Does Democracy Affect The Fiscal Policy Cyclicality? Evidence from Developing Countries

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Outline

- Background
- Main Contribution
- Research Question
- Data & Empirical Strategies
- Findings
- Conclusion

Background and Motivation

- **Countercyclical fiscal policy** is a preferred pattern to stabilize the economy.
  - Government should reduce tax and increase government spending during recession, and increase tax and reduce spending during boom.

[1] See e.g. Riascos & Vègh (2003), Calderón et al. (2010) and Caballero & Krishnamuthy (2004)

[2] See e.g. Woo (2009) and Venes (2006)

[3] See e.g. Frankel, Vègh & Vuletin (2013), Alesina, Campante & Tabellini (2008) and Ilzetzki & Vègh (2008)

Background and Motivation

- **Countercyclical fiscal policy** is a preferred pattern to stabilize the economy.
  - Government should reduce tax and increase government spending during recession, and increase tax and reduce spending during boom.

- Developing countries implement fiscal policy **procyclicality** due to several reasons:
  - **imperfect international credit market**; credit constraint and difficult to access the external fund during bad time[1].
  - **policy polarisation**; government insists to implement certain policy regardless budget deficit condition[2].
  - All reasons point toward **weak institutions**[3].

[1] See e.g. Riascos & Vègh (2003), Calderón et al. (2010) and Caballero & Krishnamuthy (2004)

[2] See e.g. Woo (2009) and Venes (2006)

[3] See e.g. Frankel, Vègh & Vuletin (2013), Alesina, Campante & Tabellini (2008) and Ilzetzki & Vègh (2008)

Main Contribution

1. Stress the **issue of endogeneity** and resolve it using the IV approach and the dynamic panel data analysis.
2. Analyse the **interaction effects** of the quality of institutional and the political regime.
3. Reversal in the Political Regimes: Consider **the maturity of political regime** in affecting the fiscal policy cyclicality.

Research Question

1. Does democracy affect the fiscal policy cyclicality in developing countries?
2. How does the interaction between the political regime and the institutional quality affect the fiscal policy cycle?
3. Does the maturity of a political regime affect the cyclical pattern of government spending?

Data

Unbalanced panel data of 63 developing countries from 1980 to 2013.

- Main Dependent Variable: **Fiscal policy cyclicality** measured by Government spending gap. The percentage change of total real government consumption (constant USD) from its trend.

- Main Independent Variables:
  - **Business cycle** measured by Output gap. The cyclical component of real output (constant USD).
  - **Democracy indices** range between 0 to 20(Polity IV): Democracy dummy variable equals to 1 if democracy index ≥ 16, otherwise 0.
  - **Institutional quality variables** are Control of Corruption, Government Effectiveness, Political Stability and Absence of Violence and Terrorism, Regulatory Quality, Rule of Law and Voice and Accountability.

Data (2)

- Other Independent Variables:
  - **Maturity of democracy** is constructed by matching the Legislative and Executive Indices of Electoral Competition (≥ 4) and democracy indices (≥ 16).
  - **Legislative and Executive Indices of Electoral Competition(LIEC and EIEC)** range between 1 to 7 and are provided by the Political Institutions Database.
- Some Control Variables:
  - **Financial Openness Indices** are adopted from Chinn & Ito (2008). It ranges between 0 and 1.
  - **Trade Openness** is the ratio of export and import to GDP in logarithmic form and is taken from World Development Indicators (WDI).

Descriptive

Empirical Strategies: OLS-FE cross-country Regression

$$G_{i,t} = \beta_1 OutputGap_{i,t} + \beta_2 G_{i,t-1} + \beta_3 Democracy_{i,t} + \beta_4 InstQual_{i,t} + \beta_5 X'_{i,t} + \mu_i + \lambda_t + u_{i,t} \quad i = 1, 2, ..., 63 \; t = 1, 2, ..., 33 \tag{1}$$

where $OutputGap_{i,t}$ represents the output gap, $G_{i,t}$ denotes the government spending gap (percentage deviation of government spending from its trend) and $X_{i,t}$ is set of related control variables.

