

Government Spending Shocks and Private Activity: The Role of Sentiments

Bijie Jia and Hyeongwoo Kim

Auburn University

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Fiscal Policy and Economic Activity

- The profession has recently revived a debate on the effectiveness of the fiscal spending policy in stimulating economic activity.
- Related questions include,
 - Can fiscal spending promote private activity?
 - How will consumption and investment respond to it?
 - Will it improve labor market conditions?
- There is a large literature on these issues.

Positive Views

- One group reports positive responses of consumption, output, real wages to expansionary fiscal policies.
- Overall, consistent with the New Keynesian Macroeconomic Models
- See, among others, Rotemberg and Woodford (1992), Devereux, Head, and Laphan (1996), Fatas and Mihov (2001), Blanchard and Perotti (2002), Perotti (2005), Galí, López-Salido, and Vallés (2007).

Skeptical Views

- Others provide negative responses of consumption and real wages to fiscal spending shocks.
- See, for example, Aiyagari, Chiristiano, and Eichenbaum (1992), Hall (1986), Ramey and Shapiro (1998), Edelberg, Eichenbaum, and Fisher (1999), Burnside, Eichenbaum, and Fisher (2004), Cavallo (2005), Mountford and Uhlig (2009), Ramey (2013), and Owyang, Ramey, and Zubairy (2013).

Skeptical Views

- May be related with a negative wealth shock (Ramey, 2011) in the Neoclassical Macroeconomic Models (Aiyagari, Chiristiano, and Eichenbaum, 1992; Baxter and King, 1993)
- Rational consumers may reduce consumption and increase the labor supply, expecting tax hikes in the future, even with non-distortionary lump-sum tax.

Fiscal Multiplier

- One related issue is on the size of the fiscal multiplier.
 - Ramey and Shapiro (1998), Hall (2009), Barro and Redlick (2011), and Ramey (2011) obtained fairly low estimates, say less than one.
 - Hall (2009) and Christiano, Eichenbaum, and Rebelo (2009) show that fiscal multipliers can be high when the nominal interest rate is bounded at zero.

Fiscal Multiplier

- Overall, the range of fiscal multiplier estimates in the literature is very wide (Ramey, 2011).
- Can vary greatly across countries depending on key country characteristics
 - Corsetti, Meier, and Müller (2012) and Ilzetxki, Mendoza, and Vegh (2013)
 - Smaller in more open economies, in flexible exchange rate regime, in low debt countries, etc

Nonlinear Models

- Another interesting question is about the nonlinearity of fiscal effects.
- That is, is the government spending shock more powerful during times of slack?
 - Auerbach and Gorodnichenko (2012), Mittnik and Semmler (2012) and Fazzari, Morley, and Panovska (2013) report higher fiscal multipliers during recessions than in booms.
 - Owyang, Ramey, and Zubairy (2013) and Ramey and Zubairy (2014) find no such evidence.

Main Objectives

- Observing mixed evidence on the effectiveness of fiscal stimulus, we study how the government spending shock influences private activity in the US.
 - We report negligibly weak or even negative responses of private activity to fiscal shocks.
 - We introduce the role of consumer *sentiment* in the propagation of expansionary fiscal shocks.

Main Objectives

- We are not the first who discussed interactions between the sentiment and economic activity.
 - Hall (1993) and Blanchard (1993) underline the causal effects of *animal spirit* on economic activity during the 1990-1991 recession.
 - Cochrane (1994) points out that such close relationship appear because consumer confidence shocks reflect *news* about future economic productivity.
 - See also Beaudry and Portier (2004, 2006), Barsky and Sims (2012), and Bachman and Sims (2012).

Main Objectives

- We are particularly interested in the role of consumer confidence in a propagation mechanism of the government spending shock to private activity.
 - Especially, consumption and investment, excluding the government component from the total GDP.
 - We focus on a closed economy model estimation.

Main Objectives

- We employ an array of conventional VAR models as well as the two *expectational VAR* identification methods by Ramey (2011) for the post-war US data.
 - One with her *NEWS* variable and the other one with forecast errors via the *Survey of Professional Forecasters* data
 - Fiscal spending can be anticipated by market participants before its realizations.

Empirical Findings

- Government spending shocks are not very effective in stimulating private activity in the US.
 - Consumption responds positively only for a short-period of time.
 - Under the EVAR models, responses become completely muted or even negative.
 - Responses of investment similarly weak
 - We were unable to find persistently positive responses of private activity.
- However, private activity shows solid positive responses to the sentiment shock.

Empirical Findings

- Consumer sentiment rapidly deteriorates to a negative region since the impact of the fiscal spending shock.
 - Leads to subsequent decreases in consumption and investment
 - Unexpected increases in the government spending generate consumer *pessimism*.
 - Consumer sentiment seems to lead private activity rather than it passively reflects the current state of the economy.

Empirical Findings

- Such a *consumer sentiment channel* may weaken the effectiveness of the fiscal policy in the US.
- Changes in *total* consumption seem to be driven mainly by changes in *nondurable consumption* in response to fiscal shocks.
 - Consumers may consider income shocks from fiscal expansions as *windfall*.
- That is, fiscal shocks, failing to generate consumer optimism, do not generate persistent increases in private activity.

Empirical Findings

- fiscal shock seems to be ineffective in improving the labor market condition either.
 - Responses of private jobs are mostly weak and even negative.
 - Private wages don't show solid increases either.
 - Potential positive effects due to job switch vs. negative effects from decreases in private spending
- Real wage and private sector jobs show solid positive increases when sentiment shocks occur.

