

30.11.2020

GFP WEEK OPEN WEBINAR SERIES

Product dependencies, COVID-19 and the future of supply chains

Prof. Lisandra Flach,

ifo Center for International Economics

Ludwig-Maximilians-Universität Munich

ifo INSTITUTE

Leibniz Institute for Economic Research
at the University of Munich

Outline

I. WORLD BEFORE COVID-19

II. THE IMPACT OF COVID-19 ON GLOBAL VALUE CHAINS

- a. Direct and indirect effects of COVID-19 on the economy
- b. Counterfactual analysis in a less globalized world

III. PRODUCT AND SECTOR DEPENDENCIES

- a. Sector-level dependencies along the value chain using input-output tables
- b. Product-level dependencies using import data

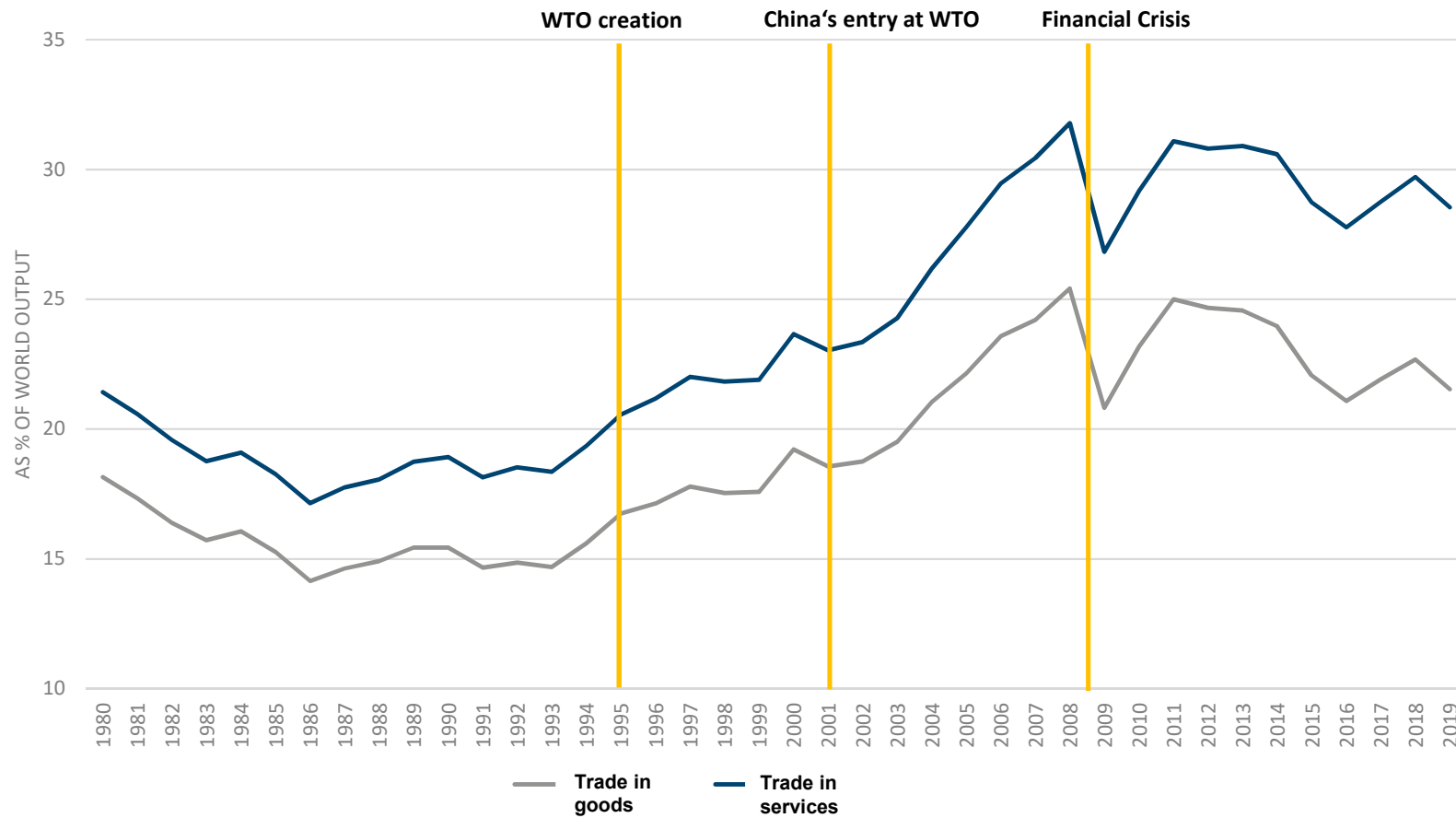
IV. THE FUTURE OF SUPPLY CHAINS

- a. COVID-19: A digitalization/robotization booster?
- b. Lessons learned and the future of supply chains

World Trade before COVID-19



01 THE WORLD BEFORE COVID-19: SLOWBALIZATION



Source: WTO (2020) and World Bank (2020), own calculation.

