Economic Stabilization in the Post-Crisis World: Are Fiscal Rules the Answer?

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Avoiding Procyclical Fiscal Policy: Are Rules a Solution?

- Much work on monetary policy rules (IT rules), little on fiscal
  - IT Rules / Taylor Rules Operating practice in many central banks
- Emphasis on supranational-national fiscal rules in Europe, especially for EMU members…despite failure of SGP constraints of past
- Little empirical work on systematic effectiveness of national fiscal rules, and that is focused on Europe
- Rules applicable to advanced as well as emerging/developing economies? IMF thinks so, and has been giving this “institutional” advise on reforms

Objective

- Are fiscal rules effective in moving policies toward counter-cyclical responses?

- Are rules only effective if supported by “institutional efficiency”?

- Strategy: use data on fiscal rules to test whether stronger fiscal rules reduce procyclicality of policy (response of real expenditures to real GDP) over time and across countries, controlling for government efficiency

*Chile's Balanced Budget Rule since 2001

- "Chile is undoubtedly the poster child of this graduation movement… since 2001 Chile has followed a fiscal rule that has a structural (i.e., cyclically-adjusted) fiscal balance as its target. By construction, such a rule ensures that temporarily high fiscal revenues are saved rather than spent." (Frankel, Vegh, Vuletin, 2011). "Graduated" from pro-cyclical to counter-cyclical policies."

- Structural balance with independent body providing key inputs. Under the structural balance rule, government expenditures are budgeted ex ante in line with structural revenues, i.e., revenues that would be achieved if: (i) the economy were operating at full potential; and (ii) the prices of copper and molybdenum were at their long-term levels.

- The implementation of the rule has changed somewhat since 2009. From 2001-07 a constant target for the structural balance (surplus of 1 percent of GDP) was defined; in 2008 a new constant target was specified (surplus of 0.5 percent of GDP). In 2009, while the target was a zero structural surplus, a de facto escape clause was used to accommodate countercyclical measures. Further, the current administration (2010-14) has specified a target path (to converge to 1 percent of GDP structural deficit by 2014).

Some Empirical Literature

- Literature shows procyclicality of fiscal policy (w/ "graduation")
  - Fiscal Cyclicality
    - Ilzetzki and Vegh (2008); Frankel, Vegh and Vuletin (2011): "graduation"
    - These show the nature of fiscal cyclicality and how its changed
  - Quality of institutions (Calderón et al., 2012; Céspedes & Velasco (2014)
    - Large number of countries
    - Focusing on quality of institutions and cyclicality (cross section)
  - Rules: some literature for advanced, especially Europe (e.g. EC, 2013; Bergman, Hutchison, Jensen, 2013: market pressure or rules?), little for emerging/developing (noted by Céspedes & Velasco, 2014)

Our contribution

- Construct new indices for national and international fiscal rules (81 countries, 1985-2012)– advanced, emerging, developing
- Combine with government efficiency
- Investigate efficacy of rules in reducing procyclicality in dynamic panel setting

International Comparative Data on Rules

- IMF most comprehensive, covering emerging/developing economies: "Fiscal Rules Dataset, 2012" (FAD)
  - 81 countries, 1985-2012, advanced (31) and emerging/developing (50); IMF has aggregate index, unpublished, so we calculate index for each country for each year:
  - four types of fiscal rules: budget balance rules, debt rules, expenditure rules, revenue rules
    - five main characteristics for each type of rule: monitoring, enforcement, coverage, legal basis, escape clauses
  - 20 categories (4 x 5) plus 8 other characteristics, e.g. supporting procedures and institutions (multi-year expenditure ceilings implemented at the aggregate level, by ministry of by line item), independent body setting budget assumptions, transparency and accountability, etc.
  - Total of 28 categories: most (0,1) but several continuous with different ranges; we normalized all to (0, 1) and sum; sum normalized to (0, 4) range (to be consistent with EC index for comparisons)

Supranational Fiscal Rules: similar construction from FAD, based on 22 characteristics

Government Efficiency "Institutional Quality"

- Index is from the World Bank "Worldwide Governance Indicators, 2013 Update" (WGI) project research dataset. Data on the quality of governance provided by a "large number of enterprise, citizen and expert survey respondents in industrial and developing countries. Survey institutes, think tanks, non-governmental organizations, international organizations, and private sector firms.

- "Government Efficiency" indicator reflects "…perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies."

- Indicator ranges from -2.5 to 2.5, with higher values indicating greater government efficiency.

Cyclical Fiscal Policy

- Both real government expenditures and tax rates may measure the cyclicality of policy. Tax rate indicators not available for a broad group of countries over time, so we focus on real government expenditures– cyclically adjusted (HP filter) or percentage change. This follows the norm in the literature (e.g. Kaminsky et al., 2005; Frankel et al., 2011; Calderón et al., 2012; Céspedes and Velasco, 2014)

Model: Measuring the effect of rules in cyclicality

$$GEXP_{it} = \beta_0\, GEXP_{it-1} + \beta_1\, GDP_{it} + \beta_2(GDP_{it} * NFRI_{it}) + \beta_3(GDP_{it} * GE_{it}) + \beta_4(GDP_{it} * NFRI_{it} * GE_{it}) + \mu_i + \varepsilon_{it}$$