Empirical Strategies: Instrumental Variable Approach (1)

First-stage

$$OutputGap_{i,t} = \pi_0 + \pi_1 TFPgrowth_{i,t} + \pi_4 X'_{i,t} + \mu_i + \lambda_t + \varepsilon_{i,t}$$
$$i = 1, 2, ..., 38 \quad t = 1, 2, ..., 33 \tag{2}$$

- **Validity:** the TFP growth is one of engines driven the output growth (significant First-Stage (π_1)).
- **Exclusion Restriction:** the TFP growth correlates to the potential output level (supply side) of the output gap, while government spending usually affects the output gap through demand side. Therefore, we expect that TFP growth may not be dependently correlated to $G_{i,t}$.

Empirical Strategies: Instrumental Variable Approach (2)

Second-stage

$$\begin{aligned} G_{i,t} &= \beta_1 Outp\hat{u}tGap_{i,t} + \beta_2 G_{i,t-1} + \beta_3 Democracy_{i,t} \\ &\quad + \beta_4 InstQual_{i,t} + \beta_5 X'_{i,t} + u_{i,t} \\ u_{i,t} &= \mu_i + \lambda_t + \varepsilon_{i,t} \\ &\quad i = 1, 2, ..., 38 \quad t = 1, 2, ..., 33 \end{aligned} \tag{3}$$

where $Outp\hat{u}tGap_{i,t}$ is the fitted value from the first-stage regression and β_1 is the parameter which measures the cyclical pattern of fiscal policy.

Empirical Strategies: Dynamic Panel Data Analysis

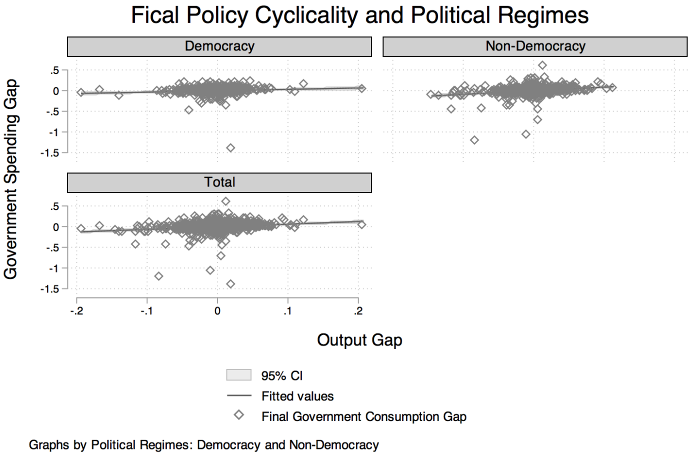
Generalised Method of Moment (GMM) Transformed equation:

$$
\begin{aligned}
\Delta G_{i,t} &= \beta_1 \Delta OutputGap_{i,t} + \beta_2 \Delta G_{i,t-1} \\
&\quad + \beta_3 \Delta Democracy_{i,t} + \beta_4 \Delta InstQual_{i,t} + \beta_5 \Delta X'_{i,t} + u_{i,t} \\
u_{i,t} &= \mu_i + \lambda_t + v_{i,t} \\
&\quad i = 1, 2, ..., 63 \quad t = 1, 2, ..., 33
\end{aligned} \tag{4}
$$

β_1 is the parameter which measures the cyclical pattern of fiscal policy.

Procyclical Fiscal Policy in Developing Countries

Figure: 1.1 Fiscal Policy Cyclicality in Developing Countries by Their Political Regimes



Findings

1. Developing countries implement **procyclical** fiscal policy.
    - **Democratic** countries tend to implement less fiscal policy procyclicality than the non-democratic ones by 2.93-10.44 percentage point (OLS, Model 1 and IV-2SLS, Model 5 Table 1.2, respectively).
    - **Improvements in the institutional quality** decrease the fiscal policy procyclicality by 4.46 percentage point. Marginal Effects
2. **The maturity and stability of democracy** help to restrain the fiscal policy procyclicality.
    - Countries with 21 years of stable democracy or more tend to implement less procyclical fiscal policy.

