WIFO AUSTRIAN INSTITUTE OF ECONOMIC RESEARCH

WU WIRTSCHAFTS UNIVERSITÄT WIEN VIENNA UNIVERSITY OF ECONOMICS AND BUSINESS

Global Supply Chain Pressures, International Trade and Inflation

Comment on Di Giovanni, Kalemli-Özcan, Silva and Yildirim [DKSY]

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Agenda

- Short Recap of DKSY results and comments
- Some more stylized facts
- Insulation and decoupling: simulation results

DKSY's Key Equation and Questions

- DKSY: $d \log CPI = \boldsymbol{\Lambda}' d \log \boldsymbol{W} \Rightarrow d \log CPI = d \log GDP - \boldsymbol{\Lambda}' d \log \boldsymbol{L}$ and hence AD shock ζ is backed out using

$$d \log \zeta = d \log CPI + \boldsymbol{\Lambda}' d \log \boldsymbol{L}$$

- A useful/simple way of disentangling (sectoral) supply and aggregate demand shocks
- Complex IO-Links hiding in $\boldsymbol{\Lambda}'$
- Key result: Supply shocks explain 40-50% of inflation in Eurozone; about 30% in US

Limitations

- Low level of granularity of IO-data may underestimate the price effects of supply shocks
- Role of trade costs? GVC-stress? New protectionism…
- Not robust to imperfect competition: in general one would expect supply shocks to lead to firm exit, less competition, and hence higher prices
- No monetary policy at all …

Further important insights from DKSY

(1) Recovery of goods trade after Corona looks strong but would have been stronger in absence of supply chain bottlenecks due to demand shift towards tradeables

(2) Effective trade elasticities are reduced due to supply chain bottlenecks

(3) With nominal wage rigidity, a single sector negative supply chock coupled with relative demand shifts can create country-wide inflation

(4) Foreign shocks and global supply chain bottlenecks played an outsized role relative to domestic aggregate demand shocks in explaining Euro area inflation 2020-21; the opposite is true in the US

- All results very plausible, even if model framework is stylized
- Tightening of monetary policy in the Euro area is unlikely to eliminate excess inflation while supply chain bottlenecks persist (Or: achievable only at a very high output cost)

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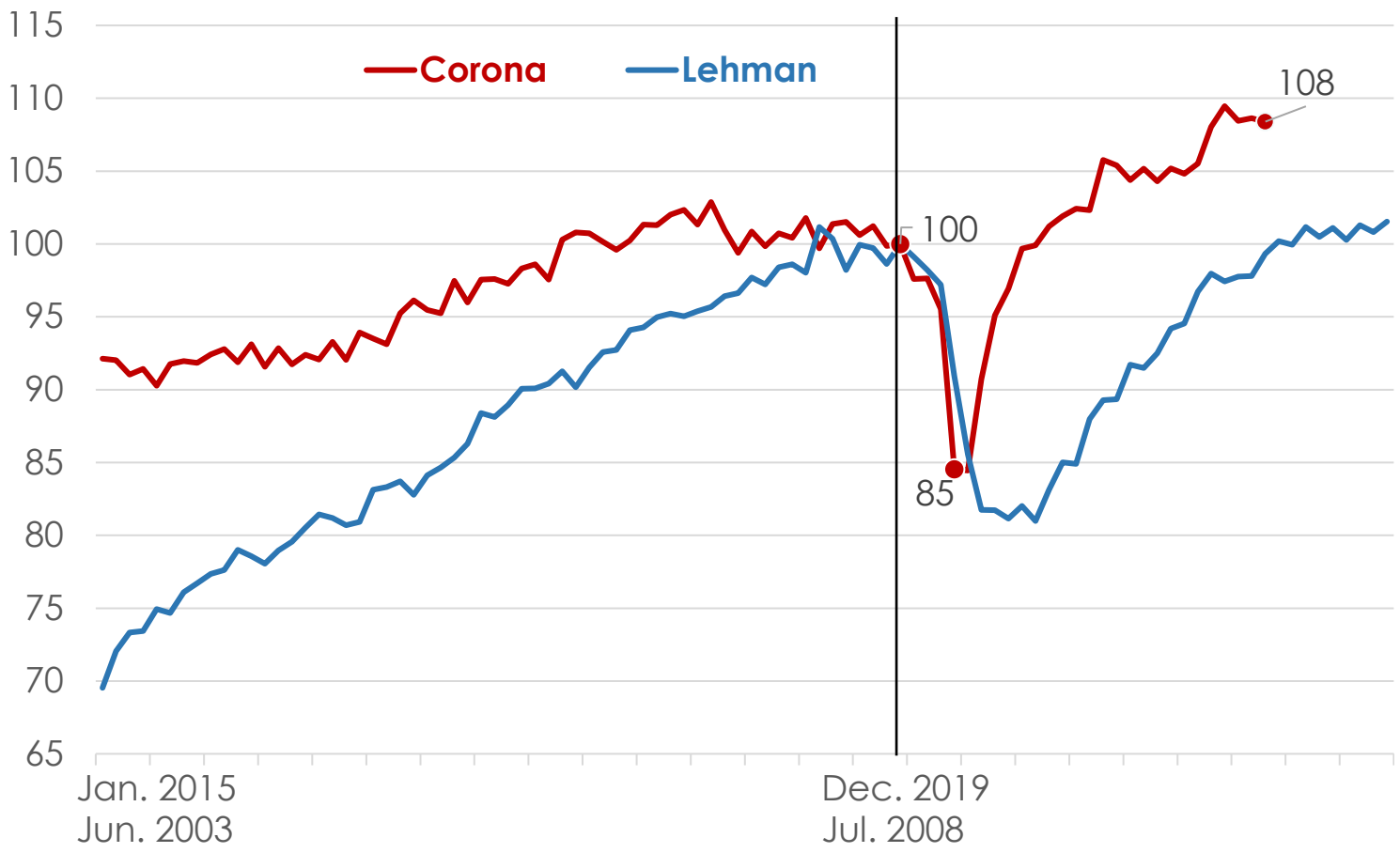
Goods Trade: Fast Recovery after Corona-Drop, Different than Lehman

Monthly global quantity indicators of goods trade (Dec. 2019 = Jul 2008 = 100)



- Trade response after Corona-Shock differs strongly from GFC
- Pre-shock performance of world goods trade different

- Does this insight suggest that supply chain issues are of minor relevance?
- DKSY: Not so fast …
- Need to compare to right counterfactual

Source: CPB, own calculations and illustration. Last data point: March 2022.

