

Fiscal Policy, Wages, and Jobs in the U.S.

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Fiscal Policy and Economic Activity

- Debate on the effectiveness of the fiscal policy in stimulating economic activity
 - Topics on fiscal policy effects were somewhat overlooked compared with monetary policy research.
 - Central banks funded more conferences than Treasury departments.
 - Since December 2008, the Fed has faced the ZLB problem.
 - The sluggish recovery from the Great Recession triggered active debates on the fiscal policy effects.

Fiscal Policy and Economic Activity

- Some related questions include,
 - Can fiscal spending promote private activity?
 - How will consumption and investment respond to it?
 - Will it improve labor market conditions?
 - How will private wages and jobs respond?
- There exists a large literature on these issues.

Optimistic Views

- One group reports somewhat positive responses of consumption, output, real wages to expansionary fiscal policy.
 - 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).
 - The New Keynesian approach attempts to replicate these responses, but sometimes it can be difficult (Galí, López-Salido, and Vallés, 2007).

Skeptical Views

- Others provide negative responses of consumption and real wages to fiscal spending shocks.
 - See, for example, 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

- Negative wealth effects (Ramey, 2011) as demonstrated in Neoclassical macroeconomic models (Aiyagari, Chiristiano, and Eichenbaum, 1992; Baxter and King, 1993)
 - In response to increases in G , consumers may reduce C and increase the labor supply, expecting tax hikes in the future.
 - Increases in L_S raise MP_K , resulting in an increase in investment, then real wages rise due to higher MP_L .

Skeptical Views

- Negative wealth effects (Ramey, 2011) as demonstrated in Neoclassical macroeconomic models (Aiyagari, Chirstiano, and Eichenbaum, 1992; Baxter and King, 1993)
 - Investment may fall when G rises temporarily.
 - Pessimism may weaken the propagation of fiscal policy to promote economic activity (Kim and Jia, 2017).

Nonlinear Models

- Another interesting question is about the nonlinearity of fiscal policy effects.
- More powerful expansionary fiscal policy during times of slack?
 - Yes: Auerbach and Gorodnichenko (2012), Mittnik and Semmler (2012), Bachman and Sims (2012), Fazzari, Morley, and Panovska (2013)
 - No: Owyang, Ramey, and Zubairy (2013), Ramey and Zubairy (2014), and Kim and Jia (2017)

Nonlinear Models

- Another interesting question is about the nonlinearity of fiscal policy effects.
- Hall (2009) and Christiano, Eichenbaum, and Rebelo (2011) show that fiscal policy can be more effective when the nominal interest rate is bounded at zero.

Main Objectives

- This paper studies the fiscal policy effects on labor market variables in the U.S.
 - Employing an array of recursively identified vector autoregressive (VAR) models
 - Post-war U.S. macroeconomic data
- We also investigate the predictive contents for private wages and employment in key macroeconomic variables.

Main Objectives

- This paper studies the fiscal policy effects on labor market variables in the U.S.
- We also investigate the predictive contents for private wages and employment in key macroeconomic variables.
 - Fiscal spending, corporate profits, and productivity
 - In-sample analysis & out-of-sample forecasting models

Major Findings

- Government spending shocks are not very effective in stimulating private activity in the US.
 - Private GDP responds negatively to the fiscal spending shock.
 - Initial increases in GDP are due to an increase in the fiscal spending, eventually dominated by the former.
- Fiscal spending shocks increase government jobs at the expense of private jobs.
- Asymmetric effects of the corporate profits and private wages

Major Findings

- Government spending shocks are not very effective in stimulating private activity in the US.
- Fiscal spending shocks increase government jobs at the expense of private jobs.
 - Ramey (2012) points out different fiscal policy effects via increases in government value-added and government purchase.
 - Private and government wages both rise in response to expansionary fiscal policy.
- Asymmetric effects of the corporate profits and private wages

Major Findings

- Government spending shocks are not very effective in stimulating private activity in the US.
- Fiscal spending shocks increase government jobs at the expense of private jobs.
- Asymmetric effects of the corporate profits and private wages
 - Corporate profits have virtually no role in improving labor market conditions.
 - Private wage shocks increase profits in the long-run as productivity responds positively to wage shocks.

The ARRA of 2009

- Congress approved the \$787 billion American Recovery and Reinvestment Act in February 2009.
- The ARRA had three categories.
 - Cut taxes by \$288 billion and spent \$224 billion in extended unemployment benefits, education and health care
 - Created jobs by allocating \$275 billion in federal contracts, grants, and loans. E.g., new staffs in the Environmental Protection Agency, the Department of Defense, the Food and Drug Administration, the Border Patrol, the Small Business Administration, the Departments of Labor, Education, Agriculture and Housing and Urban Development.

The VAR Model

Abstracting from deterministic terms, we employ the following vector autoregressive (VAR) model.

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

where

$$\mathbf{x}_t = [g_t \quad y_t \quad lab_t \quad i_t \quad m_t]',$$

\mathbf{C} is the Choleski factor, and \mathbf{u}_t is a vector of mutually orthonormal structural shocks, that is, $E\mathbf{u}_t\mathbf{u}_t' = \mathbf{I}$.

The VAR Model

We are particularly interested in the j -period ahead orthogonalized impulse-response functions (OIRF) defined as follows.

$$IRF(j) = E(\mathbf{x}_{t+j} | u_{k,t} = 1, \Omega_{t-1}) - E(\mathbf{x}_{t+j} | \Omega_{t-1}),$$

where $u_{k,t}$ is the structural shock to k^{th} variable and Ω_{t-1} is the adaptive information set at time $t - 1$.