Table: 1.1 The Fiscal Policy Cyclicality in Developing Countries (Baseline Model)

	(1) (OLS)	(2) (FE)	(3) (IV-FE)	(4) (IV-2SLS)	(5) (LD-GMM)	(6) (LD-SYSGMM)	(7) (DY-GMM)	(8) (DY-SYSGMM)
Output Gap	0.841***	0.827***	14.89*	11.40*	1.306***	1.900***	1.034***	0.503**
	(5.73)	(5.47)	(2.00)	(2.48)	(7.13)	(9.94)	(19.32)	(2.89)
L.Gov Gap	0.244***	0.228***	0.705*	0.616***	0.0866*	0.253***	0.0628***	0.0389
	(6.43)	(5.77)	(2.56)	(3.38)	(2.47)	(8.65)	(10.78)	(1.35)
Trade Openness	-0.0146	-0.0351	0.515	0.0238	-0.122*	0.0929*	-0.156***	-0.167**
	(-1.06)	(-0.79)	(1.31)	(0.47)	(-2.33)	(1.99)	(-9.25)	(-2.67)
Financial Openness	0.00324	-0.0156	-0.106	0.0132	0.0108	-0.0455	0.00928	0.0142
	(0.36)	(-0.72)	(-0.89)	(0.45)	(0.37)	(-1.52)	(0.96)	(0.47)
Control of Corruption	0.0226*	0.0421*	-0.0845	0.00141	0.150***	0.107***	0.157***	0.0810***
	(2.37)	(2.02)	(-0.70)	(0.04)	(5.70)	(4.41)	(13.22)	(7.81)
Dummy_Democracy	-0.00845	-0.0482**	-0.130*	-0.00664	-0.00664	-0.0371*	0.00535	0.0141
	(-1.38)	(-3.27)	(-2.01)	(-0.33)	(-0.33)	(-1.97)	(0.77)	(1.23)
First-stage								
TFP Growth			0.0006*	0.0006*				
			(0.0003)	(0.0002)				
N	883	883	456	456	883	883	652	652
FE	No	Yes	Yes	No	No	No	No	No
R-squared	0.11	0.11	0.09	-	-	-	-	-

Source: Author's own calculation.
Notes: Table estimates the fiscal policy cyclicality of developing countries using various econometric methods. t statistics are in parentheses and * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Less Fiscal Policy Procyclicality in Democratic Nations

Table: 1.2 An Interaction between Political Regimes and Corruption in Affecting Fiscal Policy Cyclicality (the OLS-FE and the IV-2SLS)

	OLS-FE				IV-2SLS			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Output Gap	1.54***	4.50***	0.82***	1.45***	4.42**	8.76***	0.35	3.65**
	(7.53)	(8.13)	(5.45)	(7.17)	(3.25)	(6.96)	(0.72)	(2.82)
L.Gov Gap	0.236***	0.242***	0.228***	0.234***	0.393***	0.360***	0.257***	0.369***
	(6.06)	(6.31)	(5.77)	(5.99)	(5.40)	(6.28)	(4.26)	(5.18)
Trade Openness	-0.0289	-0.0257	-0.0338	-0.0316	-0.0171	-0.0207	-0.0318	-0.0206
	(-0.66)	(-0.60)	(-0.76)	(-0.72)	(-0.70)	(-0.92)	(-1.33)	(-0.86)
Financial Openness	-0.0173	-0.0123	-0.0156	-0.0169	0.00312	0.00836	0.00517	0.00391
	(-0.81)	(-0.58)	(-0.71)	(-0.78)	(0.20)	(0.57)	(0.33)	(0.25)
Dummy_Democracy	-0.05**	-0.05***	-0.03	-0.05**	-0.007	-0.01	0.03	-0.007
	(-3.22)	(-3.61)	(-0.68)	(-3.23)	(-0.66)	(-1.35)	(0.55)	(-0.71)
Control of Corruption	0.04	0.02	0.05	0.04	0.02	0.008	0.05*	0.02
	(1.92)	(0.98)	(1.64)	(1.80)	(1.38)	(0.48)	(2.02)	(1.32)
Output Gap*Dummy_Democracy	-1.39***				-6.02**			
	(-5.10)				(-3.05)			
Output Gap*Control of Corruption		-2.67***				-5.82***		
		(-6.89)				(-6.50)		
Control of Corruption*Dummy_Democracy			-0.009				-0.03	
			(-0.27)				(-0.77)	
Output Gap*Control of Corruption*Dummy_Democracy				-0.79***				-3.02*
				(-4.57)				(-2.56)
N. Observations	883	883	883	883	456	456	456	456
R-squared	0.13	0.16	0.11	0.13	0.08	0.19	0.07	0.1

Source: Author's own calculation.

