Presidents and the U.S. Economy:
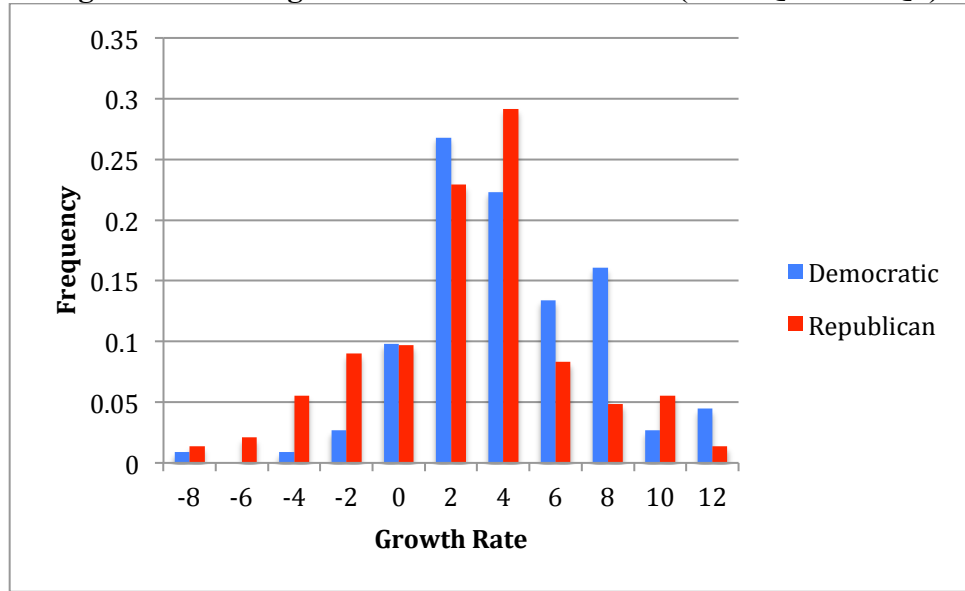# An Econometric Exploration

− Online Appendices −

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Appendix A: Additional Figures and Tables

Figure A.1: Histogram of GDP Growth Rates (1949:Q2-2013:Q1)

Table A.1: Summary Statistics of real GDP Growth Rates (1949:Q2 – 2013:Q1)

	Democratic	Republican
N	112	144
Mean	4.33	2.54
Median	3.81	2.90
Std. Dev.	3.84	3.93
Skew.	0.71	-0.31
Kurtosis (excess)	2.05	0.48
Minimum	-7.87 (1980:2)	-9.97 (1958:1)
Maximum	16.92 (1950:1)	11.92 (1955:1)

Table A.2: The D-R gap over alternative lags

Lag (in quarters)	Quarters Used to Compute Average	Democratic	Republican	Difference	*p*-value
1	Year 1:Q2 through Year 5:Q1 (Benchmark)	4.33 (0.58) [0.46]	2.54 (0.33) [0.45]	1.79 (0.67) [0.64]	0.01
0	Year 1:Q1 through Year 4:Q4	4.09 (0.56) [0.49]	2.67 (0.27) [0.42]	1.42 (0.63) [0.63]	0.03
2	Year 1:Q3 through Year 5:Q2	4.23 (0.61) [0.47]	2.64 (0.36) [0.45]	1.59 (0.71) [0.64]	0.03
3	Year 1:Q4 through Year 5:Q3	4.11 (0.57) [0.47]	2.74 (0.36) [0.45]	1.38 (0.67) [0.64]	0.05
4	Year 2:Q1 through Year 5:Q4	3.92 (0.59) [0.53]	2.94 (0.38) [0.43]	0.98 (0.70) [0.66]	0.18
-1	Year 0:Q4 through Year 4:Q3	3.82 (0.57) [0.54]	2.89 (0.22) [0.40]	0.92 (0.61) [0.66]	0.12
–2	Year 0:Q3 through Year 4:Q2	3.81 (0.60) [0.55]	2.90 (0.21) [0.40]	0.91 (0.64) [0.67]	0.14
-3	Year 0:Q2 through Year 4:Q1	3.86 (0.59) [0.53]	2.89 (0.20) [0.40]	0.96 (0.62) [0.65]	0.11
-4	Year 0:Q1 through Year 3: Q4	3.94 (0.64) [0.54]	2.85 (0.26) [0.40]	1.08 (0.69) [0.66]	0.11

Notes: See notes to Table 1 in text.

Table A.3: Average GDP growth rate by term

Rank	Term	Party	Growth Rate (%)
1	**Truman**	**D**	**6.57***
2	**Kennedy-Johnson**	**D**	**5.74**
3	**Johnson 2**	**D**	**4.95**
4	**Clinton 2**	**D**	**4.00**
5	*Reagan 2*	*R*	*3.89*
6	*Nixon 1*	*R*	*3.57*
7	**Carter**	**D**	**3.56**
8	**Clinton 1**	**D**	**3.53**
9	*Reagan 1*	*R*	*3.12*
10	*G.W. Bush 1*	*R*	*2.78*
11	*Eisenhower 1*	*R*	*2.72*
12	*Eisenhower 2*	*R*	*2.26*
13	*G.H.W. Bush*	*R*	*2.05*
14	**Obama 1**	**D**	**1.98**
15	*Nixon-Ford*	*R*	*1.97*
16	*G.W. Bush 2*	*R*	*0.54*

* The Truman figure drops to 5% if we include the balance of his unelected term: 1947:Q2 through 1949:Q1. The Obama figure rises to 2.10% if the sample is extended through 2015:Q1.

