

Big G

by Cox, Müller, Pasten, Schoenle, Weber

Discussion by Valerie A. Ramey

UCSD and NBER

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Brief Summary of the Paper

1. Uses data on the universe of procurement contracts by the federal government since 2001 – covers 40 % of federal spending, 16 % of total govt spending.
2. Documents 5 facts, including many “sub-facts.”
3. Incorporates a subset of the facts in a two-sector stylized NK sticky-price model.
4. Finds important differences in the output response based on the sector-specific increase in government spending.

Assessment of CMPSW's Contribution

- Impressive data construction.
- Systematic documentation of intriguing details of government contracts, particularly for nondefense spending, is potentially useful since it has been studied much less than defense spending in previous research.
- I admit that I was surprised by the path the paper took.
 - With such detailed micro data about contracts, I thought they would use the information to calibrate a cool network model on the effects of government spending.
 - Instead, the authors decided to add a few features to a textbook New Keynesian model.

Review of CMPSW's 5 Facts

1. Government spending is granular - it is concentrated in relatively few firms and sectors.
2. Relative to private expenditures its composition is biased.
3. Procurement contracts are short-lived and sectoral spending is only moderately persistent.
4. Idiosyncratic variation dominates fluctuations in spending.
5. Government spending is concentrated in sectors with relatively sticky sectors.

Outline of My Discussion

- How this paper adds to what we previously knew.
- Presentation of some graphs to illustrate aggregate government spending processes.
- Some questions about their facts.
- Discussion of the NK Model
- Summary of what we have learned and future work.

What we knew before this paper was written

- Federal spending is very concentrated by **industry** – evidence from **input-output** tables.
 - In fact, Ramey-Shapiro (1998) “Costly Capital Reallocation and the Effects of Government Spending” started out as a **pure sectoral shifts** paper.

We analyzed a **2-sector DSGE model** in which government spending was concentrated in one sector and it was costly to reallocate capital across sectors.

- Perotti (2008), Nekarda and Ramey (2011, 2013) used the **sectoral bias of all federal spending to create instruments** for 4-digit manufacturing industries to test mechanisms of leading macro models.

What we knew before this paper – continued

- Defense spending is very concentrated among **firms** – evidence from firm-level military contracts.
 - **Fisher and Peters** (2010) use **firm concentration of defense contracts** to develop a govt spending shock based on excess stock market returns.
 - **UCSD dissertations** by Christiansen (2007), Goudie (2008), Johnson (2018), **Hastings-Roer** (2018) - study **firm-level and city-level** effects of government contracts.

Captain Hastings-Roer was an Air Force Contracting Officer!

- Geographic concentration: Effects of govt spending using defense **contract data aggregated to the state level** (some as far back as 1951!), e.g. Hooker and Knetter (1997), Nakamura-Steinsson (2014), and Dupor and Guerrero (2017).

New facts learned from this paper



- Nondefense contracts are only slightly less concentrated by firm and sector than defense contracts.



- Median contract length is short – median 31 days and 90% < 1 year.



- Authors claim that sectoral persistence of government shocks is less than aggregate persistence.