01 THE WORLD BEFORE COVID-19: GROWING PROTECTIONISM

- **Signs of growing protectionism**
 - Increase in the number of protectionist measures
 - Despite the increase in the number of trade agreements, recent retreat from regional liberalization, e.g. Brexit

- **Multilateralism has stalled**
 - WTO appeal court paralysed
 - No agreement on new WTO DG
 - WTO reforms are necessary, but not in sight

The impact of the COVID-19 crisis on GVCs



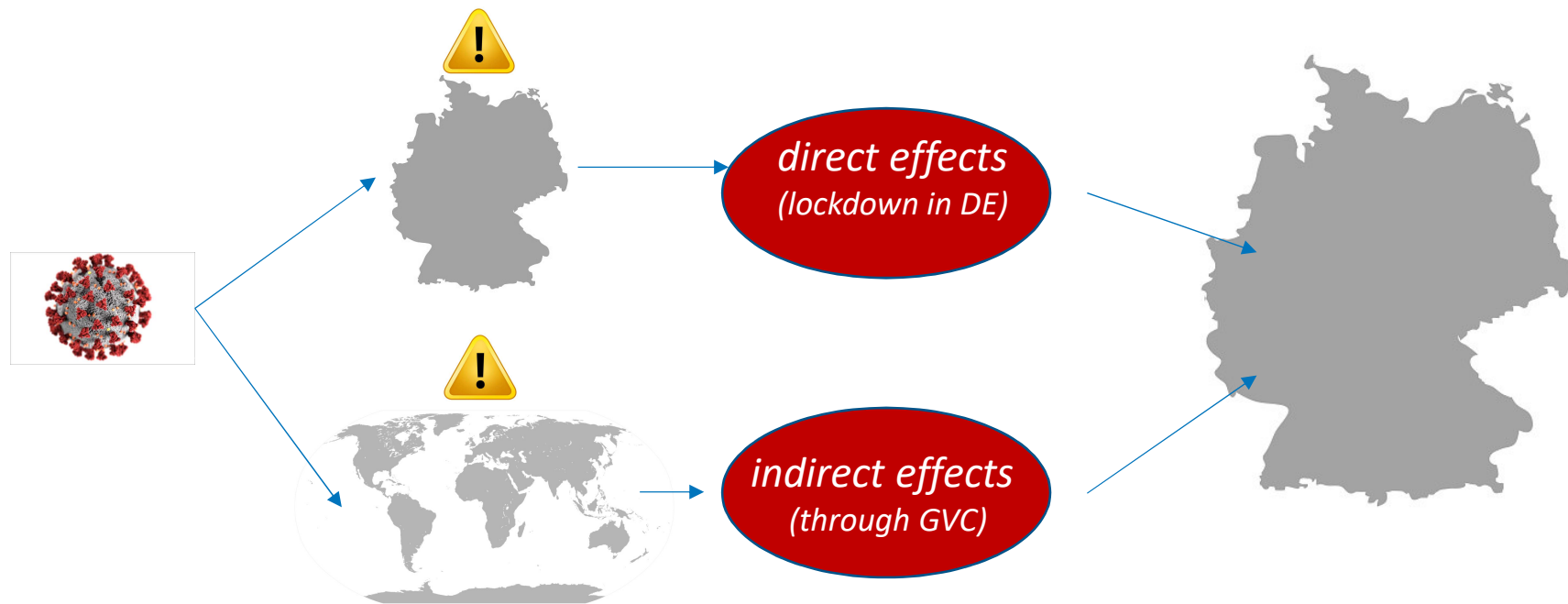
02 THE EFFECT OF COVID-19 ON GVC

- Based on Steininger and Sforza (2020), Flach and Steininger (2020) quantify the effect of COVID-19 on GVCs across German states