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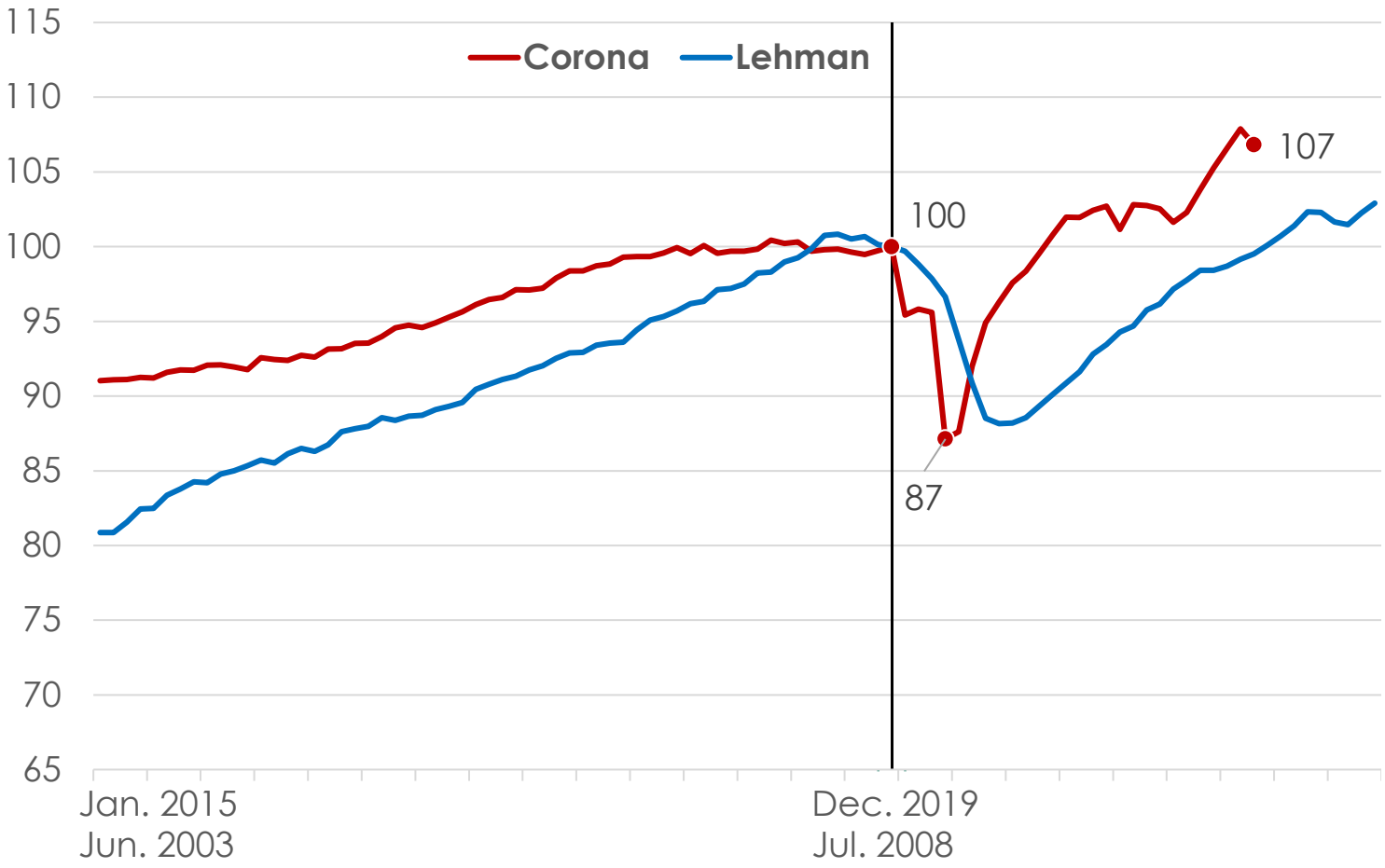
Industrial Production (IP): Corona versus Lehman

Monthly global industrial production(Dec. 2019 = Jul 2008 = 100)



- Trade reacted less strongly to changes in IP in corona crisis than in GFC
- IP dynamics reflect shift in spending towards tradeable (durables consumption) goods
- See DKSY on similar results regarding GDP versus trade …

Source: CPB, own calculations and illustration. Last data point: March 2022.

