The Significance of Direct and Indirect Exports for the Regional Economy of North Rhine-Westphalia

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Agenda

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- Motivation

- Methodology

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- Conclusion

Introduction

- NRW as a share of Germany:
  - 21.6 % of the population
  - 20.8 % of employment
  - 20.8 % of GDP
  - 15.0 % of exports
- Export share (exports/GDP):
  - Germany: 38.9 %
  - NRW: 27.8 %
- What's going on here?
- Does this mean that NRW is less dependent on exports?
- How important are trade shocks for the regional economy of NRW?

Direct Exports and Indirect Exports

- Direct export:
  - A good is produced in NRW and sold to a customer outside Germany.
  - These exports are recorded in the national accounts.
  - Statistical offices provide this information.
- Indirect exports:
  - A good is produced in NRW and sold to a customer in another part of Germany.
  - That customer uses the good to produce other goods which are then exported to customers outside Germany.
  - These "exports" are not recorded anywhere.
  - We have no information from official sources.

Direct Exports and Indirect Exports

Germany's most important trading goods, 2019
Billion euros

Exports **Imports**

Manufacture of motor vehicles, Manufacture of motor vehicles,
railers and semi-trailers 223 | 126 trailers and semi-trailers

Manufacture of computer,
electronic and optical
products

Machinery and equipment 194 | 117

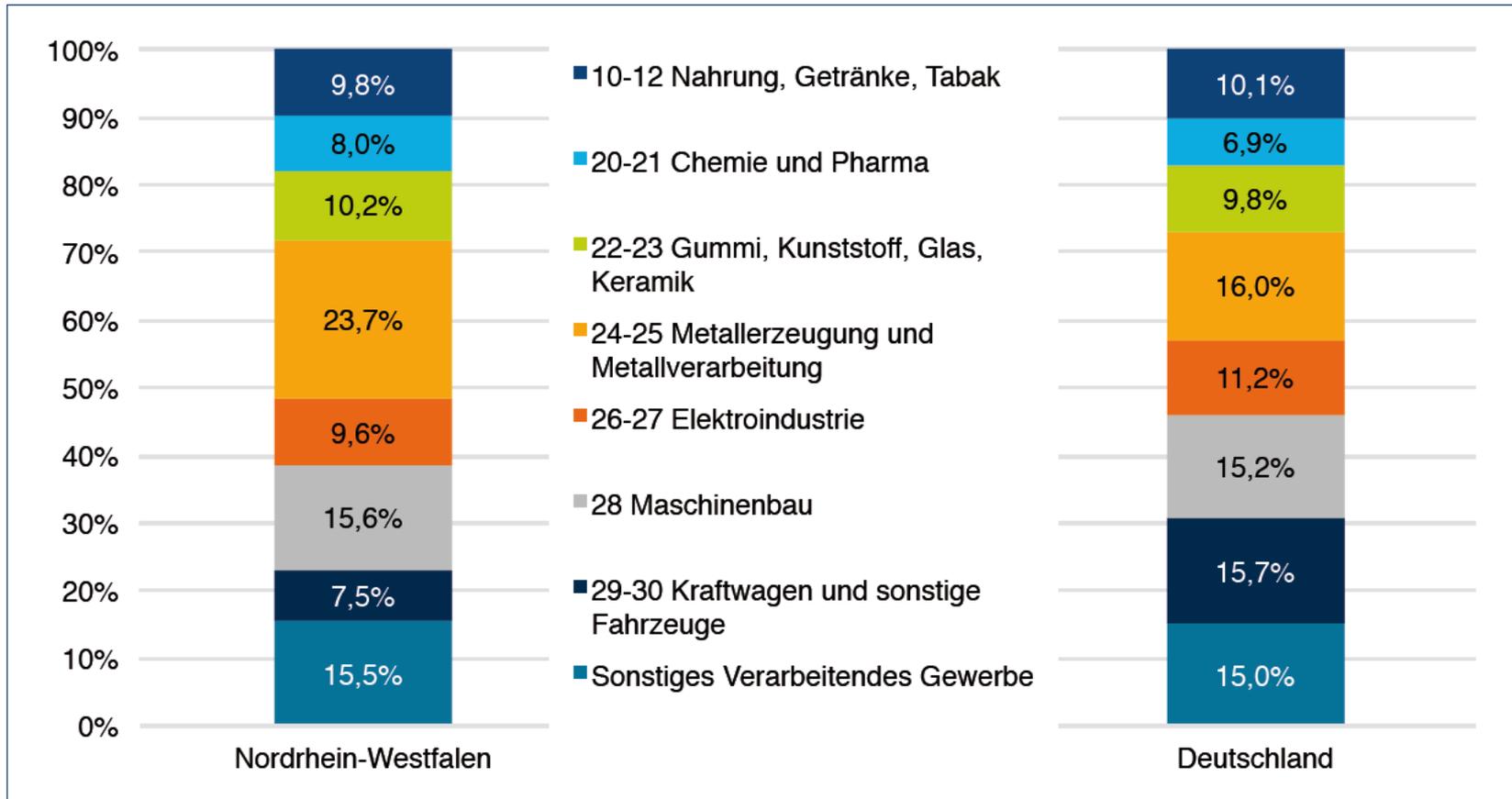Chemicals and chemical products 118 | 86 Machinery and equipment