Closed Economy VAR Models

$$\mathbf{x}_t = \sum_{j=1}^p \mathbf{A}_j \mathbf{x}_{t-j} + \varepsilon_t,$$

where

$$\mathbf{x}_t = [\mathbf{g}_t \quad \mathbf{y}_t \quad sent_t \quad \mathbf{z}_t]'$$

- \mathbf{g}_t : Government spending variables
- \mathbf{y}_t : Private activity variables
- $sent_t$: A scalar sentiment variable
- \mathbf{z}_t : Control variables (tax rate, interest rate, money)

Identification Methods

- We employ an array of VAR models based on alternative identification methods for the government spending shock (Ramey, 2013).
- *TGOV* model identifies the government spending shock by unexpected increases in the total government spending ($tgov_t$).
 - $\mathbf{g}_t = tgov_t$
 - Blanchard and Perotti (2002), Perotti (2005, 2008), and Galí, López-Salido, and Vallés (2007)

Identification Methods

- We employ an array of VAR models based on alternative identification methods for the government spending shock (Ramey, 2013).
- Two *EVAR* models with Ramey's (2011) *NEWS* variable as well as *SPF forecast errors*.
 - $\mathbf{g}_t = news_t$ (*NEWS*) and $\mathbf{g}_t = spf_t$ (*SPF*)
 - Ramey (2011) points out a timing issue from using conventional VAR models when changes in fiscal variables are anticipated.

Identification Methods

- We employ an array of VAR models based on alternative identification methods for the government spending shock (Ramey, 2013).
- Two *EVAR* models with Ramey's (2011) *NEWS* variable as well as *SPF forecast errors*.
 - *NEWS* variable constructed by estimating changes in the expected present value of government spending, utilizing Business Week and other mass media sources
 - One-quarter ahead *SPF forecast errors* of fiscal spending growth rates, using the SPF data (mean responses) from the Philadelphia Fed

Identification Methods

Our benchmark models are,

$$TGOV : \mathbf{x}_t = [tgov_t \quad invt_t \quad conm_t \quad sent_t \quad tr_t \quad i_t \quad m_t]'$$

$$FGOV : \mathbf{x}_t = [fgov_t \quad tgov_t \quad invt_t \quad conm_t \quad sent_t \quad tr_t \quad i_t \quad m_t]'$$

$$NEWS : \mathbf{x}_t = [news_t \quad tgov_t \quad invt_t \quad conm_t \quad sent_t \quad tr_t \quad i_t \quad m_t]'$$

$$SPF : \mathbf{x}_t = [spf_t \quad tgov_t \quad invt_t \quad conm_t \quad sent_t \quad tr_t \quad i_t \quad m_t]'$$

Wold Ordering Issue

- Econometric inferences from recursively identified VAR models might not be robust to alternative VAR orderings.
- Fiscal spending effects under our framework do not suffer from this ordering problem.
 - Consider a VAR with $\mathbf{x}_t = [\mathbf{x}_{1,t}, \mathbf{x}_{2,t}]$, where $\mathbf{x}_{1,t}$ is a vector of variables with a known ordering, while the ordering of $\mathbf{x}_{2,t}$ is completely unknown.
 - All impulse-response functions of the entire variables in \mathbf{x}_t to the shock to $\mathbf{x}_{1,t}$ variables are unaffected by arbitrary reshuffling of $\mathbf{x}_{2,t}$ (Kim et al., 2015).

Wold Ordering Issue

- Econometric inferences from recursively identified VAR models might not be robust to alternative VAR orderings.
- Fiscal spending effects under our framework do not suffer from this ordering problem.
 - \mathbf{g}_t is ordered first, thus *all* response functions to the fiscal spending shock are *identical* among all recursively identified VAR models.
 - Fiscal policy actions need to get approval from Congress prior to implementation.

Wold Ordering Issue

- Econometric inferences from recursively identified VAR models might not be robust to alternative VAR orderings.
- Fiscal spending effects under our framework do not suffer from this ordering problem.
- Response functions to the sentiment shock are *not* invariant to the ordering of the VAR.
 - An array of robustness check analyses yield similar results.

Data Descriptions

- We use quarterly frequency data from 1960:I (1968:IV for *SPF* model) to 2013:II. We obtained the data from the FRED with a few exceptions. [▶ Data](#)
- $news_t$ is obtained from Valerie Ramey's website.

Data Descriptions

- We use quarterly frequency data from 1960:I (1968:IV for *SPF* model) to 2013:II. We obtained the data from the FRED with a few exceptions. [▶ Data](#)
- Consumer sentiment index ($sent_t$) data is from the University of Michigan's Survey of Consumers database.
 - Combination of the two sub-indices, the current economic conditions index (ICC) and the index of consumer expectations (ICE)
 - Highly correlated each other. [▶ Sentiment](#)

Data Descriptions

- We use quarterly frequency data from 1960:I (1968:IV for *SPF* model) to 2013:II. We obtained the data from the FRED with a few exceptions. [▶ Data](#)
- We use "total" government expenditures for government spending variables.
- All public and private spending variables are log transformed and are real per capita terms.

Data Descriptions

- We use quarterly frequency data from 1960:I (1968:IV for *SPF* model) to 2013:II. We obtained the data from the FRED with a few exceptions. [▶ Data](#)
- $sent_t$ is expressed in natural logarithm.
- tr_t denotes the government tax receipts divided by the total GDP.
- i_t denotes the three month Treasury Bills yield and m_t is the nominal M2, expressed in natural logarithm.

