Fiscal Policy Cyclicality and Growth within the US States

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Motivation

- 48 states have faced a budget deficit during the recent recession
  - North Dakota and Montana are the exceptions
- Combined shortfall from 2009 - 2012: $\sim$ \$550 billion
- Responses have varied – dependent on size of deficits, political climate, stringency of balanced budget restrictions
  - Aggressively reduce deficits through combination of higher taxes and reduced government spending; ex. Illinois, California
  - Maintain (or expand) current deficits, paying off debt in future; ex. Delaware, Michigan
- Each response implies a different path for fiscal policy across the business cycle

Questions

- General question: What are the long-run consequences of choosing one response over another?
- Specific question: How does the cyclicality of fiscal policy affect long-run growth within the US states?

Theoretical Link - Aghion and Howitt (2006)

- Firms choose to invest in either capital or productivity-enhancing technology
  - Investment in technology is subject to future payment shocks
  - Credit-constraint – firms can only borrow up to a fraction of their earnings
  - Firms forecast that their credit constraint tightens during recessions, reducing their likelihood of being able to pay the shock
  - Implication: firms reduce investment in technology, GDP growth slows
- Policy response
  - Introduce a counter-cyclical fiscal policy; ex. counter-cyclical public investment
  - Firms forecast that, during future recessions, government will buy more goods – loosens credit constraint
  - Leads to increased investment in technology, higher growth rate
- Elements consistent with Aghion, Angeletos, Banerjee, and Manova (2006)

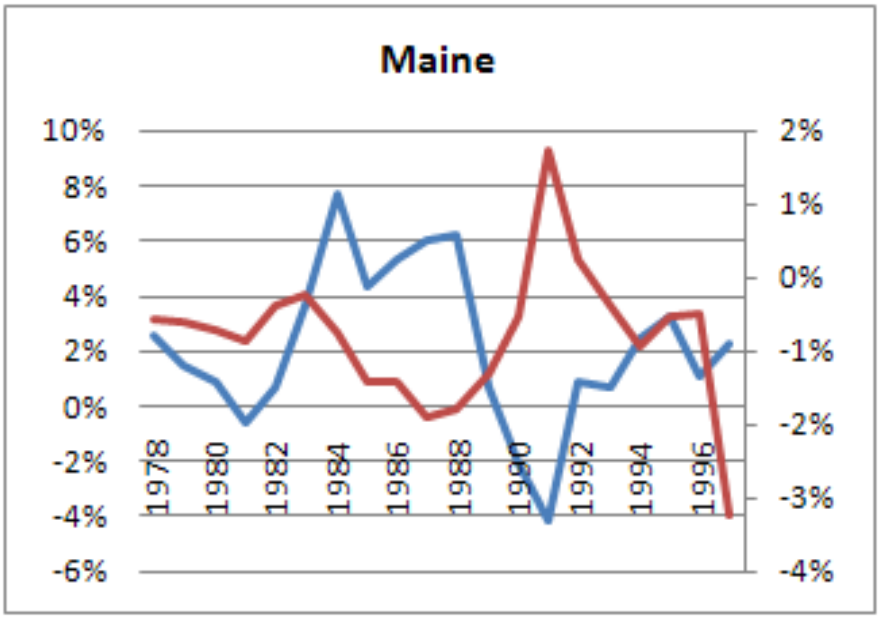
This Paper

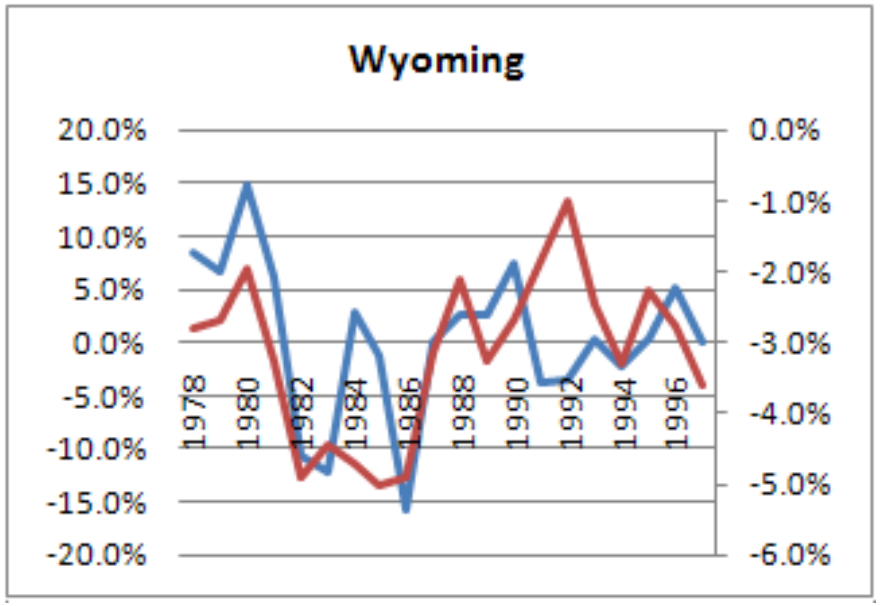
Does a more counter-cyclical fiscal policy increase long-run growth across US states?

