

Fiscal foresight and
the effects of government spending:
It's all in the monetary-fiscal mix

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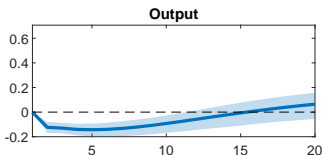
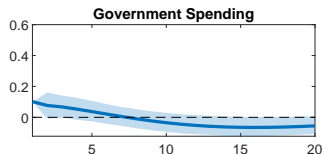
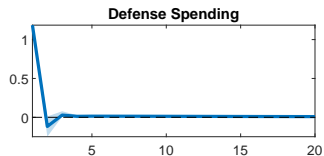
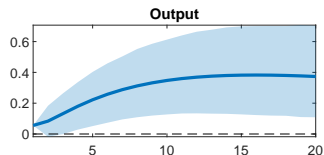
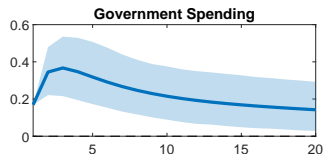
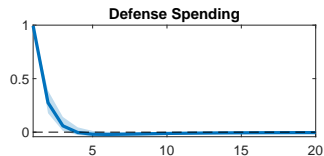
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Motivation

- How does the economy respond to an anticipated rise in government spending?
- Changes in fiscal policy are preannounced: inside and outside lag
- Taking fiscal foresight into account, [Ramey \(2011\)](#) shows that IRFs from SVAR give different results than [Blanchard and Perotti \(2002\)](#)
 - long sample: 1939q1-2008q4
 - with standard identification (BP - choleski): output \uparrow , consumption \uparrow , hours \uparrow , real wage $\uparrow \Rightarrow$ **NK**
 - adding anticipation (war dates dummies): output \uparrow , consumption \downarrow , hours $\uparrow\uparrow$, real wage $\downarrow \Rightarrow$ **Neoclassical**
- This evidence favours a neoclassical view over a Keynesian one

Empirical evidence by subsamples

Ramey (2011) defence spending shocks



Great Inflation (1960q1-1979q2)

Great Moderation (1984q1-2007q2)

Why?

We extend the analysis taking monetary-fiscal interactions into account

Great Moderation \Rightarrow **Monetary regime (M)**

central bank sets interest rates

government adjusts deficits to stabilize real debt

\Rightarrow Ricardian equivalence holds, no wealth effects on debt

Great Inflation \Rightarrow **Fiscal regime (F)**

government sets deficits,

central bank accommodates rates to let inflation stabilize real debt

\Rightarrow fiscal theory at work, no Ricardian equivalence, wealth effects on debt

(e.g., [Bianchi and Melosi, 2017, 2014](#); [Bianchi, 2012](#); [Chung et al., 2007](#); [Sims, 2011](#); [Davig and Leeper, 2007, 2011](#))

What we do

Does fiscal foresight lead fiscal shocks to have different effects under regime M or F?

- Theoretically:
 - effects of anticipated government spending in regime M and F
 - analytics in a simple model & simulations [Smets and Wouters](#) model
- Empirically:
 - check empirical evidence with anticipation effects
 - check what happens under standard identification
- Explore the issue of non-fundamentality

- Theoretically
 - *unanticipated* GS shocks are expansionary in both regimes
 - ***anticipated*** GS shocks are expansionary in regime F and contractionary in regime M ***during the anticipation period***
- Empirical evidence corroborates theoretical results
 - extend the VAR to include C, I, H, w
 - use other measures of anticipated shocks as [Ramey and Shapiro \(1998\)](#) and [Forni and Gambetti \(2016\)](#).
 - same results using the standard VAR identification by [Blanchard and Perotti \(2002\)](#) ⇒ no difference with the [Ramey \(2011\)](#) measure
- ***Conditional on the regime, shocks are fundamental***: Granger causality tests ⇒ no evidence that shocks could have been forecasted