SPF Forecast Errors

- The SPF data were obtained from the Philadelphia Fed.
 - Nominal defense spending forecast from 1968:IV to 1981:II
 - Real federal spending forecast since 1981:III
 - We use the forecast of the GDP deflator to convert nominal forecast to real ones.
 - Nine changes in base year, all SPF data rescaled with 2009 as the common base year

SPF Forecast Errors

- The SPF data were obtained from the Philadelphia Fed.
- Following Ramey (2011), we use the actual government spending growth minus the forecast of it made one quarter earlier.
 - $g_t - E(g_t|\Omega_{t-1})$ where Ω_{t-1} is the forecasters' information set at time $t - 1$

SPF Forecast Errors

- The SPF data were obtained from the Philadelphia Fed.
- We combine forecast errors of defense spending growth with those of federal spending growth rates.
 - News or defense spending variable explain substantial portion of changes in fiscal spending growth.
 - Uses forecast growth rates instead of forecasts
 - De-filtered series behave similarly. [▶ HPC](#)

Identified Fiscal Shocks

- Identified shocks are overall highly correlated with each other.
 - Raw data [▶ Data](#)
 - Residuals [▶ Residual](#)
 - Scatter Plots [▶ SPlots](#)

Responses of Private GDP

- We first estimate fiscal spending effects on private GDP excluding the G component.
- Fiscal shocks have negligible or even negative effects on the private GDP in all models. ▶ PGDP-F
 - Implies that evidence of positive responses of the total GDP to the fiscal shock might be mainly driven by an expansion of the public sector.
 - Consistent with Ramey (2013)

Responses of Private GDP

- We also estimate responses of the private GDP to the sentiment shock.
- From all models, we observe highly significant positive responses that last over two years. ▶ PGDP-S
 - Responses to an 1 percent shock, $sent_t$ has higher standard deviation than $fgov_t$ ▶ Volat
 - Consistent with the work by Hall (1993), Blanchard (1993), Cochrane (1994), and Bachman and Sims (2012) that report close relationship between consumer sentiment and economic activity

Responses of Private Spending

- Consumption responses are somewhat mixed, though no persistently positive responses are observed ▶ Comm-F
 - Significantly positive responses in the short-run under *TGOV* and *FGOV* identification schemes
 - No meaningful or even significantly negative responses under *EVAR* schemes
- Similarly weak responses of investment to the fiscal shock ▶ Invt-F
- These responses jointly explain the negligible responses of the private GDP to the fiscal shock reported earlier.

Sentiment Responses to the Fiscal Shock

- We investigate the role of consumer sentiment in the propagation channel of the fiscal shock.
- For this purpose, we estimate sentiment responses to the fiscal shock. ▶ Sent
 - Under the *TGOV*, *FGOV*, and *SPF* schemes, consumer sentiment rapidly falls below zero immediately when the fiscal shock occurs.
 - Fiscal spending shocks may be interpreted as a sign of weak economy. \Rightarrow Consumer pessimism \Rightarrow Decreases in private spending

Sentiment Responses to the Fiscal Shock

- We investigate the role of consumer sentiment in the propagation channel of the fiscal shock.
- May weaken the effectiveness of the expansionary fiscal policy as private spending falls in response to the fiscal shock.
 - In what follows, we show *total* consumption responses resemble those of *nondurable* goods consumption.
 - Fiscal spending as *windfall*?

Private Spending Responses to the Sentiment Shock

- Private spending persistently positively respond to the sentiment shock for a prolonged period of time.
 - consumption responses are highly significant at the 5% level for over three years. ▶ Conm
 - Distributions of investment responses are heavily skewed to the positive area. ▶ Invt
- Robustness analyses with $sent_t$ from the first to the last show that the sentiment effect are robust to alternative orderings.

Sentiment Channel

- The effectiveness of the fiscal spending shock may critically hinge upon a sentiment channel.
 - ① Sudden increases in the government deficit
 - ② Interpreted as a clear sign of economic downturn
 - ③ Consumers revise down economic growth forecasts
 - ④ Private spending declines, weakening policy effects
- Consistent with the *news* effect argument by Cochrane (1994) and Bachman and Sims (2012), even though Bachman and Sims (2012) are more optimistic on the role of the expansionary fiscal policy.

Sentiment Channel

- One alternative reasoning is,
 - ① Sudden increases in the government deficit
 - ② Consumption and investment fall after the spending shock due to some unknown reason
 - ③ Sentiment passively reflects such decreases in private GDP
- We are skeptical on this view.

Sentiment Channel

- Under *TGOV* and *FGOV* models,
 - Consumption \uparrow for a short period of time.
 - However, sentiment \downarrow almost immediately.
 - Sentiment should've resembled the responses of consumption if it passively reflects current conditions.
 - CS is a combination of ICC and ICE.
- It seems that the sentiment plays a leading role in determining private activity.

Durables vs. Nondurables

- We estimate responses of durable goods consumption and of nondurable goods and services consumption.
- One motivation of this exercise is,
 - Consumers tend to adjust consumption for durable goods when they expect persistent changes in economic conditions.
 - Nondurable goods consumption might be also influenced by temporary changes in incomes.

Durables vs. Nondurables

- Overall, durable good consumption does not significantly positively respond to the fiscal shock.
 - ▶ Cond
- Nondurable good consumption responses resemble those of total consumption.
 - ▶ Conn
 - ▶ Conm
- Under the *SPF* identification scheme, durables consumption decreases substantially more than the increase in the nondurable counterpart.

Durables vs. Nondurables

- Fiscal shock effects on *total consumption* are overall driven by responses of $conn_t$ instead of those of $cond_t$.
- That is, positive responses of consumption, if any, might occur because consumers view possible income shocks as *windfall*.
- These findings imply fiscal shocks fail to generate consumer optimism on economic conditions in the near future.