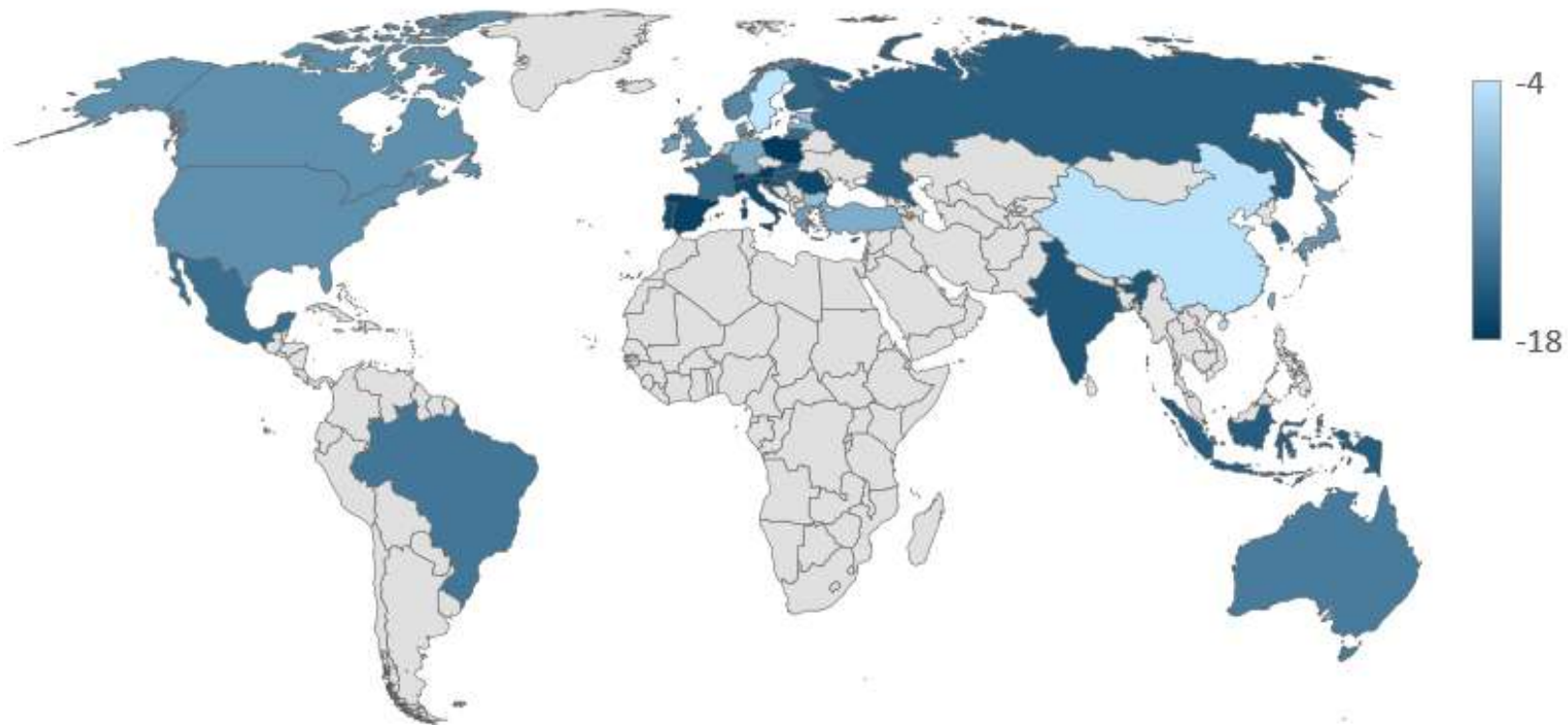
- General equilibrium model that accounts for **input-output linkages**

- Following Steininger and Sforza (2020), account for:
 - Country and sector-level variation in lockdown measures
 - Stringency of lockdown measures introduced worldwide (Hale et al., 2020) and duration of government responses (CoronaNet)
 - Degree of teleworkability across sectors (Dingel and Neiman, 2020)

