

**Fiscal Rules and Macro Performance:
World Evidence**

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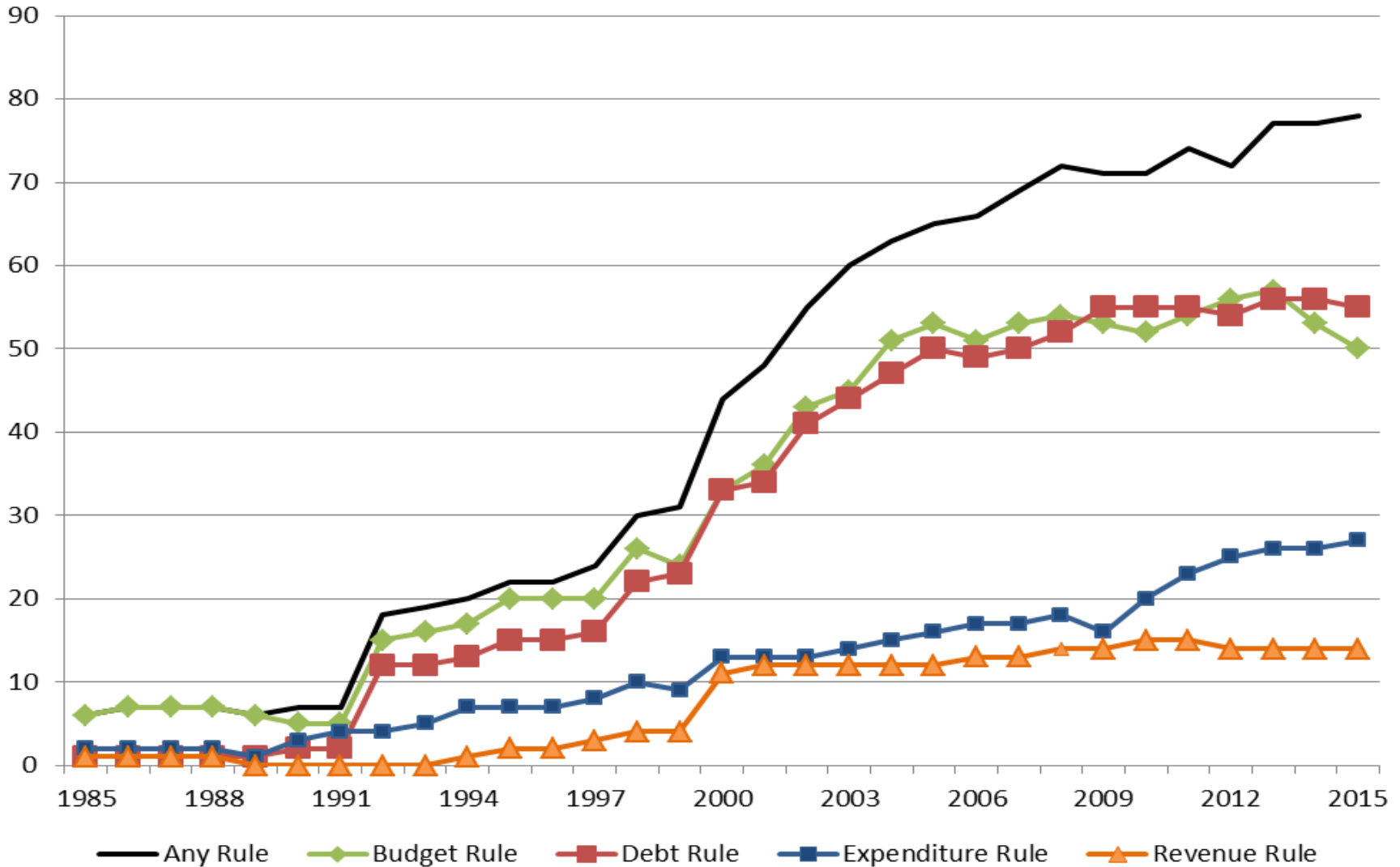