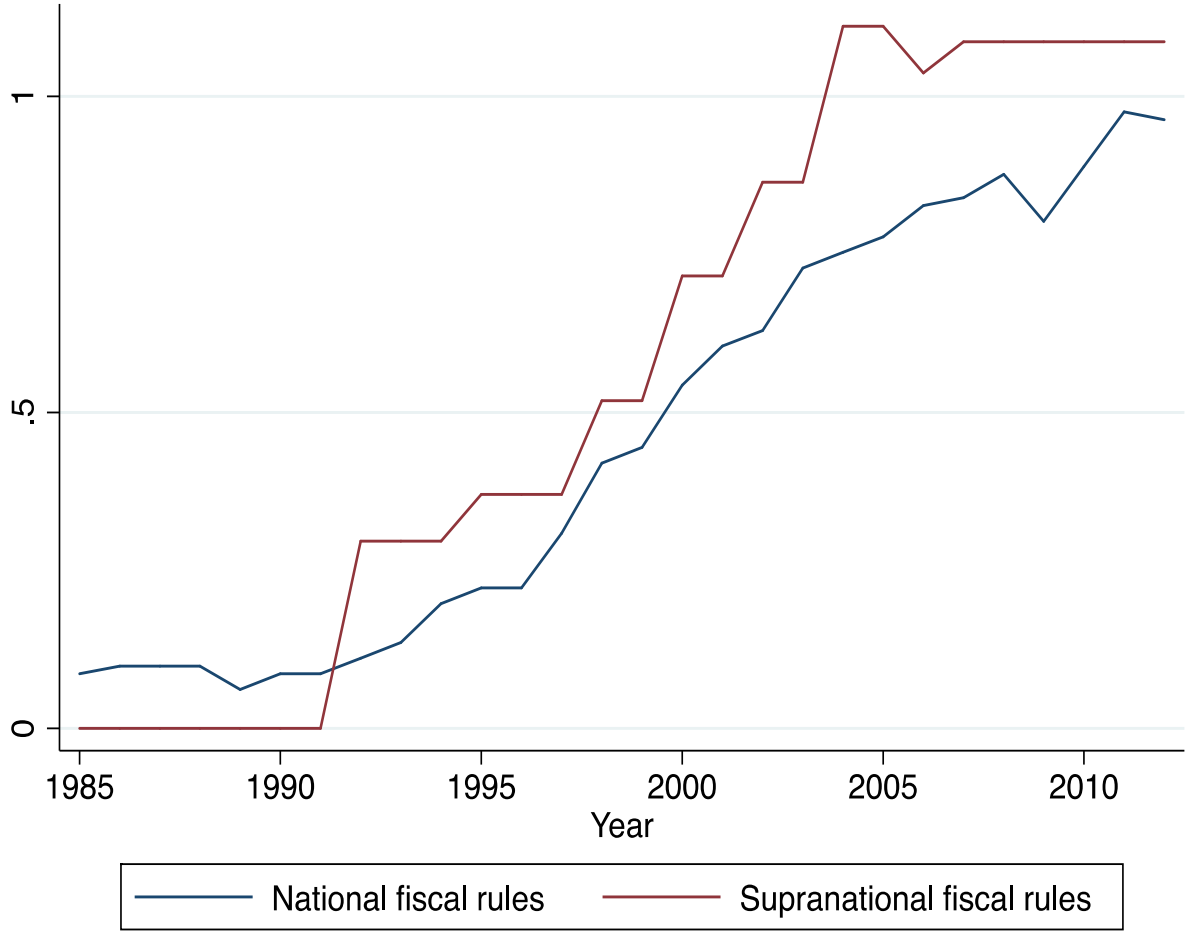
Where GEXP is the HP-filtered cyclical component of real government expenditures, GDP is the HP-filtered cyclical component of real GDP, NFRI is the index of fiscal rules, and GE is the World Bank measure of government efficiency.

Measure net (non-linear) effect of fiscal rules and GE on cyclicality of government expenditures:

$$\beta_1 + \beta_2 * (NFRI_{it}) + \beta_3\,(GE_{it}) + \beta_4(NFRI_{it} * GE_{it})$$

Dynamic panel with fixed effects; Arellano-Bond one-step GMM difference estimator. GDP endogenous. Report clustered, robust standard errors. Our panel has 81 groups (N) each with 28 observations (T). Follow Roodman (2012) in reducing number of instruments.

Figure 1 Average number of national and supranational fiscal rules.