Notes: Table estimates an interaction between political regimes and the control of corruption, as a proxy for the institutional quality, in affecting the fiscal policy cycle using the OLS-FE and the IV-2SLS approaches (we omitted first-stage results, but they are significant). t statistics are in parentheses and * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Improvements in The Institutional Quality Decrease The Fiscal Policy Procyclicality

Table: 1.3 An Interaction between Political Regimes and Average Institutional Quality in Affecting Fiscal Policy Cyclicality

	OLS-FE				IV-2SLS			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Output Gap	1.56***	6.43***	0.84***	1.50***	4.64***	18.13***	0.44	4.14**
	(7.64)	(7.76)	(5.61)	(7.39)	(3.42)	(6.54)	(0.91)	(3.11)
Dummy_Democracy	-0.049***	-0.052***	-0.32***	-0.049***	-0.01	-0.015	-0.12	-0.01
	(-3.38)	(-3.65)	(-3.97)	(-3.38)	(-0.95)	(-1.44)	(-1.68)	(-1.00)
Average	0.037	0.018	-0.06	0.034	0.04	0.03	0.02	0.04
	(0.95)	(0.47)	(-1.35)	(0.89)	(1.56)	(1.41)	(0.52)	(1.56)
Output Gap*Dummy_Democracy	-1.4***				-6.3**			
	(-5.14)				(-3.22)			
Output Gap*Average		-3.83***				-11.8***		
		(-6.85)				(-6.26)		
Average*Dummy_Democracy			0.18***				0.07	
			(3.41)				(1.49)	
Output Gap*Average*Dummy_Democracy				-0.8***				-3.48**
				(-4.79)				(-2.87)
N. Observations	883	883	883	883	456	456	456	456
R-squared	0.14	0.16	0.12	0.13	0.06	0.14	0.08	0.08

Source: Author's own calculation.
Notes: Table estimates an interaction between political regimes and the average 6 indices of institutional quality in affecting the fiscal policy cycle using the OLS-FE and IV-2SLS approached. t statistics are in parentheses and * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Maturity of Democracy Does Also Affect Fiscal Policy Cyclicality

Table: 1.4 The Effects of Maturity of Democracy and Control of Corruption in Affecting Fiscal Policy Cyclicality

	10 Years Old		20 Years Old		30 Years Old	
	(OLS)	(IV-2SLS)	(OLS)	(IV-2SLS)	(OLS)	(IV-2SLS)
Output Gap	0.568	0.198	0.12	-0.002	-0.17	-0.42*
	(0.36)	(0.43)	(0.20)	(0.18)	(0.17)	(0.16)
Control of Corruption	0.09	-0.02	0.01	-0.03	0.07	-0.01
	(0.04)	(0.01)	(0.02)	(0.009)	(0.05)	(0.01)
N. Observations	146	86	180	106	119	61
FE	Yes	No	Yes	No	Yes	No
R-squared	0.27	0.19	0.14	0.02	0.18	0.33

Source: Author's own calculation.
Notes: Table estimates the effects of the maturity of democracy and the control of corruption, as proxy for the institutional quality, in affecting the fiscal policy cycle using the OLS and the IV-2SLS approaches. t statistics are in parentheses and * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Key Takeaways

Government and their effectiveness influence the direction of macroeconomic policies and countries' economic stability.

- The ***better quality of institution*** helps to reduce asymmetric information problem, transaction costs, and risk, which determine a proper direction of the macroeconomic policies, especially in democratic developing countries.

Thank You Very Much for Your Attention.

Data and Descriptive Statistics of Key Variables

Table: 1.1 Summary Statistics of Key Variables

Variable	Mean	Std. Dev.	Min.	Max.	N
Output Gap	-0.001	0.026	-0.193	0.206	1900
Government Spending Gap	-0.004	0.08	-1.405	0.598	1900
Trade Openness	1.821	0.244	1.045	2.343	1899
Financial Openness	0.373	0.317	0	1	1725
Total Factor Productivity Growth	0.877	2.18	-25.97	18.938	1135
Democracy Index	11.812	6.592	0	20	1900
Legislative Indices of Electoral Competition (LIEC)	5.97	1.745	1	7	1872
Executive Indices of Electoral Competition (EIEC)	5.524	1.981	1	7	1870
Number of Year in Democracy	5.754	8.431	0	35	1900
Control of Corruption	1.495	0.301	0.165	1.947	976
Government Effectiveness	1.57	0.239	0.591	1.939	976
Political Stability and Absence of Violence and Terrorism	1.426	0.362	-0.326	1.981	976
Regulatory	1.555	0.288	0.458	1.907	976
Rule of Law	1.493	0.265	0.379	1.92	976
Voice and Accountability	1.478	0.32	0.284	1.94	976
Average 6 Institutional Quality	1.503	0.23	0.603	1.884	976

Source: Author's own calculation.