A simple New Keynesian model with fiscal policy block

Beck-Friis and Willems (2017)

$$\hat{y}_t - \alpha_1 \tilde{g}_t = \mathbb{E}_t \hat{y}_{t+1} - \alpha_1 \mathbb{E}_t \tilde{g}_{t+1} - \alpha_2 [\hat{i}_t - \mathbb{E}_t \hat{\pi}_{t+1}] \quad (\text{Euler})$$

$$\hat{\pi}_t = \beta \mathbb{E}_t [\hat{\pi}_{t+1}] + \kappa \alpha_3 \hat{y}_t - \kappa \alpha_4 \tilde{g}_t \quad (\text{Phillips curve})$$

$$\hat{i}_t = \phi \hat{\pi}_t \quad (\text{Taylor rule})$$

$$\tilde{b}_t = \frac{1}{\beta} \tilde{b}_{t-1} - \frac{1}{\beta} (\tilde{\tau}_t - \tilde{g}_t) - \frac{1}{\beta} \frac{b}{y} \hat{\pi}_t + \frac{b}{y} \hat{i}_t \quad (\text{Government b.c.})$$

$$\tilde{\tau}_t = \psi \tilde{b}_{t-1} + \varepsilon_t^\tau \quad (\text{Tax rule})$$

$$\tilde{g}_t = \rho \tilde{g}_{t-1} + \varepsilon_t^g \quad (\text{Government spending rule})$$

Monetary and fiscal parametrization

Monetary regime

- active monetary policy: $\phi > 1$
- passive fiscal policy: $\psi > 1 - \beta$

Fiscal regime

- passive monetary policy: $\phi < 1$
- active fiscal policy: $\psi < 1 - \beta$

We calculate analytically both anticipated and unanticipated GS multipliers on output for different degree of anticipation under the two regimes

Monetary regime

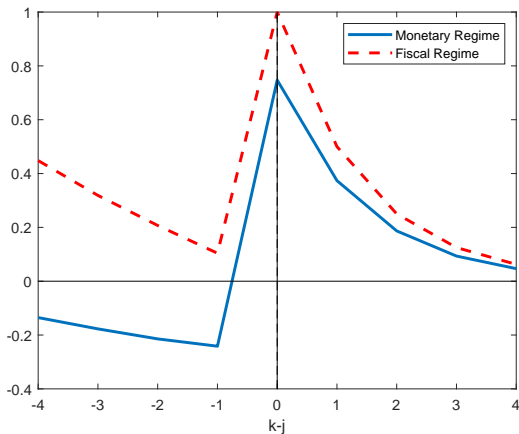
- Unanticipated multipliers: **Positive**
 - shifts of labor supply (Neoclassical negative wealth effect)
 - shifts of labor demand (sticky prices)

- Anticipated multipliers : **Negative**
 - Two competing effects
 1. $\pi^e \uparrow \Rightarrow r \downarrow \Rightarrow c \uparrow$ (real interest rate channel)
 2. $c^e \downarrow \Rightarrow c \downarrow$ (negative wealth effect + consumption smoothing)
 - Potentially ambiguous response of current demand
 - For a standard calibration, demand and output **decreases** in the anticipation period
 - anticipated G shock lowers consumption, as it is fiscally backed

Effects on inflation and real debt

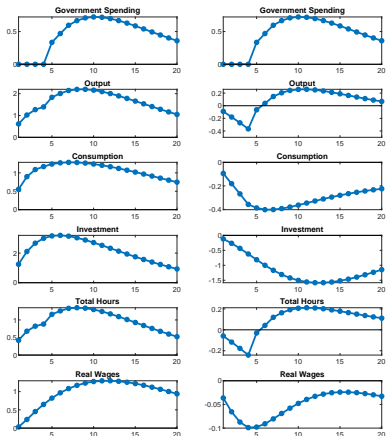
- Unanticipated multipliers: **Positive**
 - Two additional nominal wealth effects (shut down under M)
 - $TM_F^y(0, k)$ newly-issued bonds increase net wealth for the households (equivalent to a debt-financed tax cut)
 - fiscal inflation tax: inflation erodes the real value of existing debt
 - Keynesian and nominal wealth effects are both expansionary upon implementation (our calibration)
 - $GSM_F^y > GSM_M^y$
- Anticipated multipliers: **Positive**
 - Same intuition: Keynesian effect + nominal wealth effect
 - Keynesian effect contractionary during anticipation
 - nominal wealth effect expansionary during anticipation
 - Nominal wealth effect dominates
⇒ two bursts of activity