Rise in Fiscal Rule Popularity

*Figure 2 National fiscal rule index for selected countries

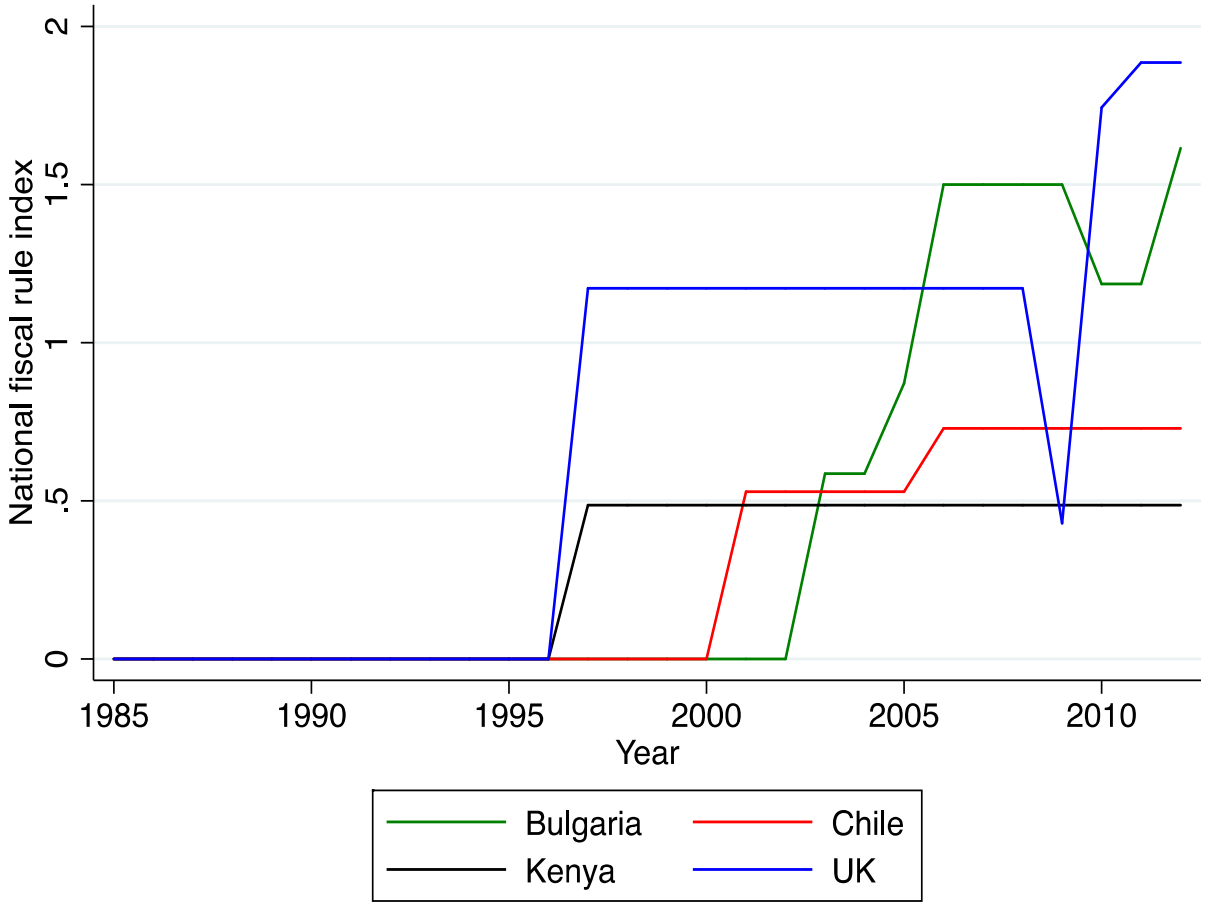
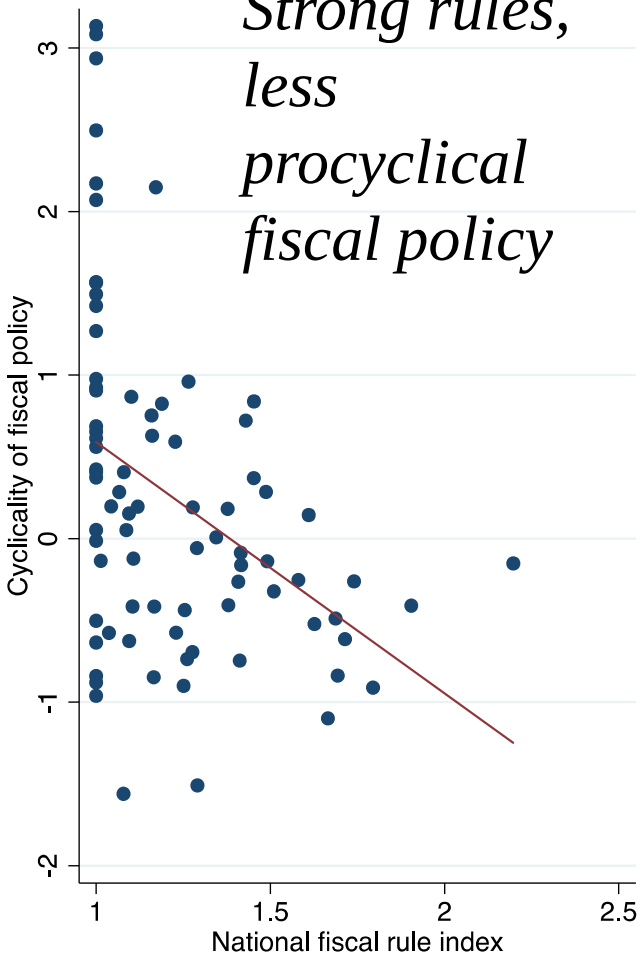
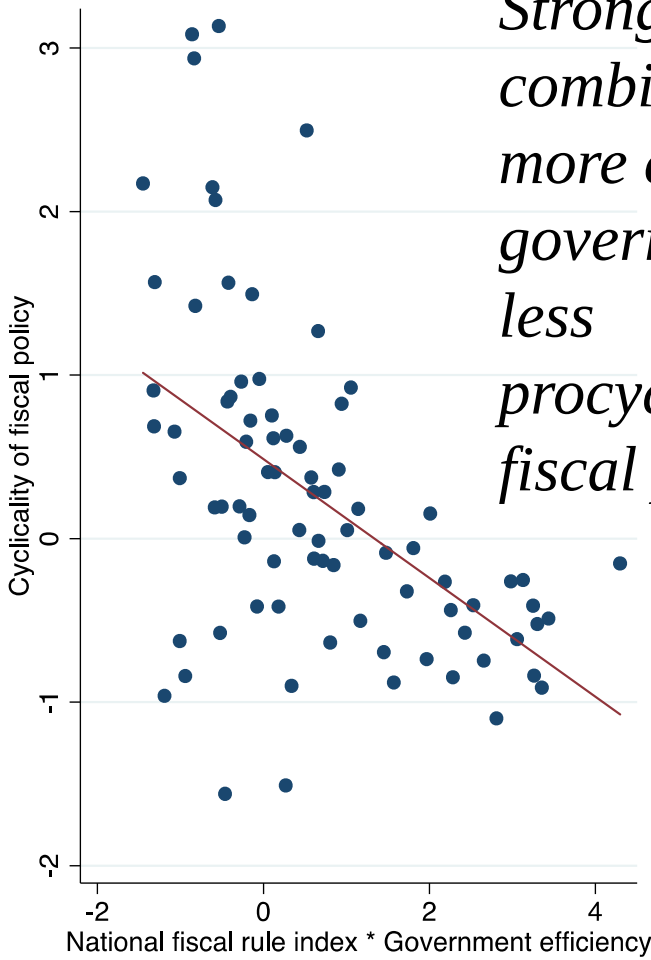


Fig. 3 Cross-correlations of cyclicality of fiscal policy, fiscal rule index and efficiency of government



Strong rules, less procyclical fiscal policy



Strong rules combined with more efficient government, less procyclical fiscal policy