Table A.4: Average growth rates by spending component

Sector	Share	Democratic	Republican	Difference	*p*-value	Share × Difference
GDP	1.00	4.33 (0.58) [0.46]	2.54 (0.33) [0.45]	1.79 (0.67) [0.64]	0.01	1.79
Consumption	0.63	3.91 (0.51) [0.39]	3.09 (0.35) [0.37]	0.83 (0.62) [0.52]	0.18	0.52
Goods	0.28	4.38 (0.54) [0.54]	2.84 (0.53) [0.59]	1.54 (0.76) [0.80]	0.07	0.43
Durable	0.09	8.59 (1.53) [1.52]	4.66 (1.19) [1.32]	3.94 (1.94) [2.04]	0.06	0.35
Nondurable	0.20	2.99 (0.36) [0.32]	2.21 (0.30) [0.33]	0.78 (0.47) [0.45]	0.11	0.16
Services	0.35	3.70 (0.51) [0.33]	3.42 (0.33) [0.25]	0.28 (0.60) [0.39]	0.63	0.10
Investment	0.17	8.96 (1.25) [2.01]	3.05 (1.36) [1.89]	5.91 (1.85) [2.75]	0.00	1.00
Fixed	0.17	6.52 (0.63) [1.04]	2.33 (1.06) [1.29]	4.19 (1.24) [1.55]	0.01	0.71
Nonresidential	0.12	7.48 (0.77) [1.04]	2.69 (0.67) [1.16]	4.79 (1.02) [1.47]	0.00	0.57
Residential	0.05	5.17 (1.16) [2.14]	2.82 (2.74) [2.90]	2.35 (2.97) [3.53]	0.57	0.12
Exports	0.08	6.24 (1.27) [1.54]	7.10 (1.78) [1.58]	-0.85 (2.18) [2.30]	0.72	-0.07
Imports	−0.09	8.47 (1.45) [1.41]	6.14 (1.45) [1.47]	2.33 (2.05) [2.09]	0.27	-0.21
Government	0.21	4.48 (2.33) [1.78]	1.65 (0.56) [0.51]	2.83 (2.40) [1.85]	0.20	0.59
Federal	0.10	5.37 (3.66) [3.07]	1.17 (1.19) [0.93]	4.20 (3.85) [3.20]	0.26	0.42
Defense	0.08	5.86 (4.85) [4.04]	0.79 (1.60) [1.18]	5.06 (5.10) [4.20]	0.34	0.40
Nondefense	0.03	4.70 (1.78) [1.50]	5.13 (1.30) [1.61]	-0.43 (2.20) [2.17]	0.80	-0.01
State and local	0.10	3.14 (1.01) [0.73]	3.07 (0.65) [0.49]	0.07 (1.20) [0.86]	0.95	0.01

Notes: The table shows the growth rates of spending components of real GDP. The second column shows the average nominal GDP share of the component. Standard errors shown in parentheses and brackets and *p*-value shown in the final column are computed as in Table 1. The share-weighted sectoral differences add up to the D-R gap, and the final column shows "Share×Difference" for each sector .

Table A.5: Average growth rates by spending component by year of term

Sector	Year 4 of previous term				Year 1				Year 2				Year 3				Year 4		
	Dem	Rep	Dif		Dem	Rep	Dif		Dem	Rep	Dif		Dem	Rep	Dif		Dem	Rep	Dif
GDP	1.94	4.25	-2.31		4.87	0.67	4.20		4.86	2.28	2.58		3.75	4.37	-0.62		3.84	2.86	0.98
Consumption	2.71	4.35	-1.64		4.34	1.62	2.73		4.14	3.16	0.99		3.06	4.31	-1.25		4.10	3.26	0.84
Goods	2.35	4.52	-2.16		5.33	1.03	4.30		4.74	2.56	2.18		2.76	4.84	-2.08		4.68	2.93	1.75
Durable	2.81	8.05	-5.24		10.55	-0.21	10.76		10.06	5.24	4.82		4.54	9.67	-5.13		9.22	3.93	5.29
Nondurable	2.20	3.47	-1.27		3.49	1.52	1.97		3.16	1.97	1.19		1.95	2.81	-0.85		3.36	2.53	0.83
Services	3.14	4.17	-1.03		3.41	2.52	0.89		4.05	3.61	0.45		3.73	4.02	-0.29		3.61	3.55	0.06
Investment	0.54	6.46	-5.92		15.43	-3.38	18.81		9.29	2.04	7.25		3.12	11.65	-8.53		8.01	1.87	6.13
Fixed	0.97	5.76	-4.78		7.57	-0.86	8.43		6.94	-0.27	7.21		6.13	6.90	-0.77		5.45	3.56	1.89
Nonresidential	3.22	7.05	-3.83		6.09	1.28	4.81		9.72	-2.32	12.05		7.03	6.94	0.09		7.08	4.88	2.20
Residential	-3.17	3.17	-6.33		10.97	-5.51	16.49		0.62	7.00	-6.38		5.92	9.15	-3.23		3.16	0.63	2.53
Exports	1.95	5.58	-3.63		4.72	4.21	0.51		9.97	6.16	3.81		11.08	10.67	0.41		-0.81	7.35	-8.15
Imports	3.68	5.72	-2.03		10.78	3.21	7.57		12.41	3.91	8.50		6.05	13.08	-7.03		4.65	4.36	0.29
Government	3.28	3.24	0.04		2.87	1.85	1.02		5.88	1.32	4.56		7.01	0.92	6.09		2.18	2.52	-0.34
Federal	2.57	3.56	-0.99		2.17	1.04	1.13		8.55	0.46	8.09		9.40	0.59	8.81		1.37	2.60	-1.23
Defense	0.24	3.12	-2.88		1.09	0.83	0.26		11.43	-0.10	11.52		10.35	0.51	9.84		0.57	1.93	-1.36
Nondefense	14.43	5.90	8.52		5.72	4.83	0.89		3.22	6.26	-3.05		5.73	3.91	1.83		4.13	5.52	-1.39
State and local	4.28	2.92	1.36		4.15	4.06	0.09		2.84	3.41	-0.57		2.78	2.04	0.74		2.79	2.78	0.01

Notes: The table shows the growth rates of spending components of real GDP for each year of the 16 full terms, 1949:Q2-2013:Q1.