02 THE EFFECT OF COVID-19 ON GLOBAL VALUE CHAINS (GVC)

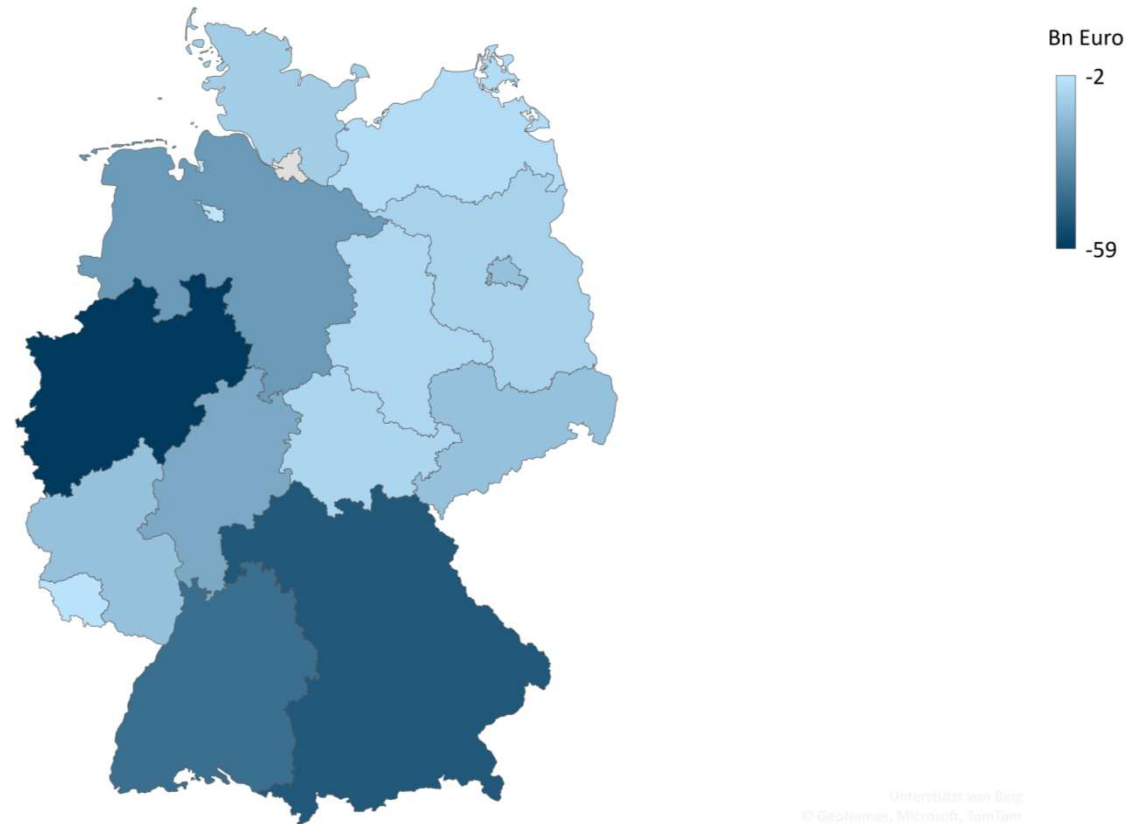


02 COVID-19 HAS PUT GLOBAL SUPPLY CHAINS UNDER PRESSURE: LARGE DECREASE IN REAL INCOME



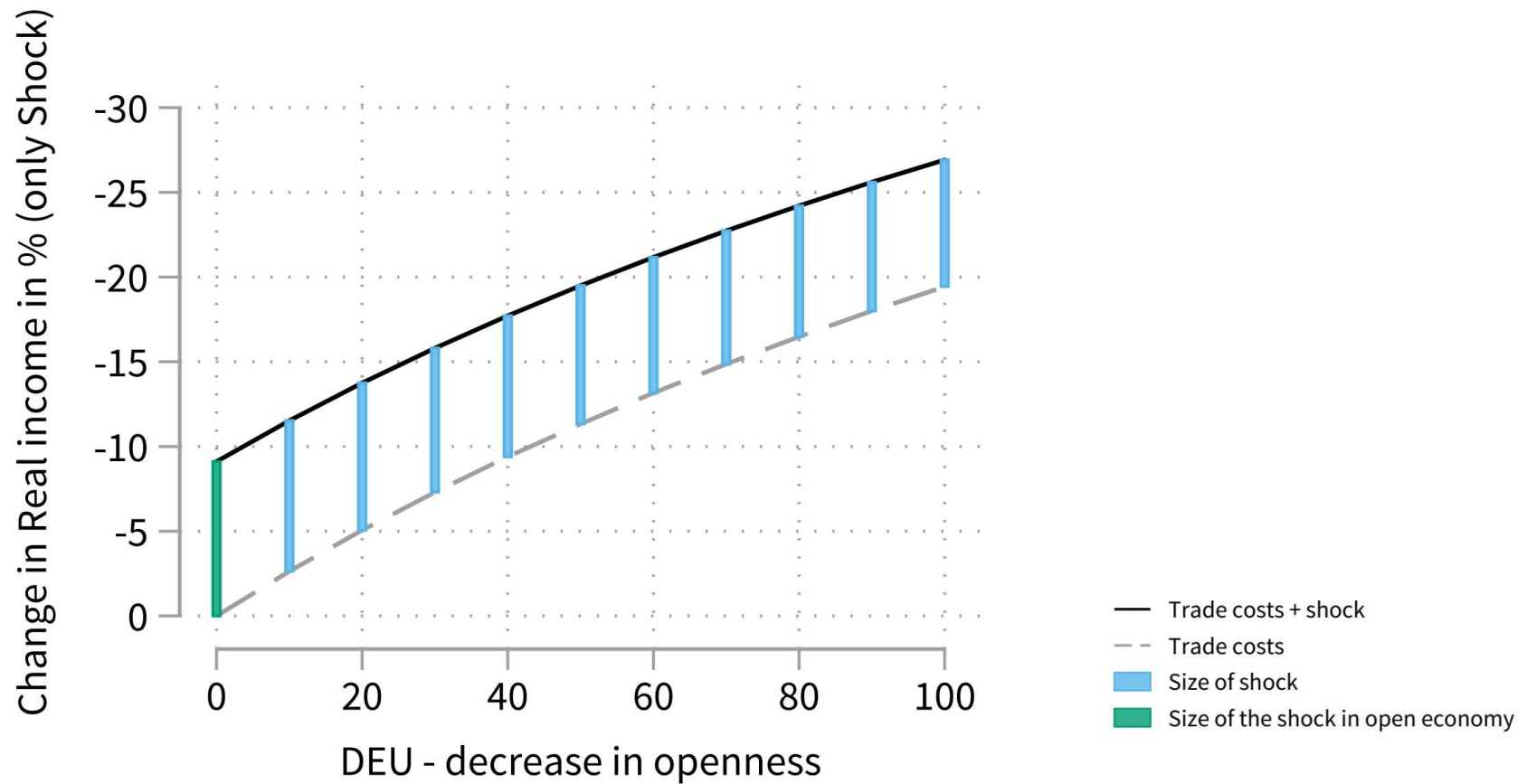
Source: Sforza and Steininger (2020), „Globalization in the Time of COVID-19”, CEPR Press, COVID Economics.