The VAR Model

- g_t : Real federal government *C&I* spending per capita
- y_t : Real GDP per capita, private real GDP per capita
- lab_t : Labor market variables
 - private wages (pw_t), government wages (gw_t)
 - private employment (pj_t), government employment (gj_t)
- i_t and m_t : Effective FFR and the monetary base

VAR Ordering

- g_t is ordered first, while i_t and m_t are ordered last.
 - Implementations of discretionary fiscal policy actions normally require Congressional approvals.
 - The FOMC can revise the stance of monetary policy whenever it is necessary.
 - i_t is ordered before m_t because the Fed targets the interest rate and the monetary base responds endogenously.
- Our key results are robust to alternative VAR ordering (Christiano, Eichenbaum, and Evans, 1999).

Out-of-Sample Forecasting: Benchmark Model

We employ an autoregressive (AR) type out-of-sample forecasting model to study the predictive contents for labor market variables in macro variables. The j -period ahead benchmark prediction model is,

$$lab_{t+j} = \alpha_j lab_t + u_{t+j}, \quad j = 1, 2, \dots, k,$$

where α_j is less than one in absolute value for stationarity.

- Direct forecasting approach is used.
- α_j coincides with the AR persistence parameter when $j = 1$.

Out-of-Sample Forecasting: Benchmark Model

The ordinary least squares (OLS) estimator for this yields the following j -period ahead forecast from the benchmark model.

$$lab_{t+j|t}^{BM} = \hat{\alpha}_j lab_t$$

Out-of-Sample Forecasting: Competing Model

The competing model extends the benchmark model with a predictor variable z_t .

$$lab_{t+j} = \alpha_j lab_t + \beta_j z_t + u_{t+j}, \quad j = 1, 2, \dots, k$$

Out-of-Sample Forecasting: Competing Model

Its j -period ahead forecast from this competing model is,

$$lab_{t+j|t}^C = \hat{\alpha}_j lab_t + \hat{\beta}_j z_t$$

- The competing model nests the benchmark when z_t does not contain any useful predictive contents for lab_{t+j} , that is, $\beta_j = 0$.

Fixed-Size Rolling Window Scheme

- 1 We first estimate the models using $\{lab_t, z_t\}_{t=1}^{T_0}$, $T_0 < T$, then obtain the first round forecast lab_{T_0+j} .
- 2 Move the sample window forward by one then re-estimate the models using $\{lab_t, z_t\}_{t=2}^{T_0+1}$ for the second round forecast lab_{T_0+j+1} .
- 3 We repeat this until we forecast the last observation, lab_T .

Evaluation Methods: RRMSPE

- We use the ratio of the root mean square prediction error (*RRMSPE*).

$$RRMSPE(j) = \frac{\sqrt{\frac{1}{T-T_0-j} \sum_{t=T_0+j}^T \left(u_{t+j|t}^{BM}\right)^2}}{\sqrt{\frac{1}{T-T_0-j} \sum_{t=T_0+j}^T \left(u_{t+j|t}^C\right)^2}},$$

where

$$u_{t+j|t}^{BM} = lab_{t+j} - lab_{t+j|t}^{BM}, \quad u_{t+j|t}^C = lab_{t+j} - lab_{t+j|t}^C$$

Evaluation Methods: RRMSPE

- The competing model outperforms the benchmark when $RRMSPE$ is greater than 1.

Evaluation Methods: DMW

We also employ the (*DMW*) test. For this we define the following loss function.

$$d_t = (u_{t+j|t}^{BM})^2 - (u_{t+j|t}^C)^2,$$

where the squared loss function can be replaced by the absolute value loss function.

Evaluation Methods: DMW

The *DMW* test evaluates the null of equal predictive accuracy, that is, $H_0 : Ed_t = 0$

$$DMW(j) = \frac{\bar{d}}{\sqrt{\widehat{Avar}(\bar{d})}},$$

where \bar{d} is the sample average, $\bar{d} = \frac{1}{T-T_0-j} \sum_{t=T_0+j}^T d_t$.

Evaluation Methods: DMW

$\widehat{Avar}(\bar{d})$ denotes the asymptotic variance of \bar{d} ,

$$\widehat{Avar}(\bar{d}) = \frac{1}{T - T_0} \sum_{i=-q}^q k(i, q) \hat{\Gamma}_i,$$

where $k(\cdot)$ is a kernel function with the bandwidth parameter q , and $\hat{\Gamma}_i$ is the i^{th} autocovariance function estimate.

Data Descriptions

- We obtained all data from the Federal Reserve Economic Data (FRED).
- Observations are quarterly frequency and span from 1960:I to 2017:II.

Data Descriptions

- The private GDP (py_t) is the total GDP (y_t) minus the total government consumption and gross investment spending.
- g_t is the real federal government consumption and gross investment expenditures.
- All income/spending variables are log-transformed and are expressed in real per capita terms.
- i_t is the EFFR, which is used to identify the monetary policy shock, whereas m_t is the monetary base.

Data Descriptions

- Three employment variables are,
 - The private sector job (pj_t) is the number of employees in the total private industries (USPRIV).
 - The government sector job (gj_t) the number of employees in the government (USGOVT).
 - We also use the total nonfarm employment (PAYEMS; tj_t).