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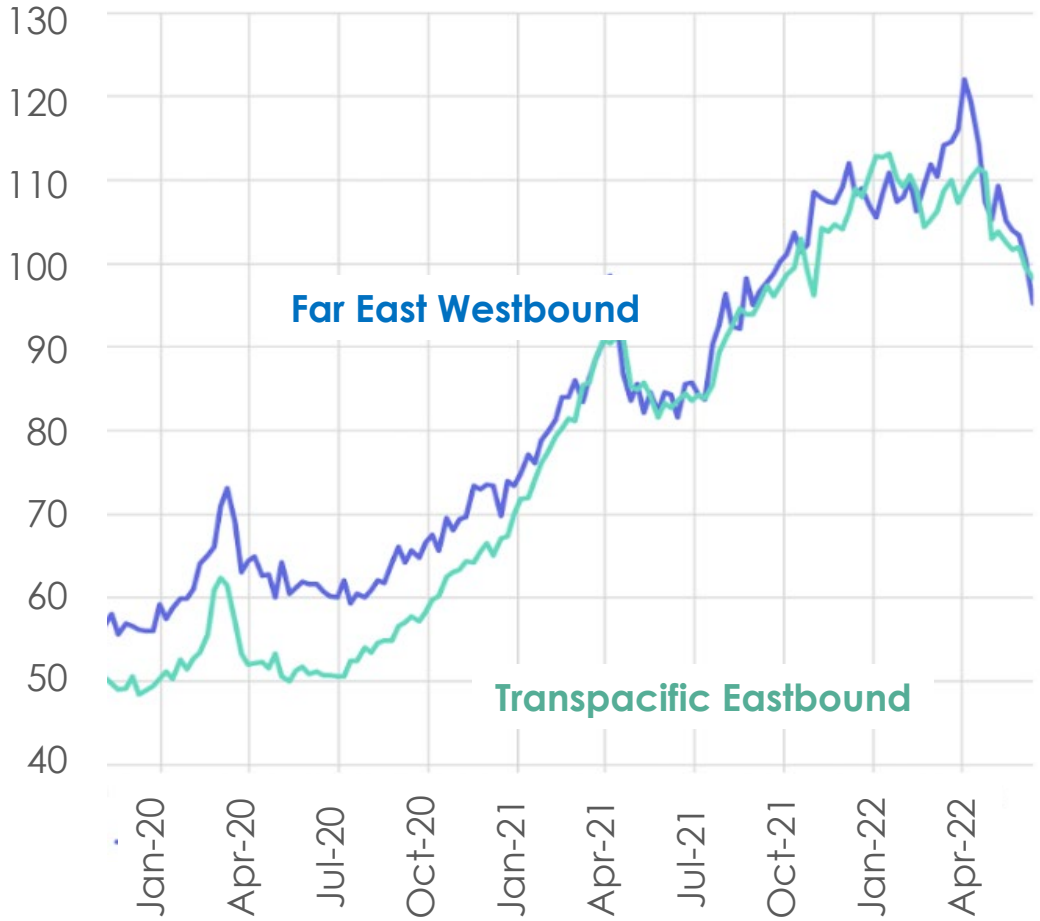
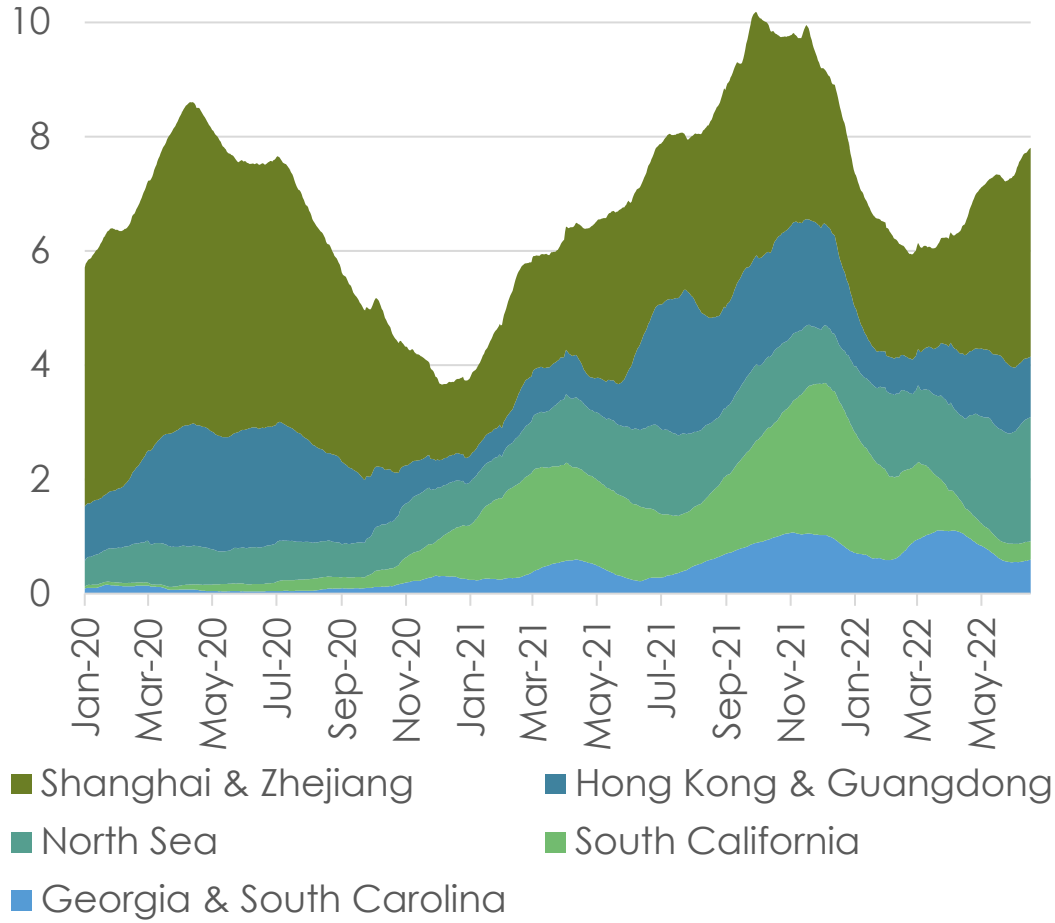
Maritime Bottlenecks: Ambiguous Signals

Ocean delivery times, days%



Idle global container ship capacity, %



Source: Kiel Institute, own illustration (last date 21.6.2022); Flexport Research.