Table A.6: Detailed forecasting results

A. Results for the SPF

	Ca	Cl1	Cl2	Ob1		Ni	NF	Re1	Re2	BI	BII1	BII2		D	R
Actual	3.6	3.7	4.2	2.4		0.2	-0.3	-2.5	3.1	1.3	1.4	3.7		3.5	1.0
Forecast (SPF Dated Q1)	6.1	3.1	2.2	0.9		3.3*	4.3	3.0	3.7	1.6	3.2	3.5		3.1	3.2
Forecast (SPF Dated Q2)	5.8	3.1	2.4	0.7		2.5	4.0	2.5	3.3	1.6	2.2	3.3		3.0	2.8

B. Results for the Greenbook

	Ca	Cl1	Cl2	Ob1		Ni	NF	Re1	Re2	BI	BII1	BII2		D	R
Actual	3.6	3.7	4.2	2.4		0.2	-0.3	-2.5	3.1	1.3	1.4	3.7		3.5	1.0
Forecast	6.3	2.9	2.4	1.2			4.9	-0.1	3.3	2.0	2.8	3.9		3.2	2.8
Greenbook Date	2/9/77	1/29/93	1/29/97	1/22/09			2/7/73	1/28/81	2/6/85	2/1/89	1/25/01	1/26/05			
Forecast	6.2	2.5	2.2	0.5		1.7*	4.9	0.8	2.9	1.8	2.2	3.7		2.8	2.6
Greenbook Date	5/11/77	5/14/77	5/15/97	4/22/09		5/21/69	5/9/73	5/13/81	5/15/85	5/10/89	5/9/01	4/28/05			

C. Results for the Time Series Models (Nixon – Obama-1)

	Ca	Cl1	Cl2	Ob1		Ni	NF	Re1	Re2	BI	BII1	BII2		D	R
Actual	4.1	3.4	4.5	1.6		0.3	0.7	-2.5	4.1	2.8	1.4	3.1		3.4	1.4
AR	2.5	2.2	2.8	1.1		2.7	3.7	4.4	2.4	3.1	2.1	3.1		2.2	3.1
VAR	3.0	3.6	2.9	2.6		1.8	3.3	1.5	3.8	2.1	1.7	3.2		3.0	2.5
AR-NL	2.5	2.5	3.1	3.7		2.9	4.0	4.6	2.8	3.2	0.4	3.0		2.9	3.0

D. Results for the Time Series Models (Truman-2 – Obama-1)

	Tr	KJ	Jo	Ca	Cl1	Cl2	Ob1		Ei1	Ei2	Ni	NF	Re1	Re2	BI	BII1	BII2		D	R
Actual	3.8	7.3	8.1	4.1	3.4	4.5	1.6		-1.8	-2.9	0.3	0.7	-2.5	4.1	2.8	1.4	3.1		4.7	0.6
AR	1.7	3.4	4.0	3.4	2.7	3.0	2.3		3.9	3.4	3.5	3.9	4.7	3.0	3.3	2.5	3.4		2.9	3.5
VAR	1.5	3.6	3.8	3.7	3.4	3.2	3.4		3.6	2.7	3.1	3.7	3.5	4.1	2.5	2.3	3.4		3.2	3.2
AR-NL	2.2	3.9	4.0	3.2	2.6	2.9	5.3		3.7	2.4	3.5	4.3	5.4	3.3	3.0	0.5	2.8		3.4	3.2

Notes: Values are averages of GDP growth rates from Q2 of the inaugural year to Q1 of the following year. The SPF forecasts shown in panel A are from surveys dated Q1 and Q2 of the inaugural year. The actual values shown panels A and B are from the FRB Philadelphia real time data sets dated Q2 in year 3 of the administration. *Forecasts are for average growth rate in 1969:Q2-1969:Q4 because of missing data.

Table A.7: Correlation matrix of controls

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	1.00																					
2	-0.11	1.00																				
3	-0.10	0.00	1.00																			
4	0.01	0.02	*0.36*	1.00																		
5	-0.11	-0.08	*0.62*	*0.62*	1.00																	
6	-0.12	-0.11	*0.60*	0.29	*0.80*	1.00																
7	-0.00	-0.08	-0.02	0.08	0.09	0.10	1.00															
8	0.07	-0.02	0.04	-0.00	0.02	0.04	0.07	1.00														
9	-0.10	0.09	0.13	-0.09	0.05	0.07	0.03	-0.16	1.00													
10	-0.08	0.07	0.01	-0.06	0.01	-0.01	-0.04	0.14	-0.01	1.00												
11	0.15	0.02	-0.01	0.06	0.01	-0.03	-0.00	-0.06	0.04	-0.05	1.00											
12	0.06	-0.11	-0.03	*-0.37*	*-0.36*	-0.04	0.11	0.13	0.03	-0.07	-0.13	1.00										
13	-0.02	-0.20	-0.05	*-0.41*	*-0.32*	-0.05	0.03	0.18	0.04	0.02	-0.17	*0.79*	1.00									
14	-0.00	-0.13	-0.07	*-0.31*	-0.28	-0.05	0.06	0.02	0.06	0.11	-0.01	*0.49*	*0.64*	1.00								
15	0.06	-0.16	-0.01	0.03	0.02	0.03	0.13	0.07	-0.08	0.04	-0.09	0.02	0.07	0.10	1.00							
16	0.03	-0.02	-0.11	-0.05	-0.17	-0.19	0.07	*0.30*	-0.13	0.19	-0.07	0.05	0.03	0.04	*0.31*	1.00						
17	-0.02	0.00	-0.11	0.03	-0.07	-0.07	0.08	0.04	0.01	0.09	-0.03	0.06	0.15	0.27	0.27	0.17	1.00					
18	-0.05	-0.06	-0.06	-0.02	-0.04	-0.04	-0.07	0.09	-0.04	-0.13	-0.01	0.01	-0.09	-0.28	-0.12	-0.05	*-0.44*	1.00				
19	-0.20	-0.04	0.01	-0.06	-0.02	-0.04	-0.02	-0.04	-0.07	0.18	0.00	0.02	0.01	-0.05	-0.28	-0.06	-0.26	0.27	1.00			
20	-0.21	-0.04	0.07	-0.06	0.07	0.04	0.01	0.02	-0.01	0.23	0.04	-0.03	0.05	-0.00	-0.19	-0.02	-0.08	0.11	*0.58*	1.00		
21	0.08	0.00	0.00	0.04	0.01	-0.01	0.00	0.01	0.09	-0.09	0.00	0.13	0.06	0.03	-0.02	-0.01	0.12	0.01	-0.09	*-0.31*	1.00	
22	0.18	0.01	0.08	-0.05	-0.05	-0.03	0.14	0.05	0.03	0.06	-0.01	-0.01	0.07	0.09	0.22	0.21	0.17	-0.26	-0.24	-0.19	0.17	1.00