Data Descriptions

- Two wage variables are,
 - The private wage (pw_t) is the total compensation in the private sector (A132RC1Q027SBEA) divided by pj_t , then deflated by the GDP deflator.
 - The government sector wage (gw_t) denotes the total compensation in the government sector (B202RC1Q027SBEA) divided by gj_t , then deflated by the GDP deflator.

Data Descriptions

- The corporate profits (prf_t) is the nominal corporate profits after tax (CP) divided by the GDP deflator, then log-transformed.
- We consider two measures of productivity (prd_t).
 - Real output per person in nonfarm business sector (OPHNFB), log-transformed
 - Real output per hour of all persons in nonfarm business sector (PRS85006163), log-transformed
 - Similar results

Data Descriptions

- All data are trending upward. [▶ Data](#)
- Need to check business cycle components (HP cyclical components)
 - g_t tends to be counter-cyclical, cp_t and prd_t show pro-cyclical dynamics. [▶ Macro Data](#)
 - pw_t and pj_t tend to be pro-cyclical, gw_t and gj_t are likely to be counter-cyclical [▶ Labor Data](#)

Fiscal Policy Effects on GDP

- Report the responses of the real GDP to the fiscal spending with $\mathbf{x}_t = [g_t \text{ } py_t \text{ } tj_t \text{ } i_t \text{ } m_t]'$ and $\mathbf{x}_t = [g_t \text{ } y_t \text{ } tj_t \text{ } i_t \text{ } m_t]'$. ▶ Fiscal Policy
- The government spending shock fails to stimulate private activity.
 - The initial increase in the real GDP is mainly driven by the increase in the government spending.
- Monetary policy seems to be effective. ▶ Monetary Policy

Fiscal Policy Effects on Employment

- Report the responses of job variables to the fiscal spending with $\mathbf{x}_t = [g_t \ y_t \ pj_t \ i_t \ m_t]'$ and $\mathbf{x}_t = [g_t \ y_t \ gj_t \ i_t \ m_t]'$. ▶ Fiscal Policy
- The government spending shock increases government jobs at the expense of private jobs.
 - Government value-added vs. government purchase
 - Sentiment effect: pessimism vs. optimism
- Monetary policy seems to be effective. ▶ Monetary Policy

Fiscal Policy Effects on Wages

- Report the responses of wage variables to the fiscal spending with $\mathbf{x}_t = [g_t \ y_t \ pw_t \ i_t \ m_t]'$ and $\mathbf{x}_t = [g_t \ y_t \ gw_t \ i_t \ m_t]'$.

▸ Fiscal Policy

- The government spending shock raises both wages, but more significantly and substantially in the government sector.
 - pw_t may rise due to a decrease in the labor supply (value-added) or an increase in the labor demand (government purchase).
 - gw_t may rise due to an increase in the labor demand.
- Monetary policy seems to be effective especially for raising pw_t .

▸ Monetary Policy

Trickle-Down Effect

- Responses of private wages to corporate profits with $\mathbf{x}_t = [g_t \ y_t \ pw_t \ prf_t \ i_t \ m_t]'$. ▶ Corporate Profits
- Weak evidence of the trickle-down effect.
 - The response of pw_t to the corporate profit shock is weak and short-lived.
- In response to the wage shock, corporate profits initially declines but eventually rises significantly after about 2 years.
 - Wage increase enhances productivity. ▶ Productivity
 - Profit enhancement due to layoffs and lower labor costs? Not likely. ▶ P.Jobs

Robustness Check

- Key findings are robust to alternative sample periods.
 - ▶ Employment
 - ▶ Wages
- IRFs are consistent with the forecast error variance decomposition analysis.
 - ▶ Profits
 - ▶ Productivity

Simulation Analysis

- Compare the dynamic path of labor variables with and without the fiscal spending shock
 - ▶ PJobs ▶ GJobs
 - ▶ PWages ▶ GWages
- Measured gains or losses can be substantial ▶ Losses
 - Fiscal shocks result in job losses all together. ▶ Job Ratio
 - Fiscal shocks may widen the wage gap between the two sectors. ▶ Wage Gaps

Out-of-Sample Forecasting Exercises

- We consider 4 labor market variables for lab_t : private jobs (pj_t), government jobs (gj_t), private wages (pw_t), and government wages (gw_t).
- Predictor variable (z_t) includes the government spending (g_t), corporate profits (prf_t), productivity (prd_t), and the private GDP (py_t).
- We report the *RRMSPE* and the *DMW* statistics.

Out-of-Sample Forecasting Exercises

- g_t contains strong out-of-sample predictive contents for pj_t in all forecast horizons. ▶ Pjobs
 - *RRMSPE* statistics are greater than one for all cases.
 - *DMW* statistics rejects the null of equal predictability for 11 out of 12 forecast horizons at the 5% significance level, and for 12 out of 12 at the 10% level.

Out-of-Sample Forecasting Exercises: Employment

- g_t also has significant predictive contents for $g j_t$ in the short-run. [▶ Gjobs](#)
- Corroborate in-sample evidence that fiscal policy strengthens the public job market at the expense of private jobs.

Out-of-Sample Forecasting Exercises: Employment

- Fail to find out-of-sample evidence of the trickle-down effect that corroborates our in-sample evidence.
 - prf_t and py_t have additional predictive contents only in a few cases.
- prd_t adds predictive power for private jobs in the medium-run.
- py_t seems to have substantial predictive contents for gj_t .
 - The demand for government services increases as the economy flourishes.