- Data: Annual data on US states from 1977 - 1997*
- Key finding: A one standard deviation increase in the counter-cyclicality of fiscal policy increases the average, per-capita growth rate by 0.4%
  - Robust to a number of different specifications and robustness checks
  - Complements Aghion and Marinescu (2007) and Woo (2009)

Fiscal cyclicality

Comovement in primary deficit and GDP growth



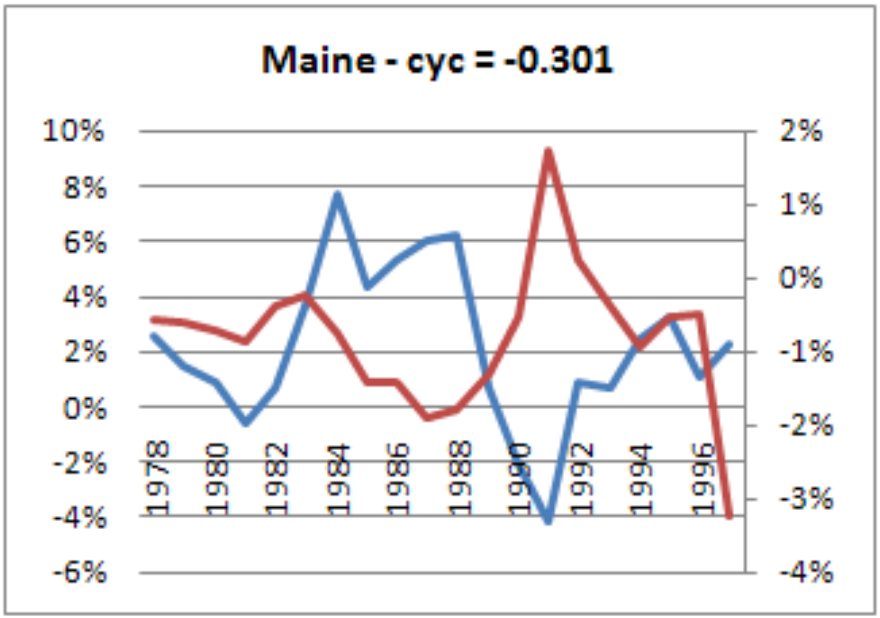


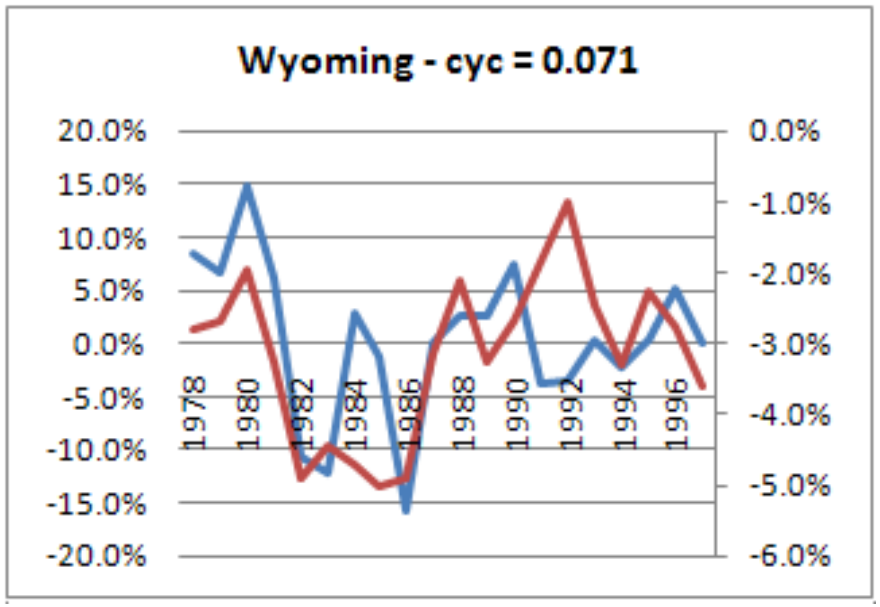
Real GDP Growth Primary Deficit over GDP