Notes: Correlations are computed over the longest common sample period for each pair of series. Sample correlations larger than 0.30 in absolute value are show in **bold italics.**

Note: Time series used

Number	Series	Number	Series	Number	Series
1	Oil (Hamilton)	9	GDP Growth Europe	17	TED Spread
2	Oil (Killian)	10	Exchange Rates	18	FRB SLOOS
3	TFP (Util. Adj.,Fernald)	11	Taxes (Romer and Romer)	19	Consumer Sentiment
4	Labor Prod. (LR-VAR)	12	Monetary Pol. (Romer and Romer)	20	Consumer Expectations
5	TFP (LR-VAR)	13	Monetary Pol. SVAR (Sims-Zha)	21	Uncertainty Index (BBD)
6	TFP (Util. Adj. by authors)	14	Monetary Pol. SVAR (authors)	22	Uncertainty Index (JLN)
7	Defense Spending (Ramey)	15	Baa-Aaa Spread		
8	Defense Spending (Fisher-Peters)	16	GZ Spread		

Table A.8: The effect of shocks on GDP growth rates by presidential term

Shock	Smpl.	Democratic							Republican								
		Tr	KJ	Jo	Ca	Cl1	Cl2	Ob1	Ei1	Ei2	Ni	NF	Re1	Re2	BI	BII1	BII2
Prices (Hamilton)	1949:Q2-2013:Q1	0.86	0.84	0.78	-1.34	0.65	-0.24	0.39	0.52	0.58	0.48	-1.53	-0.28	0.84	-0.45	0.32	-2.44
Quantities (Killian)	1972:Q3-2004:Q3	.	.	.	-0.23	0.34	0.29	.	.	.	.	0.08	0.01	0.19	-0.54	-0.16	.
TFP (Util. Adj.,Fernald)	1949:Q2-2013:Q1	0.58	0.26	0.44	-0.34	-0.56	0.19	-0.35	0.34	0.36	0.23	-0.16	-0.68	0.03	-0.28	0.46	-0.52
Labor Prod. (LR-VAR)	1950:Q3-2013:Q1	0.72	0.42	-0.01	-0.08	-0.15	0.02	0.06	0.11	-0.28	-0.15	-0.31	-0.29	0.08	-0.16	0.40	-0.16
TFP (LR-VAR)	1950:Q3-2013:Q1	1.74	1.35	0.62	-1.11	-0.87	0.54	-0.61	0.22	0.43	0.34	-0.52	-0.59	-0.33	-0.27	0.55	-0.95
TFP (Util. Adj.by authors)	1950:Q3-2013:Q1	1.94	1.86	1.00	-1.29	-0.99	0.87	-0.87	0.53	0.24	0.86	-0.94	-1.11	-0.46	-0.62	0.87	-1.29
Ramey	1949:Q2-2013:Q1	1.12	-0.03	0.02	0.05	-0.08	-0.08	-0.18	-0.12	-0.02	-0.09	-0.08	-0.11	-0.19	-0.18	0.01	-0.02
Fisher-Peters	1949:Q2- 2008:Q4	-0.05	-0.08	0.18	0.24	0.18	-0.40	.	0.20	-0.09	-0.23	-0.04	-0.11	-0.09	-0.12	0.34	0.08
GDP Growth Europe	1963:Q4-2013:Q1	.	.	0.13	-0.11	0.02	0.10	-0.03	.	.	-0.01	-0.05	-0.05	0.07	-0.05	0.00	-0.01
Exchange Rates	1975:Q4-2013:Q1				-0.01	-0.03	0.05	-0.01					0.04	-0.07	0.04	-0.03	0.02
Taxes (Romer and Romer)	1949:Q2-2007:Q4	-0.02	0.16	0.40	-0.04	-0.34	-0.13	.	0.00	-0.23	0.09	-0.09	0.66	-0.32	-0.42	0.52	-0.37
Romer and Romer	1970:Q3-1996:Q4	.	.	.	0.75	-0.94	.	.	.	.	1.89	0.34	-1.11	0.10	-0.50	.	.
SVAR (Sims and Zha)	1961:Q4-2003:Q1	.	-0.27	0.39	0.06	0.02	-0.11	.	.	.	0.19	0.19	-1.73	0.92	-0.13	0.86	.
SVAR (authors)	1957:Q2-2008:Q4	.	0.16	0.30	-0.68	-0.30	-0.19	.	.	-0.80	0.34	0.43	-0.74	0.72	0.06	0.93	-0.26
Baa-Aaa Spread	1950:Q1-2013:Q1	0.16	0.27	0.11	-0.44	0.25	0.20	0.44	0.32	0.15	-0.23	-0.39	-0.32	-0.18	0.35	0.00	-0.67
GZ Spread	1975:Q3-2012:Q4	.	.	.	0.14	0.59	0.31	0.12	.	.	.	.	-0.45	-0.43	-0.03	-0.06	-0.19
TED Spread	1973:Q3-2013:Q1	.	.	.	-0.45	0.27	-0.08	0.65	.	.	.	.	-0.35	-0.22	0.22	0.30	-0.42
FRB SLOOS	1972:Q3-2013:Q1	.	.	.	-0.60	0.13	-0.35	0.53	.	.	.	0.36	0.56	0.12	-0.19	-0.25	-0.28
Consumer Sentiment	1962:Q3-2013:Q1	.	-0.39	-0.44	-0.69	0.94	0.77	-0.15	.	.	-0.40	-0.43	0.02	0.45	-0.20	0.39	0.00
Consumer Expectations	1962:Q3-2013:Q1	.	0.50	0.49	-1.10	0.44	0.86	-0.31	.	.	0.16	-0.27	0.21	-0.13	-0.54	0.20	-0.34
Uncertainty Index (BBD)	1950:Q1-2013:Q4	0.38	-0.11	-0.33	-0.25	0.06	0.15	-0.34	0.74	0.47	0.10	-0.27	-0.17	-0.18	0.17	-0.11	-0.24
Uncertainty Index (JLN)	1963:Q1-2013:Q4		0.51	0.13	-0.78	0.71	-0.26	0.47			-0.05	-0.21	-0.29	-0.02	0.30	0.08	-0.37

Note: Results are shown for the 16 full terms in the sample. The entries are the sample averages of $\hat{\gamma}(L)e_t$ over the Presidential terms minus the full-sample average, where $\gamma(L)$ is estimated using (1) with k =1, the same value for both parties, and the shock and sample period shown in the table.