Out-of-Sample Forecasting Exercises: Wages

- g_t and prf_t add virtually no additional predictive contents for private wages, which implies no evidence of the trickle-down effect. ▶ PWages
- prd_t and py_t have some predictive contents in the long-run and in the short-run, respectively.
- Limited or virtually no predictive contents from all variables for gw_t ▶ GWages
 - g_t doesn't have much predictive contents for gw_t , which is at odds with previous in-sample analysis.

Concluding Remarks

- This paper estimates the fiscal policy effects on labor market conditions in the U.S.
- Fiscal shocks result in net losses in employment and widening wage gaps in the two sectors.
 - Government jobs increase significantly at the cost of private jobs, which implies a possibility of government value-added shocks.
 - Government wages rise more persistently and significantly, whereas increases in private wages die out quickly.

Concluding Remarks

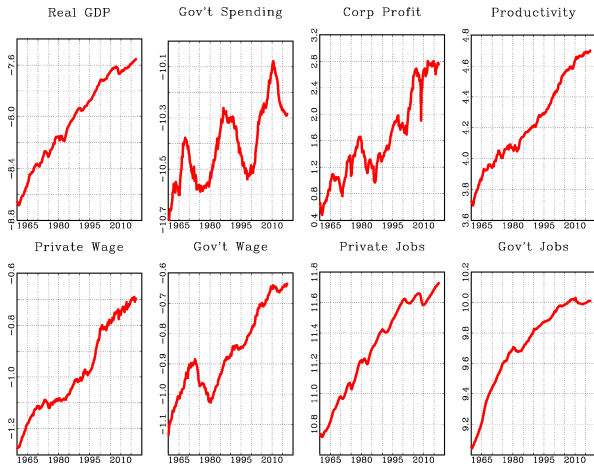
- Corporate profits have negligible effects on private wages, which provides empirical evidence against the trickle-down effect.
- Positive wage shocks in the private sector increase corporate profits in the long-run, reflecting significant productivity improvement in response to wage shocks.
- Our results are robust to alternative sample periods. The FEVDEC analysis also supports major findings.

Concluding Remarks

- Our out-of-sample forecasting exercises corroborate in-sample findings.
- Government spending contains useful predictive contents for private jobs and government jobs
- Corporate profits have virtually no predictive contents for any labor market condition variables, confirming there's no evidence for the trickle-down effect.

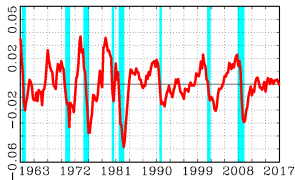
Thank You!
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MACROECONOMIC DATA