Durables vs. Nondurables

- Sentiment shock effects on durables and nondurables consumption are solid positive again.
- Both consumptions persistently positively increase in response to the sentiment shock. ▶ Cond ▶ Conn

Private Jobs

- Fiscal spending effects on private jobs may differ depending on the nature of government spending.
 - Government purchases of private sector goods and services \Rightarrow Private jobs \uparrow
 - Increases in government value added (more public jobs) \Rightarrow Private jobs \downarrow
- Overall, responses of the private sector jobs are either insignificant or even negative. ▶ PJobs-F
- The sentiment shock has a solid positive effect on private employment. ▶ PJobs-S

Private Wages

- Private wages may rise in either cases of government purchases of private sector goods or increases in government value added.
- Private sector wages may fall if rational consumers increase the labor supply sufficiently.
- If fiscal shocks decreases in private activity, there will be further negative effects on private wages.

Private Wages

- Private wages may rise in either cases of government purchases of private sector goods or increases in government value added.
- we observe slightly positive but insignificant or negative effects of the fiscal shock on private wages.

▸ PWages-F

- Solid increases in private wages (▸ PWages-S) to the sentiment shock are observed.

ICC and ICE

- Further experiment with the two sub-indices of the consumer sentiment index.
 - Index of current economic conditions (ICC) and index of consumer expectations (ICE)
 - Bachman and Sims (2012) use ICE instead of ICS.
 - All indices behave similarly, though. ▶ Sentiment
- Our results are robust to alternative choices of sentiment variables.
 - ICE: ▶ Consumption ▶ Investment ▶ Sentiment
 - ICC: ▶ Consumption ▶ Investment ▶ Sentiment

SPF: A Sub-Sample Analysis

- We combined forecast errors for the real defense spending growth rate with those for the real federal spending growth rate via the SPF data.
- Similar IRFs for 1981:III to 2013:II ▶ IRF-Sub
 - Consumption and investment negatively respond to the fiscal shock.
 - Private spending again responds persistently positively to the sentiment shock.

Concluding Remarks

- Observation of the slow recovery from recent Great Recession triggered a debate on the effectiveness of the fiscal policy in stimulating economic growth.
- Empirical evidence is at best mixed.
- This paper attempts to understand what may influence the propagation channel of the fiscal policy to private activity.

Concluding Remarks

- We introduce the role of consumer sentiment in a propagation mechanism for government spending shocks towards private economic activity.
- For this purpose, two conventional VAR and two expectational VAR models are employed to identify the fiscal spending shock.
 - *EVAR* models allow fiscal spending changes to be anticipated by market participants.
 - We use Ramey's (2011) *NEWS* variable as well as forecast errors via the *SPF* data.

Major Findings

- Our empirical results imply a very weak, even negative effect of the government spending shock on private sector activity.
- The consumer sentiment shock generates solid positive responses of consumption and investment for a prolonged period.

Major Findings

- Consumer sentiment negatively responds to the government spending shock since the impact.
 - Sentiment seems to be leading instead of reflecting the current economic conditions.
 - As the fiscal shock generates consumer pessimism, decreases in private spending weakens the fiscal policy effect.

Major Findings

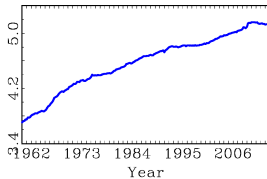
- Similar evidence obtained from private sector labor market variables.
 - Employment and real wages in the private sector respond significantly positively only to the sentiment shock.
- An array of robust check analyses supports our findings.

Thank You!

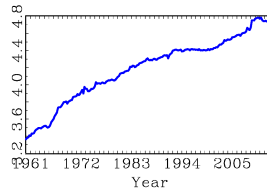


GOVERNMENT SPENDING: RAW DATA

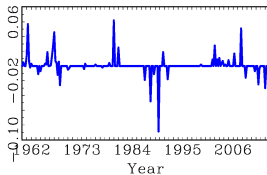
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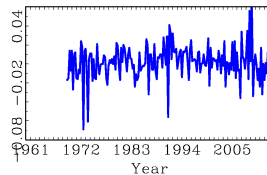
FGOV



NEWS

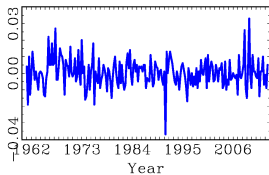


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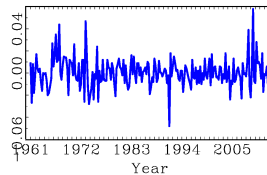


GOVERNMENT SPENDING: RESIDUALS

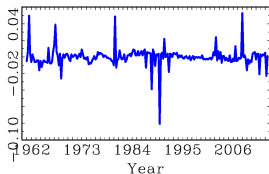
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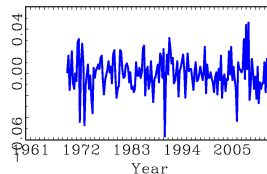
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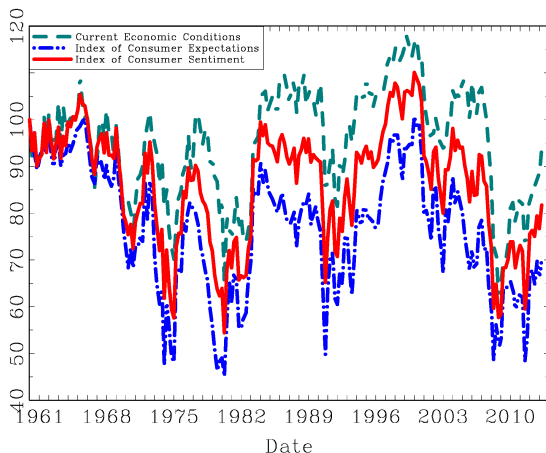
NEWS



