Discussion of
Fiscal Multipliers and Financial Crises
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The Paper in a Nutshell

• What did U.S. fiscal policy do to aggregate consumption during the Great Recession?

• Model-based analysis using New Keynesian model with banks, housing and fiscal policy.

• Measurement of fiscal stimulus during Great Recession:
  – Gov. consumption, transfers to households, bank recapitalization and credit guarantees.
The Paper in a Nutshell

• **Key result I**: Consumption would have fallen by 50% more during the Great Recession without fiscal stimulus.
  – Consumption would have fallen by about 3.75% instead of 2.5%.

• **Key result II**: Transfers to households (borrowers) and bank recapitalization particularly effective during the Great Recession.

• **Key result III**: Fiscal multipliers state dependent.
2.1.1 Household Preferences

There are two types of households, borrowers and savers, indexed by $i = \{b, s\}$ and in measures $N^s$ and $N^b$, respectively. Households differ in terms of the preferences and the type of financial assets they have access to. Savers can invest in short-term bank deposits and government debt, while borrowers can own houses and borrow in long-term debt. Savers own all firms and banks in the economy.

Both borrowers and savers seek to maximize the present discounted sum of utility flows, $V_i^t = u_i^t + E_t(V_i^{t+1})$.

Household preferences differ in only one dimension: borrowers derive utility from houses. It is worth noting that contrary to what is common in the literature, borrowers and savers do not differ according to their degree of patience.

- New Keynesian Model (nonlinear)
- Non-trivial extension of Curdia-Woodford (2010)
Fiscal Interventions

-These four time series are fed into the model as exogenous processes.
Further Observables

- These two time series are also fed into the model.
- Particle filter used to extract shocks to exogenous TFP and exogenous credit risk.

Figure 3: Annualized BAA spread over 10-year Treasury and detrended real consumption. Sample: 2000Q1-2015Q4. Lehman Brothers failure highlighted (2008Q3). Source: St. Louis FRED.

3. $s_k^t$: equity injections and transfers to the financial sector.

4. $s_d^t$: credit and/or asset guarantees; emergency lending facilities aimed at the financial sector.

Most of the policies I focus on were implemented and funded directly by the U.S. Treasury under one of the three large pieces of legislation concerning fiscal policy: the Economic Stimulus Act of 2008 (February 2008, the “Bush Rebate”), the Emergency Economic Stabilization Act of 2008 (October 2008, included the Troubled Asset Relief Program, TARP), and the American Recovery and Reinvestment Act of 2009 (February 2009, the “Obama Stimulus”). Additionally, I consider policies enacted by independent government agencies and corporations for which the U.S. Treasury is ultimately liable, such as the Federal Deposit Insurance Corporation (FDIC).

Mapping Fiscal Policy Data to the Model

Figure 4 plots the resulting data series, normalized by US GDP in the first quarter of 2007 (annualized). The vertical dashed line corresponds to the third quarter of 2008, the quarter of the run on and subsequent failure of Lehman Brothers. The bulk...

[21 The Federal Reserve also engaged in extensive quasi-fiscal policies during this period; an extension that considers these is currently work in progress.]

24 • These two time series are also fed into the model.

• Particle filter used to extract shocks to exogenous TFP and exogenous credit risk.
Key Results: Effects of Fiscal Policy

Aggregate Consumption

Figure 8: Counterfactual decomposition for the path of aggregate consumption.

Activate one policy at a time. Figure 8 plots aggregate consumption in the full policy benchmark (which coincides with the data) as well as the path of aggregate consumption that is obtained by shutting off each policy at a time. The second panel plots the differences as percentages of the stochastic steady state. The figure shows that, by far, social transfers were the most important of fiscal policy stabilization during the Great Recession. Notice that, due to the nonlinear nature of the model, there is not a linear map between turning off one policy at a time and turning off all policies at a time. In fact, the no-transfer counterfactual (with other policies active) would have been slightly worse than the no policy counterfactual. The reason is that the effects of these policies interact, and can cancel each other. The figure also shows that bank recapitalizations also had a positive impact, but smaller. Government purchases seem to have had a negative impact overall, and consumption would have recovered faster in their absence.

The aggregate figure does, however, mask interesting distributional effects. An interesting insight that comes from this analysis is that while transfers appear to have been the most important tool for stabilizing aggregate outcomes, bank equity injections appear to be the intervention that comes closest to being a Pareto improvement, to the extent that it benefits both borrowers and savers. Figure 9 analyzes the differential impact on borrower and saver consumption of the no...
Intuition

• Why are transfers to borrowers and bank recapitalizations most efficacious during the crisis?
  – Transfers directly relax borrowing constraint and bank recap. directly reduce credit spread.