Output response to an announced fiscal expansion

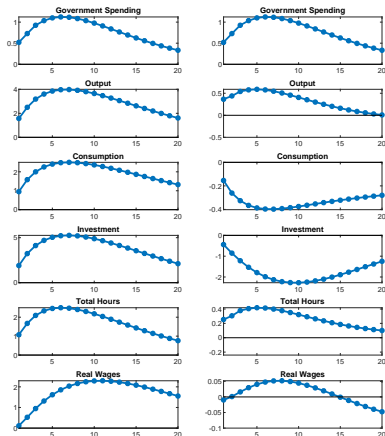


Smets and Wouters with 4-period anticipation

Anticipated shocks



Unanticipated shocks



(a) F: $\varphi = 0$, $\phi = 0.5$

(b) M: $\varphi = 0.2$, $\phi = 1.5$

(c) F: $\varphi = 0$, $\phi = 0.5$

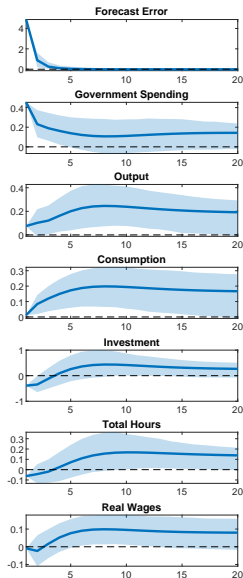
(d) M: $\varphi = 0.2$, $\phi = 1.5$

Anticipated shock: opposite behavior in the anticipation period;

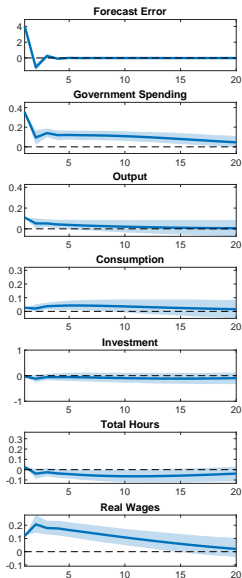
Unanticipated shock: same behavior (except for investment, consumption)

Empirical evidence: Unanticipated shocks

F: 1966q4-1979q2



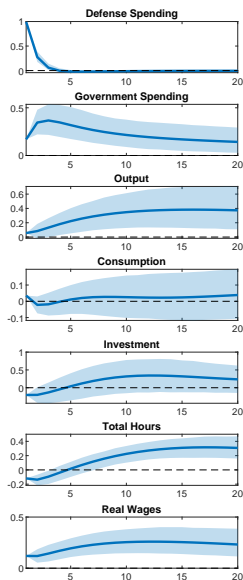
M: 1984q1-2007q2



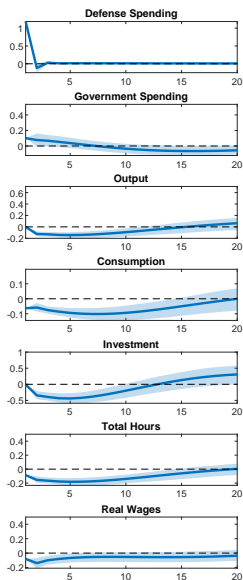
- Unanticipated shocks are identified as innovations to forecast errors using SPF data, [Auerbach and Gorodnichenko \(2012\)](#)
- no clear-cut differences between the two regimes

Additional empirical evidence: Anticipated shocks

F: 1960q1-1979q2



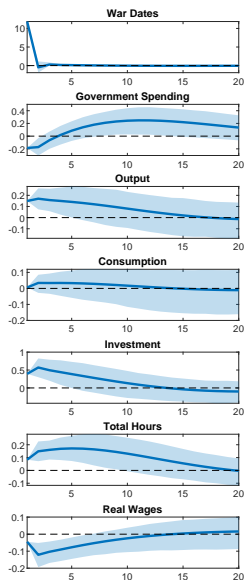
M: 1984q1-2007q2



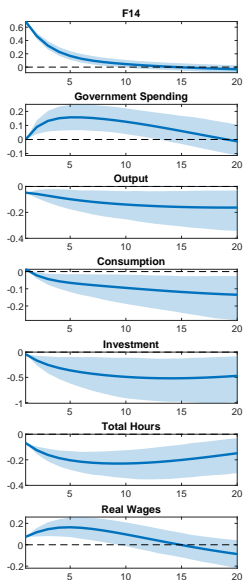
- Ramey (2011) defence spending shocks with larger VAR

Additional empirical evidence: Anticipated shocks

F: 1960q1-1979q2



M: 1984q1-2007q2

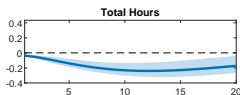
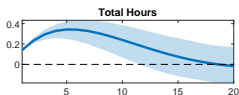
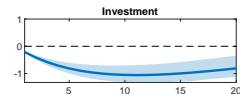
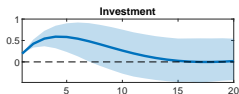
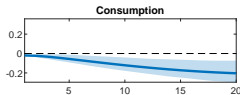
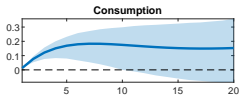
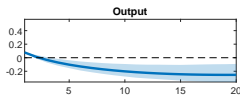
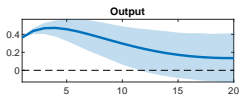
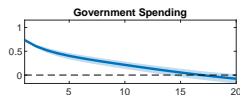
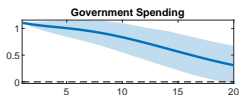