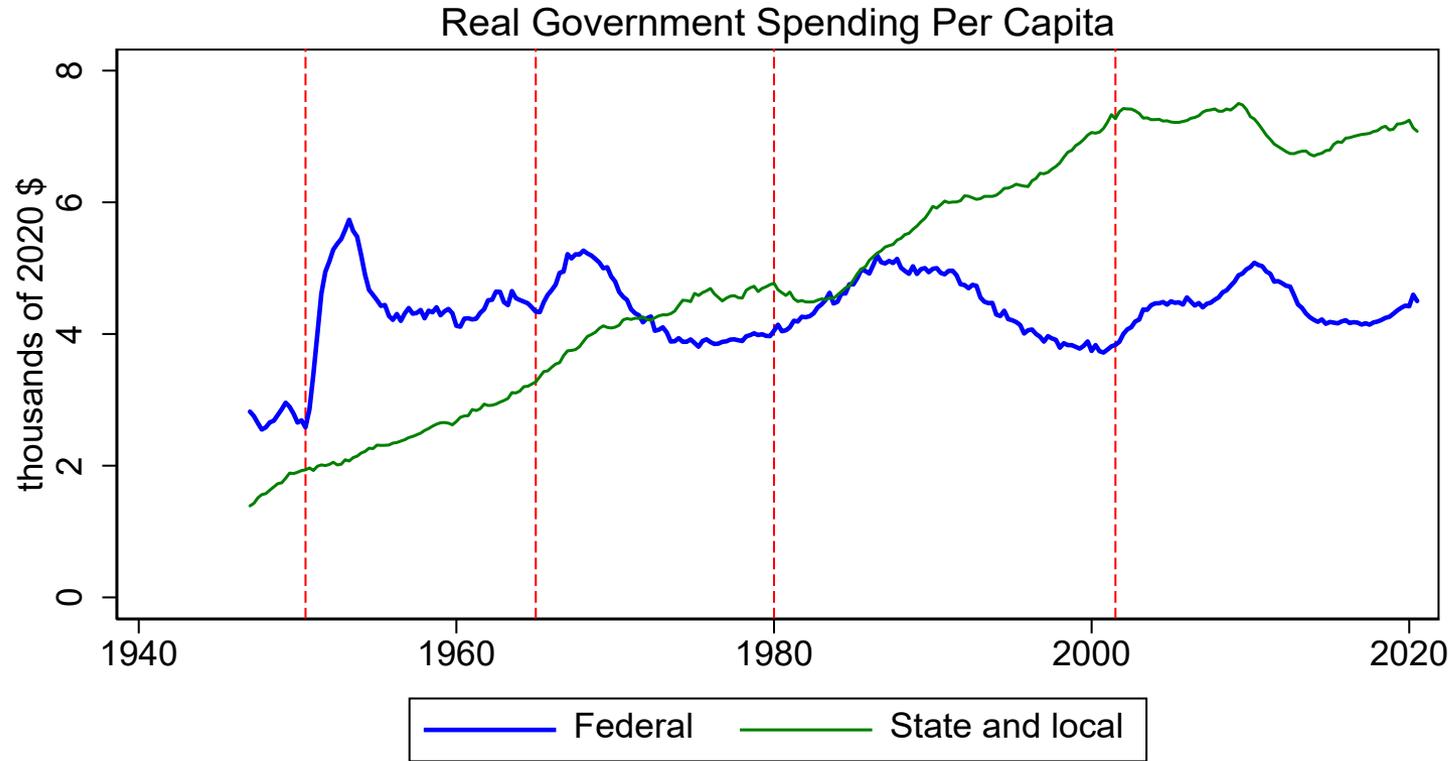


- Idiosyncratic shocks (e.g. shocks at firm and sectoral level) dominate fluctuations in govt spending.