Preliminary results
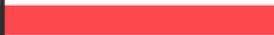
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Direct Exports and Indirect Exports

Quelle: Beschäftigungsstatistik der BA, eigene Berechnungen.

Source: Koch et al., 2019

Direct and Indirect Exports

- Observations:
  - Focussing on direct exports suggests that NRW is not highly dependent on exports.
  - The export share is relatively low (27.8% in NRW, 38.9% in Germany).
- But:
  - NRW produces a lot of intermediary goods (e.g. basic metals) for customers in other areas of Germany (e.g. carmakers).
  - In case of an export shock, the demand for those goods would be affected.
- Hypothesis:
  - The importance of exports (including indirect exports) for the regional economy is higher than we might think.
- Research question:
  - How important are exports for the regional economy of NRW?

Methodology

- MRIO model
  - Based on WIOD MRIOT
  - Germany separated into two regions: NRW and ROC (rest of country)
- The MRIOT shows:
  - Exports from NRW to ROW (direct exports of NRW)
  - Exports from ROC to ROW (direct exports of ROC)
- Using the MRIO model, we can compute:
  - The share of regional output that depends on final demand in NRW, ROC, and ROW

Extension: Expert Interviews

- The aforementioned MRIOT was developed in the context of another project.

- The MRIOT is based on a number of assumptions and estimates.

- In the present project, we conduct expert interviews to improve the reliability of those estimates.

- Work in progress, not yet finished!
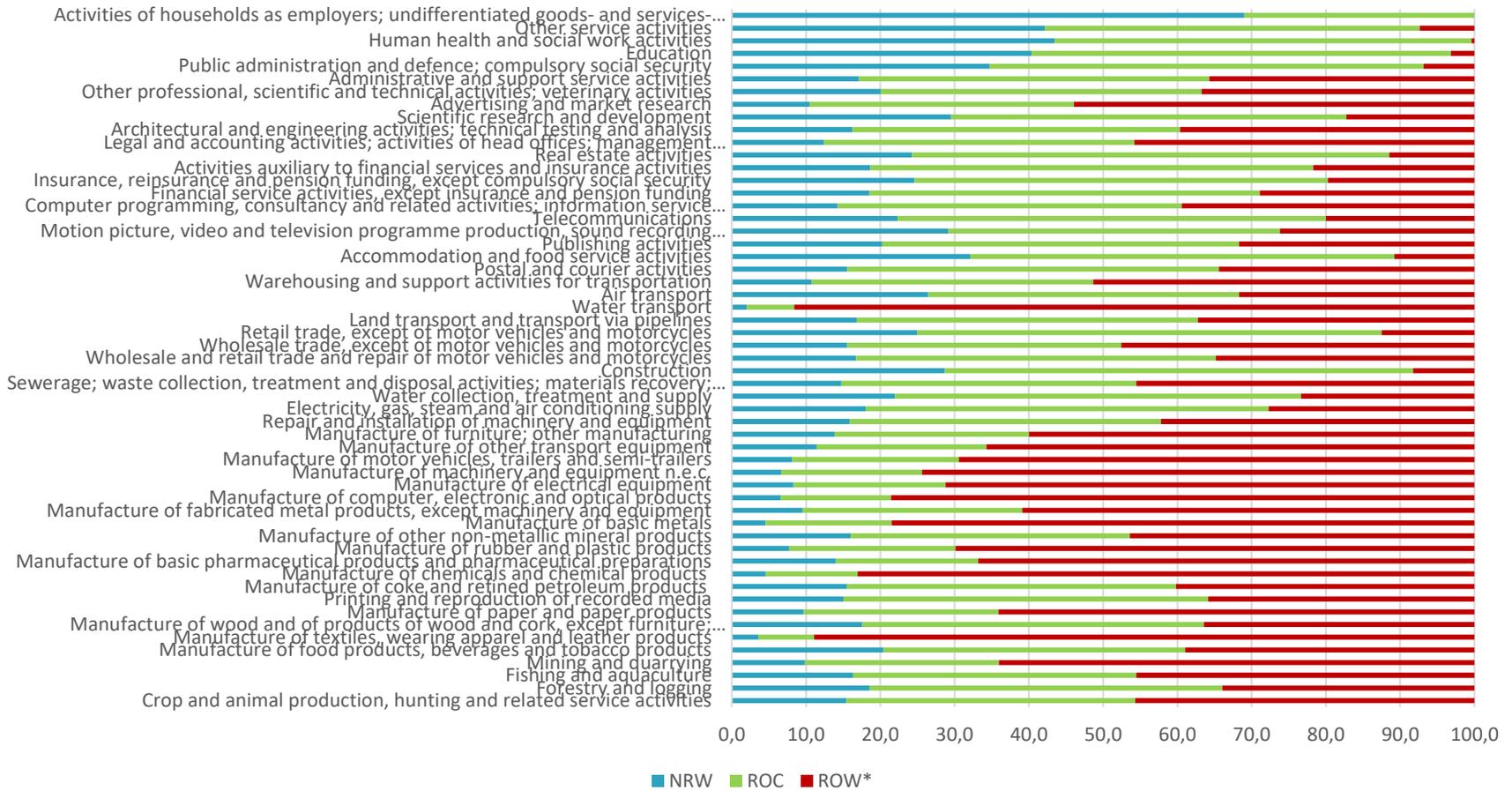
Final Demand for Products