Table A.9: Average GDP growth rates excluding selected terms

	Democratic	Republican	Difference	*p*-value
Benchmark (all administrations)	4.33 (0.58) [0.46]	2.54 (0.33) [0.45]	1.79 (0.67) [0.64]	0.01
Excluding				
Truman-2, Eisenhower-1	3.96 (0.53) [0.42]	2.52 (0.38) [0.48]	1.43 (0.65) [0.63]	0.04
Johnson, Nixon	4.23 (0.68) [0.51]	2.42 (0.35) [0.48]	1.81 (0.76) [0.70]	0.02
Bush-I, Bush-II-1	4.33 (0.58) [0.46]	2.58 (0.43) [0.56]	1.75 (0.72) [0.72]	0.03
Truman-2, Eisenhower-1, Johnson, Nixon	3.76 (0.60) [0.44]	2.37 (0.40) [0.51]	1.39 (0.72) [0.67]	0.07
Truman-2, Eisenhower-1, Johnson, Nixon, Bush-I, Bush-II-1	3.76 (0.60) [0.44]	2.36 (0.56) [0.69]	1.40 (0.82) [0.82]	0.12
Bush-II-2, Obama	4.72 (0.51) [0.48]	2.79 (0.25) [0.45]	1.93 (0.57) [0.67]	0.00

Notes: See notes to Table 1.

Appendix B: Trends

To investigate that trends might explain the DR-gap, we computed average growth rate differences after detrending the quarterly GDP growth rates using increasingly flexible trends computed from long two-sided weighted moving averages.[1] The flexibility of the estimated trend is adjusted by varying a weighting parameter, κ. $\kappa = \infty$ means that the trend growth rate does not change over the sample period. As κ gets smaller, the weights become more concentrated around the current time period and start looking more like cycles than trends.

Figure A.2 plots GDP growth rates and trends computed for different values of κ. The four choices produce trends that range from completely constant at the sample average ($\kappa = \infty$) to quite variable. When $\kappa = 67$, the trend growth rate is 4% through the early 1960s and falls to roughly 2% in the 2000s.

Table A.10 shows the average *detrended* growth rates for Democratic and Republican presidents, using these four different definitions of "trend." In the benchmark specification (constant trend, $\kappa = \infty$), the Democratic and Republican averages are the deviations from the full-sample average. Thus, the average value shown for Democrats is +1.06 percentage points, which is the average growth rate for Democrats (4.35% from Table 1) minus the full-sample average of 3.29%; the average value shown for Republicans is -0.74 percentage point (= 2.54% -3.29%).[2] The D-R gap is thus 1.80 points, which is, of course, the same value shown in Table 1. For the other trend specifications, the underlying trend is allowed to vary over time, so D-R differences need not match the 1.80 percentage point value reported in Table 1. However, the table shows that results using $\kappa = 100$ or $\kappa = 67$ hardly differ from the benchmark. Indeed, even when $\kappa = 33$, a "trend" that is so flexible that it seems to capture cyclical elements, the estimated D-R gap remains large (1.46 percentage points) and highly significant. In sum, low-frequency factors appear to explain little, if any, of the D-R gap.

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[1] The weights are computed using a bi-weight kernel. See Stock and Watson (2012).
[2] The 3.29% figure for the grand mean used here differs slightly from the 3.33% figure cited earlier because, here, we extend the sample all the way back to 1947:2.

Figure A.2: GDP growth rates and different trends
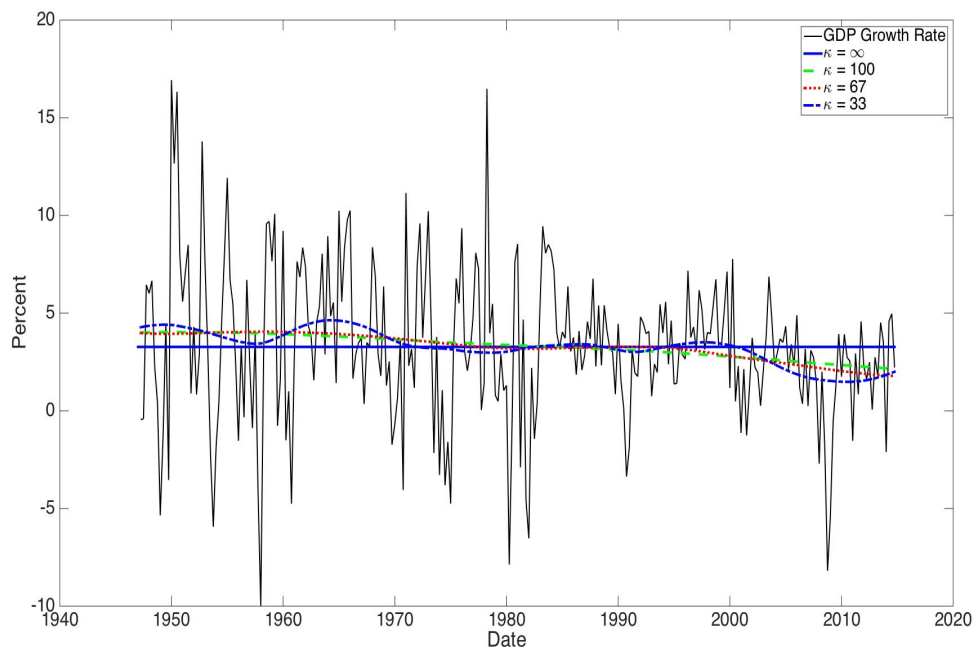
Table A.10: Growth rates of real GDP: deviations from trends