02 COVID-19: HETEROGENEOUS EFFECTS ACROSS GERMAN STATES



Source: Flach and Steininger (2020), "Globalisierung nach Covid-19: Die Folgen der Pandemie für die deutsche Wirtschaft." *ifo Schnelldienst* 73.07 (2020): 17-23.

02 DEGLOBALIZATION IS NOT A SOLUTION! A COUNTERFACTUAL ANALYSIS

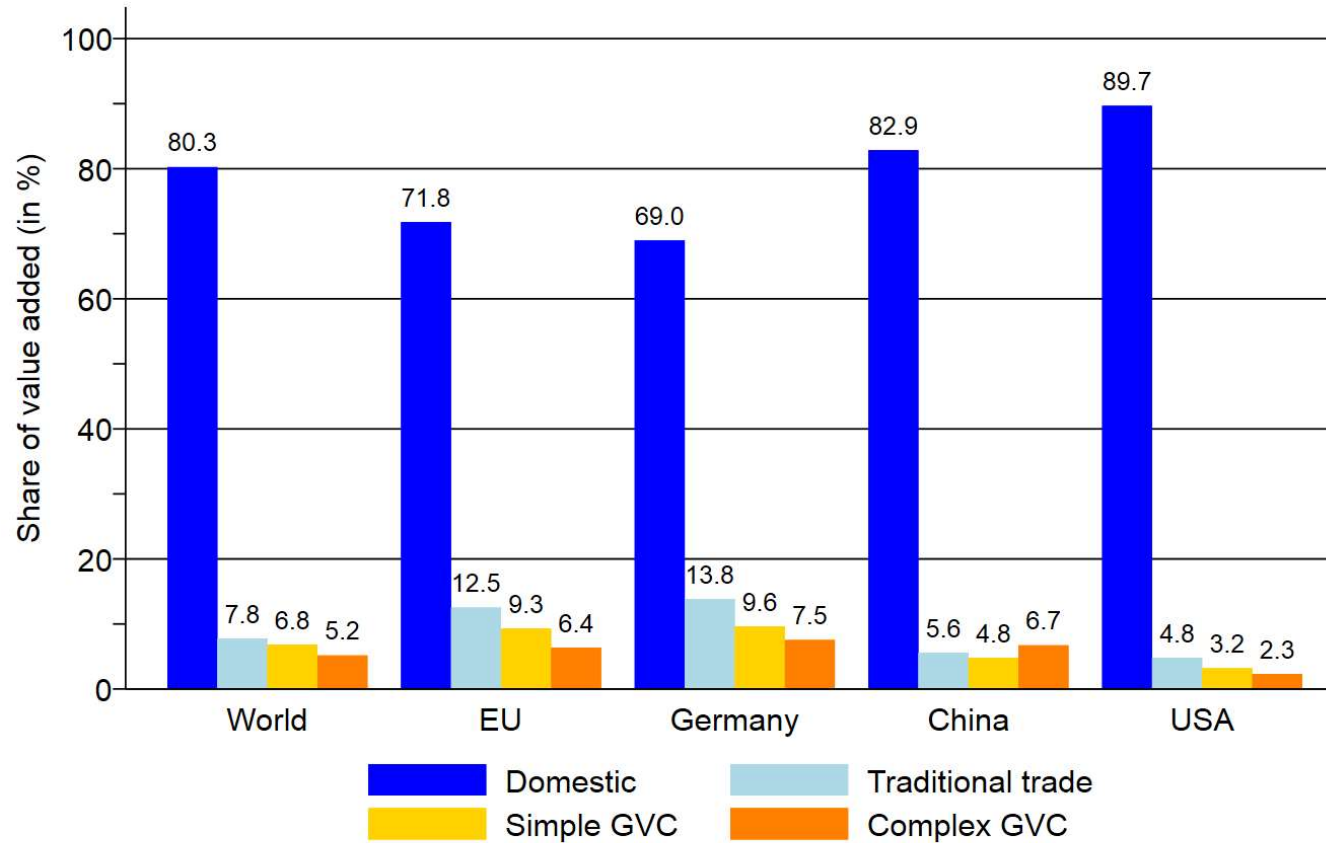


Source: Sforza and Steininger (2020) and Flach and Steininger (2020).

Product and sector dependencies



03 SECTOR DEPENDENCIES USING INPUT-OUTPUT LINKAGES: 17% OF GERMAN VALUE ADDED IS CREATED THROUGH GLOBAL VALUE CHAINS. WORLD AVERAGE: 12%



