Capturing heterogeneity in global value chains: how to slice and dice?

Current version of the paper can be found at: https://tinyurl.com/uqn9t72

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Motivation – what would we like to know?

- Trade policies more and more targeting different types of enterprises (e.g. SMEs, startups, firms led by female entrepreneurs) to make globalisation more inclusive
- Much known about direct exports
- SMEs are less prone to export. Policy makers worry: do SMEs miss out, e.g. on emerging markets?
- Not much known about indirect exports, that is, supplying in the value chain of exporters

How to quantify this?

The usual work horse: input output table

	Manufacturing	Services	Exports	Consumption	Investment	Total production
Manufacturing						
Services						
Value added						
Imports						
Total production						

But that is not going to work here. No SME to be seen! And one cannot assume that SMEs behave as large enterprises.

Motivation – what is the problem?

- Usual approaches for global value chains do not work
- Because of heterogeneity, e.g. SMEs are (even as a group) very different than large enterprises
- For example, less imports and exports

- Two methods exist to tackle the problem
- One is time and data consuming, of good quality
- The other method is quick & dirty
- But do the results differ much?

We need an extended input output table (eIOT)

	Manufacturing, SME	Manufacturing, large enterprises	Services, SME	Services, large enterprises	Exports	Consumption	Investment	Total production
Manufacturing, SME								
Manufacturing, large enterprises								
Services, SME								
Services, large enterprises								
Value added								
Imports								
Total production								

How to make an eIOT – eSUT method

- Need production, use, imports, exports
- By industry, by type of enterprise
- At product level, to create extended Supply Use Tables (eSUT), SUT is standard in National Accounts
- Then create eIOT from eSUT using proportionality

E.g. Metal: SME and large produce 5 & 25 bolts resp.

Construction: SME and large use 20 & 10 bolts resp.

SME metal -> SME construction is 5/30 * 20/30 = 100/900

How to make an eIOT – shares method

Following Piacentini and Fortanier (2015) and Miao and Fortanier (2018):

- Start with an input-output table
- Use shares, by industry, of each type of enterprise in imports, exports, value added, production
- Split the IO-table, start with production and value added, then imports, later exports
- No product detail needed

Pros and cons of the methods

- eSUT-method integrates data at product x industry level
- Flexible; e.g. can remove unlikely combinations (small enterprises building roads) or pinpoint illegal production
- eSUT method is the “gold standard”
- Very data and time consuming – everything at product x industry level
- Shares-method is far less data and time (factor 5) consuming but might be of lower quality
- And might be the only feasible method for many researchers

Some theoretical considerations

- Shares method has, by construction, correct estimates for total production, value added, imports and exports
- That accounts for a large part of supply and demand in industries strongly connected to foreign economies
- Then errors in the intermediate part of the IO-table have only small influence on indicators related to international trade
- Indicators related to the domestic economy could be of worse quality

Data used to compare the 2 methods

- Extended input-output table from the Netherlands
- Reporting year 2012, described in Chong et al. (2019)

- First compiling extended SUT, then extended IOT
- Use the original eIOT as example of eSUT approach
- Create shares from eIOT, apply them on IOT to rebuild eIOT

- 58 industries, each split into SME/large enterprises
- 16 industries (agriculture, financial sector, non market sector) not split

Check: really two different eIOTs

Value of intermediate deliveries in eIOT, selection

		SME food manufacturing	large food manufacturing	ratio large / SME
eSUT	SME agriculture	2713	6254	2.31
method	Large agriculture	8	276	34.50
	Oil and gas mining	81	229	2.83
	SME food manufacturing	680	927	1.36
	large food manufacturing	2123	4317	2.03
shares	SME agriculture	2904	5943	2.05
method	Large agriculture	132	271	2.05
	Oil and gas mining	102	208	2.05
	SME food manufacturing	871	1783	2.05
	large food manufacturing	1770	3622	2.05

Results - macro

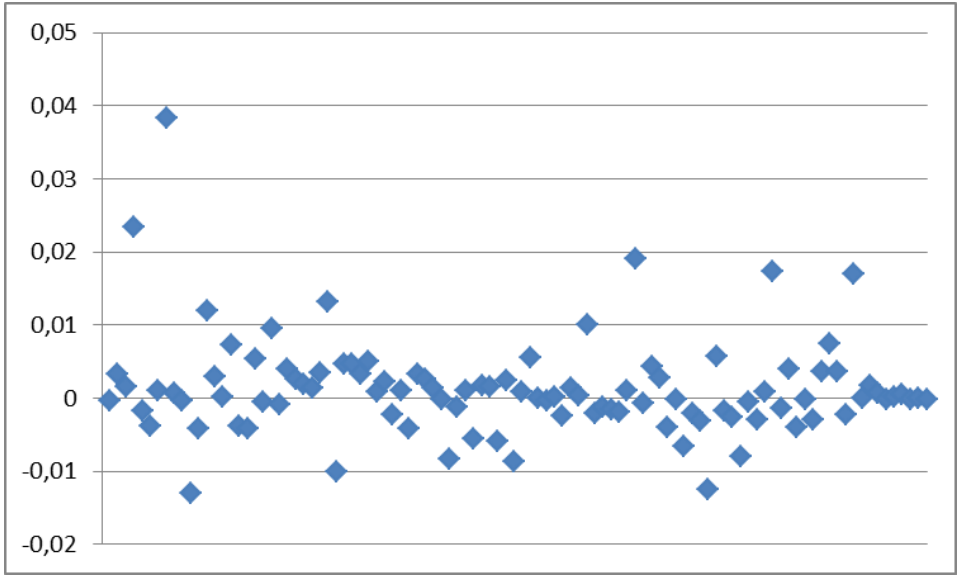
Indicators:

- DVAX domestic value added in exports as share of total exports
- VAX_in_VA value added due to exports as share of total value added
- Spillover (value added at suppliers due to exports of industry A) / (value added in industry A due to its own direct exports)

	shares	eSUT		shares	eSUT		shares	eSUT
	DVAX			VAX_in_VA			Spillover	
SME	0.75	0.74		0.38	0.38		0.78	0.78
Large enterprises	0.49	0.49		0.50	0.49		0.97	0.97
Non-split	0.83	0.83		0.17	0.17		1.81	1.81

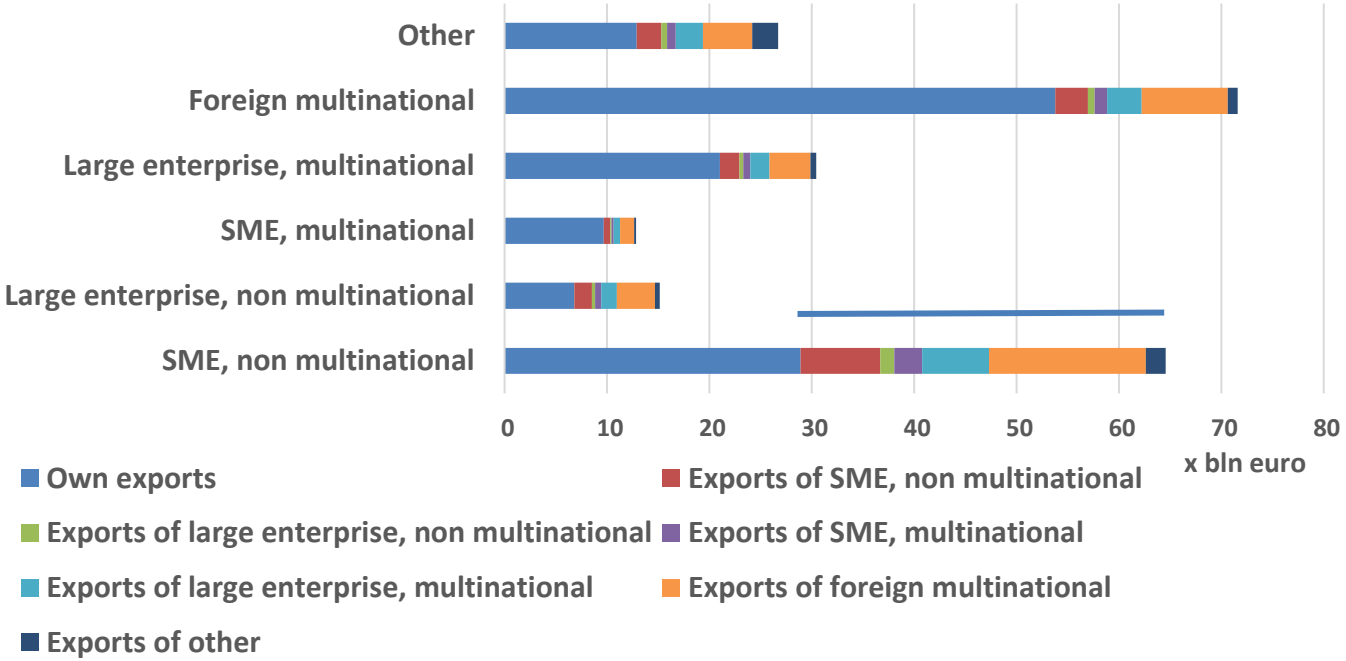
Results - meso

Difference in results for DVAX, by industry and size class



Similar results for VAX_in_VA and spillovers (see paper)

Application: MNEs and nonMNEs in Netherlands



About half of SME value added due to exports is earned by suppling in the value chain of other types of enterprises

Conclusion / discussion

- ESUT method consumes much time and data, is thought to be of best quality
- Shares method uses less resources, quality unknown
- Both methods yield similar results
- Next: create the shares from publicly available data
- Next: consider other country

Thought of policy makers: SMEs are missing out on exports. This is not supported by our analysis: SMEs have large indirect exports due to their presence in ecosystems of exporters.

Thank you for your attention

Please ask me questions!

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