Trend Specification	Averages			
	Democratic	Republican	Difference	*p*-value
$\kappa = \infty$ (benchmark)	1.06 (0.58) [0.46]	-0.73 (0.33) [0.45]	1.79 (0.67) [0.64]	0.01
$\kappa = 100$	1.03 (0.37) [0.39]	-0.76 (0.31) [0.45]	1.80 (0.48) [0.59]	0.00
$\kappa = 67$	1.04 (0.35) [0.38]	-0.75 (0.31) [0.45]	1.79 (0.46) [0.59]	0.00
$\kappa = 33$	0.85 (0.27) [0.35]	-0.57 (0.24) [0.44]	1.42 (0.36) [0.57]	0.00

Notes: Values are in percentage points at an annual rate. The trends corresponding to these κ values are plotted in the figure above. See notes to Table 1.

Appendix C: Accounting for the D-R gap using DSGE models

In this appendix, we ask how three DSGE models account for the D-R gap. The models were estimated over different sample periods (shown in the first row of Table A.11), and use somewhat different measures of output. The well-known Smets-Wouters (2007) (SW) model uses demeaned per capita values of real GDP; the Leeper, Plante, and Traum (LPT) (2010) (LPT) model uses per capita measures, log-detrended values of consumption, investment, and government spending, with per capita GDP computed from C+I+G using a log-linear approximation; and the Schmitt-Grohé and Uribe (2012) (SGU) model use GDP growth rates. The second row of Table A.11 shows the D-R gap computed using the model-specific sample periods and data. The D-R gap ranges between 1.15 and 1.53 percentage points.

The remaining rows of the table decompose each D-R gap using realizations of the shocks for the relevant models. While the list of shocks differs substantially across models, we have tried to group the shocks into familiar categories (TFP, Investment, and so forth).[3]

Neutral productivity shocks explain approximately 20 basis points of the D-R gap in each of the models. This is smaller than the 38 basis points for utilization-adjusted TFP shocks shown in the text, Table 8, although the difference may be explained by differences in the sample periods and the measurement of TFP. Both the SW and LPT models attribute much of the D-R gap to investment-specific productivity shocks, but these have little effect in the SGU model. The LPT and SGU models attribute much of the D-R gap to labor shocks (labor supply shocks in LPT, and wage markup shocks in SGU). Wage markup shocks are modestly important in the SW model, but labor supply shocks have huge effects in the LPT model. Intertemporal preference shocks have large, but inconsistent, effects across the models.

These models suggest (or impose) little role for policy in explaining the D-R gap. Monetary shocks in the SW model favor Republicans, which is consistent the evidence presented in the main text, Tables 6 and 9. Shocks to government purchases have little effect in any of the models--although the earliest sample period begins in 1955 and thus does not the Korean War. This is also consistent with our reduced-form findings. Finally, the tax and transfer shocks in the LPT model do not explain the D-R gap.

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[3] For the SGU model, the TFP and Investment categories include the contributions from the stationary and non-stationary shocks in the model, and each category includes both realized and anticipated shocks. Detailed results for the SGU model are presented in appendix Table A.12.

Table A.11: Structural shock decompositions of the D-R gap

	A. Smets and Wouters	**B. Leeper, Plante and Traum**	**C. Schmitt-Grohé and Uribe**
Sample Period	1960:Q1 – 2004:Q4	1961:Q2 – 2008:Q1	1955:Q2 – 2006:Q4
Total D-R Gap	1.53	1.15	1.44
Structural Shock			
TFP	0.17	0.16	0.23
Investment	0.60	1.42	0.09
Preference (Intertemporal)	0.71	-1.19	-0.16
Gov. Purchases	0.14	0.04	0.04
Wage Markup	0.20		1.18
Price Markup	-0.03		
Mon. Policy	-0.26		
Preference (Intratemporal)		0.75	
Transfers		0.04	
Tax – capital		-0.04	
Tax – labor		-0.08	
Tax – cons.		0.00	

Notes: The Schmitt-Grohé Uribe model includes 21 structural shocks, and the table shows results from grouping the shocks in the categories shown in column 1. Table A.11 contains detailed results.

Table A.12: Detailed decomposition for the Schmidt-Grohé Uribe (2012) Model

Total D-R Gap	1.44
Decomposition	
Stationary Neutral Tech.	-0.06 (-0.05, -0.01, -0.01)
Non. Stat. Neutral Tech.	0.29 (0.23, 0.02, 0.05)
Stat. Investment	0.13 (0.04, 0.02, 0.07)
Non.Stat. Investment	-0.04 (-0.02, -0.01, 0.00)
Preference	-0.16 (-0.13, -0.01, -0.02)
Gov. Purchases	0.04 (0.02, 0.02, 0.01)
Wage Markup	1.18 (0.02, 1.15, 0.01)
Measurement Error	0.17
Initial Conditions	-0.11

Notes: The numbers in parentheses show the components associated with the three shocks $(\varepsilon^0, \varepsilon^4, \varepsilon^8)$ in each category.

Appendix D: Evidence from other countries

In this appendix, we ask whether other Western-style democracies display comparable growth differences when governed by left-leaning versus right-leaning political parties. To provide useful comparisons to the United States, the country must (a) have a stable two-party system (that eliminated Italy); (b) change the president's or prime minister's party often enough to permit statistical analysis (that eliminated Japan); and (c) offer a reasonably long time series on real GDP (that eliminated many countries). We also wanted to stick with large countries (that eliminated The Netherlands and many others). In the end, we studied partisan differences in four other countries: the United Kingdom, Canada, France, and Germany. Results are summarized in Table A.13.