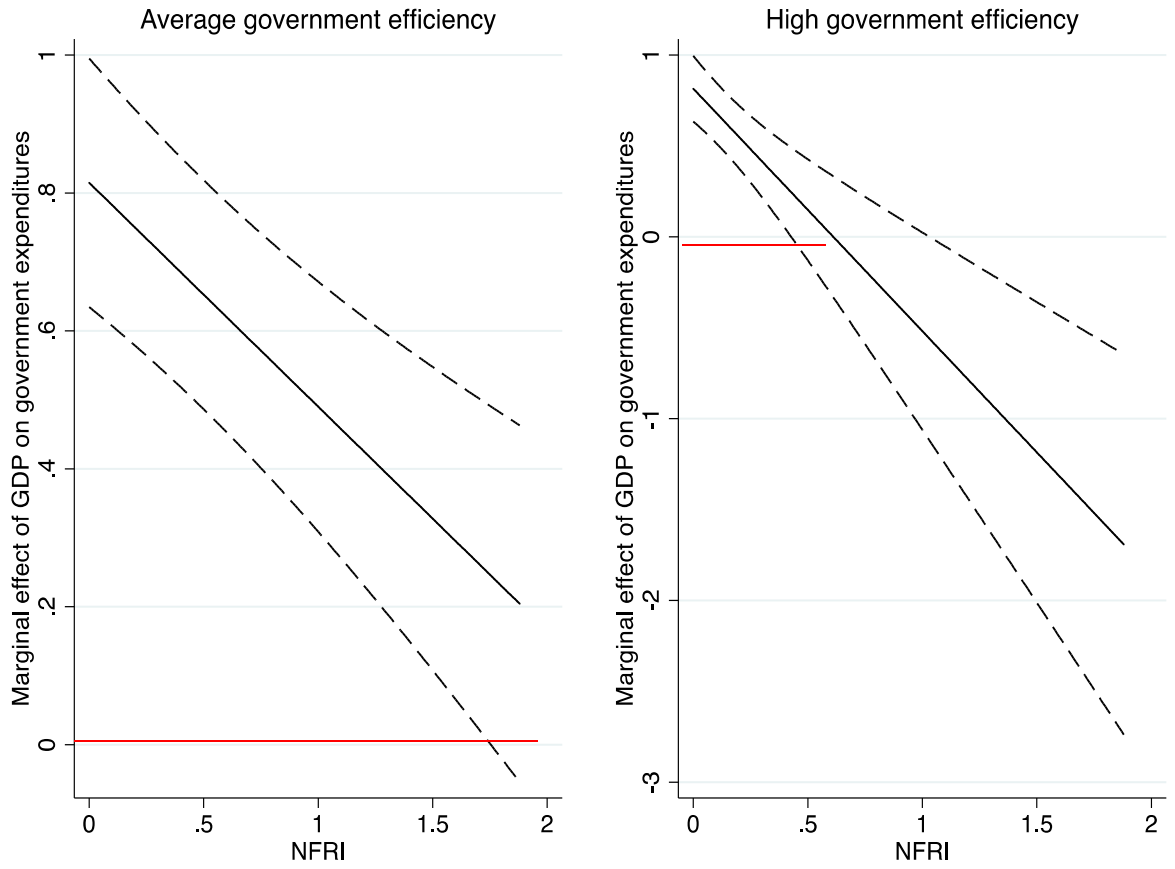
Country-specific regression coefficients (GEXP on GDP).

Table 5 Cyclical of Fiscal Policy to GDP, Fiscal Rules and Government Efficiency

	(1)	(2)	(3)	(4)
GEXP(-1)	0.243***	0.240***	0.241***	0.240***
	(0.050)	(0.048)	(0.049)	(0.049)
GDP	0.684***	0.815***	0.833***	0.872***
	(0.072)	(0.092)	(0.102)	(0.107)
GDP*GE	-0.001		0.001	0.001
	(0.002)		(0.002)	(0.002)
GDP*NFRI* GE		-0.741***	-0.800**	-0.625*
		(0.166)	(0.324)	(0.372)
GDP*NFRI				-0.355
				(0.370)
#obs	1549	1549	1549	1549
#instruments	54	55	56	57
AR(1)	0.001	0.001	0.001	0.001
AR(2)	0.205	0.192	0.18	0.186
Hansen	0.063	0.097	0.074	0.093
Hansen diff1	0.583	0.154	0.13	0.23

*Note: Arellano-Bond one-step difference GMM estimation. Clustered and robust standard errors are shown within parentheses below each point estimate. *** denotes significance at the 0.01 level, ** at the 0.05 level and * at the 0.10 level. GDP is assumed to be endogenous while all other explanatory variables are assumed to be exogenous. When applicable we also include NFRI and/or GE as iv-style instruments. Hansen is a test for over identification and Hansen(iv) is a test of exogeneity of iv-style instruments.*

Figure 5: Marginal effect of GDP on government expenditures as a function of NFRI for average and high levels of government



Hard to find a rule giving acyclical policy if "average" GE

Based on column (2) of table 5. ("Average GE" is sample average; "High GE" is average of average of highest quintile)