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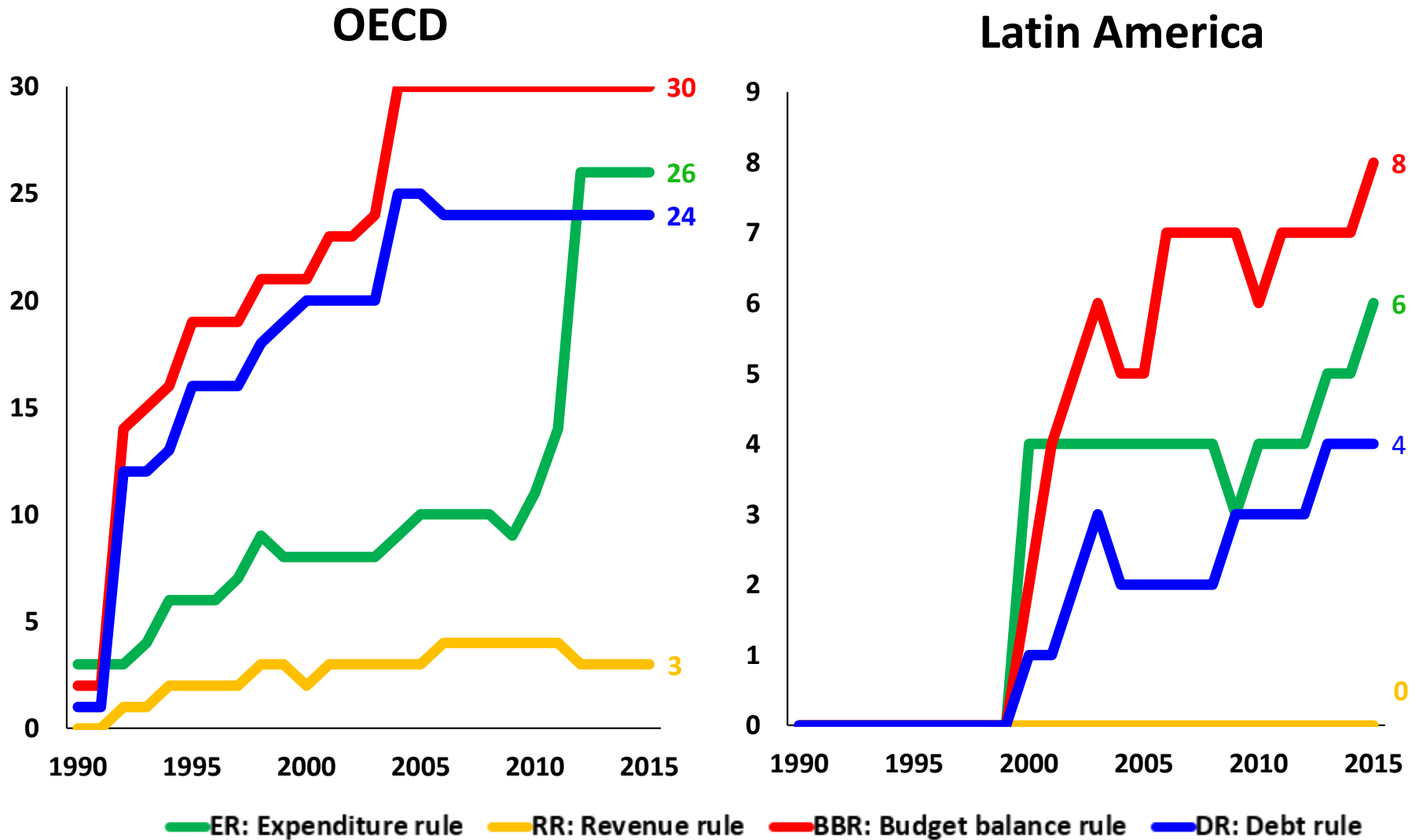
1. World Distribution of Fiscal Rules