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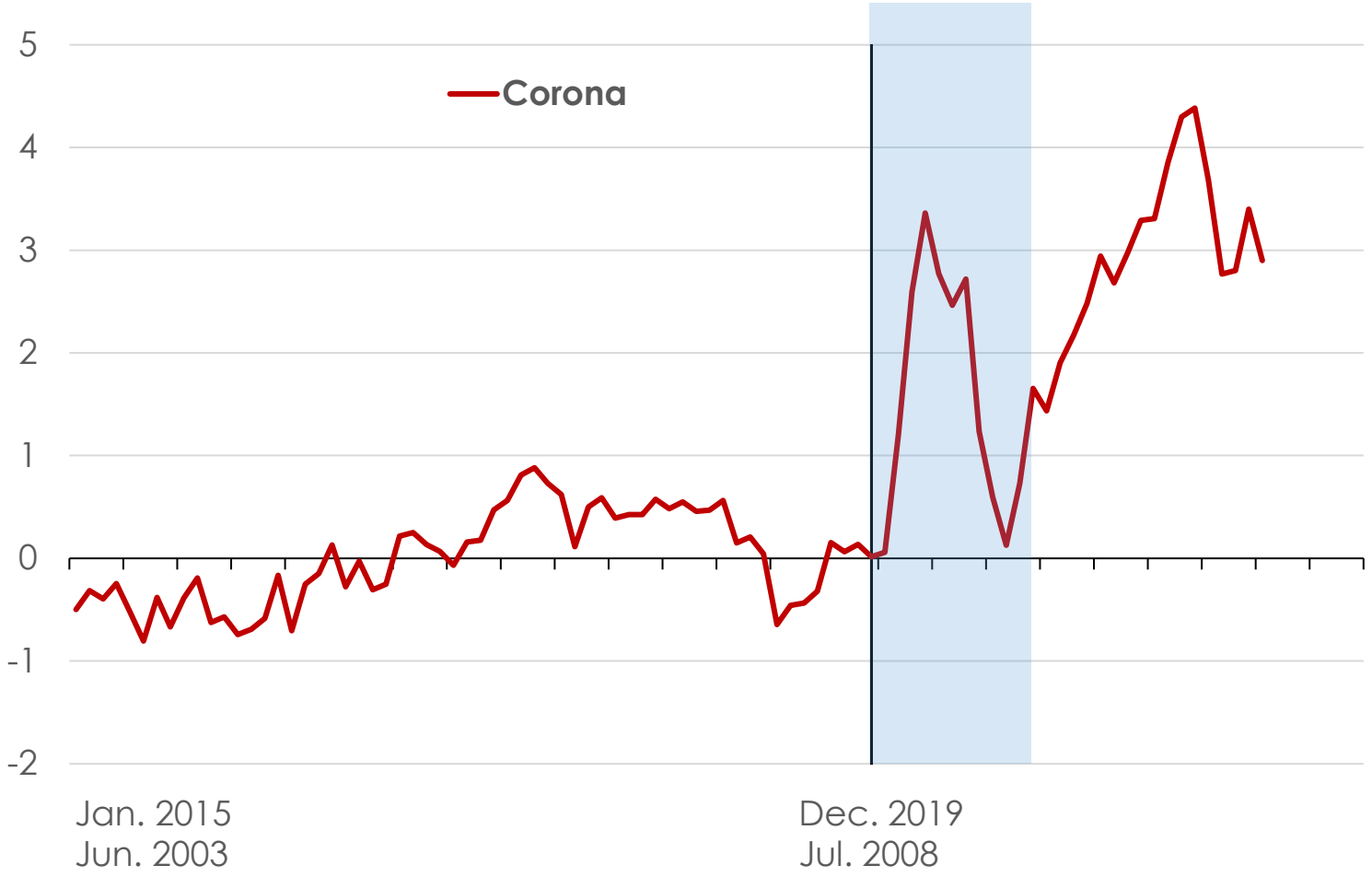
FRBNY Global Supply Chain Pressure Index: Corona vs. Lehman

GSCPI (Dec. 2019 = Jul 2008 = 100), standard deviations from average



Source: Federal Reserve Bank of New York, own illustration.