Distinguishing Among Countries on Basis of Government Efficiency

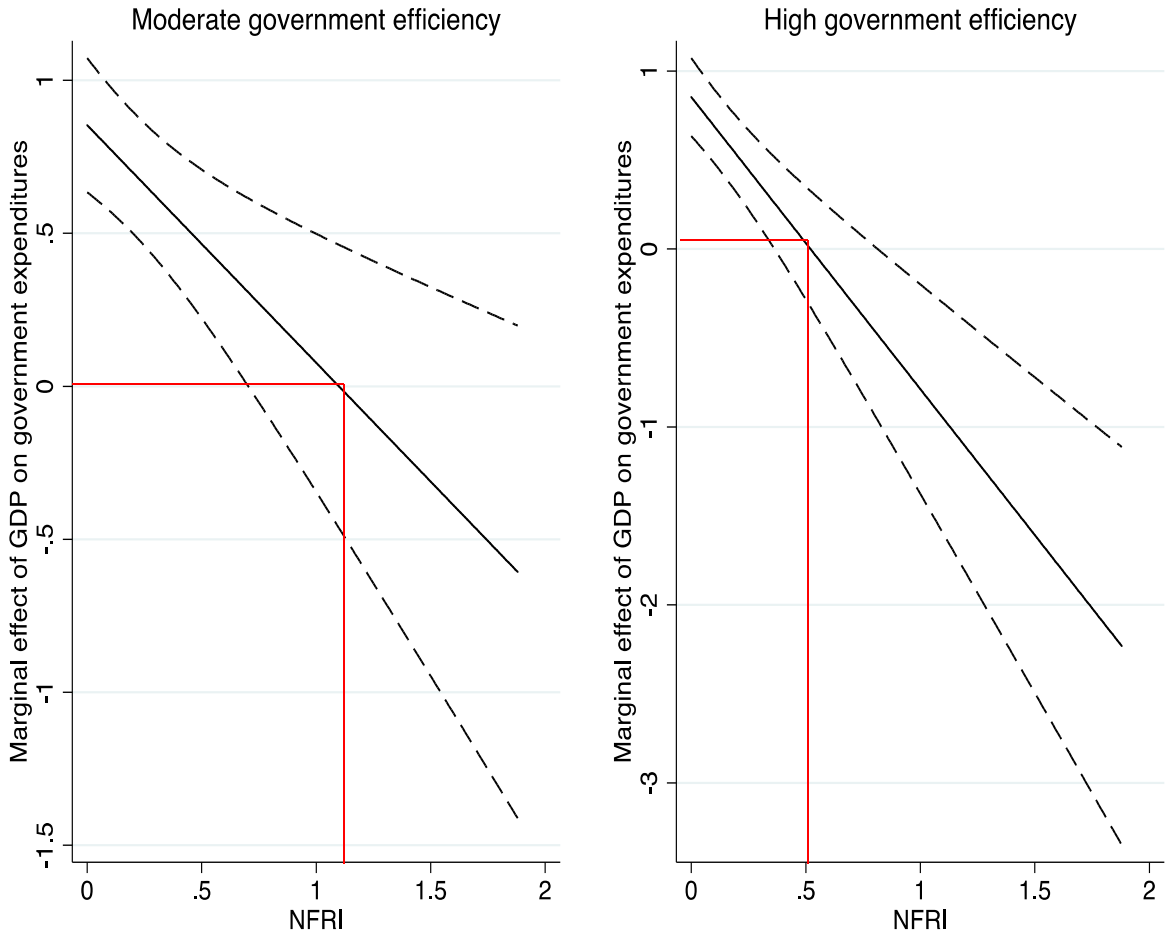
- GE measure not nuanced
- Not possible to distinguish countries in many cases (e.g. Sweden and Denmark; Brazil and Bulgaria; Chile and Italy; see Charron et al. 2010)
- Cluster countries into broad level of GE: high, good, moderate, low

Table 6: Cyclicality of fiscal policy, National Rules, Supranational Rules and Government Efficiency

	(1)	(2)	(3)	(4)
GEXP(-1)	0.255***	0.246***	0.240***	0.253***
	(0.049)	(0.048)	(0.047)	(0.047)
GDP	0.854***	0.736***	0.844***	0.986***
	(0.112)	(0.071)	(0.081)	(0.131)
GDP*GE*NFRI			-0.940***	
			(0.212)	
GDP*GE*SFRI		0.052	0.209**	
		(0.128)	(0.100)	
GDPNFRI	1.473***			1.354**
	(0.623)			(0.636)
GDPNFRI Moderate GE	-2.250***			-2.333***
	(0.641)			(0.648)
GDPNFRI Good GE	-1.847***			-1.793***
	(0.623)			(0.662)
GDPNFRI High GE	-3.114***			-2.547***
	(0.689)			(0.718)
GDPSFRI				-0.561***
				(0.151)
GDPSFRI Moderate GE				0.826**
				(0.368)
GDPSFRI Good GE				0.462**
				(0.186)
GDPSFRI High GE				-0.044
				(0.274)
#observations	1564	1549	1549	1564
#instruments	57	55	57	62
AR(1)	0.001	0.001	0.001	0.001
AR(2)	0.207	0.177	0.227	0.31
Hansen	0.092	0.051	0.078	0.141
Hansen(iv)	0.074	0.399	0.17	0.621

