

Discussion:
Total factor productivity and the terms of trade
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Summary

- **Research question:** What is the effect of ToT shocks on TFP
- How it address the question:
 - ① Test an SVAR with TFP and ToT on aggregate data
 - ② Test the effect of ΔToT on ΔTFP at the firm level using CompNet data
 - ③ Build and calibrate a model with 4 sectors: M,X,N and R&D
 - ★ Model follows closely Schmitt-Grohé and Uribe (2018) and adds the R&D sector
- Findings:
 - ① SVAR: ToT shock has a negative effect on TFP
 - ② Regression:
 - ★ Improvements in ToT reduce changes on TFP
 - ★ The effect is driven by the effect on manufacturing sector. Within manufacturing, the effect is explained by the interaction of the share of exporters and the change in ToT
 - ★ The effect is not present in non-manufacturing sector
 - ★ The effect is not explained by new entrants
 - ★ Negative effect of changes in ToT on changes in R&D expenditures
 - ③ Model
 - ★ Does a good job in matching targeted and non-targeted moments
 - ★ Can replicate the decrease in TFP and increase in output observed in the data
 - ★ \downarrow TFP is explained by \downarrow R&D coming from a \downarrow in employment in R&D sector

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Comments I

Macroeconomic Evidence

- Identifying restriction of the VAR: TFP in the long-run is only affected by its own shocks
 - ▶ If there is a shift of resources away from R&D to physical goods, this would affect the LR level of TFP (unless in the future you compensate the decrease in R&D)
- It is true that TFP decrease the first period after the shock, but then increases in most cases (many cases not significant though)
- If one expect that the ToT shocks is long lasting, then one can expect that R&D investment increases to increase profits in the future.
 - ▶ Although according to Schmitt-Grohé and Uribe (2018) the ToT shocks have an average duration of around 2 years

Comments II

Microeconomic Evidence

- In the main regression, I would suggest constructing industry specific ToT.
- Changes in the mass of firms: only consider entrants. But the other term explaining the changes in TFP could be the mass of exiters.
 - ▶ Specially when \downarrow ToT one can expect that less productive firms exit $\Rightarrow \uparrow$ TFP

R&D and ToT Evidence

- Not clear the effect. In the table 7/12 have negative relation but 5/12 have positive (and around the same magnitude in both directions)
- In terms of significance, there is one in the positive and one in the negative side

Comments III

Model

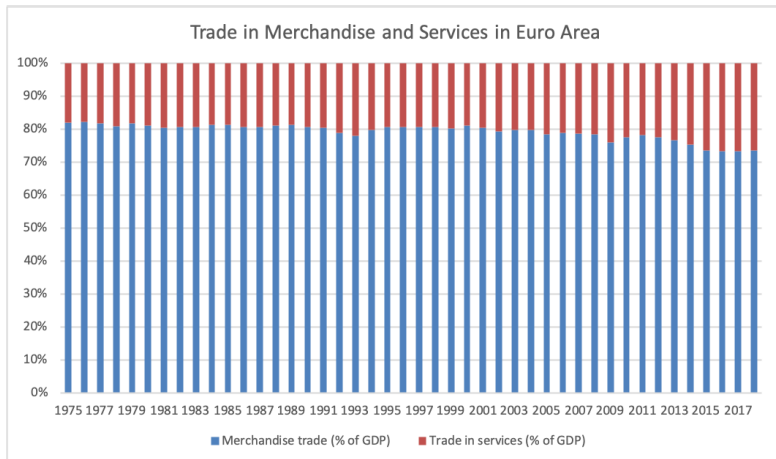
- Not very clear the modelling choice for the R&D sector:
 - ▶ Production function: Why the R&D sector do not use K?
 - ▶ Nobody pays for the research good (the government covers the cost), why not having a proper sector (like Atkenson and Burstein, 2010)
 - ▶ All sectors have CRS, while R&D seems a DRS, why?
- Calibration:
 - ▶ The non tradable sector is matched to the share of services. However, trade in services has been increasing (nowadays is 1/4 of total trade) [Graph](#)
 - ▶ In the calibration the autocorrelations are stated as non-targeted, but I guess that most of the work is done by ρ_z
 - ▶ The standard deviations are reported in percentage terms, with respect to what?

Minor comments

- It would help to have in the appendix how the TFP index used in the SVAR is constructed
- The claim that countries are homogenous in the SVAR analysis is risky. There are large countries like Germany, the UK or France and very small ones like Denmark or Belgium.
- Main mechanism
$$\frac{U_3(c, l^m, l^x, l^n, h)}{(1-\tau) \text{totAz} F_2^x(k, l)} = \frac{U_5(c, l^m, l^x, l^n, h)}{BAz \gamma h^{\gamma-1}}$$
 - ▶ If $\uparrow h \rightarrow \uparrow U_5(c, l^m, l^x, l^n, h)$ and $\uparrow BAz \gamma h^{\gamma-1}$, we can not define the sign of this
 - ▶ However, the author shows the sign using the implicit function theorem. I would just leave that prove
 - ▶ The authors mention that TFP and R&D are counter cyclical in the model, but table 6 reports positive correlation for both variables. It should be negative since ToT increase output and decrease TFP and R&D in the model
 - ▶ The authors mention that wages in R&D sector decreases, but actually they increase in the IRF

Thank you!

Trade in Services



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