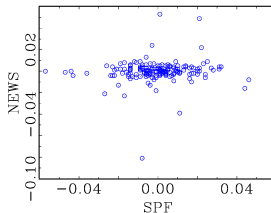
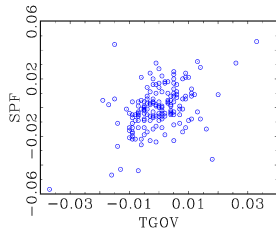
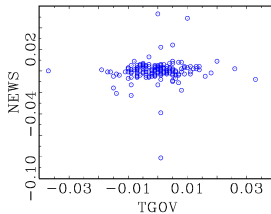
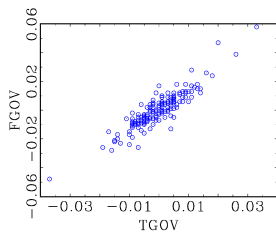
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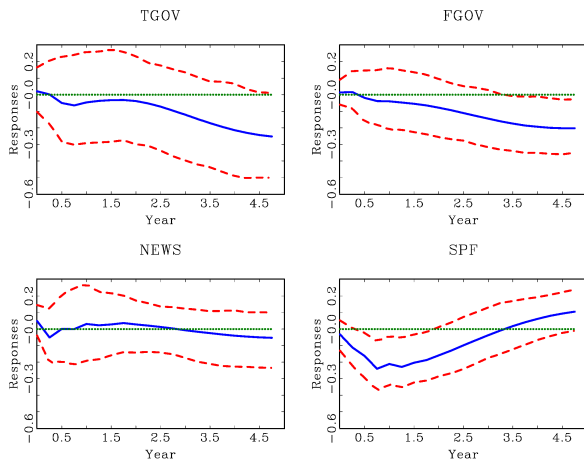
CONSUMER SENTIMENT INDEX



SCATTER PLOT DIAGRAMS

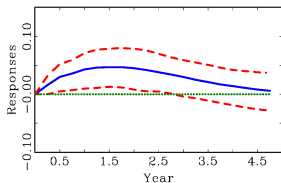


PRIVATE GDP TO THE FISCAL SHOCK

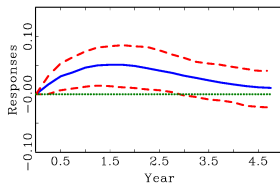


PRIVATE GDP TO THE SENTIMENT SHOCK

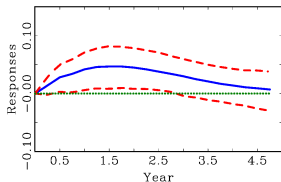
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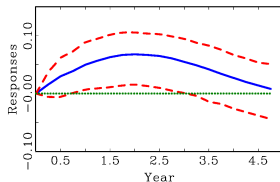
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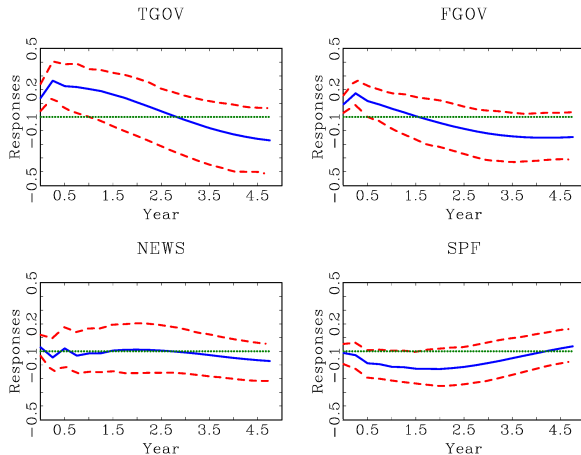
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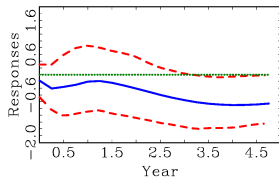


CONSUMPTION TO THE FISCAL SHOCK

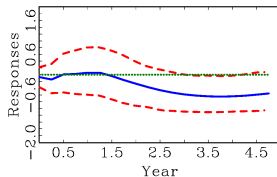


INVESTMENT TO THE FISCAL SHOCK

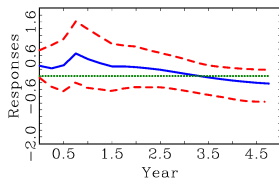
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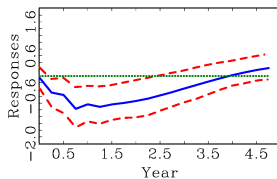
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NEWS

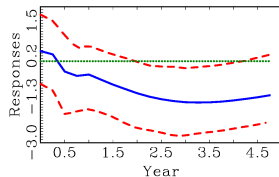


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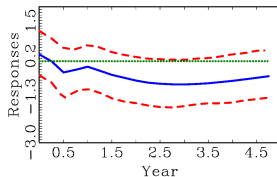


SENTIMENT TO THE FISCAL SHOCK

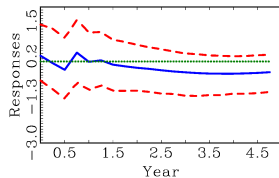
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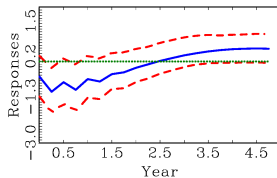
FGOV