Column 1:
Strong Evidence of Effectiveness of NFRI once GE is moderate and above

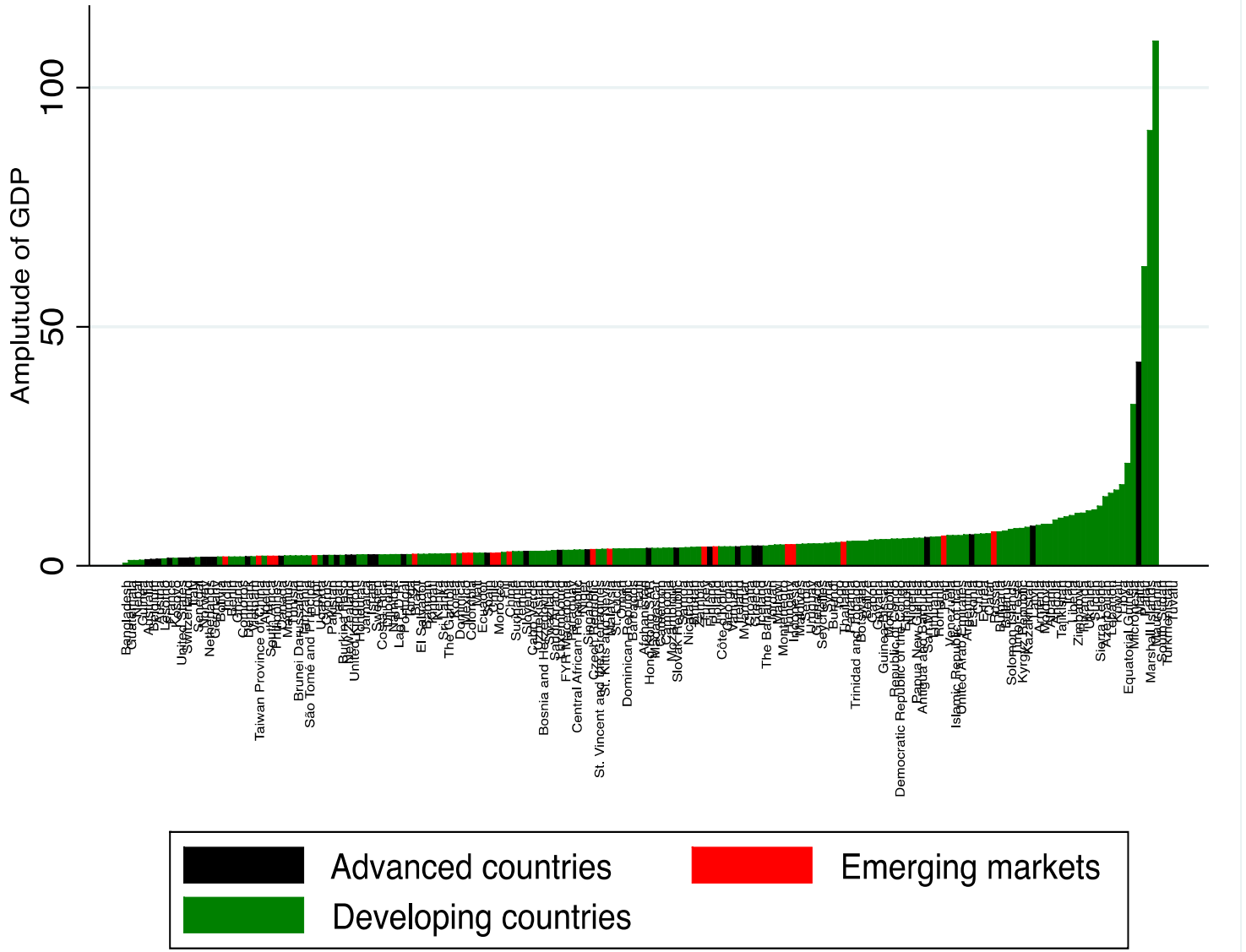
Fig 6: Marginal effect of GDP on government expenditures as a function of NFRI for moderate & high levels of govt. efficiency



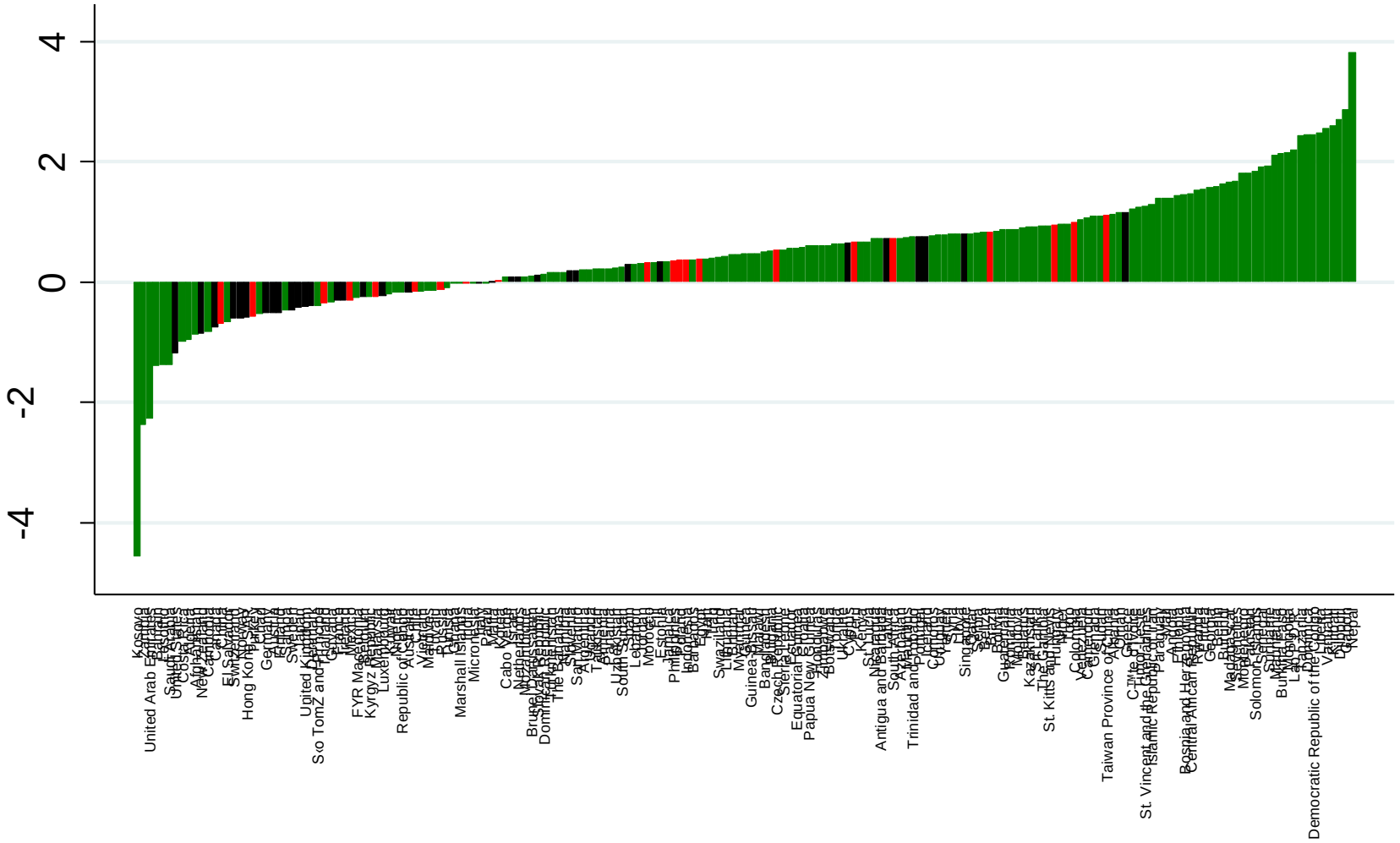
Based on column (1) of Table 6.

