gas-sector: flexible wage

Economic Sanctions

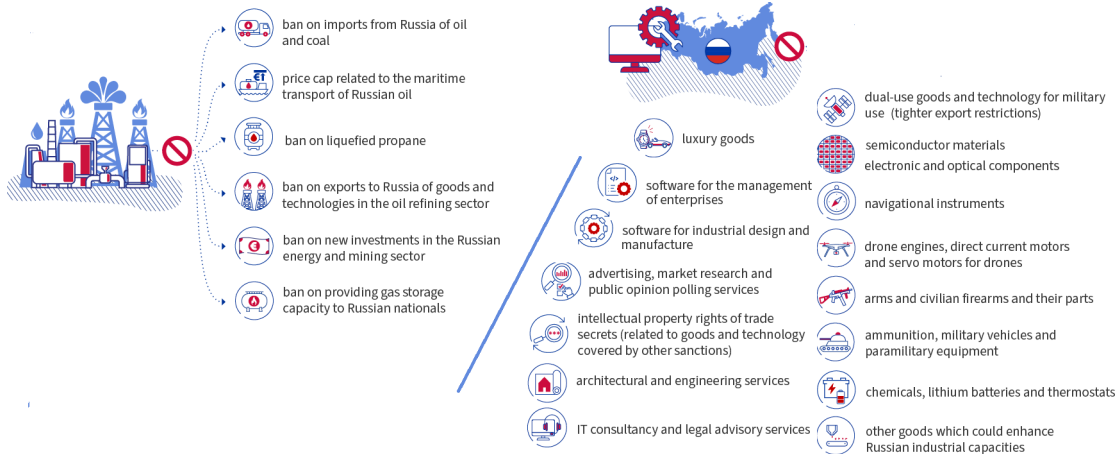
Sanctions in response to Russia's invasion of Ukraine (1/2)



Asset freeze/travel ban against individual and entities

Notes: Source: The Bureau of Industry and Security (US Department of Commerce) and European Commission

Sanctions in response to Russia's invasion of Ukraine (2/2)



Export/import restrictions on energy, products, and services

Notes: Source: The Bureau of Industry and Security (US Department of Commerce) and European Commission

Gas (import) sanctions: full stop of commodity imports from Foreign

- ▶ equivalently, price cap below Foreign marginal costs in commodity production

C-good trade sanctions: exclusion of high productive firms

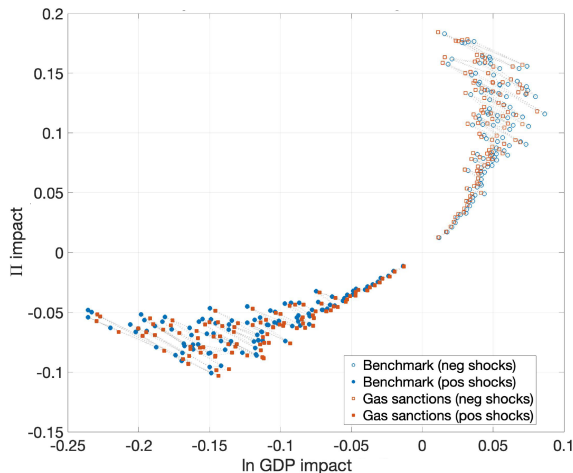
- ▶ export sanctions: Top 1% most productive Home exporters drop from trade
- ▶ import sanctions: Top 1% most productive Foreign exporters drop from trade
- ▶ trade sanctions = export + import sanctions

Financial sanctions: a fraction of Foreign HHs are excluded from Int'l. bond markets

- ▶ sanctioned Foreign HHs cannot hold Home-issued bonds & cannot trade any bonds with Home HHs.
- ▶ but they can domestically trade Foreign-issued bonds with unsanctioned Foreign HHs.

Phillips curve

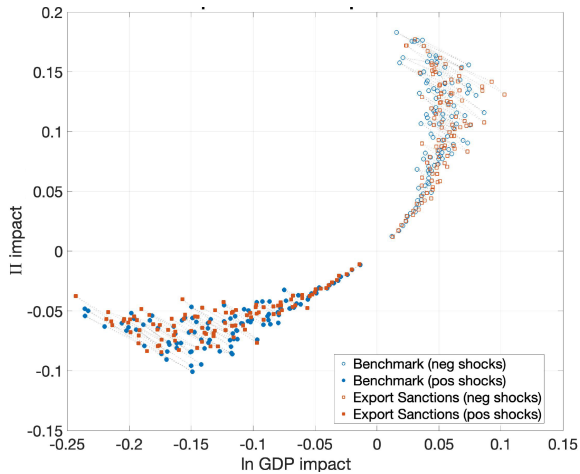
Steeper Phillips curve with commodity trade sanctions