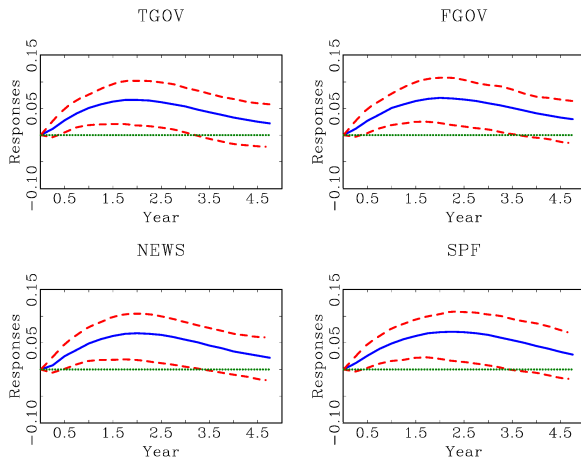
NEWS



SPF

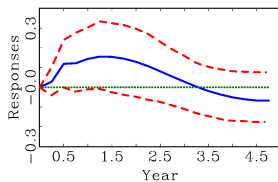


CONSUMPTION TO THE SENTIMENT SHOCK

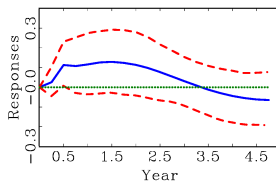


INVESTMENT TO THE SENTIMENT SHOCK

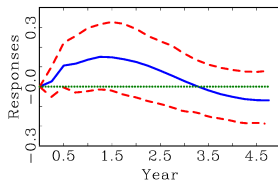
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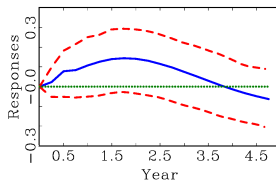
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NEWS

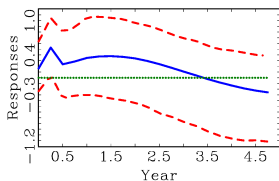


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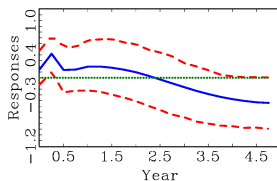


DURABLE GOOD CONSUMPTION TO THE FISCAL SHOCK

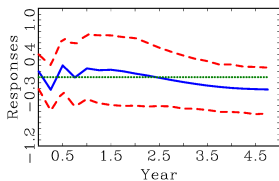
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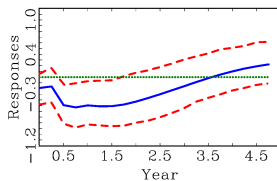
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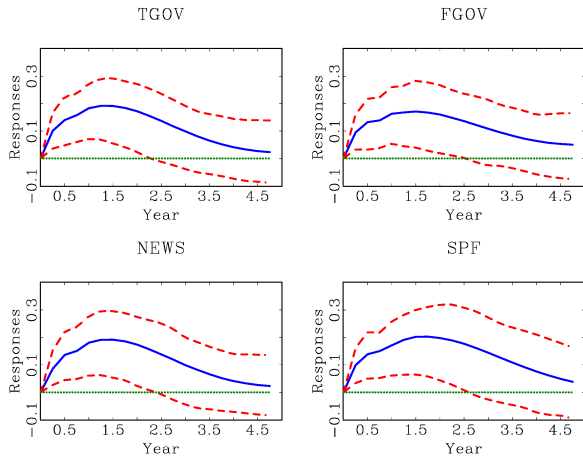
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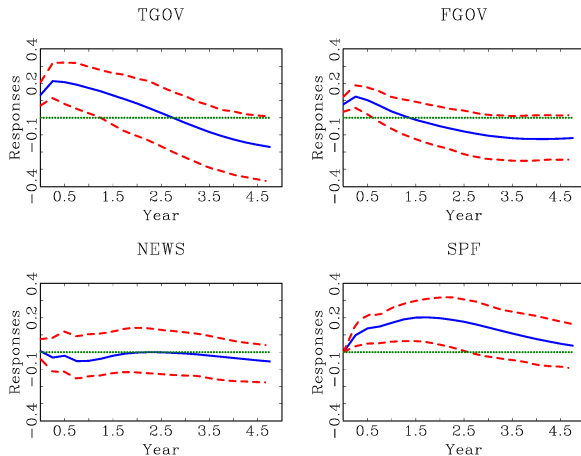
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DURABLE GOOD CONSUMPTION TO THE SENTIMENT SHOCK

