Discussion of Imbs & Pauwels (2023):
A Simple Approximation of the Effects of Trade
Sanctions with an application to Russia

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Summary

Summary: Data-driven methodology to approximate the effects of sanctions

- evaluation of the approximation against the model
- evaluation against a simpler approximation (direct trade)
- detailed results from the application to the case of Russia

Results

- the approximation works well for a plausible range of elasticities
- indirect effects are large → GVCs matter
- large effects on Russia, smaller effects on Europe

Conclusion

⇒ very nice paper, many interesting results!
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Main comment: Why approximate?

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Approximation relies on two assumption:

- CPI does not change

- demand for products from other countries does not adjust
  - no GE effects, pure IO calculation
Some arguments in favour of the model

- sanctions are an important issue, so it is worth running the full model
- model needs calibration, but
  - New Quantitative Trade Theory shows how to structurally estimate the elasticities, using the same data as the calibration + a cost shifter
- approximation makes an *implicit* assumption about the elasticities
  - perfectly inelastic demand for the goods from other countries / sectors
Some arguments against the model

In my view, the model is not well suited to describe the effects of sanctions

i) elasticities of substitution identical across countries and sectors

\[
C_i = \left[ \sum_j \sum_s \left( \nu_{ji}^s \frac{1}{\rho} C_{ji}^s \right) \frac{\rho - 1}{\rho} \right]^{\frac{\rho}{\rho - 1}}
\]
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ii) CPI is hardly affected by simulated embargo → by (CES) assumption

- with a Leontief structure for "heating" vs. other consumption, CPI could go to infinity
Some arguments against the model

iii) embargo as trade cost shifter and $\rho, \epsilon < 1$

$$\pi_{ji}^s = \frac{\nu_{ji}^s (\tau_{ji}^s P_j^s)^{1-\rho}}{\sum_k \nu_{ki}^s (\tau_{ki}^s P_k^s)^{1-\rho}}$$

- expenditure shares ↑ if $\tau$ ↑
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\pi_{ji}^{s} = \frac{\nu_{ji}^{s}(\tau_{ji}^{s}P_{j}^{s})^{1-\rho}}{\sum_{k,l} \nu_{ki}^{s}(\tau_{ki}^{s}P_{k}^{s})^{1-\rho}}
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- $\rho, \epsilon < 1$ plausible for tariffs, freight cost (valuation effect dominates substitution effect), but there is no valuation effect of an embargo

- $\rho, \epsilon < 1$ plausible for substitution across sectors

iv) input shares in IO tables are in basic prices (excluding trade cost)

v) model solution is exact for small changes around the steady state, sanctions are a big change
Possible solution

Evaluate against data instead?

- there are several example of sanctions / embargoes from the past that could be used
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- the approximation approximates any model with IO-based GVCs
Other comment I: Simple vs double approximation

\[ \ln V \approx \ln \frac{\alpha \psi}{\psi + 1} \ln PY \approx \frac{\alpha \psi}{\psi + 1} \ln \overline{PY} \ (HOT) \]

Looks like double approximation works better than simple approximation?
Table 1: Comparing direct and indirect trade under an embargo on Russian Petroleum (in %)

| Country | HOT  | Direct Exports | Ratio | | Country | HOT  | Direct Exports | Ratio |
|---------|------|----------------|-------| |---------|------|----------------|-------|
| CZE     | 0.35 | 0.01           | 40.63 | | HRV     | 0.05 | 0.01           | 4.05  |
| SVK     | 0.36 | 0.03           | 14.32 | | BEL     | 0.64 | 0.16           | 4.02  |
| LTU     | 0.29 | 0.03           | 9.00  | | AUT     | 0.06 | 0.02           | 3.93  |
| BGR     | 0.70 | 0.08           | 8.72  | | DNK     | 0.96 | 0.27           | 3.56  |
| MLT     | 0.01 | <0.01          | 7.68  | | IRL     | 0.24 | 0.07           | 3.50  |
| LUX     | <0.01| <0.01          | 6.35  | | GRC     | 1.55 | 0.48           | 3.23  |
| FIN     | 0.79 | 0.15           | 5.36  | | EST     | 0.13 | 0.04           | 3.18  |
| POL     | 2.09 | 0.40           | 5.27  | | ROU     | 0.38 | 0.12           | 3.08  |
| HUN     | 0.66 | 0.13           | 4.96  | | SVN     | 0.07 | 0.03           | 2.79  |
| SWE     | 0.84 | 0.17           | 4.87  | | FRA     | 2.21 | 0.80           | 2.76  |
| NLD     | 1.02 | 0.24           | 4.20  | | DEU     | 5.79 | 2.27           | 2.55  |
| ITA     | 1.97 | 0.47           | 4.19  | | ESP     | 0.70 | 0.28           | 2.52  |
| PRT     | 0.25 | 0.06           | 4.19  | | GBR     | 3.19 | 1.39           | 2.30  |
| LVA     | 0.09 | 0.02           | 4.10  | | CYP     | 0.01 | <0.01          | 2.10  |

- very large ratios
- suggest that indirect effects through GVCs are really important
- could be stressed more!
Conclusion

- very nice paper!
- stress more the quantitative importance of accounting for GVC linkages
- evaluate approximation against data?

Appendix: A few additional minor comments to the authors
Additional suggestions and minor comments

pXpY means page X paragraph Y

- p6: $P_i$ in display lacks superscript $c$?

- Eq. (3): is $\alpha$ a scalar? Given that it occurs as $\alpha^s$ previously, I believe it should show up as a diagonal matrix here.

- $\alpha^s$ is never officially introduced, same for $\eta^r$

- p12: second to last word should be "indirect"?

- p18p5: to what time period does "historically" refer?