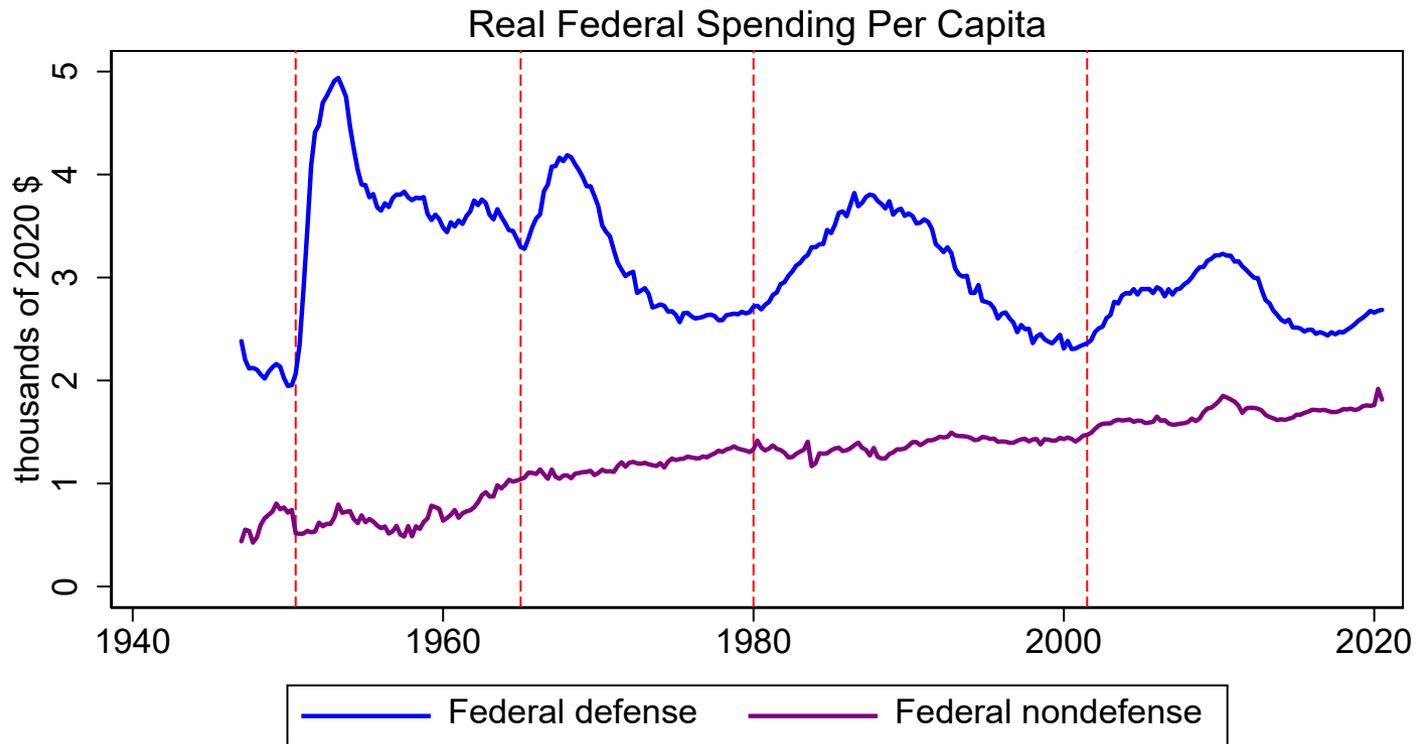
- The sectors in which federal spending is concentrated have lower frequency of price changes than other sectors.

Let's Look at Aggregate Patterns in Government Spending First



Vertical red dashed lines are the Ramey-Shapiro military dates.

- **Federal spending** is dominated by medium frequency swings related to military events.
- **State & local spending** is dominated by trends, with some effects of severe recessions.
- Both series have high frequency **wiggles**.



- **Defense spending dominates** the variation in federal spending – nondefense purchases simply add a trend and high frequency wiggles.
- Low frequency swings and trends are overlaid with high frequency wiggles.

These **wiggles are due largely to the timing of contract payouts** as well as how they are recorded in NIPA.