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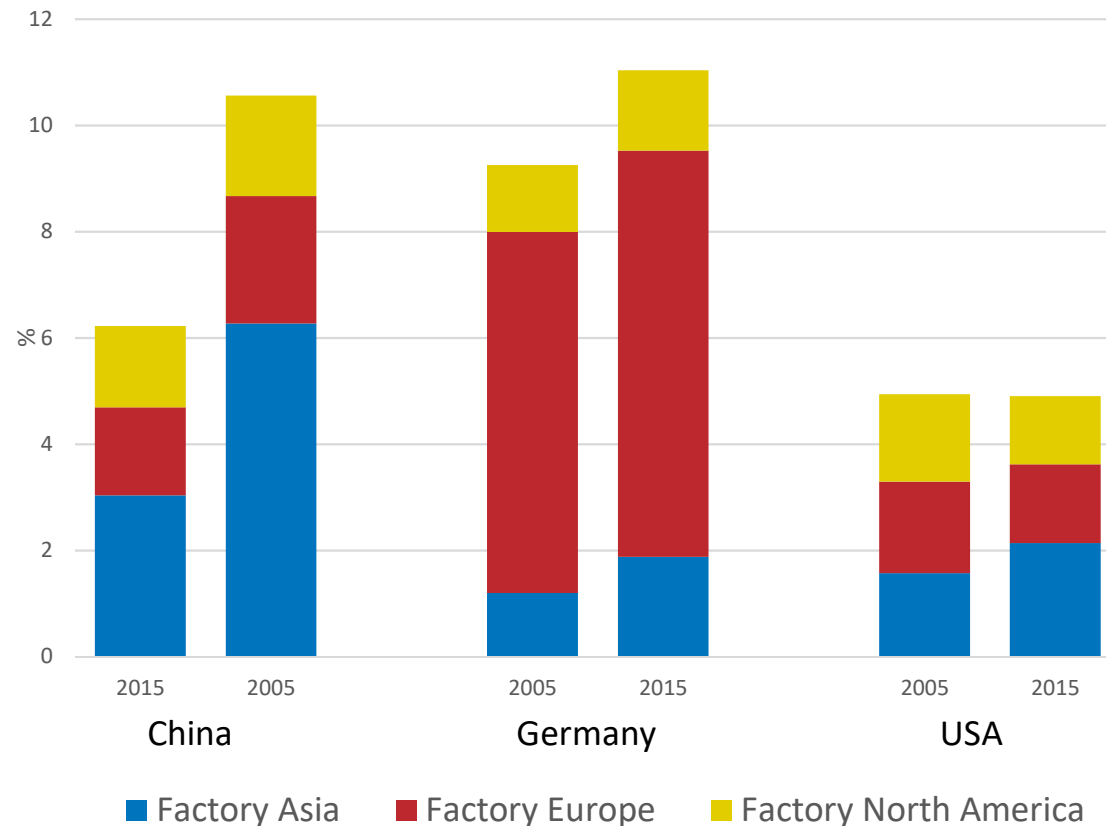
Source: Flach, L., R. Aichele und M. Braml (2020), „Status quo und Zukunft globaler Lieferketten“, *ifo Schnelldienst*, 73(5), 16-22.

03 SECTOR DEPENDENCIES USING INPUT-OUTPUT LINKAGES: STRONG RELIANCE ON NEIGHBORING COUNTRIES

GERMAN ECONOMY IS SUBSTANTIALLY MORE NETWORKED WITH EUROPE THAN USA OR CHINA WITH THEIR NEIGHBORS.

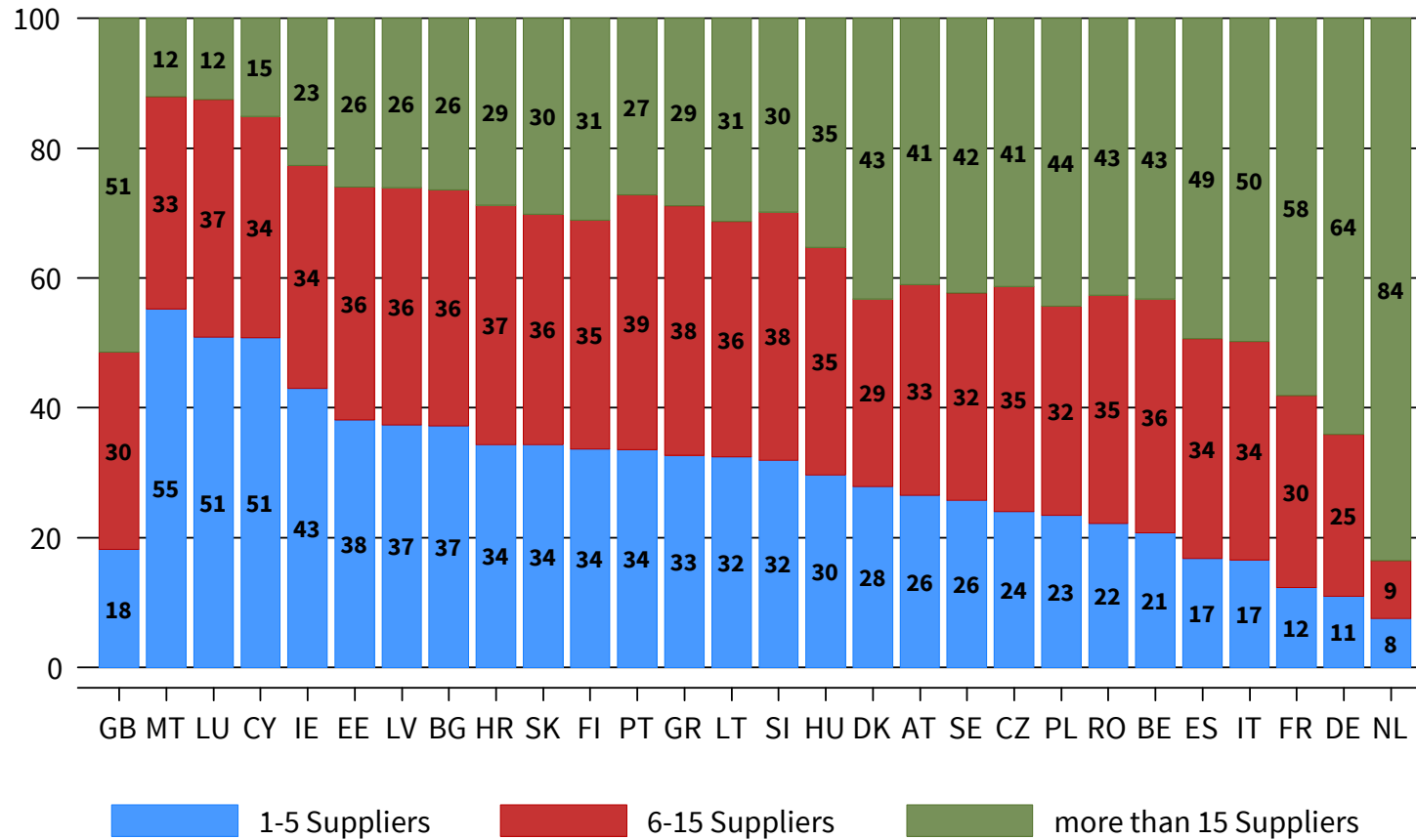
Germany is therefore more affected than China or the US by