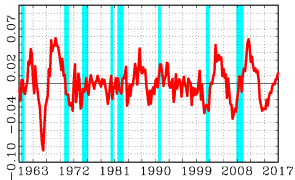


BUSINESS CYCLE COMPONENTS: MACRO DATA

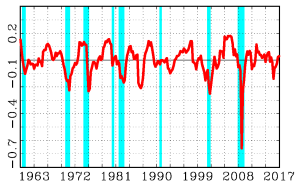
Real GDP



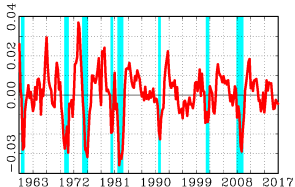
Government Spending



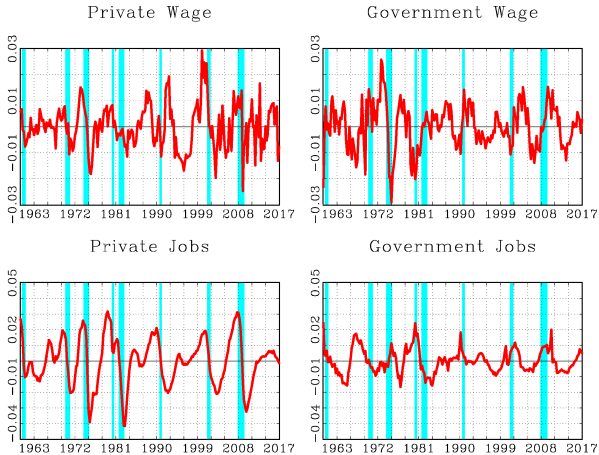
Corporate Profits



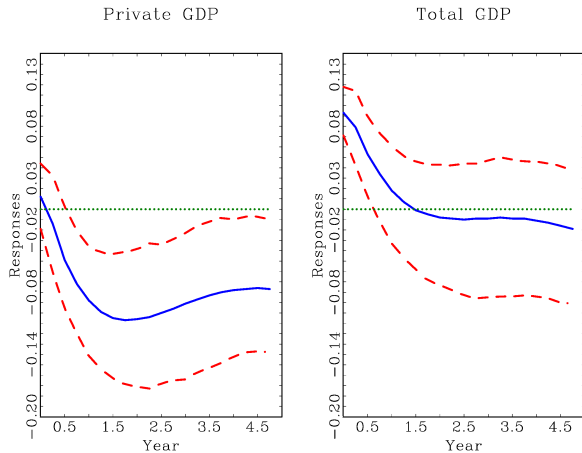
Productivity



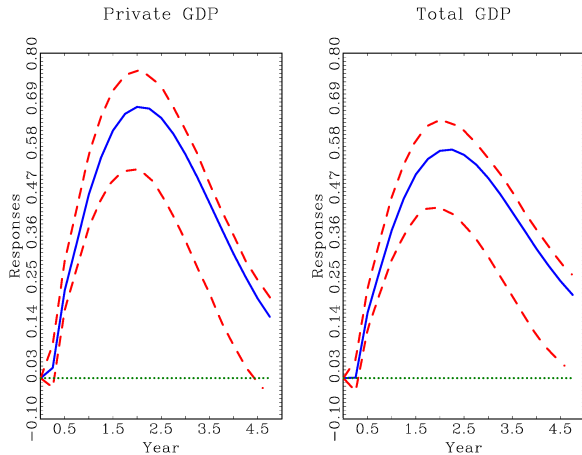
BUSINESS CYCLE COMPONENTS: LABOR DATA



GOVERNMENT SPENDING SHOCK

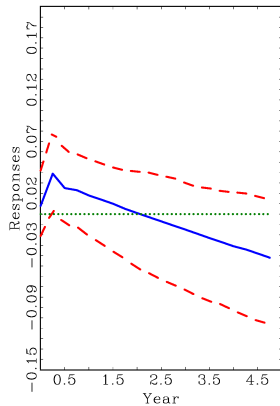


MONETARY POLICY SHOCK

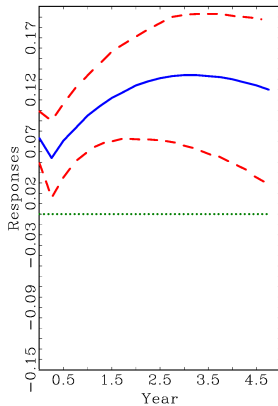


GOVERNMENT SPENDING SHOCK

Private Wages

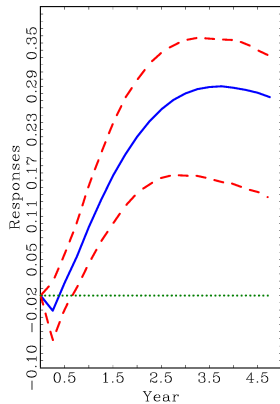


Government Wages

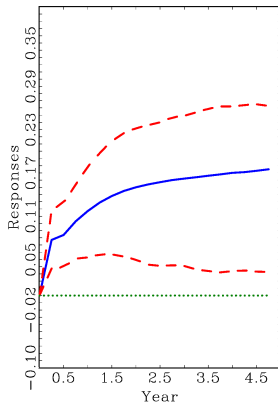


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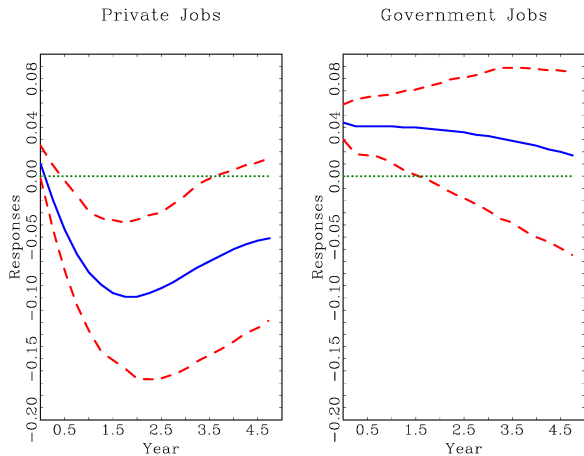
Private Wages



Government Wages

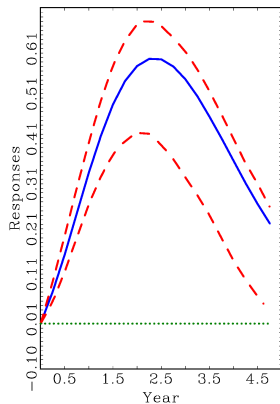


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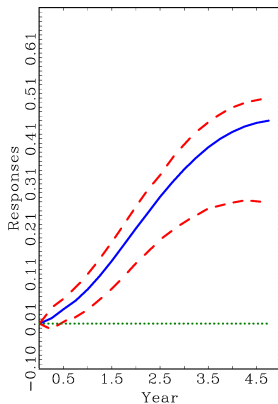


