Sectoral heterogeneity, production networks, and the effects of government spending
by H. Bouakez, O. Rachedi, E. Santoro

Discussion
L. Metelli, Bank of Italy
This discussion

- Summary of the paper
- Comments
- Conclusions
Summary of the paper, 1/2

Motivation

- Fiscal packages involve the purchases of good & services produced by heterogeneous and interconnected industries
- The literature on fiscal policy mostly uses one-sector DSGE

Paper

- Develops a DSGE with multi-sectors, which differ in:
  - Price rigidity
  - Factor intensities
  - Use of intermediate inputs
  - Contribution to final demand
- Calibration of the model (58 sectors, US input-output matrix)
- Quantitative evaluation of the model in terms of the fiscal multiplier
Main results. Two types of shock:

1. Common spending shock:
   - Aggr. fiscal multiplier 84% larger than in the one-sector economy.
   - Mainly due to heterogeneity in: price rigidity and the use of intermediate inputs

2. Sector-specific spending shocks:
   - Dispersion in the size of aggr. fiscal mult. (range: 0.3-0.75)
   - Dispersion in the response of the real wage (also in the sign)
   - Higher effect on aggr. output following shocks in those sector:
     - More price-rigid
     - More downstream in the production network
Overall comment

- **Great paper**: very interesting and very well executed

- It contributes to the literature on fiscal multipliers, highlighting the importance of *sectoral disaggregation* in the transmission of fiscal policy. Stimulates more work on the empirical side.

- More in general, it represents a further step into considering non-linearities and *heterogeneities* in the economic structure.
Comment I: framing

- Authors state (even in the abstract) that fiscal multiplier is 84% larger than that obtained in the corresponding one-sector economy...

- ...However, looking at the numbers in absolute value:

<table>
<thead>
<tr>
<th></th>
<th>One-sector</th>
<th>BRS model</th>
<th>% difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 year</td>
<td>0.66</td>
<td>0.76</td>
<td>15.7%</td>
</tr>
<tr>
<td>5 years</td>
<td>0.49</td>
<td>0.65</td>
<td>34.7%</td>
</tr>
<tr>
<td>Long-run</td>
<td>0.31</td>
<td>0.56</td>
<td>84.3%</td>
</tr>
</tbody>
</table>

- In absolute value, the difference looks smaller. Percentage diff. among small numbers overstates the magnitudes.

This is related to my second comment...
Comment II: size of the fiscal multiplier

- Quite **small number** for the fiscal multiplier in the **benchmark one-sector economy** (in the range 0.3 - 0.6).
  
  **Why** is this the case? (especially in a New-Keynesian framework with a lot of rigidities...)

- In any case, maybe the authors could find a calibration delivering a higher multiplier. **Then** it would make more sense to express the difference in %
Comment III: imperfect mobility assumption

- I did not fully understand how important is the assumption of imperfect labor mobility.

- Think of perfect labor mobility. Would the contribution of heterogeneous price rigidity in increasing the multiplier w.r.t. the one-sector economy, disappear/decrease?

\[ \pi_t = \beta E \pi_{t+1} + k(\eta c_t + \psi g_t) - \frac{(1 - \gamma) \nu^k}{\nu^n} \sum k_s q_{s,t} \]

- Can you show in the appendix, the case of fully mobile labor markets? Or at least, comment on the relevance of this assumption for your results.
Comment IV: framing, the response of the real wage

- Very interesting feature of the model. In some cases (actually 30/58) the **real wage falls**, differently from the standard NK model.

- However, I did not fully understand the **long-run real wage behaviour**, as wage falls after any sector-specific shock. Is it so b/c prices adjust? Or b/c authors show the **real wage multiplier** (while the IRFs go back to the baseline)?

- I’d clarify the concepts and explain better the way of reporting results.
Comment V: more focus on consumption

- I would stress more in the text the response of private consumption (at the moment in the Appendix), both after the common and sector-specific shocks.

- This is important in the light of the empirical debate on the response of consumption to spending shocks.

- Also, I would report the response of consumption in the one-sector model, to be able to compare. In particular, does consumption fall more than in the one-sector model? (as the real wage goes down in 30/58 sectors).
Reference to a related paper:

- **Ercolani & Pavoni (2018)**, show that public health care shocks have the potential to stimulate private consumption. Because of lower precautionary savings by households.

- In your paper, consumption falls irrespective of the type of sector-specific shock. Very different channels w.r.t. EP 2018, **BUT** there is an important common finding: various public spending categories affect the economy **differently**!

Ercolani and Pavoni ”The precautionary saving effect of government consumption” forthcoming at The B.E. Journal of Macroeconomics (FRONTIERS)
We know from Baxter & King (1993) that **financing is crucial**. Distortionary taxation can even tilt the sign of spending multipliers.

In the paper, baseline results are calculated with lump-sum taxation. In the appendix, it is shown that the main result holds also with labor income tax. However:

Maybe labor-income tax affects more the **most labor-intensive** sectors? Could be this an **additional channel** of the multi-sector framework?
Conclusions

- Summing up: most of my comments point to some framing issues and to a slightly too low multiplier in the model (despite some of the assumptions favor a large multiplier...)

- In any case: great paper, interesting and well written