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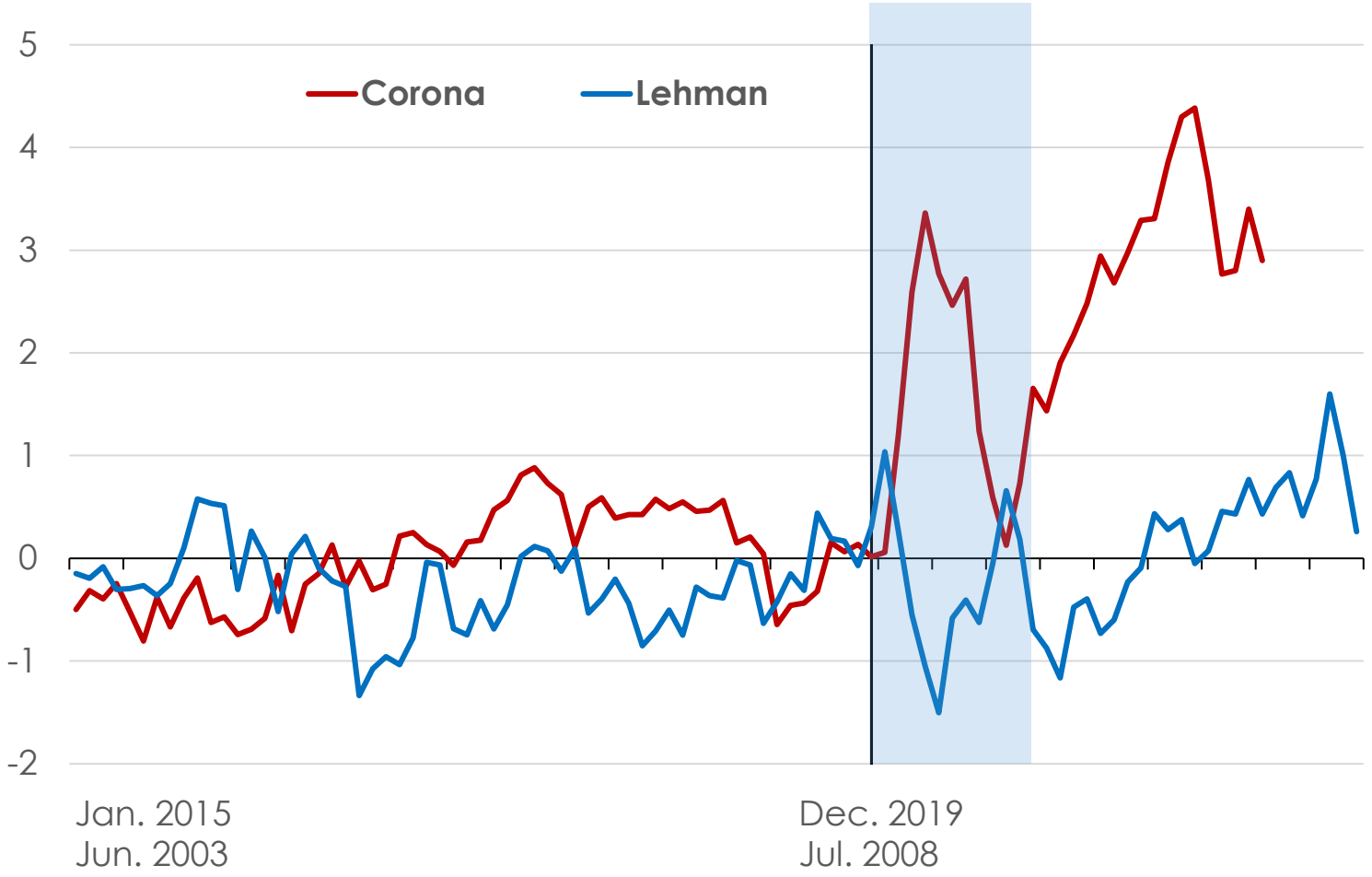

- Before the shock, run-up to Corona crisis shows some supply chain stress
- On impact, totally different responses of GSCPI reflecting different nature of crisis (supply shock vs. demand shock dominating)
- Post-shock, supply chain stress build up, but much more in Corana case

Source: Federal Reserve Bank of New York, own illustration.

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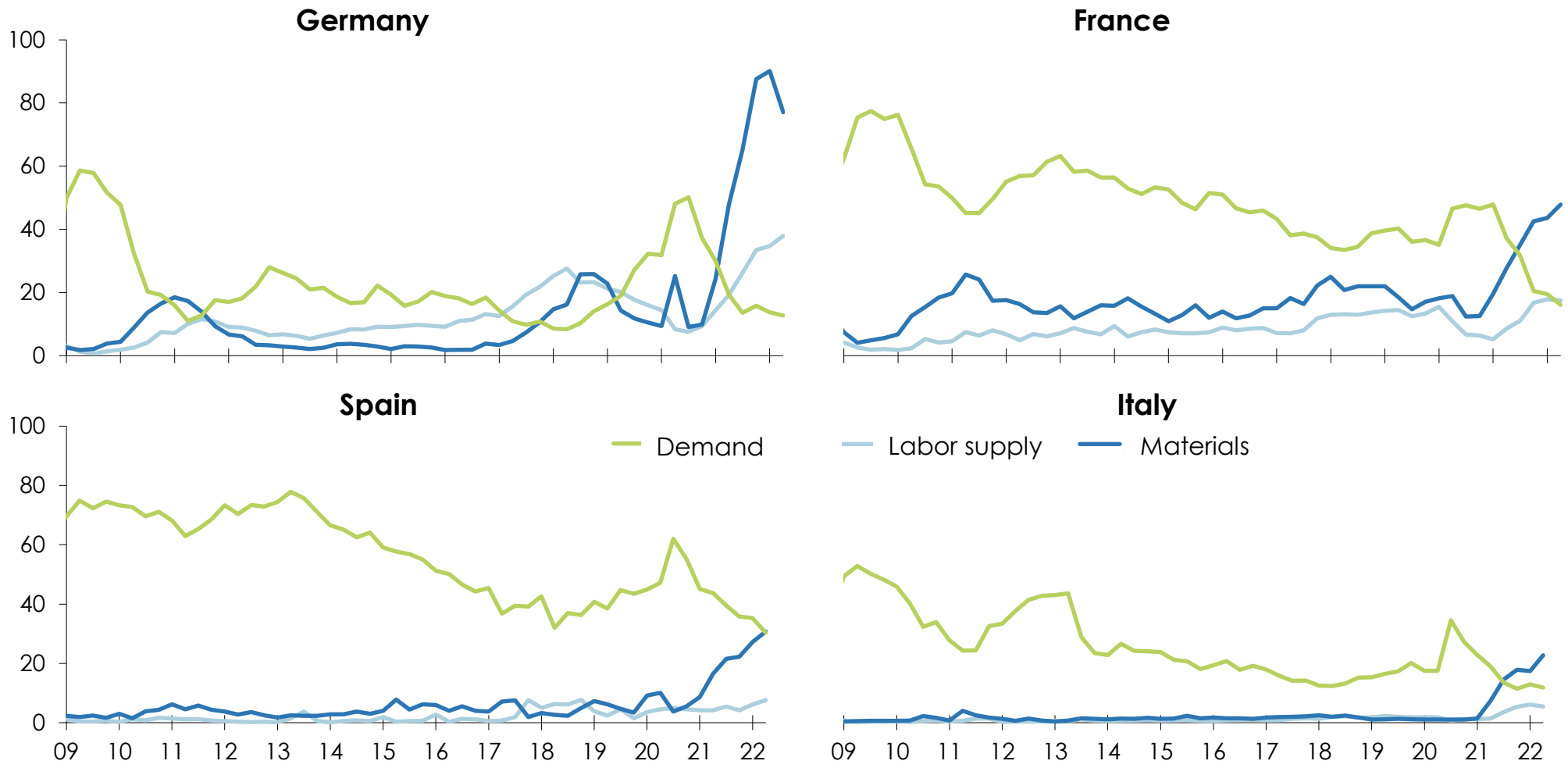
Lack of material still prevalent in Eurozone