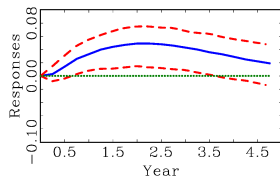


NONDURABLES CONSUMPTION TO THE FISCAL SHOCK

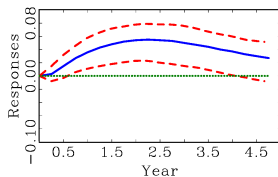


NONDURABLES CONSUMPTION TO THE SENTIMENT SHOCK

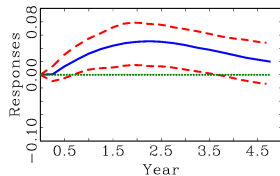
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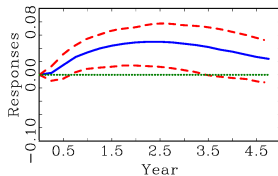
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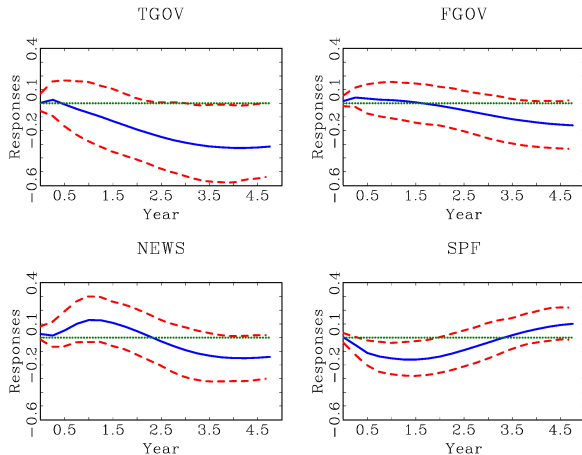
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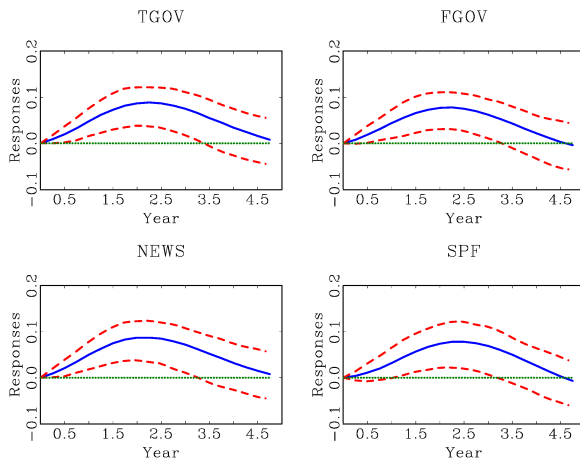
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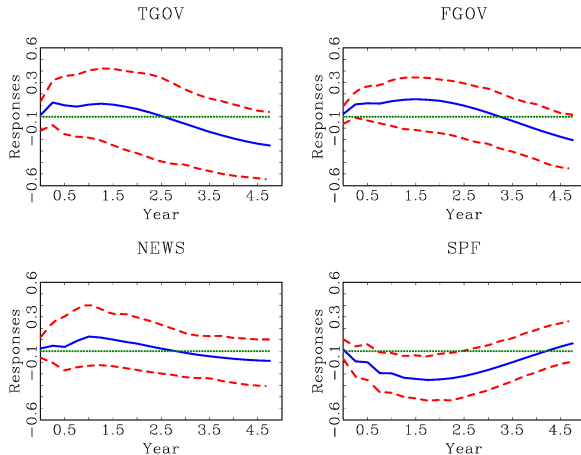
PRIVATE JOBS TO THE FISCAL SHOCK



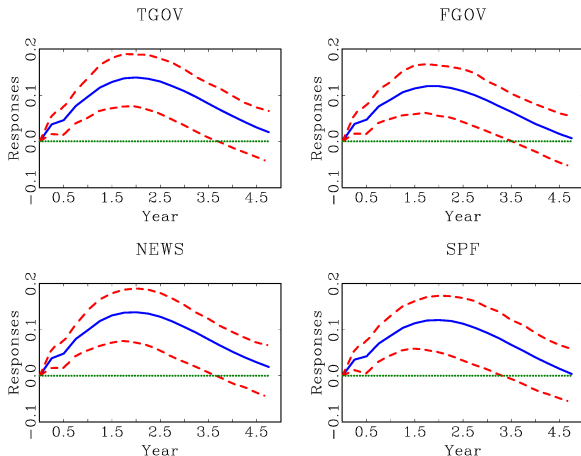
PRIVATE JOBS TO THE SENTIMENT SHOCK



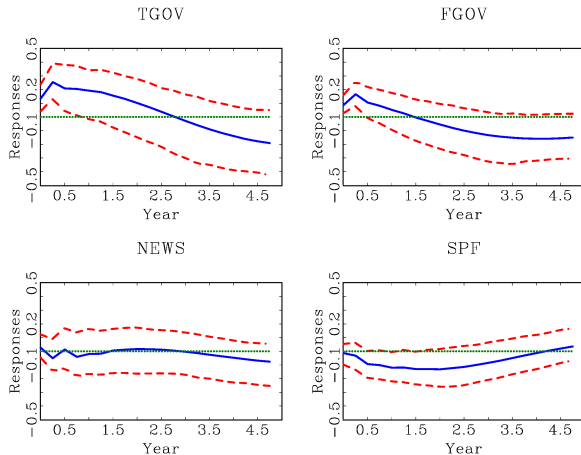
PRIVATE WAGE TO THE FISCAL SHOCK



PRIVATE WAGE TO THE SENTIMENT SHOCK

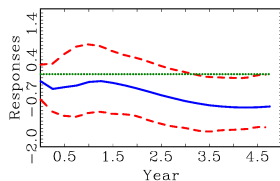


CONSUMPTION TO THE FISCAL SHOCK: ICE

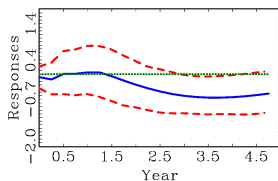


INVESTMENT TO THE FISCAL SHOCK: ICE

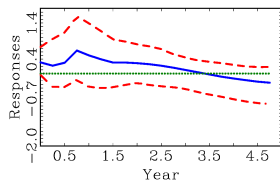
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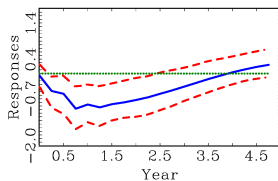
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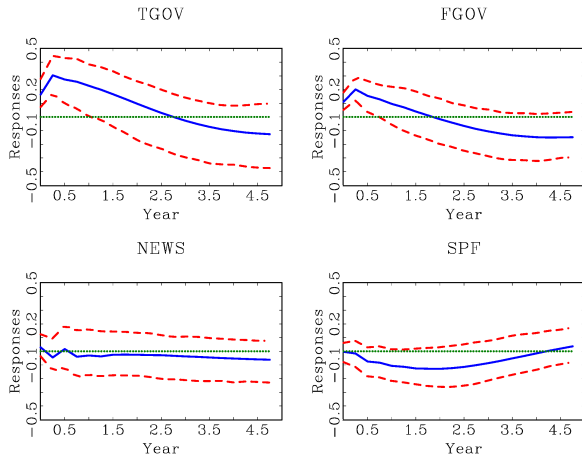
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SPF