Table A.13: Average GDP growth rates for different countries

Country	Sample Period	Political Party		Difference
		Left	Right	
United States	1949:Q2 – 2013:Q1	4.33 (0.46)	2.54 (0.45)	1.79 (0.64)
Canada	1961:Q2 – 2012:Q2	3.89 (0.38)	2.48 (0.71)	1.41 (0.80)
France	1949:Q2 – 2012:Q2	3.19 (0.51)	3.42 (0.50)	-0.23 (0.72)
Germany	1970:Q2 -2012:Q2	2.18 (0.55)	2.17 (0.51)	0.02 (0.75)
United Kingdom	1955:Q2 – 2012:Q2	2.47 (0.47)	2.67 (0.49)	-0.20 (0.70)

Notes: Standard errors (Newey-West 6 lags) are shown in parentheses.

The United Kingdom

We were able to trace quarterly real GDP in the UK back to 1955:Q1. Over that period, the British parliamentary system has been dominated by either the Labor or the Conservative ("Tory") party, although there have been occasional coalition governments. "Labor" and "Conservative" in the UK map very roughly into "Democratic" and "Republican" in the US, although the ideological differences between the two British parties are historically greater than between the two American parties, and the entire political spectrum is shifted notably to the left in the UK.

Of the 229 available quarters, Labor ruled in 95, over which the average GDP growth rate was 2.47%.[4] Conservative governments ruled in 134 quarters, over which the average growth rate was 2.67%. Thus the partisan growth gap in the UK goes in the opposite direction from that in the US, but is tiny (20 basis points) and comes nowhere close to statistical significance.

Canada

Canada is like the US in many respects, and has long-lived Liberal and Conservative parties like the UK, though Canada's are probably less ideological. Canadian quarterly GDP data go back only to 1961. Thus we have 205 quarters to work with, of which 135

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[4] In parliamentary systems such as the UK's, elections come at various times. We "rounded" the election quarter according to which party ruled for the majority of that quarter. Then we counted the newly-elected party as responsible for the economy beginning in the *next* quarter. Example: The Blair (Labor) government began on May 2, 1997. We counted 1997:2 as having a Conservative prime minster, and started counting 1997:3 as under Labor.

were under Labor governments and 70 were under Conservative governments. A partisan growth gap similar to that in the United States emerges in Canada: Growth averaged 3.89% under Labor but only 2.48% under the Conservatives.

Canadian economic performance tends to be dominated by that of its giant neighbor to the south. On a quarterly basis, the correlation between Canadian and US GDP growth rates is 0.49, which is quite high for such noisy data.

So we also compared Canadian growth rates when the *US president* was a Democrat versus a Republican. The results were striking. Canadian growth averaged 4.30% when the US had a Democratic president but only 2.67% when the US had a Republican president. That cross-national partisan gap of 1.63 percentage points is actually a bit larger than the purely Canadian gap (1.41 percentage points) and almost as large as the US gap (1.79 points).[5] This result could be because US booms and busts cause Canadian booms and busts, or it could be because Canada generally had Liberal prime ministers when the US had Democratic presidents and had Conservative prime ministers when the US had Republican presidents. The former seems more important than the latter. Both countries were led either by the more liberal or by the more conservative party 57% of the time, and by parties of different ideological stripes 43% of the time. The 57-43 split, while significantly different from 50-50 with 205 observations, is substantively close to 50-50. Canada seems more tightly linked to the US economically than politically.

France

France is trickier because the names of the left-leaning and right-leaning parties change over time. But they can readily be identified as either labor/socialist or republican/Gaullist. Quarterly GDP data allow us to trace French economic history all the way back to 1949. Of those 253 quarters, France had a "labor" government in 96,[6] with an average real GDP growth rate of 3.19%. Of the 157 quarters with a "republican" government, the growth rate averaged 3.42%. Thus, on this dimension, France resembles the UK, not the US or Canada. The right does very slightly (and insignificantly) better.

Germany

Germany, meaning *West* Germany before 1991, has had a stable two-party system at least since 1949. The Christian Democratic Union (CDU) is the center-right party, and the Social Democratic Party (SPD in German) is the center-left party. The bigger challenge in Germany is obtaining a long time series on quarterly GDP that covers *all* of Germany, including the former *East* Germany. The furthest we can go back is to 1970, so we have only 169 quarters to work with. Of these, 89 quarters were under a CDU chancellor and 80 were under an SPD chancellor. Partitioning the growth data long these partisan lines, we find no CDU-SPD difference at all. Rounded to the first decimal place, Germany's annualized growth rate was 2.2% regardless of which party was dominant.

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[5] But note that the time periods do not match.

[6] In two instances between 1981 and 1995, there was "cohabitation." We code these as "labor." In addition, there were two very brief periods (between DeGaulle and Pompidou, and between Pompidou and Giscard) in which the technocrat Alain Poher served as interim president. We code those two quarters as Gaullist.

To summarize, in terms of growth differences by political party, Canada closely resembles the United States—but this may be, in part, because the giant American economy pushes the much smaller Canadian economy around. The UK, France, and Germany do not exhibit partisan differences in growth rates. While further study is surely merited, the stark left-right gap in economic performance may be largely a U.S. phenomenon.

Appendix E: Data sources

The table below lists the data series, sources, and miscellaneous notes about the data used in this paper.