- regional lockdowns
- border closures
- drop in foreign demand, in particular from the EU.



Source: Flach, L., R. Aichele und M. Braml (2020), „Status quo und Zukunft globaler Lieferketten“, *ifo Schnelldienst*, 73(5), 16-22.

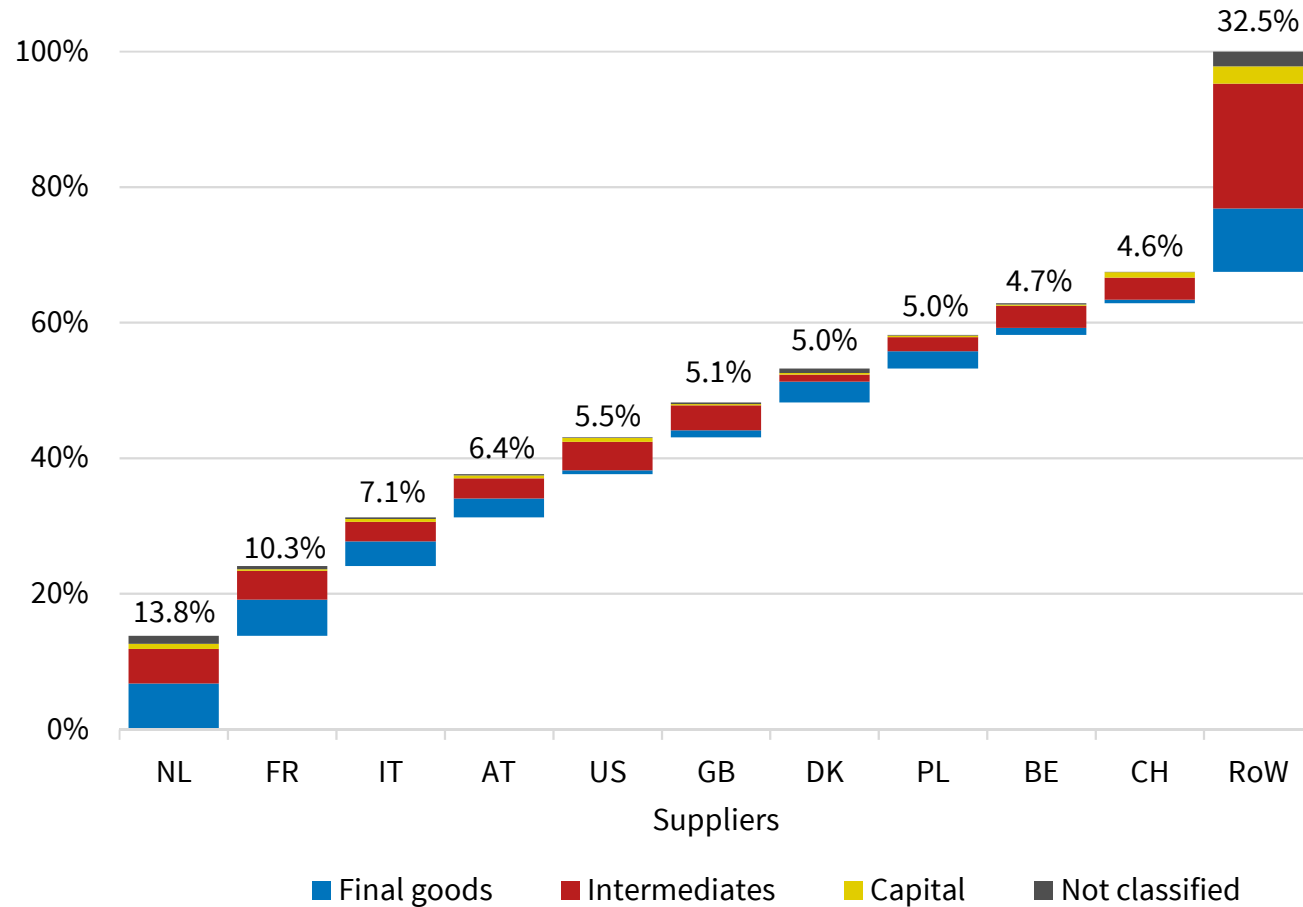
03 PRODUCT DEPENDENCIES: GERMANY AND MOST EU-COUNTRIES HAVE A HIGHLY DIVERSIFIED SOURCING PORTFOLIO



