Discussion of Corsetti, Meyer and Muller, “What Determines Government Spending Multipliers?”

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Proposal: determine the degree to which “multiplier effect” of government purchases depends on other conditions
Motivation

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- Theory (and some existing evidence) suggests that circumstances may matter greatly: in particular,
  - should depend on monetary policy response, which will differ depending on exchange rate regime, whether at ZLB.
  - should depend on consequences for future fiscal policy, arguably different depending on existing fiscal strain.
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- Issue of particular current relevance: want to know likely effects of “stimulus spending” during crisis, but available estimates mainly for quite different circumstances
Motivation

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- in order to avoid strong structural assumptions, use SVAR methodology
- but linearity of estimated model requires that dynamic multipliers be independent of changes in other variables
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Few exceptions:

- Ilzetzki et al. (2009): panel regressions for groups of countries with different characteristics (e.g. exch rate regime)
- Barro and Redlick (2009): regress on $\Delta \text{militarypurch} \cdot \text{unemployment}$ as well as $\Delta \text{militarypurch}$
- Almunia et al. (2009), Gordon and Krenn (2010): estimate only for Depression period
The Method Used Here

- **Step 1:** construct a time series of fiscal shocks \( \{\epsilon_{i,t}\} \) for each of a panel of countries
  - residuals of a government-consumption equation, separately estimated for each country

  — identifying assumptions similar to SVAR studies, but don’t use VAR to estimate effects
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**Step 2:** panel regressions of macro variables on own lags, country fixed effects (and country-specific trends), and

- fiscal shocks \( \epsilon_{i,t} \) (and lags)
- conditioning variables \( d_{i,t} \) (and lags)
- interaction terms \( g_{i,t} \cdot \epsilon_{i,t} \) (and lags)

— similar to Barro and Redlick (2009), but different approach to identifying fiscal shocks
For each country, regress government consumption $g_{i,t}$ on
- lags $g_{i,t-j}$
- lags of output $y_{i,t-j}$
- lagged index of leading indicators $cli_{t-1}$
residual $\hat{\epsilon}_{i,t}$ identified as period $t$ “fiscal shock”
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Idea: effects of state of economy on $g_{i,t}$ occur with delay, so component of $g_{i,t}$ not predictable in advance is exogenous shock to policy
Identification of Fiscal Shocks

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- Familiar approach in SVAR literature (Blanchard-Perotti, . . .), but subject to familiar critique
Potential problems with “shocks” identified this way:

- may be effects of economic developments on gov’t spending, within the period
  - unforecastable part of $g_{i,t}$ may include endogenous components
  - a bigger worry, given annual data here, unlike Blanchard-Perotti
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- people may have advance news of (likely) changes in gov’t spending, before the spending actually occurs
  - so fiscal shock need not be orthogonal to lagged variables
Advance News of Fiscal Changes

- May be a problem, even with annual data
- Example: estimates of Cogan et al. (2009) of government purchases under stimulus package enacted February 2009

Figure 2. Estimated Output Effects of Government Purchases in the February 2009 Stimulus Legislation. (Government purchases equal federal purchases plus 60 percent of transfers to state and local governments for purchases of goods and services)
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Can also be advance news for many reasons other than legislation already passed (e.g., change in party in power)

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Advance News of Fiscal Changes

Why is this a problem?

- not just because there may be fiscal shocks that aren’t included in the unforecastable component of $g_{i,t}$

- also a reason why equation residual $\epsilon_{i,t}$ may be correlated with shocks other than true fiscal policy shocks
Example: suppose \( \{y_t, g_t\} \) evolve according to

\[
y_t = \rho_y y_{t-1} + \nu_t + \nu_t
\]

\[
g_t = \rho_g g_{t-1} + u_t
\]

where

- \( u_t, \nu_t, \nu_t \) are each i.i.d. normally distributed r.v. with mean zero
- all distributed independently of \((y_{t-1}, g_{t-1})\)
- \( u_t, \nu_t \) are known at \( t - 1 \), \( \nu_t \) only at \( t \)
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Suppose “leading indicator” forecasts
\[
cli_t = E_t[y_{t+1} - \lambda g_{t+1}]
\]
\[
= (\rho_y y_t + \nu_{t+1}) - \lambda(\rho_g g_t + u_{t+1})
\]
In this example, the regression residual (asymptotically) identifies

\[ \epsilon_t = g_t - E[g_t | g_{t-1}, y_{t-1}, c_{li_{t-1}}] \]
\[ = u_t - E[u_t | v_t - \lambda u_t] \]
\[ = \left( \frac{\sigma^2_v}{\sigma^2_v + \lambda^2 \sigma^2_u} \right) u_t + \left( \frac{\lambda \sigma^2_u}{\sigma^2_v + \lambda^2 \sigma^2_u} \right) v_t \]
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\]

Because positively correlated with \( v_t \), authors’ method would find positive effect of \( g \) shock on output

— even though in example, true fiscal shock \( u_t \) has no effect on output
Identification of Fiscal Shocks

What solution?

- Need to use a $g_{i,t}$ equation that represents structural equation for gov’t cons
  - not only important to include all of the determinants of endogenous $g$
  - also important not to include any variables that are not structural determinants of $g$!

In above example: would get correct result if instead omitted $c_{t-1}$ from the list of regressors
- more generally: inclusion of leading indicators is problematic, because not plausibly structural, yet likely to incorporate news about determinants of future $g$ (mixed with other things)
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Results

Consequences of exchange rate regime:

- stronger output increase, less crowding out of I if exch rate peg
  — consistent with standard models: expect more monetary accommodation under peg
  — why: under floating, interest rates raised to stem inflationary impact, but this appreciates exch rate

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Another possible interpretation: these are not pure fiscal shocks?

- in fact, the **mixture of shocks** captured by the residual need not be the same in the case of the peg and the floating rate
Results

- Consequences of financial crisis:
  - much stronger output increase (multiplier $\approx 2$)
    - includes strong increase in consumption
    - consistent with standard models, to extent that financial crisis results in binding ZLB constraint (Eggertsson 2009, Christiano et al. 2009, etc.)

Would be desirable to discriminate more finely:
- is it really whether interest rates reach lower bound that matters?
- is there sharp difference in interest-rate response between crisis/non-crisis cases?
- is it perhaps instead the degree of economic slack that matters?
- or the degree of impairment of financial sector or of household/firm balance sheets?
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- Important methodological questions remain to be addressed
  — especially with regard to identification of fiscal shocks