Emerging and Developing Economies: New Work

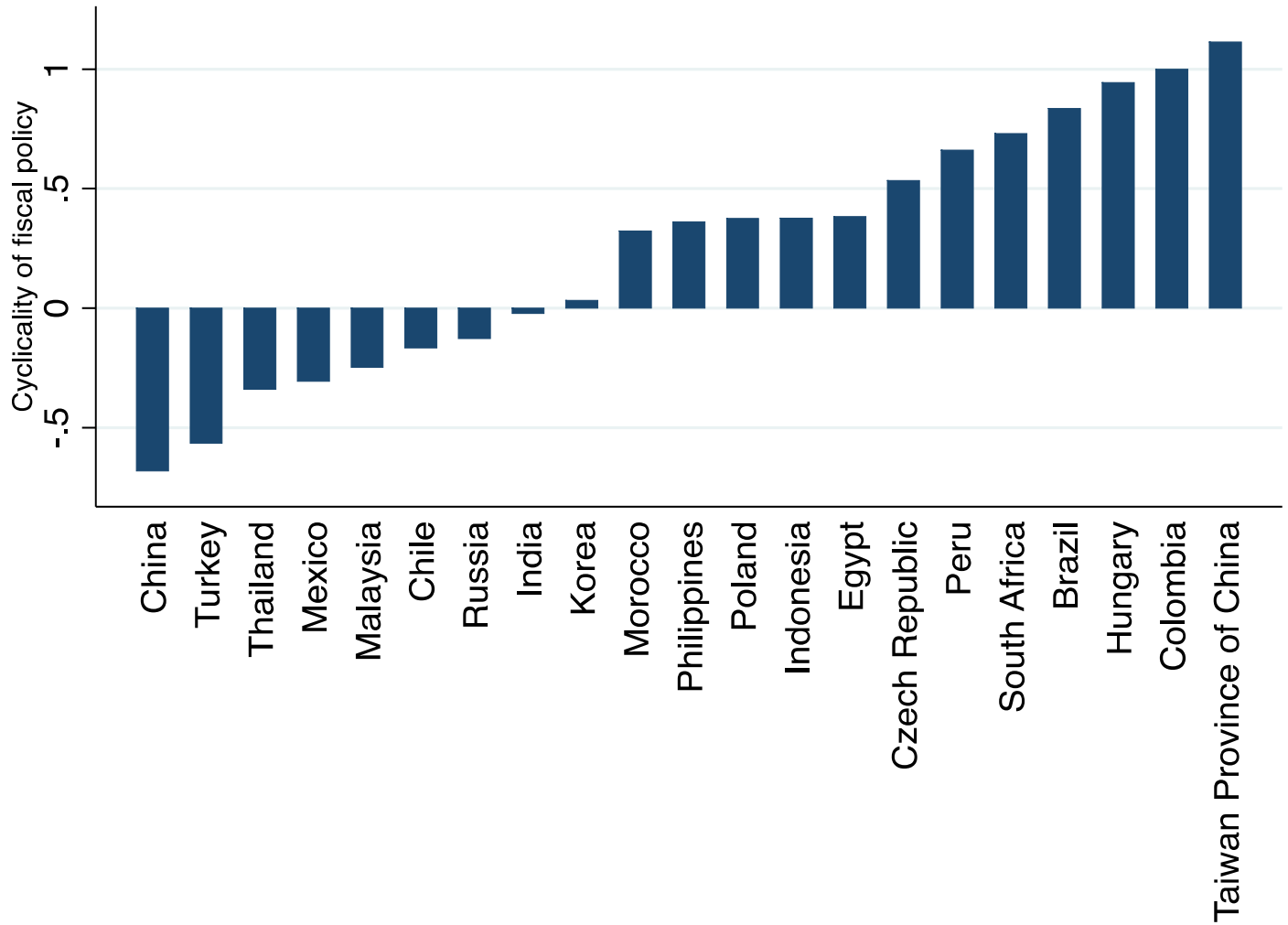
Average amplitude of cyclical component of GDP