Fiscal cyclicality

Comovement in primary deficit and GDP growth

$$\frac{G_{st} - T_{st}}{Y_{st}} = \alpha_{1,s} + \alpha_{2,s}\Delta \log Y_{st} + \alpha_{3,s}\pi_t + \alpha_{4,s}t + \epsilon_{st}$$

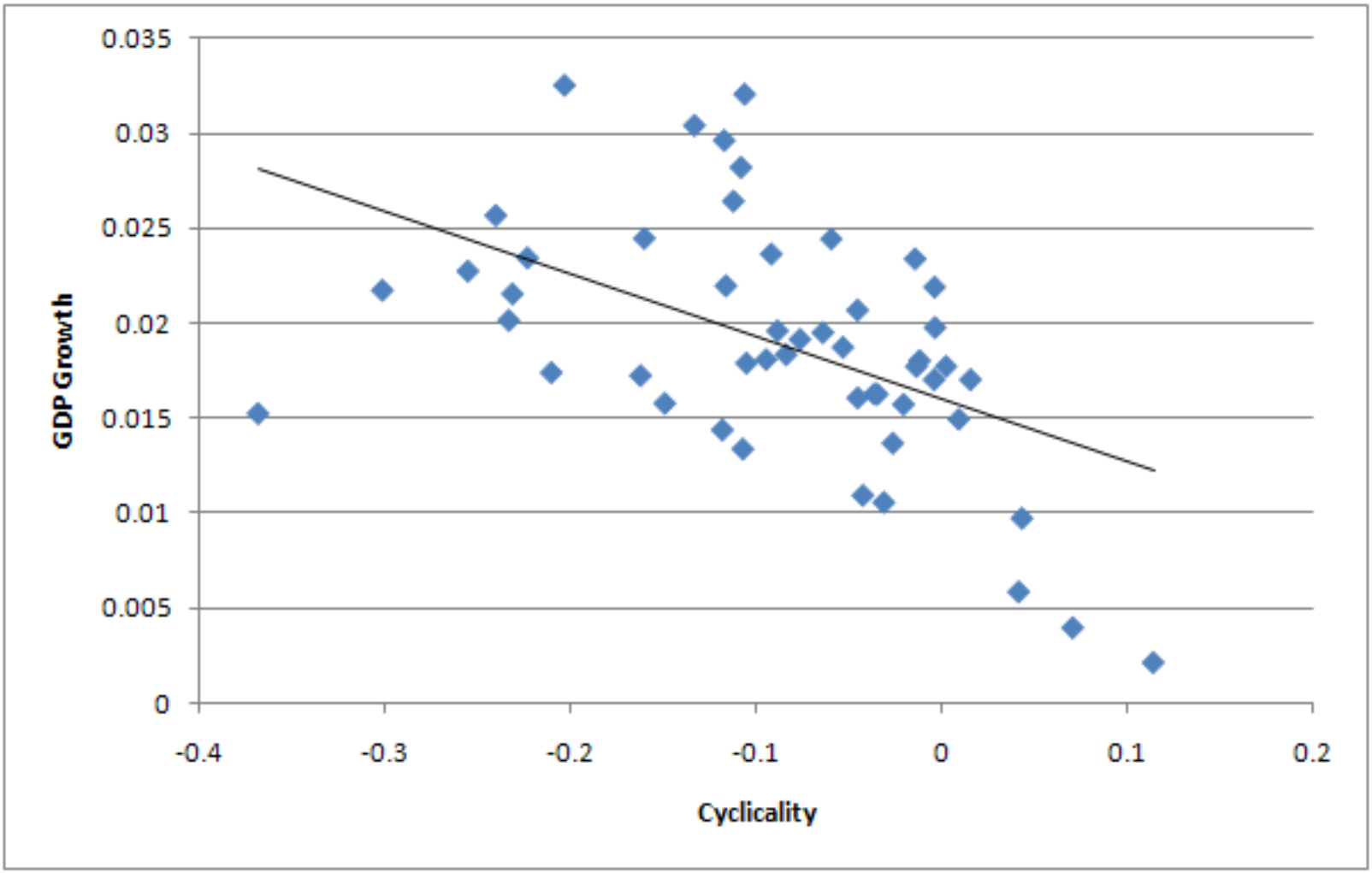




Real GDP Growth Primary Deficit over GDP

Cyclicality and Growth

A Scatterplot



Empirical Strategy

- Difficulty: Cyclicality is potentially endogenous
  - Governments, in response to low growth rates, can alter the cyclicality of their fiscal policy
- Instrumental variables approach
  - Exclusion principle: instrument must influence a state's cyclicality, but be uncorrelated to the unexplained component of a state's average growth rate
  - Chosen instrument: balanced budget restrictions