• Minor questions:
  – Why are bank guarantees not plotted in figure?
  – Why is trough of consumption different in figures 3 and 8?
  – How important are TFP and credit risk shocks for consumption and BAA spread (historical decomp.)?
Key Result: State Dependent Multipliers

Notice that multipliers for transfers and recaps are basically zero in normal times but high during crisis times.

Purchases multiplier always below one.
Depth and Duration of the Great Recession

- Paper implies that the economy was back to ‘normal’ by end-2010. Also, the recession was quite shallow.

- Use of HP-filtered data appears problematic – fiscal multipliers depend on depth and duration of crisis!
HP vs. Linear Pre-Crisis Trend

- HP trend generates a very short-lived and shallow recession
- Linear pre-crisis trend perhaps also extreme
- Suggestion: use consumption growth rate as observable
The Zero Lower Bound

• Taylor rule used in model:

\[ Q_t^{-1} = \bar{Q}^{-1} \left[ \frac{\Pi_t}{\bar{\Pi}} \right]^{\phi_\Pi} \left[ \frac{Y_t}{\bar{Y}} \right]^{\phi_Y} \]

• Model solution and analysis abstracts from the zero lower bound on the nominal policy interest rate.
Using Okun’s law, the Taylor rule can easily be rewritten to incorporate an unemployment gap in place of the output gap:

\[ \text{Policy rate} = 1.25 + (1.5 \times \text{Inflation}) – (2 \times \text{Unemployment gap}). \]

The unemployment gap is measured as the percentage point difference between the unemployment rate and the non-accelerating inflation rate of unemployment, or NAIRU. The NAIRU, just like potential GDP, is not directly measurable. However, the CBO regularly releases estimates of its value. These estimates are closely linked to those of potential GDP and include several adjustment factors, for example, based on the potential size of the labor force or potential labor force productivity. The version of the Taylor rule that uses the unemployment gap is discussed in Rudebusch (2010).

Before 2008, the policy rates recommended by the output and unemployment gap versions of the benchmark Taylor rule remained within a few fractions of a percentage point of each other and reasonably close to what the federal funds rate turned out to be, as illustrated in Figure 3. Note that we use the most up-to-date measures of potential GDP and the NAIRU to abstract from the variation induced by revisions and focus exclusively on the different signals provided by each gap measure.

Policy recommendations diverged considerably once the Great Recession was under way. If we ignore the zero lower bound on nominal interest rates, the unemployment gap version of the Taylor rule called for policy to be set about 3 percentage points lower than the output gap version would have suggested throughout 2010. The differences between the two narrowed over the next few years, and by 2012 they appeared to be as close as in the past. Recently, however, the unemployment rate has been gradually improving, whereas economic performance, as measured by real GDP growth, has remained lackluster. As a result the difference in the suggested policy rates has flipped: the unemployment gap version of the Taylor rule now calls for policy to be about 2 percentage points higher than the output gap version. Once again, it appears that Okun’s law and the margins firms use to adjust to the new economic environment have temporarily diverged from normal. Conflicting signals from labor markets may shed some light on this recent divergence, an issue that will be explored in the second part of this series (Bosler, Daly, and Nechio 2014).

Conclusion

Determining whether the economy is overheating or underperforming is critical for monetary policy. Policymakers cannot simply rely on one indicator to make this judgment. This Letter has shown that in times of economic turmoil it is especially difficult to get a clear read on the economy’s potential, and

Figure 3
Two Taylor rules

Sources: BEA, CBO, BLS, and authors’ calculations.

Comments on ZLB

• Unfortunately, paper does not show any nominal variables (inflation, nominal interest rate, ...).
  – How large are the discrepancies for inflation and the nominal interest rate in the model and the data?

• Crowding out of consumption due to higher gov. purchases suggests standard interest rate response (i.e. ZLB not binding).
Comments on ZLB

• There exists a very large literature emphasizing the importance of the ZLB for the magnitude of fiscal multipliers.

  – How do the multiplier estimates for the various fiscal instruments considered in this paper depend on the ZLB?
  – How do the ZLB multipliers compare with the literature?
Further (Minor) Comments

• Parameterization implies a very steep Phillips curve which is at odds with recent data.
• How important are resource costs of price adjustment quantitatively?
• Taylor rule in terms of GDP rather than gross output?
• Model extension with endogenous capital would be very interesting.
Conclusion

• Very interesting and inspiring paper!

• Lots of food for thought.