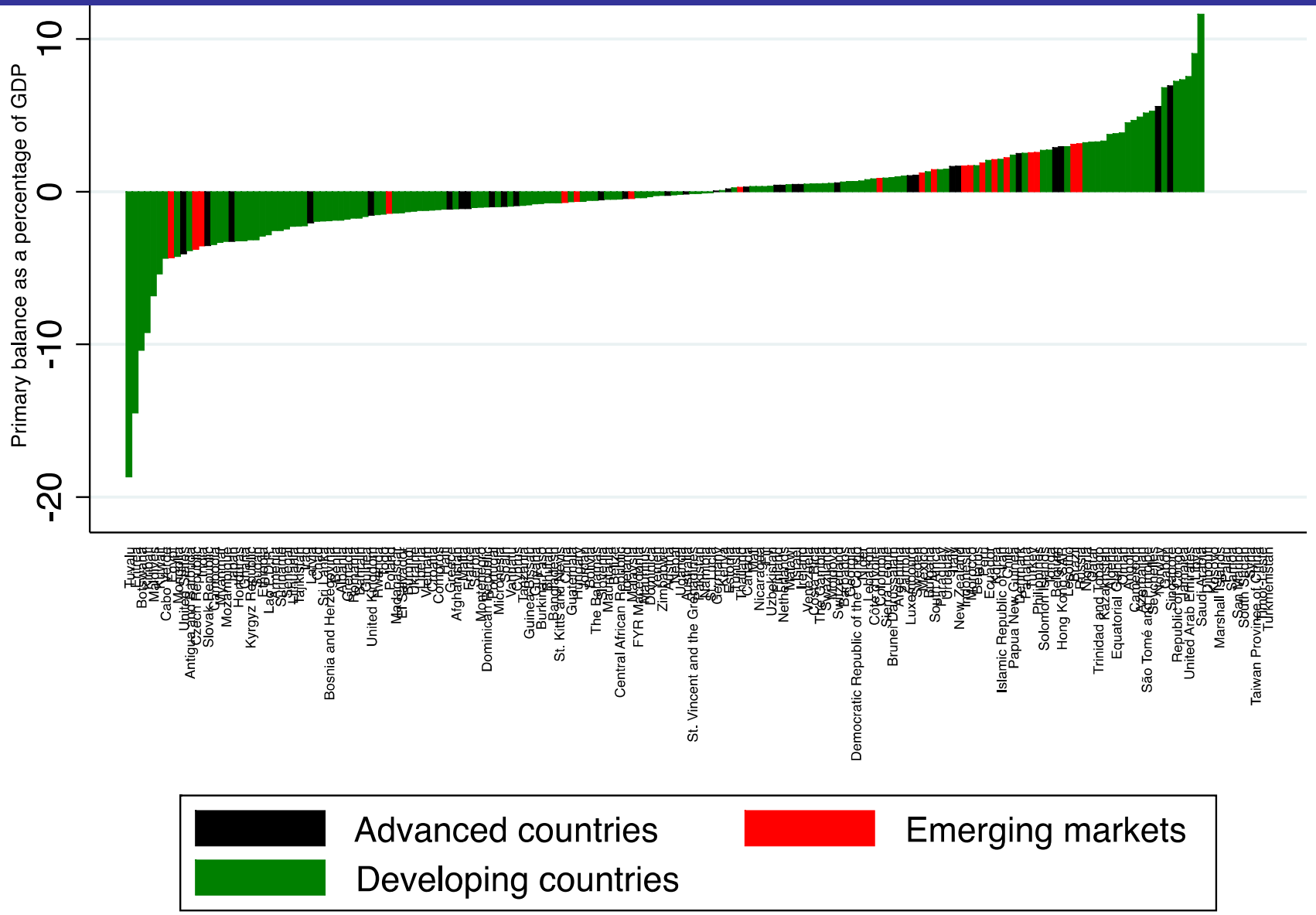
Cyclicality of Fiscal Policy



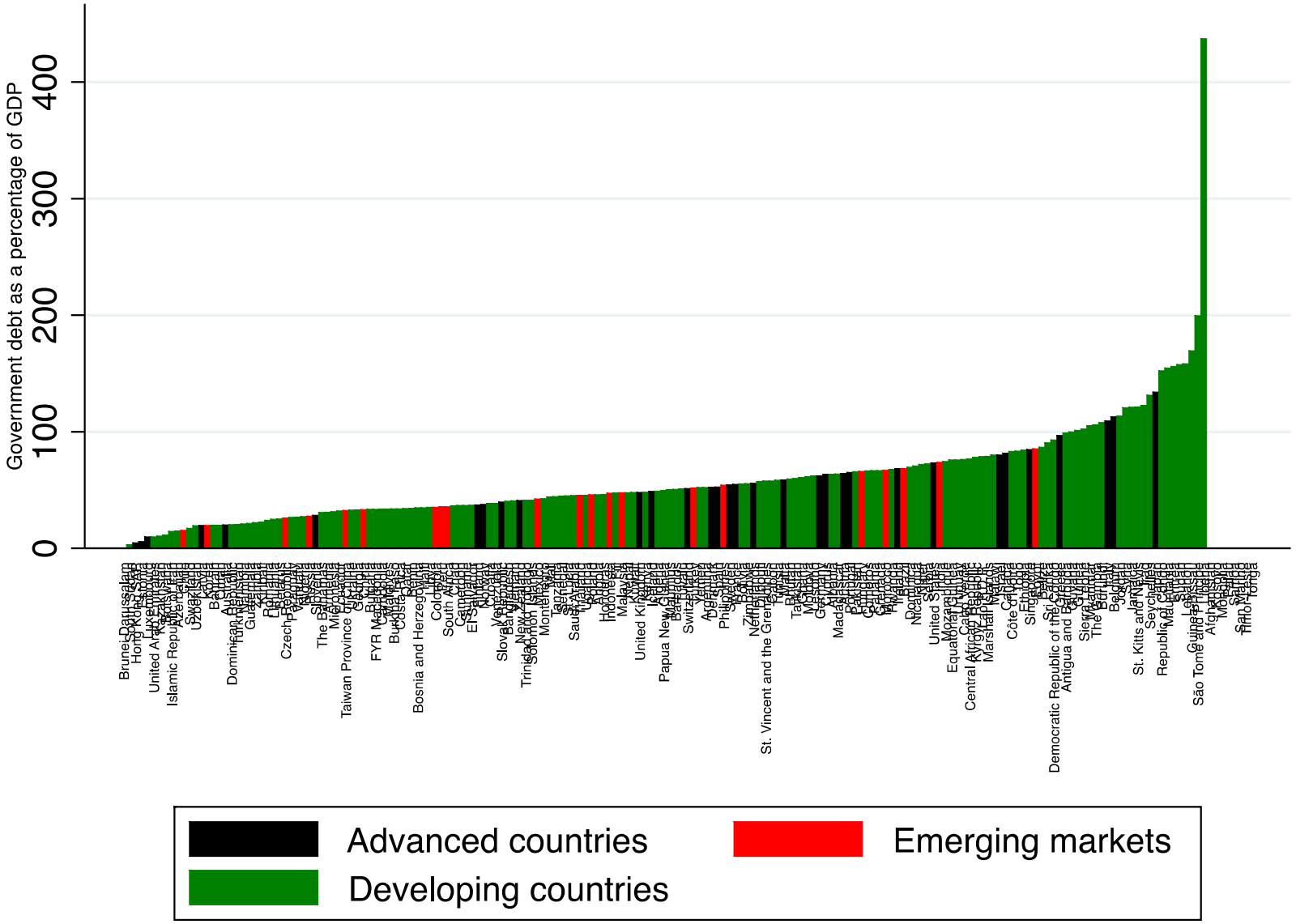
Emerging Markets Fiscal Cyclicality



Average primary balance as a percentage of GDP



Average government debt as a percentage of GDP.



Conclusion

- National Fiscal Rules are Effective… if combined with at least a moderate level of government/bureaucratic efficiency
- Government efficiency alone is not enough…combined with fiscal rules helpful
- Supranational rules not effective except in countries with lowest levels of government efficiency
- Results robust