Questions about some of the new facts from this paper

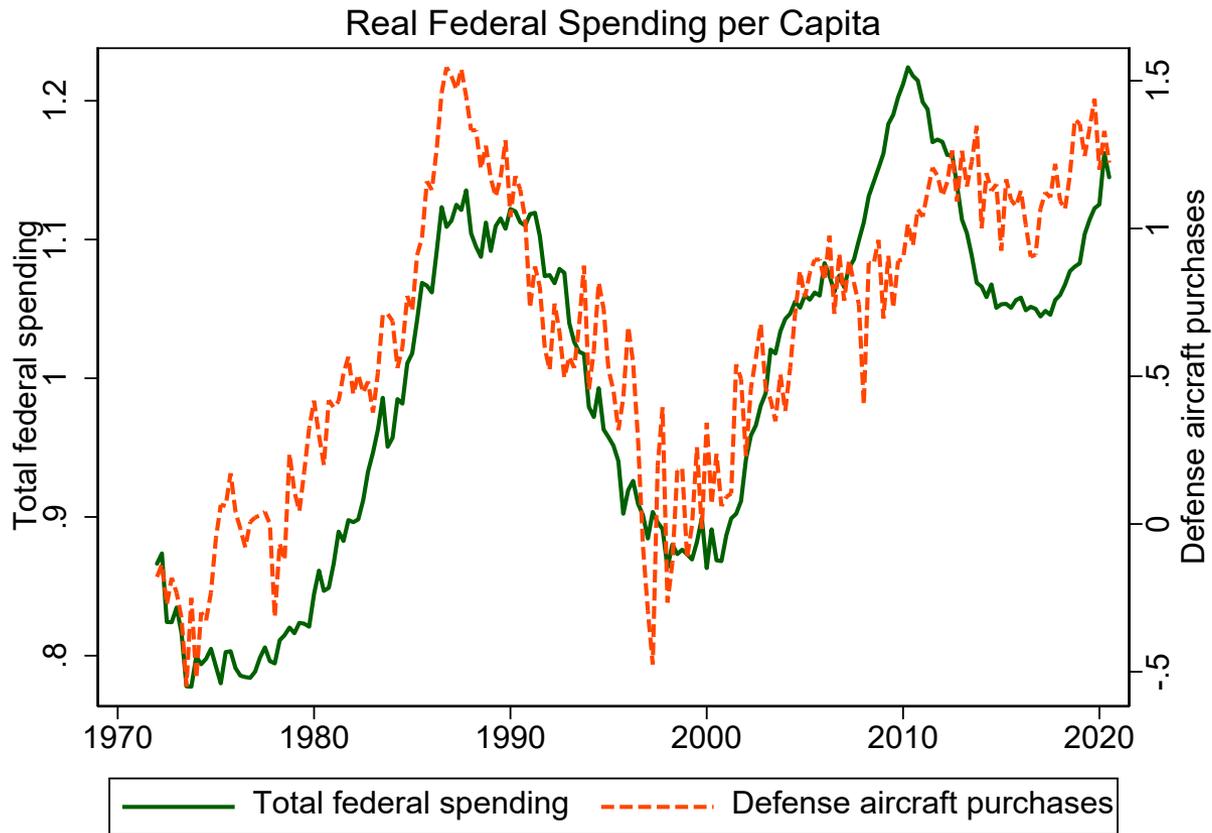
The authors make some statements about **contraction duration and persistence** that don't make sense to me.

1. Median contract length is short – median 31 days - and 90% of contracts last less than a year. It is even less when they throw out the top 1% of firms.
 - Why does the **median** duration matter for the aggregate?
 - Why would they compute statistics throwing out the top 1% of firms? Doesn't their result on concentration in a few firms tell us that they are important for the aggregate?

Persistence of Govt Spending

2. Authors go on to argue that **aggregate persistence is much greater than sectoral persistence** and this is caused by dynamic aggregation bias.
 - Estimate AR(1) parameter by sector: 0.29 at a monthly frequency, 0.4 at a quarterly frequency. (Table 2).
 - This is an important point because they calibrate their government spending process to have an **AR(1) parameter of only $\rho = 0.3$ at a monthly frequency!**
 - My experience looking at sectoral data suggests that **the most important industries have very high persistence.**

Consider the **aircraft industry** (SIC 3721) - traditionally 50% of its shipments go to the federal government:



- Sectoral spending has **as much underlying persistence** as aggregate federal spending.
AR(1) parameter = 0.97 for federal, = 0.94 for aircraft purchases.
- I wonder whether the authors' finding of lower persistence is due to noise introduced by idiosyncracies of contract spending payments.

More questions about some of the new facts from this paper

3. The authors argue that idiosyncratic shocks (e.g. shocks at firm and sectoral level) dominate fluctuations in govt spending and they appeal to Gabaix's work on **granularity**. They call this their most fundamental new fact.

- I am not sure what the point of granularity is here. We already know from previous work that government spending is concentrated by sector and firm.

→ changes in government spending will, of course, look like firm idiosyncratic shocks if you apply naïve measures.

What are we supposed to learn from this?

A question about one of the comparisons

“Manufacturing, for example, accounted for over 30 percent of government spending in 2017, but only 6 percent of GDP.” (p. 14).

2 questions about this statement:

- BEA table “Value Added by Industry as a Percent of GDP” shows that manufacturing was **14% of GDP** at the beginning of their sample in 2001 and **11% of GDP** at the end of their sample.
<https://apps.bea.gov/iTable/iTable.cfm?reqid=150&step=2&isuri=1&categories=gdpind>
- Comparing government spending to GDP share **doesn't seem like the right comparison** anyway because of net exports.