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List of Countries I

Table: 1.2 List of Sample Countries

Country Name	Year Begin	Year End
Albania	1996	2014
Algeria	1980	2014
Armenia	1991	2014
Bangladesh	1980	2014
Belarus	1991	2014
Azerbaijan	1992	2012
Bhutan	2000	2014
Bolivia	1980	2014
Botswana	1980	2014
Bulgaria	1980	2014
Brazil	1980	2014

List of Countries II

Cameroon	1980	2014
Colombia	1980	2014
China	1980	2014
Congo	1980	2014
Costa Rica	1980	2014
Dominican Republic	1980	2014
Cuba	1980	2013
Ecuador	1980	2014
Egypt	1980	2014
El Salvador	1980	2014
Gabon	1980	2014
Georgia	1994	2014
Guatemala	1980	2014
Honduras	1980	2014
Indonesia	1980	2014
India	1980	2014

List of Countries III

Iran	1980	2014
Jordan	1980	2014
Kazakhstan	1992	2014
Kenya	1980	2014
Kyrgyz Republic	1992	2014
Lao PDR	2000	2014
Lesotho	1980	2013
Lebanon	1994	2014
Macedonia	1990	2014
Malaysia	1980	2014
Mauritania	1980	2014
Mauritius	1980	2014
Mexico	1980	2014
Moldova	1992	2014
Montenegro	2006	2014
Morocco	1980	2014

List of Countries IV

Namibia	1990	2014
Nicaragua	1980	2014
Pakistan	1980	2014
Nigeria	1981	2014
Panama	1980	2014
Paraguay	1991	2014
Philippines	1980	2014
Peru	1980	2014
Romania	1990	2014
Serbia	2006	2014
South Africa	1980	2014
Sudan	1980	2011
Swaziland	1980	2011
Tajikistan	1993	2013
Thailand	1980	2014
Tunisia	1980	2013

List of Countries V

Turkey	1987	2014
Ukraine	1991	2014
Vietnam	1994	2014

List of Countries VI

Source: Author's calculation

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Discuss the Marginal Effects of Institutional Quality on Cyclical Pattern of Fiscal Policy

The magnitude of institutional quality and countries' political regime determine their fiscal policy cyclicality.
E.g. Analysing the Model 8 from Table 1.3.

- For democratic countries: $4.14 - (3.48 * 1 * average) = 4.14 - (3.48 * 1.884) = -2.41$ which represents countercyclical fiscal policy.
- For non-democratic countries: 4.14

Democratic countries implement less procyclicality than non-democratic countries by 1.6-6.55 percentage point.
As the institutional quality increases from minimum value (0.6) to maximum (1.884), the procyclicality is reduced by 4.46 percentage point.

Descriptive Statistics

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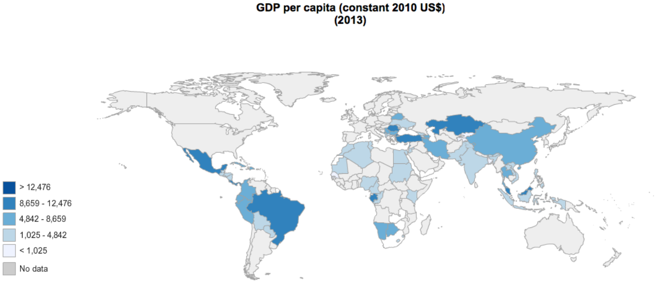
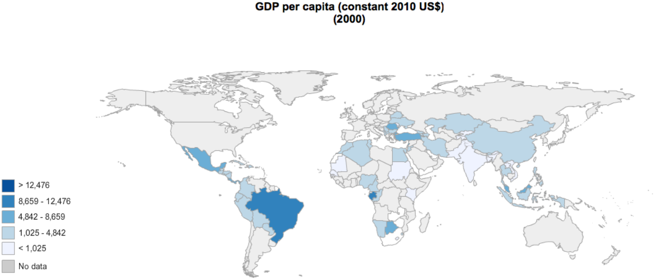
Figure: 1.2 Economic Status Defined by GDP per Capita of Selected Sample Countries in Year 1990, 2000 and 2013



Appendix A: Maps of Countries II



Appendix A: Maps of Countries III