Production impediments in manufacturing, balances in %, seasonally adjusted



Source: Business Cycle Surveys of the EU Commission, Macrobond. Last data point: Q1 22.

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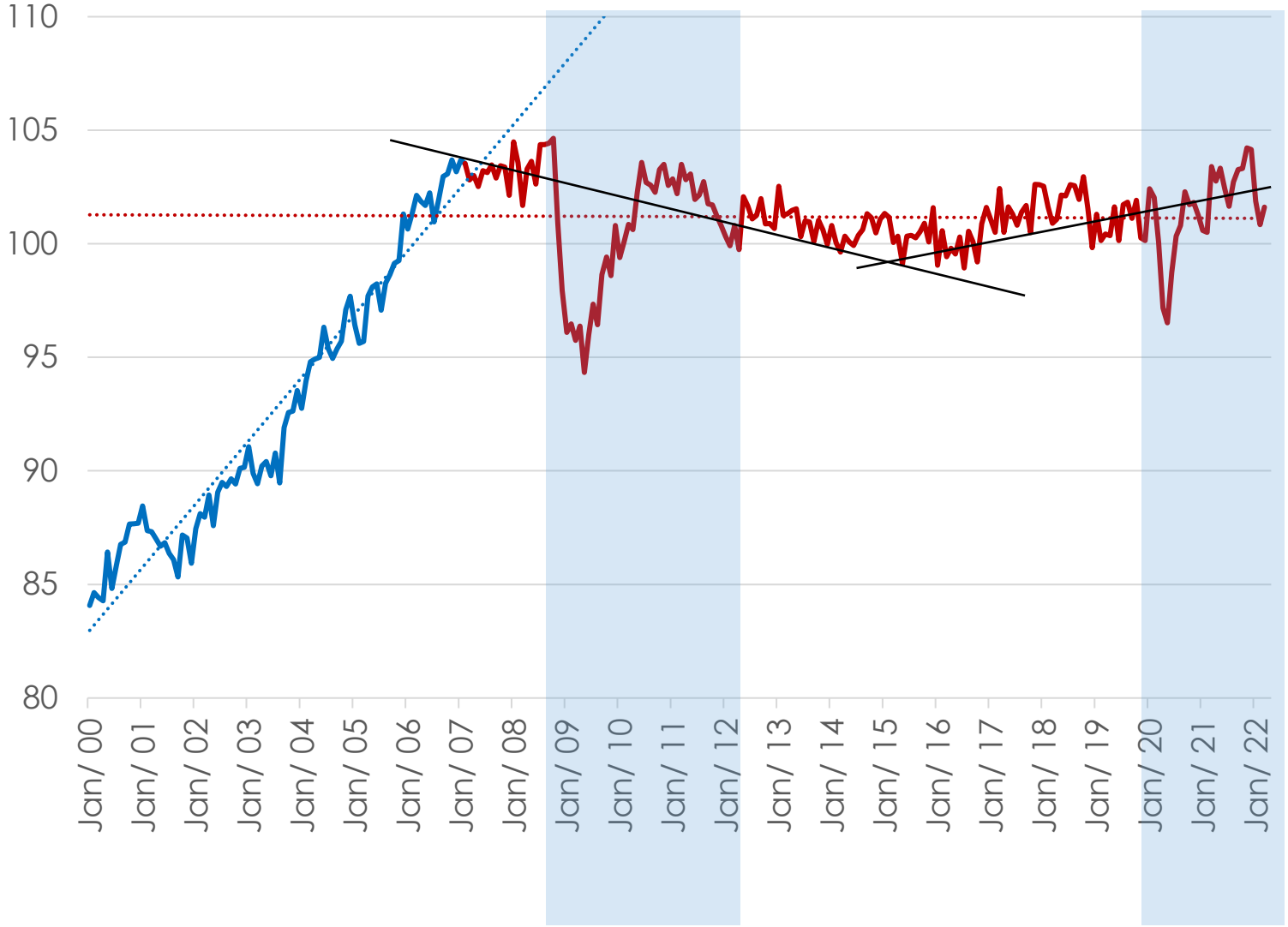
Monthly Index of Goods Market Globalization



- Real goods trade relative to industrial production
  - ➢ Stronger trade reponse relative to IP in GFC
  - ➢ But the real interesting break occurred before Lehman shock – reasons?
  - ➢ **Rise in protectionism (export restrictions) adds to supply chain stress**
  - ➢ Worrying implications for inflation dynamics

Source: CPB, own calculations and illustration. Last data point: March 2022. Index relates global index of goods trade to a global index of industrial production.