MONETARY POLICY SHOCK

Private Jobs

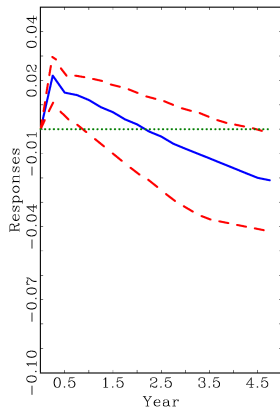


Government Jobs

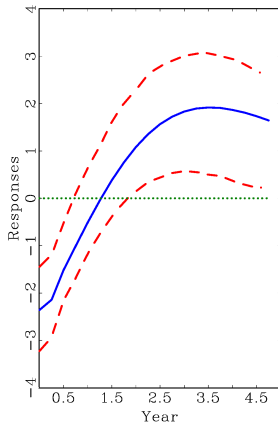


PROFITS AND WAGES

Profits to PWages

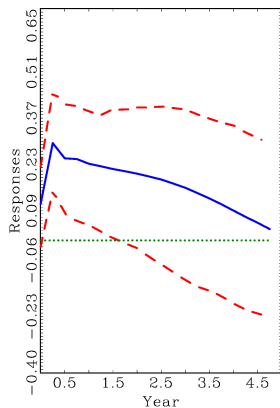


PWages to Profits

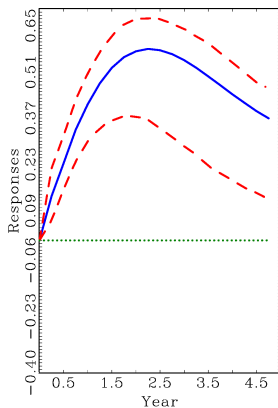


PRODUCTIVITY AND WAGES

Productivity to PWages

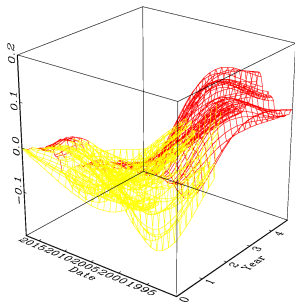


PWages to Productivity

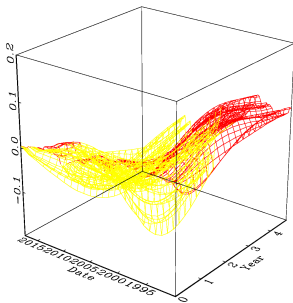


FISCAL POLICY EFFECTS ON JOBS

Gov to PJobs

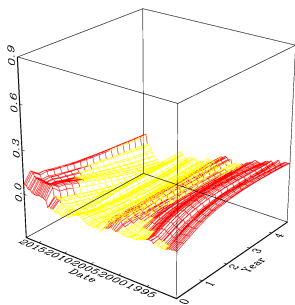


Gov to TJobs

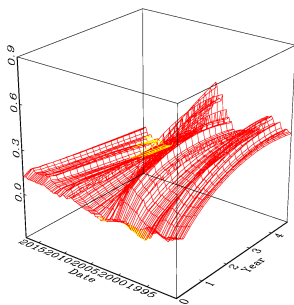


FISCAL POLICY EFFECTS ON WAGES

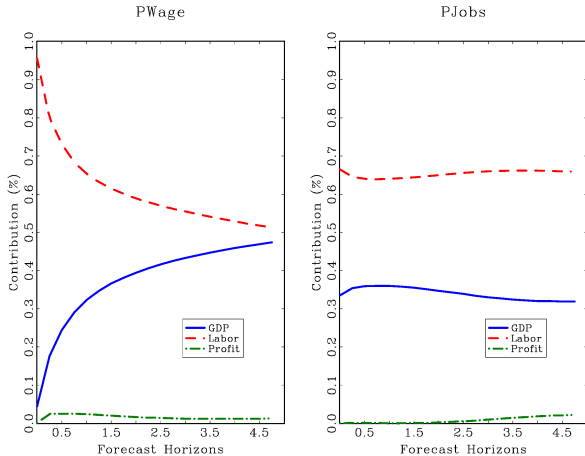
Gov to PWage



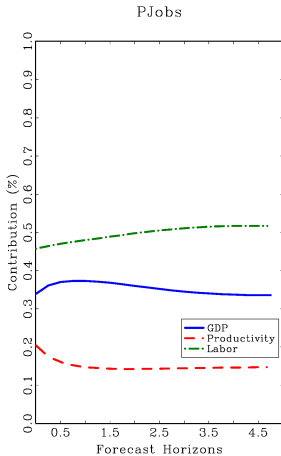
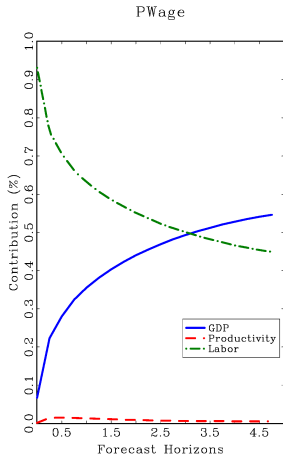
Gov to GWage