Input-Output Use tables → 30% of Private Consumption + Investment spending is on manufacturing! (I found the same thing aggregating components of NIPA consumption and investment.)

Overview of their New Keynesian Model

- 2 sectors, constant returns to labor, no capital, no labor mobility between sectors.
- Monopolistic competition in both sectors, households own firms and receive dividends.
- Private spending is more concentrated in Sector 1, government spending is more concentrated in Sector 2
- Prices are stickier in Sector 2 than in Sector 1.

Contrast with Boehm (2019) – consumption vs. investment sectors

- Government spending process has an AR(1) parameter of 0.3 at the monthly frequency.

My Skepticism about the NK Mechanisms

- As with any sticky price NK model, the key reason that government multipliers are higher is because **sticky prices** → **countercyclical markup** → **countercyclical profits**.
 - Broer, Krusell, and Öberg (2020) recently demonstrated that the sticky-price NK model achieves higher multipliers relative to neoclassical **simply because** ↓ **profits ramp up the negative wealth effect** so households work harder.
 - Does “NK” stand for “Not Keynesian” ?
- Questions that need to be answered:
 - If profits are countercyclical, **why do excess returns of defense contractors rise when defense spending rises?**
 - Why do **markups** rise in response to government spending?

Fisher-Peters 2010

Stock market excess returns rise after an increase in military spending!



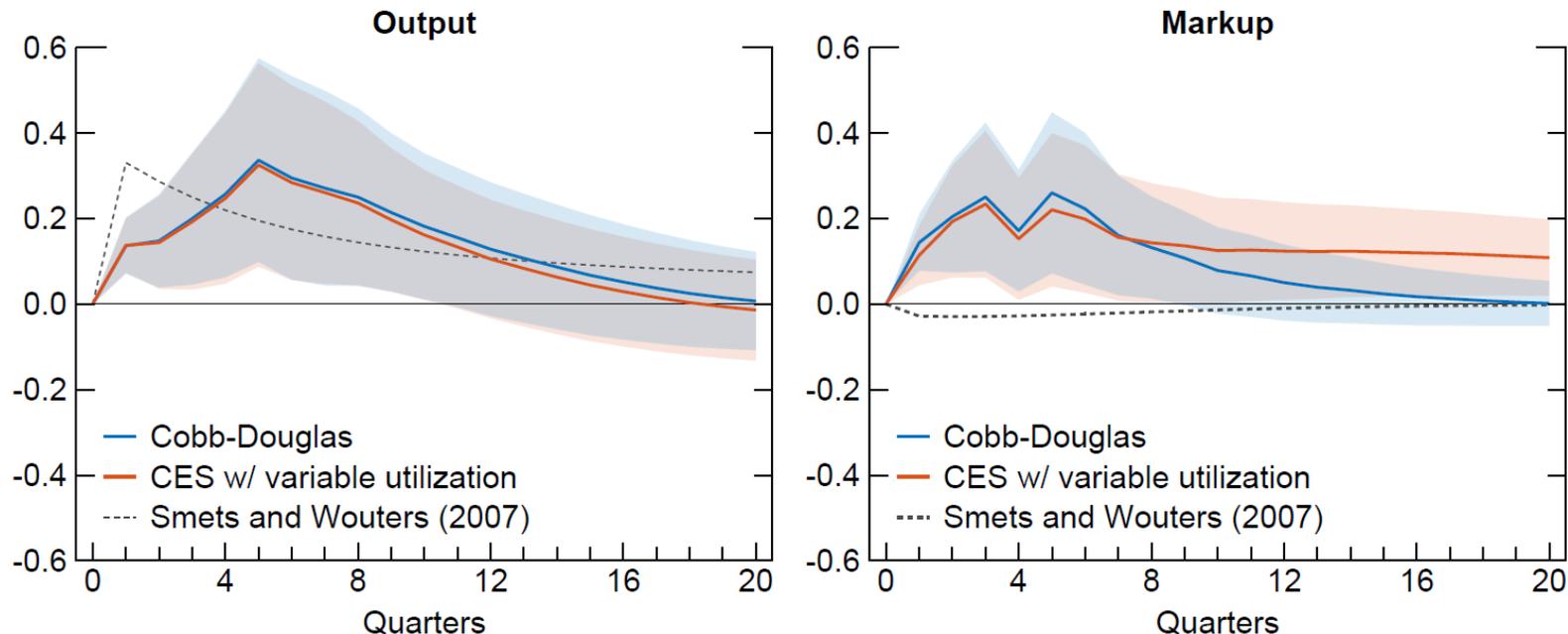
Fig. 3. *Accumulated Excess Returns and Military Spending, 1947–2007*