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Source: Flach, L., F. Teti, L. Wiest und M. Atzei (2020), „EU27 and the UK: Product Dependencies and the Implications of Brexit”, *EconPol Policy Brief*.

03 PRODUCT DEPENDENCIES: GERMANY IMPORTS HIGHLY DEPENDENT PRODUCTS MAINLY FROM THE EU27



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Source: Flach, L., F. Teti, L. Wiest und M. Atzei (2020), „EU27 and the UK: Product Dependencies and the Implications of Brexit“, *EconPol Policy Brief*.

COVID-19: A digitalization and robotization booster?

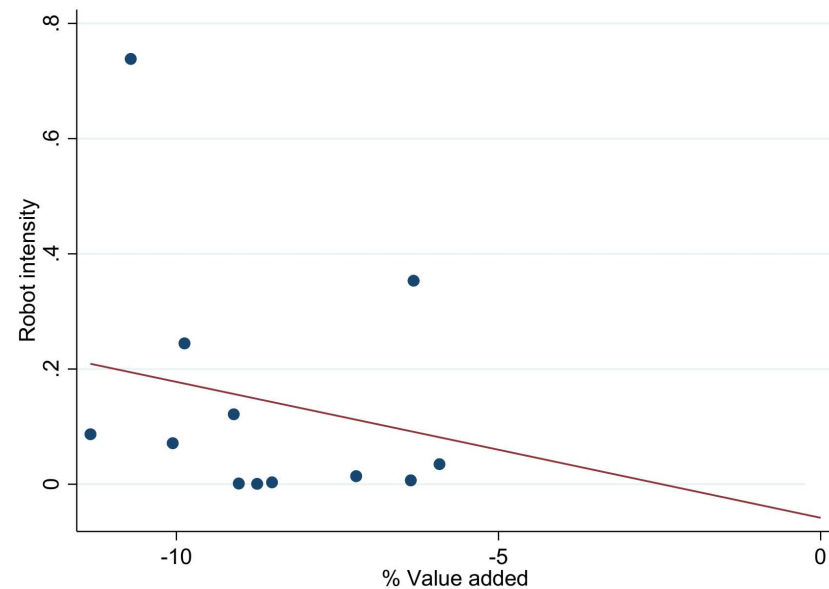


04 COVID-19: A ROBOTIZATION BOOSTER?

COVID-19 and robots:

- Robot-intensive sectors in Germany were more severely hit by COVID-19 through *indirect effect* → not surprising because of high integration in GVCs
- In 2020: Delayed firm investments, drop in demand, but positive long-run perspectives
- Firm investment decisions:
 - resilience + increase in worker safety
 - new skills are needed (training!)

Correlation between sector-level losses due to COVID-19 and robot intensity



Source: Flach and Steininger (2020) and IFR (2020).

Positive perspectives for *services robots* too: increased demand and new applications (e.g. sanitizing and healthcare, >30 new disinfection robot models in 2020, IFR Data (2020)).

FINAL REMARKS

- Large negative effects of COVID-19 on sectors integrated in GVCs, but also direct effects of COVID-19 on the economy.
- Deglobalization and nearshoring do not make the economy more resilient to global shocks!
- Diversification of the supply chains to increase resilience
- Global cooperation & Multilateralism (*interdependencies*)
- Trend towards more industrial and services robots

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THANK YOU FOR YOUR ATTENTION!

Lisandra Flach

ifo Institut – Leibniz-Institut für Wirtschaftsforschung an der Universität München e.V.

Poschingerstr. 5
81679 München

Phone: +49(0)89/9224-1423

Fax: +49(0)89/9224-1409

E-Mail: flach@ifo.de

ifo INSTITUTE

Leibniz Institute for Economic Research
at the University of Munich

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Sforza, Alessandro, Steininger, M. 2020. „Globalization in the Time of COVID-19“. *No. 8184. CESifo Group Munich*.