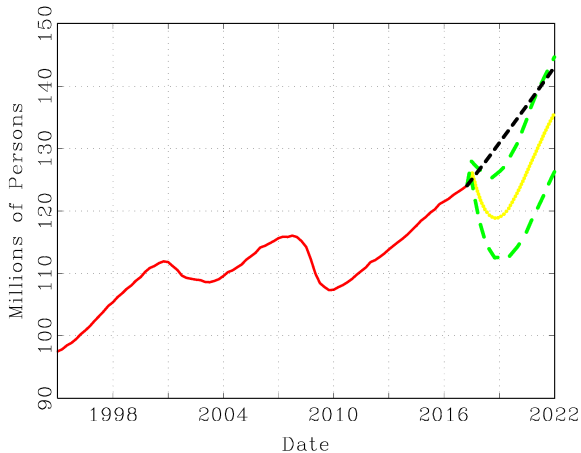
SHARE OF PROFITS



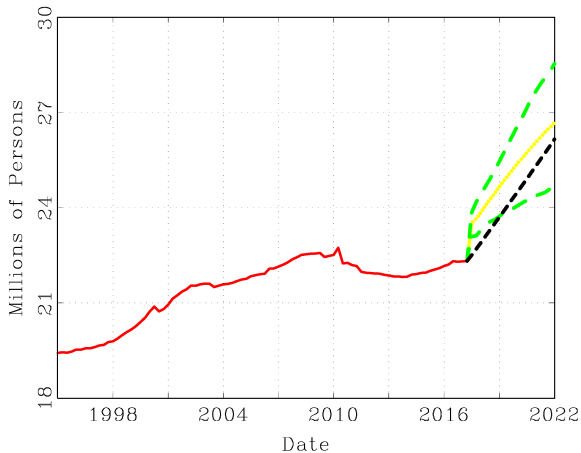
SHARE OF PRODUCTIVITY



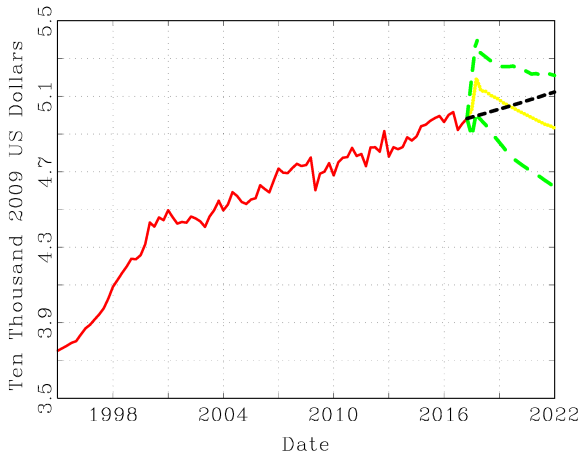
PRIVATE JOBS



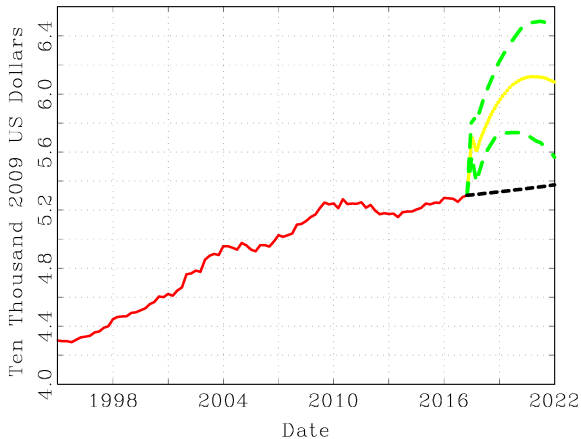
GOVERNMENT JOBS



PRIVATE WAGES



GOVERNMENT WAGES



GAINS/LOSSES TO THE 1% FISCAL SPENDING SHOCK

Table 1. Gains or Losses to the 1% Fiscal Spending Shock

j (year)	$pjob_t$	$gjob_t$	$pwag_t$	$gwag_t$
0.25	1,257	1,013	401	4,020
0.50	-2,371	951	1,987	2,950
0.75	-5,466	959	1,267	3,910
1.00	-7,933	967	1,166	4,600
1.50	-11,064	959	708	5,830
2.00	-12,433	951	253	6,670
3.00	-11,325	855	-554	7,600
4.00	-8,810	699	-1,358	7,560
5.00	-7,166	452	-2,110	6,860

OOS: PRIVATE JOBS

(a) Private Jobs

<i>h</i>	Gov't Spending		Profits		Productivity		Private GDP	
	<i>RRMSPE</i>	<i>DMW</i>	<i>RRMSPE</i>	<i>DMW</i>	<i>RRMSPE</i>	<i>DMW</i>	<i>RRMSPE</i>	<i>DMW</i>
1	1.021	3.463	1.017	1.358	0.977	-2.435	1.006	0.283
2	1.016	2.235	1.005	0.542	0.978	-2.750	1.000	0.019
3	1.012	1.421	0.996	-0.743	0.982	-2.623	0.997	-0.220
4	1.009	0.998	0.989	-2.505	0.987	-2.421	0.996	-0.404
5	1.006	0.648	0.986	-4.002	0.992	-1.910	0.996	-0.470
6	1.005	0.561	0.983	-3.751	0.997	-0.794	0.997	-0.462
7	1.006	0.694	0.984	-3.193	1.003	1.397	0.998	-0.439
8	1.008	0.932	0.986	-2.335	1.008	4.051	0.999	-0.181
9	1.008	0.896	0.991	-1.290	1.013	5.059	1.001	0.475
10	1.011	1.215	0.999	-0.165	1.018	5.222	1.004	2.261
11	1.017	1.913	1.009	0.930	1.025	4.960	1.010	3.417
12	1.024	2.388	1.021	1.980	1.034	4.887	1.020	3.685

OOS: GOVERNMENT JOBS

(b) Government Jobs

<i>h</i>	Gov't Spending		Profits		Productivity		Private GDP	
	<i>RRMSPE</i>	<i>DMW</i>	<i>RRMSPE</i>	<i>DMW</i>	<i>RRMSPE</i>	<i>DMW</i>	<i>RRMSPE</i>	<i>DMW</i>
1	1.014	1.098	0.994	-0.614	0.962	-1.322	1.039	0.708
2	1.022	1.500	0.986	-1.128	0.923	-2.297	1.087	1.283
3	1.021	1.514	0.979	-1.749	0.889	-3.838	1.127	1.580
4	1.009	0.723	0.976	-2.604	0.866	-4.401	1.186	2.633
5	0.991	-0.635	0.974	-3.260	0.864	-4.042	1.230	3.249
6	0.963	-2.183	0.971	-3.826	0.877	-3.748	1.301	4.514
7	0.931	-3.481	0.968	-3.609	0.892	-3.431	1.368	6.859
8	0.896	-4.783	0.958	-3.553	0.913	-2.689	1.413	8.779
9	0.866	-6.929	0.939	-3.805	0.943	-1.742	1.413	9.463
10	0.837	-6.272	0.913	-4.420	0.979	-0.594	1.401	9.875
11	0.816	-8.834	0.890	-5.195	1.008	0.245	1.359	10.008
12	0.799	-7.530	0.864	-6.707	1.027	0.766	1.309	9.637