Note. Solid line (left scale) is Military Spending, dashed line (right scale) is accumulated excess returns of the Top 3 military contractors.

Nekarda-Ramey (forthcoming) “The Cyclical Behavior of the Price-Cost Markup”

Aggregate results:

(b) Government Spending Shock



We consider many different ways of measuring the markup and never find countercyclical markups in response to government spending shocks.

Thus, we don't find support for the sticky price NK mechanism.

The earlier version of our paper estimated effects
on a panel of 4-digit manufacturing industries

Nekarda-Ramey 2013 NBER Working Paper Version

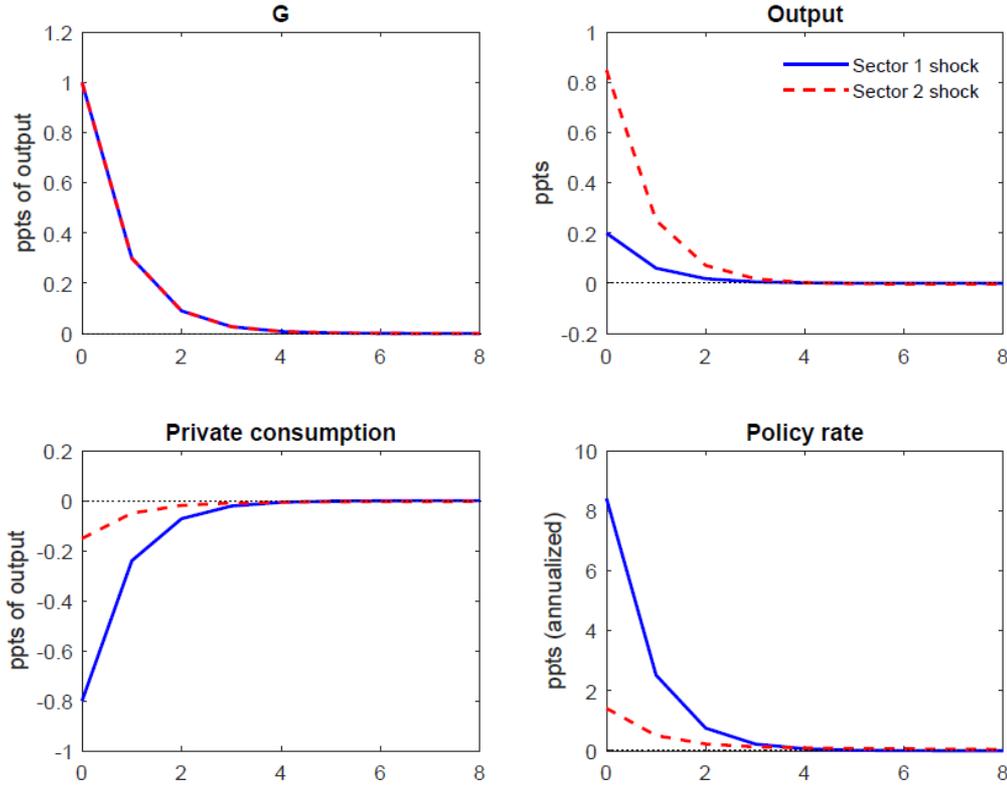
Table 3. Industry Results

<i>Specification</i>	<i>OLS</i>	<i>Instrument for shipments</i>		
		<i>Technology</i>	<i>Government spending</i>	<i>Monetary policy</i>
<i>1961–2009 (13,307 observations)</i>				
Baseline	0.267** (0.012)	0.757** (0.036)	0.057 (0.063)	0.070 (0.245)
Overhead labor	0.244** (0.015)	0.733** (0.035)	0.030 (0.065)	0.021 (0.269)
CES production, SVAR	0.316** (0.012)	0.740** (0.033)	-0.008 (0.074)	0.170 (0.261)

We found acyclical markups in response to government spending shocks at the detailed industry level.