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Decoupling Global Value Chains (GVCs)

Eppinger, Felbermayr, Krebs and Kukharsky (CESifo, 2021): effects of foreign output (supply) shocks on welfare with and without GVC trade

- Strong similarities to DKSY, but many countries and sectors
- Ricardian quantitative trade GE model with full intra- and international IO-linkages (as DKSY)
- Separation between final goods trade and GVC trade and respective trade costs
- Stochastic sectoral labor reallocation brake
- IO data from WIOD project (updated from base year 2014)
- Two different sets of trade elasticities (long-run vs. short-run)
- Foreign labor supply shock calibrated to China lock down in winter/spring 2020

- Simulation of effects of GVC decoupling, of foreign supply shocks, and of their interaction on

➢ Changes in **welfare$_i$** = $1/P_i$

Source: Eppinger, Felbermayr, Krebs und Kukharsky (2021).

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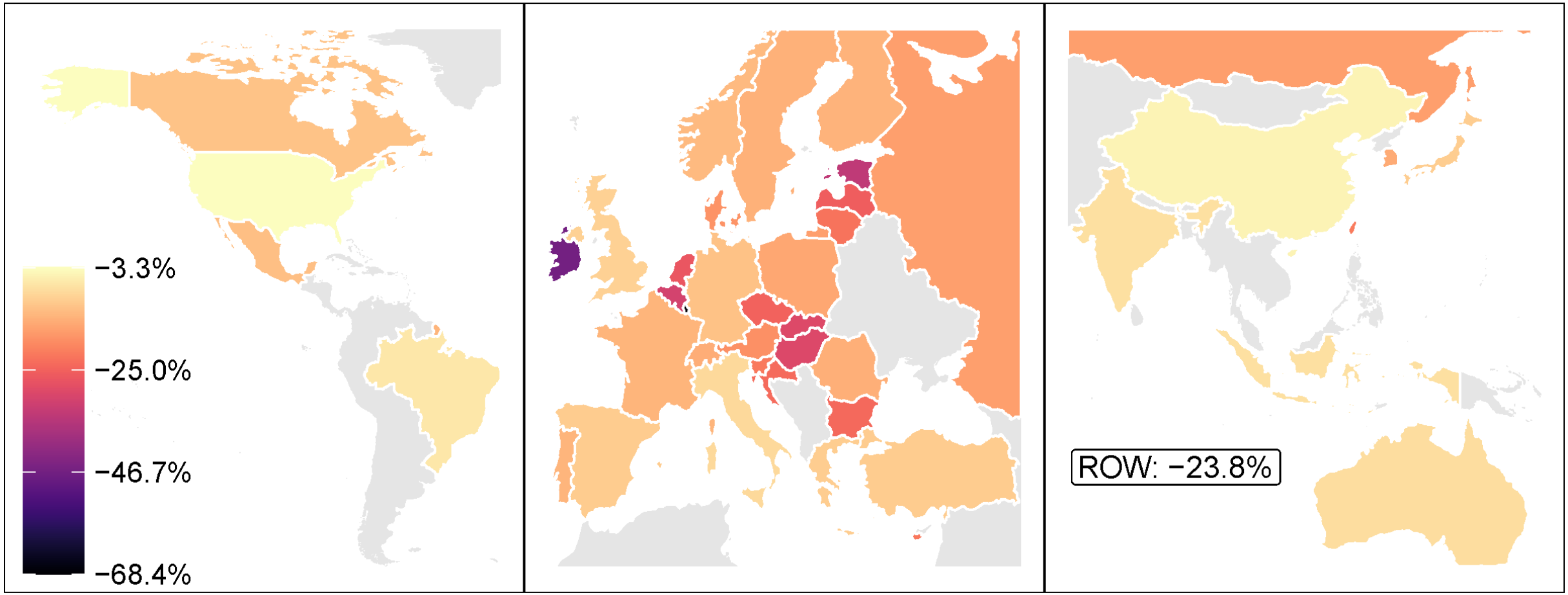
Decoupling of GVC would yield substantial welfare costs

Percentage change in long-run welfare costs (real GDP per capita)



Source: Eppinger, Felbermayr, Krebs und Kukharsky (2021).