- Using the MRIOT, we can compute the final demand for products in three regions:
  – NRW
  – ROC
  – ROW*
- In the MRIOT there are four categories of final demand (final consumption by private households, NPISH, government, and investment). We add them up to obtain total final demand in each region.
- This gives us three final demand vectors.
- We enter those vectors into a standard I-O model to compute the associated output by industry and region.

Output dependent on Final Demand (by Region)

	Share of output (%) dependent on final demand in…			
	NRW	ROC	ROW*	Total
NRW	20.2	44.4	35.4	100.0
ROC	11.1	50.4	38.5	100.0
ROW*	0.3	0.8	98.9	100.0
Total	0.9	3.2	96.0	100.0

- 20.2 % of NRW's output depends on its own final demand.

- 44.4% of NRW's output depends on final demand in the rest of Germany.

- 35.4 % of NRW's output depends on final demand in the rest of the world.

Output dependent on Final Demand (by Industry)

Output dependent on Final Demand (Selected Industries)

Industry	NRW	ROC	ROW*
Water transport	2,0	6,4	91,6
Manufacture of textiles, wearing apparel and leather products	3,6	7,5	88,9
Manufacture of chemicals and chemical products	4,6	12,3	83,1
Manufacture of computer, electronic and optical products	6,6	14,9	78,5
Manufacture of basic metals	4,5	17,0	78,5
Manufacture of machinery and equipment n.e.c.	6,7	19,0	74,4
Manufacture of electrical equipment	8,3	20,5	71,2
Manufacture of rubber and plastic products	7,7	22,4	69,9
Manufacture of motor vehicles, trailers and semi-trailers	8,1	22,5	69,4
Manufacture of basic pharmaceutical products and pharmaceutical preparations	14,0	19,2	66,8

Findings

- The regional economy of NRW is highly dependent on exports.

- According to our (very simple) model, more than one third of NRW's output depends on final demand in the rest of the world.

$\Rightarrow$ The importance of exports is bigger than we might have thought.

$\Rightarrow$ Trade shocks can have big impacts on NRW's economy.

Findings

- Some branches are more export-dependent than others.
- Branches that depend heavily on exports include manufacture of textiles, wearing apparel and leather products, chemicals and chemical products, computer, electronic and optical products, basic metals, machinery, electrical equipment, rubber and plastic products, motor vehicles, trailers and semi-trailers, basic pharmaceutical products and pharmaceutical preparations.
- Branches with low export dependence include: public administration, education, and health.

Conclusion

- The regional economy of NRW is highly dependent on exports.

- Trade shocks may have big impacts on the regional economy.

- If we want to assess the export dependence of a regional economy, official trade data may produce a misleading picture because they do not account for interregional deliveries.

- The MRIO model used in this project captures crucial links between NRW's industries (e.g. basic metals) and industries in the rest of Germany (e.g. automobile manufacturing).

- Subnational MRIO models are awesome. We should try to make them more reliable by collecting more data on interregional trade.