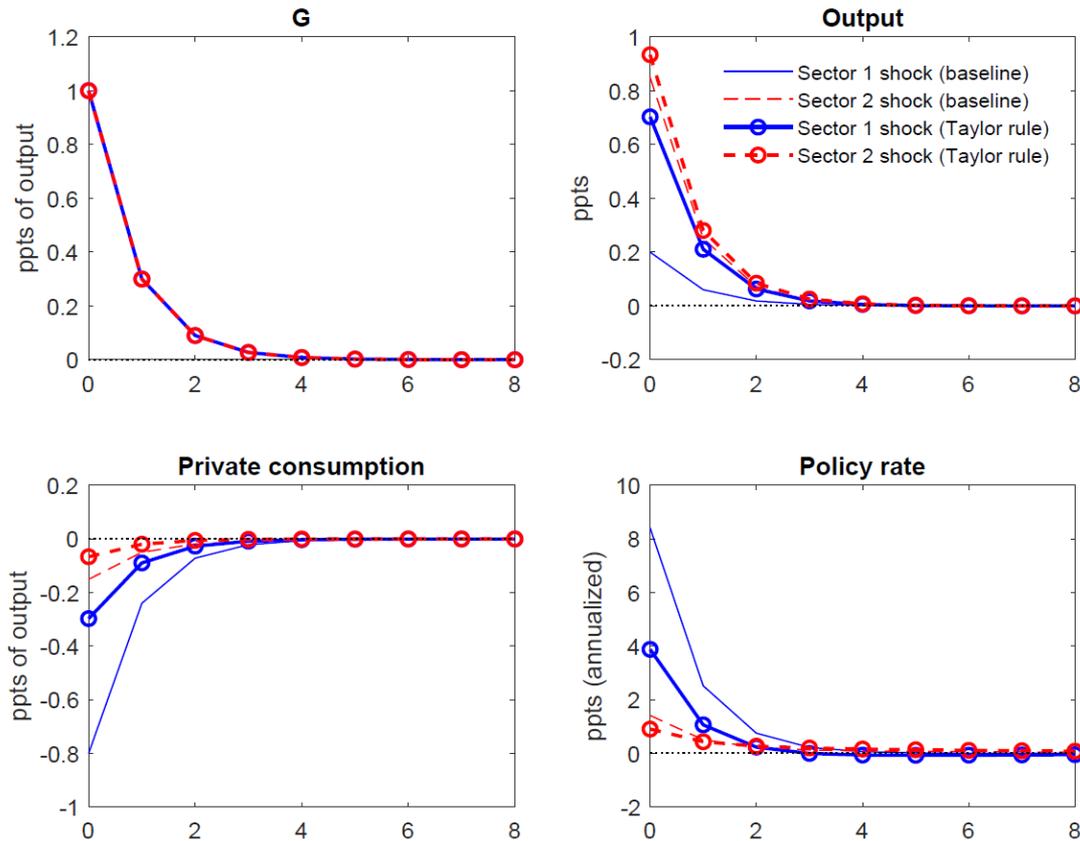
Finally, a comment on the importance of the monetary rule for the authors' results.

Figure 13: Dynamic Effect of Sectoral Shocks



- The results of a Sector 1 vs. Sector 2 government spending shock are very different in this baseline model, which assumes strict inflation targeting.
- The authors say that the results are qualitatively similar with a Taylor rule. Let's look at this experiment from their appendix.

Figure A.14: Dynamic Effect of Sectoral Shocks w/ Taylor Rule



I would say that switching to Taylor Rule from inflation targeting dramatically reduces the consequences of the sector-specific shock.

Conclusions

- The new stylized facts uncovered by the impressive data work have much promise for informing models and changing the way we think about government spending.
- I encourage the authors to “think outside the sticky price NK box” in developing theoretical models that showcase their new facts.