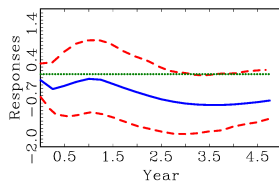


CONSUMPTION TO THE FISCAL SHOCK: ICC

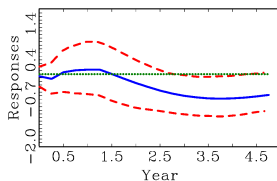


INVESTMENT TO THE FISCAL SHOCK: ICC

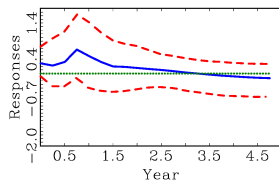
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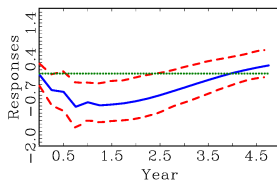
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NEWS

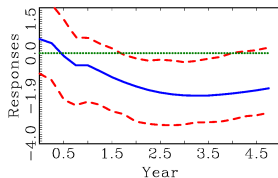


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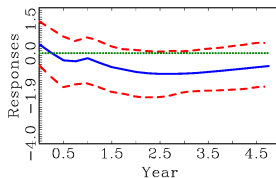


SENTIMENT TO THE FISCAL SHOCK: ICE

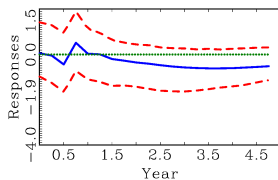
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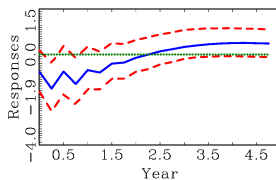
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NEWS

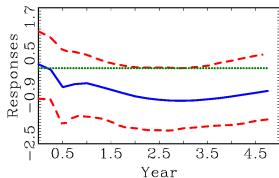


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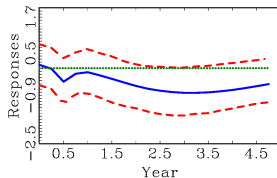


SENTIMENT TO THE FISCAL SHOCK: ICC

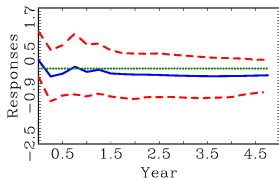
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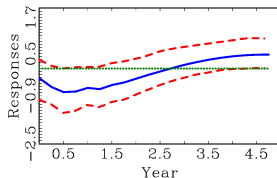
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NEWS

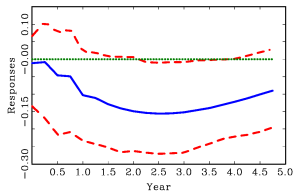


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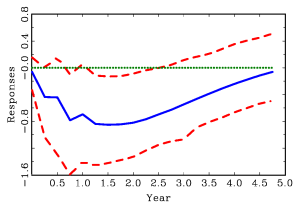


SUB-SAMPLE ANALYSIS: 1981:III - 2013:II

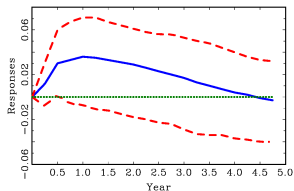
Fiscal Shock: Consumption



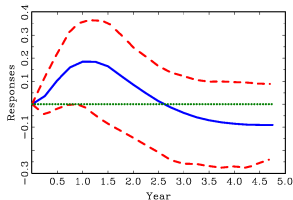
Fiscal Shock: Investment



Sentiment Shock: Consumption



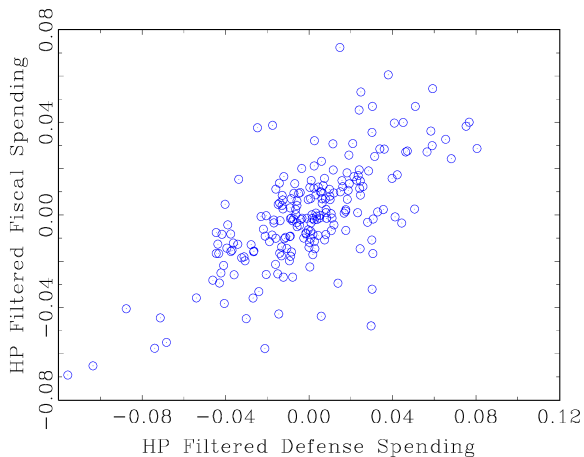
Sentiment Shock: Investment



DATA DESCRIPTIONS

Data ID	Description
GDP	Gross Domestic Product
PCE	Personal Consumption Expenditures
PCEDG	Personal Consumption Expenditures: Durable Goods
PCEND	Personal Consumption Expenditures: Nondurable Goods
PCES	Personal Consumption Expenditures: Services
GPDI	Gross Private Domestic Investment
W068RCQ027SBEA	Government total expenditures
W019RCQ027SBEA	Federal government total expenditures
GDPDEF	Gross Domestic Product: Implicit Price Deflator, Index 2009 =100
W006RC1Q027SBEA	Federal government current tax receipts
POP	Total Population: All Ages including Armed Forces Overseas
TB3MS	3-Month Treasury Bill: Secondary Market Rate
M2	M2 Money Stock
USPRIV	All Employees: Total Private Industries
A132RC1Q027SBEA	Compensation of employees: Wages and salaries, Private industries
UMCSENT	Consumer Sentiment Index: Survey of University of Michigan
SPF	Survey of Professional Forecasters from Philadelphia Fed.

SCATTER PLOT DIAGRAM: HP CYCLICAL COMPONENTS



FGOV AND SENTIMENT RESIDUALS