Series	Source	Notes
	Data used in Figure 1	
Real GDP	FRED: GDPC96	
	Additional Series Used in Tables 1 and 2	
Quarters-in-Recession	NBER	
GDP Per Capita	FRED: A939RC0Q052SBEA	The nominal series from FRED is deflated by the GDP deflator
Nonfarm Business Output	FRED: OUTNFB	
Industrial Production	FRED: INDPRO	
Employment (Payroll)	FRED: PAYEMS	
Employee Hours (NFB)	FRED: HOANBS	
Employment (HH)	FRED: CE16OV	
Unemployment Rate	FRED: UNRATE	
Returns SP500 Index	WRDS	
Corporate Profits (Share of GDI)	BEA	Corporate profits with inventory valuation and capital consumption adjustments, domestic industries, After Tax, from NIPA Table 1.10 Divided by GDI
Gross Domestic Income	FRED: GDI	
Compensation/Hour	FRED: COMPRNFB	
Ouput/Hour NFB	FRED: OPHNFB	
TFP	Supplied by John Fernald	Quarterly_tfp.xlsx produced on May 07, 2015
Surplus/Pot.GDP	CBO	Net Federal Government Saving Without Automatic Stabilizers as Percent of potential output. 1960-1964 from CBO file 43977.xls (2013 report); 1965-2014 from CBO file 45066.xlsx (2015 report).
PCE Deflator	FRED: PCECTPI	
GDP Deflator	FRED: GDPDEF	
Three month Treas. bill rate	FRED: TB3MS	
Federal Funds Interest Rate	FRED: FEDFUNDS	
Aaa Bond Rate	FRED: Aaa	
Baa Bond Rate	FRED: Baa	
10-Year Treasury Bond Rate	FRED: GS10	
	Additional Series Used in Table 6	
Oil Price Shocks (Hamilton)	BLS: WPU0561	Constructed using equation (3) in the text, with O_t WPU0561
Oil Supply Shocks (Killian)	Supplied by Lutz Killian	
TFP (Util Adj)	Supplied by John Fernald	Quarterly_tfp.xlsx produced on May 07, 2015
Defense Spending (Ramey)	Supplied by Valerie Ramey	This is an updated version of the Ramey(2011) series from Owyang, Ramey, and Zubairy (2013).
Defense Spending (Fisher-Peters)	Supplied by Valerie Ramey	

OECD GDP Growth Europe	OECD	Growth rates were detrended using a local average with biweight kernel and $\kappa = 67$.
Exchange Rates	FRED: TWEXMMTH	
Taxes (Romer and Romer)	Supplied by David Romer	
Romer and Romer	Supplied by David Romer	
SVAR (Sims and Zha)	Supplied by Tao Zha	
Commodity Prices	Conf. Board Indicators Data Base: UOM023	
EBP Spread (Gilchrist-Zakrajšek)	Supplied by Egon Zakrajšek	
Ted Spread	FRED: MED3-TB3MS	MED3 is the 3-month Eurodollar Deposit Rate (London) from the FRB H.15 Release. These data are available from 1971:M1.
SLOOS	Deutsche Bank 1970:Q1-1982:Q1 FRED: DRIWCIL from 1982:Q2	FRB Senior Loans Officer Opinions. Net Percentage of Domestic Respondents Reporting Increased Willingness to Make Consumer Installment Loans
Index of Consumer Sentiment Current (ICC)	University of Michigan Survey Research Center	
Index of Consumer Expectations (ICE)	University of Michigan Survey Research Center	
Uncertainty Index (BBD)	Supplied by Steve Davis	
Uncertainty Index (JLN)	Supplied by Serena Ng	
Additional Series Used in Table A.13		
GDP for Canada	Statistics Canada	www.statcan.gc.ca/pub/13-019-x/2012002/t/tab0003-eng.htm
GDP for France	INSEE	www.bdm.insee.fr/bdm2/affichageSeries?idbank=001615899&codeGroupe=1310
GDP for Germany	German Federal Statistical Office	The series can be found under "Long Term Series from 1970" at: www.destatis.de/EN/FactsFigures/NationalEconomyEnvironment/NationalAccounts/ DomesticProduct/DomesticProduct.html
GDP for the United Kingdom	Office of National Statistics	www.ons.gov.uk/ons/rel/naa2/quarterly-national-accounts/q2-2012/tsd-quarterly-national-accounts-2012-q2.html
Additional Series Used in Tables A.4 and A.5		
NIPA Series	BEA	

Notes: Several of the series are available at a monthly frequency. Quarterly values were constructed as monthly averages.

Appendix F: Standard Errors for the Explained D-R Gap in Tables 6, 8, and 9

As explained in footnote 21, the effect of the explanatory variables on y_t is

$\sum_{j=1}^{k}\sum_{i=0}^{m}\gamma_{ji,P}e_{j,t-i}$, where m denotes the number of lags, and the expression is written to

allow γ to depend on party, so that $P = D$ or R. This yields the "explained" D-R gap:

$DR^{\text{Explained}} = T_D^{-1}\sum_{t=1}^{T}\sum_{j=1}^{k}\sum_{i=0}^{m}D_t\gamma_{ji,D}e_{j,t-i} - T_R^{-1}\sum_{t=1}^{T}\sum_{j=1}^{k}\sum_{i=0}^{m}R_t\gamma_{ji,R}e_{j,t-i}$, where D_t is a

Democratic 0-1 indicator for date t, T_D is the number of Democratic quarters in the

sample, and similarly for R_t and T_R. The estimated value of $DR^{\text{Explained}}$ replaces $\gamma_{ij,P}$ with

its estimated value, $\hat{\gamma}_{ij,P}$, so the sampling error in $\widehat{DR}^{\text{Explained}}$ is

$$\left(\widehat{DR}^{\text{Explained}} - DR^{\text{Explained}}\right) = T_D^{-1}\sum_{t=1}^{T}\sum_{j=1}^{k}\sum_{i=0}^{m}D_t(\hat{\gamma}_{ji,D} - \gamma_{ji,D})e_{j,t-i} - T_R^{-1}\sum_{t=1}^{T}\sum_{j=1}^{k}\sum_{i=0}^{m}R_t(\hat{\gamma}_{ji,R} - \gamma_{ji,R})e_{j,t-i} .$$

This can be written as $\left(\widehat{DR}^{\text{Explained}} - DR^{\text{Explained}}\right) = W'(\hat{\gamma} - \gamma)$, where W is a function of the D-R

indicators (D_t, R_t), T_D, T_R, and the e_t data, and γ is a vector that contains the $\gamma_{ij,P}$

coefficients. The variance of $\left(\widehat{DR}^{\text{Explained}} - DR^{\text{Explained}}\right)$ is $W'\Sigma_{\hat{\gamma}}W$, where $\Sigma_{\hat{\gamma}}$ is the

covariance matrix for $\hat{\gamma}$.

Additional Reference

Stock, James H. and Mark W. Watson (2012), "Disentangling the Channels of the 2007-2009 Recession," *Brookings Papers on Economic Activity*, Spring 2012, 81-135.