- F: Ramey and Shapiro (1998) narrative defence spending
- M: Forni and Gambetti (2016) \Rightarrow SPF forecast of future spending growth in the next four quarters $F(1,4)$, ordered second in the VAR

Additional empirical evidence: Standard BP identification

F: 1960q1-1979q2

M: 1984q1-2007q2



- Blanchard and Perotti (2002) standard recursive identification with government spending ordered first (no distinction anticipated vs. unanticipated shocks)
- **No difference with fiscal foresight VARs and theoretical results for anticipated shocks**
- Under F: anticipated and unanticipated shocks are both expansionary, cannot tell apart
- Under M: fall in output thus supporting the idea that anticipation effects are the main transmission mechanism of fiscal shocks
- once controlling for the regime, shocks may become fundamental
- Tests of Fundamentalness

Conclusions

- Fiscal foresight: fiscal shocks are mostly anticipated
- Theoretically effects of **anticipated** government spending **depends crucially on the fiscal-monetary policy mix**
 - expansionary in a F regime
 - contractionary in a M regime
- **Data support this robust theoretical implication**
- Measures of anticipated G shocks in the literature can help to empirically distinguish between the two regimes
- We were able to reconcile conflicting results in the empirical literature, **that disappear conditioning the estimates on the existing monetary-fiscal policy mix**
- It could be (un)wise to anticipate future fiscal policies, depending on the regime in place.

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Monetary regime: Anticipated multipliers

Effect on inflation and real debt

- Ambiguous effects on inflation

- $Y \downarrow \Rightarrow \pi \downarrow$

- $\pi^e \uparrow \Rightarrow \pi \uparrow$

- Ambiguous effects on real debt

- depends on the real interest rate (cost of servicing the debt)

- in turn, it depends on inflation and how hawkish the central bank is

return AGSM

Fundamentalness: Ramey's (2011) Granger causality test

*Granger-causality tests between the residual from
the Blanchard and Perotti (2002) VAR and Ramey and Shapiro (1998) war dates*

	Full sample 1947q1-2008q4	F 1960q1-1979q2	M 1984q1-2007q2
4 lags			
Do war dates Granger-cause VAR shocks?	Yes (0.0004)	No (0.5056)	No (0.5785)
Do VAR shocks Granger-cause war dates?	No (0.4938)	No (0.3803)	No (0.2415)
2 lags			
Do war dates Granger-cause VAR shocks?	Yes (0.0069)	No (0.2946)	No (0.4523)
Do VAR shocks Granger-cause war dates?	No (0.4776)	No (0.1997)	No (0.6601)

- VAR shocks never Granger-cause war dates
- War dates Granger cause VAR shocks only in the full sample

return Blanchard-Perotti VAR

Fundamentalness: Ramey's (2011) Granger causality test

Granger causality test using SPF forecasts of future spending growth for one and four quarters ahead

	Full sample 1968q4-2008q4	F 1968q4-1979q2	M 1984q1-2007q2
2 lags			
Do one-quarter ahead professional forecasts Granger-cause VAR shocks?	Yes (0.0667)	No (0.6320)	No (0.1711)
Do VAR shocks Granger-cause one-quarter ahead professional forecasts?	No (0.3618)	No (0.6059)	No (0.2488)
Do four-quarter ahead professional forecasts Granger-cause VAR shocks?			No (0.6577)
Do VAR shocks Granger-cause four-quarter ahead professional forecasts?			No (0.1462)

- Non-fundamentalness present in the full sample, which does not distinguish M and F
- When well-defined monetary and/or fiscal regimes are considered, shocks become fundamental

Testing for fundamentalness: Forni and Gambetti (2016)

Orthogonality test - Regime M

	1 lag	2 lags	3 lags
$f(0)$	0.85	0.78	0.81
$f(1)$	0.17	0.25	0.35
$f(2)$	0.75	0.14	0.23
$f(3)$	0.99	0.93	0.04
$f(4)$	0.87	0.51	0.50
$f(0)$ to $f(4)$	0.59	0.13	0.13
$F(1, 4)$	0.55	0.81	0.70

- Except for one case with 3 lags, there is always evidence of fundamentalness
- And this is true even if one considers a smaller (4-variables) VAR