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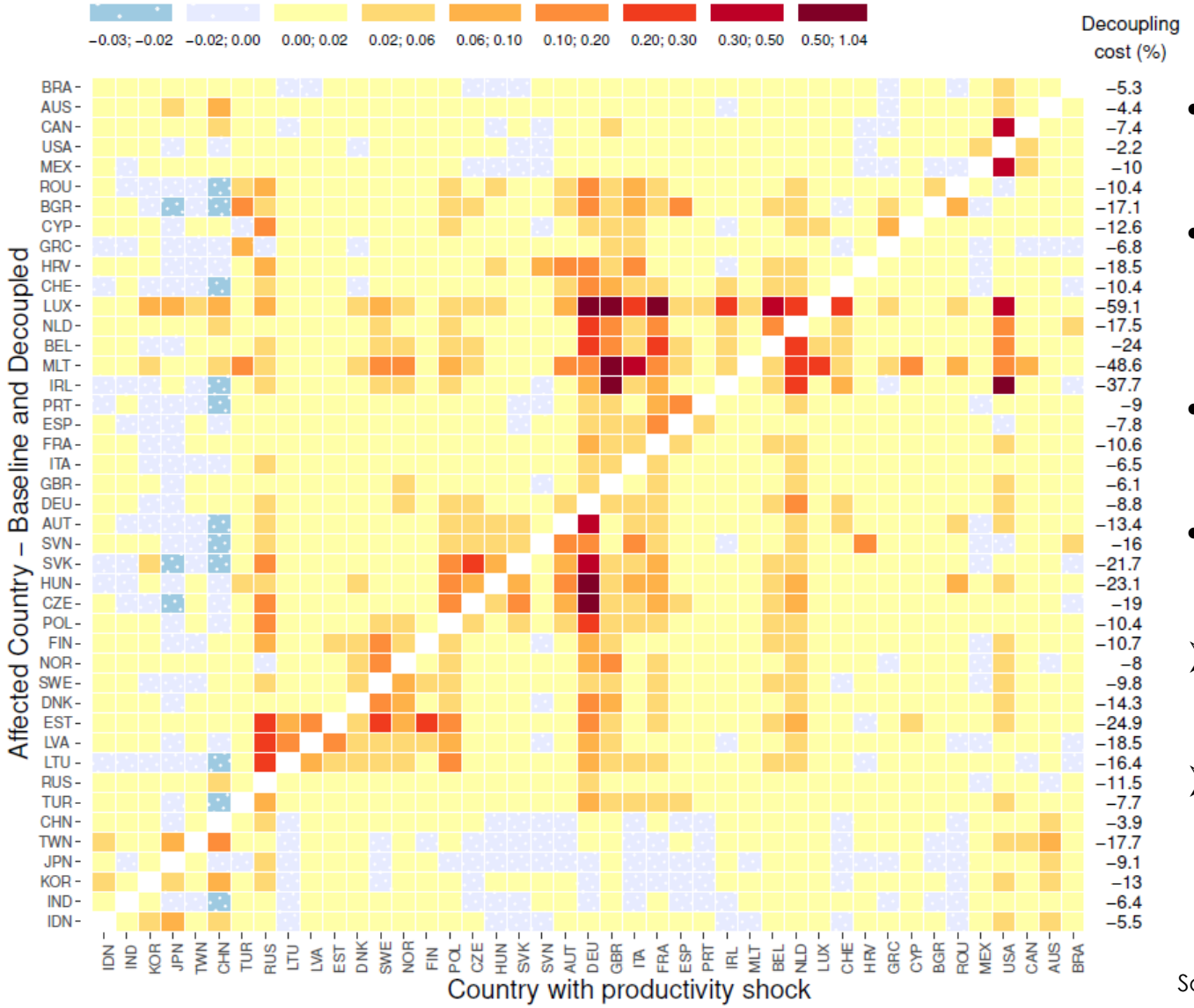
Decoupling insulates from foreign supply shocks, but at massive cost



- Uniform shock to labor productivity of -29% in country on x-axis.
- Cells show difference between per capita income effect in baseline (GVCs) and decoupling (No GVCs)
- Cell values mostly positive, but very small
- Costs of decoupling, on the other hand, are very pronounced

➢ Decoupling of GVCs makes spillover effects consistently smaller

➢ But decoupling has direct negative effects that are an order of magnitude larger

Source: Eppinger, Felbermayr, Krebs und Kukharsky (2021).

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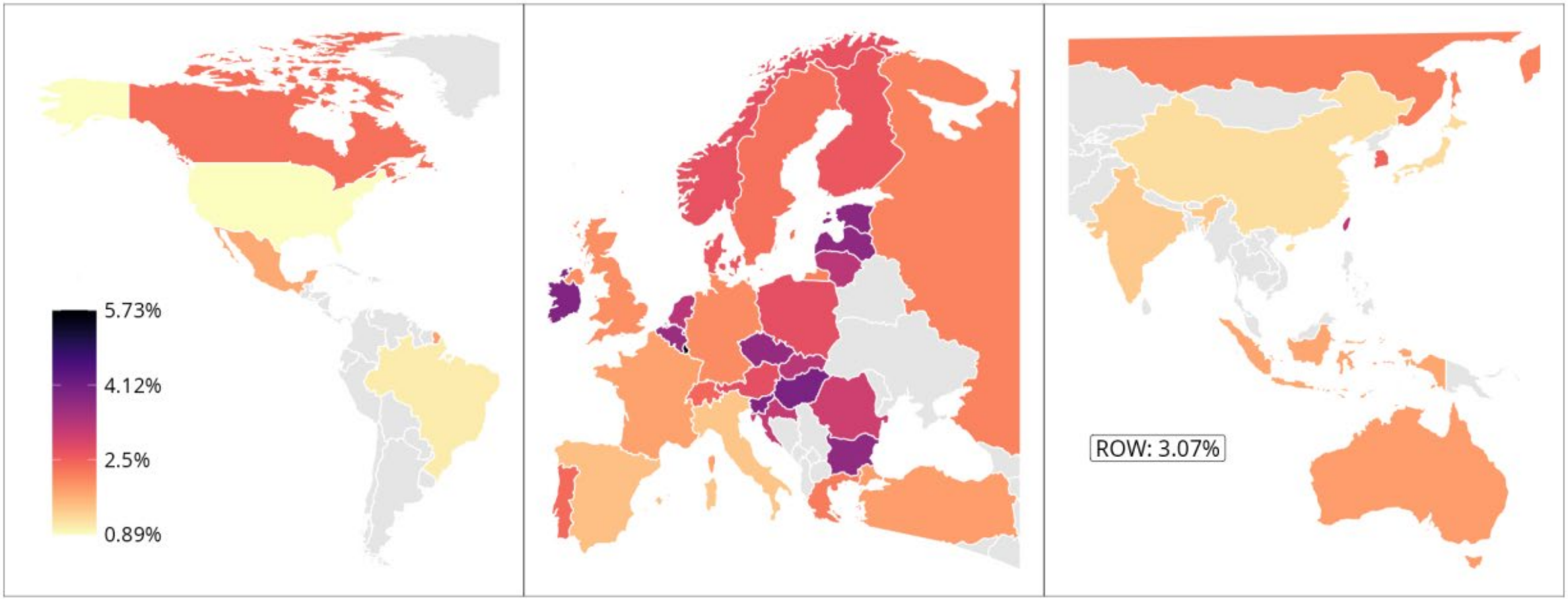
Unilateral decoupling effects on transmission of global shocks – short run analysis

Short-run welfare effects (real GDP per capita), percentage changes



Source: Eppinger, Felbermayr, Krebs und Kukharsky (2021).

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