OOS: PRIVATE WAGES

(a) Private Wages

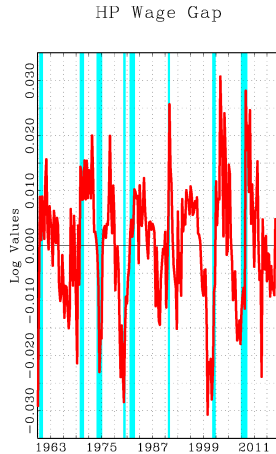
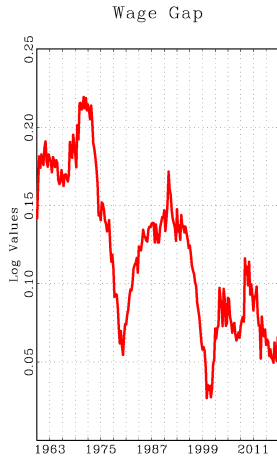
<i>h</i>	Gov't Spending		Profits		Productivity		Private GDP	
	<i>RRMSPE</i>	<i>DMW</i>	<i>RRMSPE</i>	<i>DMW</i>	<i>RRMSPE</i>	<i>DMW</i>	<i>RRMSPE</i>	<i>DMW</i>
1	0.995	-0.420	1.002	0.313	0.996	-0.888	1.017	0.649
2	0.988	-0.624	0.994	-0.890	0.975	-3.669	1.022	0.802
3	0.981	-0.958	0.986	-1.904	0.963	-4.744	1.018	0.677
4	0.979	-1.052	0.972	-3.627	0.955	-4.208	1.016	0.794
5	0.977	-1.195	0.963	-4.515	0.957	-5.146	1.008	0.330
6	0.974	-1.271	0.958	-6.254	0.963	-3.631	1.001	0.056
7	0.972	-1.693	0.953	-7.000	0.975	-2.054	0.991	-0.514
8	0.973	-1.280	0.953	-6.971	0.983	-1.336	0.999	-0.060
9	0.970	-1.704	0.946	-8.676	0.999	-0.176	0.995	-0.269
10	0.966	-1.914	0.942	-8.250	1.007	1.393	0.998	-0.125
11	0.972	-1.731	0.937	-9.623	1.011	2.256	1.005	0.284
12	0.978	-1.398	0.932	-8.265	1.012	2.324	1.010	0.535

OOS: GOVERNMENT WAGES

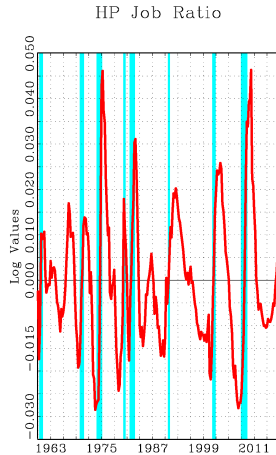
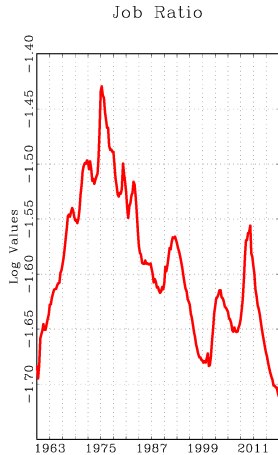
(b) Government Wages

<i>h</i>	Gov't Spending		Profits		Productivity		Private GDP	
	<i>RRMSPE</i>	<i>DMW</i>	<i>RRMSPE</i>	<i>DMW</i>	<i>RRMSPE</i>	<i>DMW</i>	<i>RRMSPE</i>	<i>DMW</i>
1	0.918	-2.740	0.980	-0.511	0.973	-1.557	0.976	-1.719
2	0.831	-5.697	0.959	-0.917	0.948	-2.539	0.949	-3.323
3	0.784	-6.163	0.940	-1.302	0.922	-2.798	0.927	-3.484
4	0.739	-9.372	0.920	-2.202	0.901	-4.434	0.907	-5.848
5	0.732	-11.041	0.922	-2.238	0.890	-5.094	0.913	-5.237
6	0.713	-11.737	0.915	-2.618	0.878	-5.762	0.929	-4.721
7	0.702	-13.716	0.908	-3.241	0.860	-6.660	0.953	-2.764
8	0.688	-17.030	0.893	-4.417	0.850	-8.659	0.990	-0.633
9	0.679	-17.354	0.889	-5.107	0.843	-8.300	1.048	3.048
10	0.662	-17.919	0.881	-5.456	0.839	-8.998	1.116	6.753
11	0.642	-19.761	0.866	-6.853	0.829	-9.504	1.183	9.348
12	0.620	-21.858	0.854	-7.411	0.829	-10.960	1.267	13.411

WAGE GAPS



JOB RATIO



LABOR MARKET VARIABLES: GROWTH RATES



PRIVATE JOBS TO THE WAGE SHOCK