Background on BBRs

- 49 states (exception: Vermont) have some type of balanced budget restriction
  - Enforced by the courts and public opinion
- Variation in BBRs:
  - Ex-ante BBRs – proposed budget is balanced
    - Governor must submit a balanced budget (10)
    - Legislature must pass a balanced budget (8)
  - Carry-over – state may carry-over deficit into following fiscal year if it is corrected in following year (8)
  - Ex-post BBRs – actual budget is balanced
    - State cannot carry-over deficit into following biennium (9)
    - State cannot carry-over deficit into following fiscal year (28)

BBRs and Voter Preferences

- Potential issue: A state's chosen BBR might reflect voter preferences over deficits
  - Preferences might then be correlated to variables related to growth
- Historical legacy argument:
  - BBRs were implemented almost 150 years ago, in response to the Panic of 1837
  - Because they were typically enacted as amendments to the state's constitution, they are difficult to modify
  - If voter preferences over deficits have changed over time, change was not reflected in the state's BBR
  - Exogenous component to the rules (Poterba 1996)
- Our contention: BBRs constrain potential counter-cyclicality of policy, but do not reflect changes in voter tastes or other recent shocks in the macroeconomy

IV Analysis

- Regression

$$\overline{\Delta \log Y_s} = \beta_1 + \beta_2 cyc_s + \beta_3 X_s + \nu_s$$

where

$$cyc_s = \gamma_1 + \gamma_{2,i} BBR_{i,s} + \gamma_3 X_s + \upsilon_s$$

  - Controls in X_s: 1977 levels of education, income, political variables, population, IG transfers, and debt to GDP ratio

First stage results

	(1)	(2)	(3)	(4)	(5)
BBR_Gov	-0.063**	-0.052	-0.045	-0.005	
	[0.029]	[0.033]	[0.032]	[0.034]	
BBR_Leg	0.065**	0.063**	0.077**	0.063*	
	[0.025]	[0.029]	[0.032]	[0.032]	
BBR_May	-0.02	-0.02	-0.022	-0.016	
	[0.027]	[0.031]	[0.031]	[0.031]	
BBR_Bie	0.019	0.015	0.015	0.026	
	[0.021]	[0.024]	[0.025]	[0.030]	
BBR_Fis	0.063*	0.069**	0.094**	0.101***	
	[0.032]	[0.033]	[0.039]	[0.036]	
ACIR index					0.009*
					[0.004]
Income 1977	-	-	-	-	-
Education 1977	-	-	-	-	-
Population 1977		-	-	-	-
Political variables 1977		-	-	-	-
IG transfers 1977			-	-	-
Debt to GDP ratio 1977				-	-
Observations	48	47	47	47	47
R-squared	0.441	0.485	0.507	0.572	0.446
F stat for H0:BBR_* =0	14.39	9.91	7.01	3.07	--
(p-value)	0.000	0.000	0.001	0.022	--

Implication: states with strict balanced budget restrictions run more procyclical fiscal policy than states with loose BBRs

Second stage results

	(1)	(2)	(3)	(4)
Cyclicality of primary deficit	-5.863***	-5.204***	-6.711***	-5.594***
	[1.837]	[1.911]	[1.683]	[1.958]
Income 1977	-0.210***	-0.222***	-0.248***	-0.252***
	[0.060]	[0.066]	[0.059]	[0.054]
Education 1977	0.163	0.138	0.174	0.142
	[0.123]	[0.141]	[0.125]	[0.131]
Population 1977		0.004	-0.014	-0.01
		[0.017]	[0.017]	[0.015]
Political Variable #1		-0.033	0.1	0.051
		[0.137]	[0.145]	[0.143]
Political Variable #2		-0.032	-0.042	-0.06
		[0.043]	[0.037]	[0.040]
IG Transfers 1977			-22.030***	-20.776***
			[7.906]	[7.837]
Debt to GDP ratio 1977				2.27
				[1.807]
Observations	48	47	47	47
R-squared	0.482	0.53	0.535	0.589

We cannot reject the null hypotheses from either the over-identification test or a Durbin-Wu-Hausman type test.

Robustness Checks

- Same qualitative results whether we ...
  - Include or exclude fiscal outliers (Alaska and Hawaii)
  - Examine state + local government statistics or just state statistics
  - Insert regional dummy variables
  - Alter the definition of fiscal cyclicality
    - Stronger results when only independent variable is growth in real GDP
    - Weaker results when only independent variable is output gap

Conclusion

- This analysis examined whether counter-cyclical fiscal policy affects the growth rate in per-capita GDP across states
- Using the variation in balanced budget restrictions as our instrument, we find that a more counter-cyclical primary deficit increases a state's long-run, per-capita growth rate
    - Strict balanced budget restrictions lead to a more pro-cyclical primary deficit