Commodity (Gas) Import Sanctions

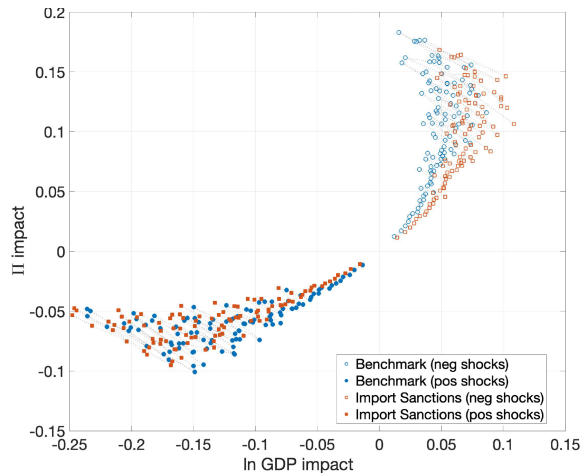
- expansionary MP shocks
 - ⇒ intermediary good demand $\uparrow$
 - ⇒ commodity price $\uparrow$
 - ⇒ final C-good price $\uparrow$
 - **No sanctions:** The country can import more commodities to mitigate the rise in domestic input costs.
 - **With sanctions:** The economy cannot use imports to absorb the shock. Domestic commodity producers face less competition, making upstream prices (and thus final goods inflation) **more sensitive** to changes in domestic demand.
- ∴ **A steeper Phillips curve.**

Flatter Phillips curve with final consumption-good sanctions



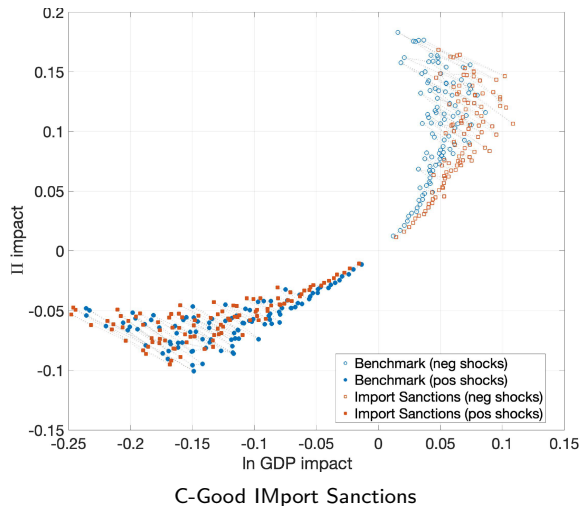
C-Good Export Sanctions

Flatter Phillips curve with final consumption-good sanctions



C-Good IMport Sanctions

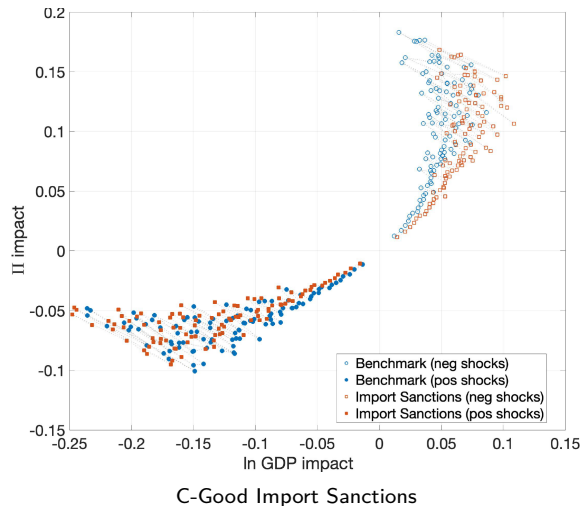
Flatter Phillips curve with final consumption-good sanctions



- expansionary MP shocks
 - ⇒ Consumption ↑ and Investment ↑
 - ⇒ final C-good price ↑
- **No sanctions:** Following an expansionary shock, the economy adjusts through trade and new firm entry (investment).
- **With sanctions:** The sanctions block the trade channel. Pronounced fluctuations in entry into production and export market, making activities become more sensitive to prices/MP shocks.

∴ **A flatter Phillips curve.**

Flatter Phillips curve with final consumption-good sanctions



► favorable shocks

⇒ less prod. foreign exporters ↑

⇒ imported good price ↑

► import sanctions cut the channel (but not in export sanctions), making inflation/prices less responsive

∴ **A flatter Phillips curve.**

Conclusion

Sanctions reshape the monetary policy trade-offs

Final C-good sanctions $\Rightarrow$ flatter Phillips curve

- ▶ Policy Implication: The output cost of disinflation is higher (a larger sacrifice ratio). However, there may be more room for expansionary policy before inflation accelerates.

Commodity-trade sanctions $\Rightarrow$ steeper Phillips curve

- ▶ Policy Implication: Stabilizing inflation requires a smaller loss of output (a lower sacrifice ratio).

Thank you!