Number of Countries with Fiscal Rules in Place, 1985-2015



Source: IMF Fiscal Rules Dataset, 2016.

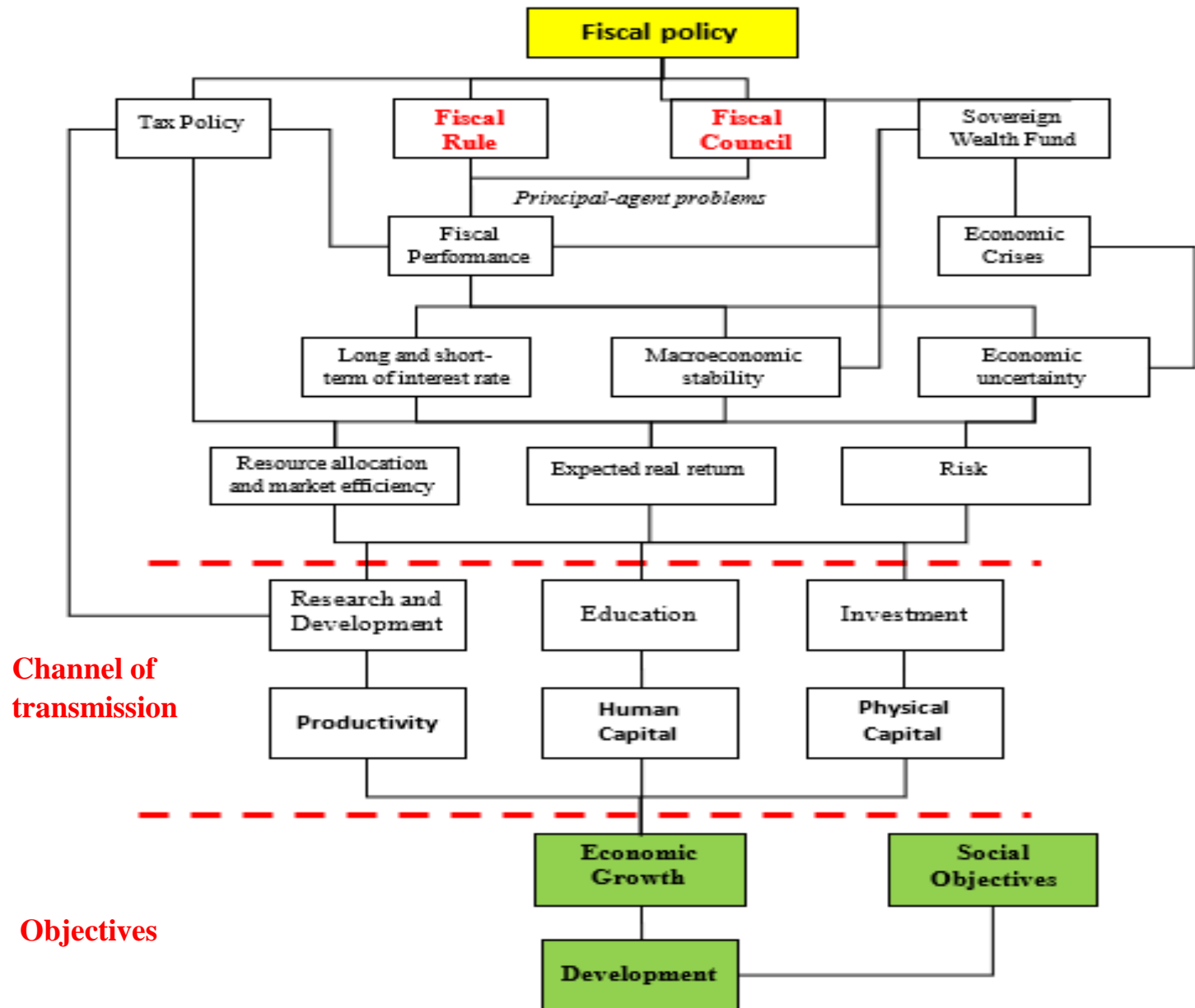
Number of countries with fiscal rules, by regions and types of rules, 1990-2015



Source: IMF, Fiscal Rules Dataset 1985-2015.

3. Literature Review: Macro Effects of Fiscal Rules (and Fiscal Councils)

From fiscal policy framework to development



Effects of fiscal rules on macro variables (1)

Dependent variable	Independent variable	Empirical finding
Income and growth		
Growth of GDP per capita	Overall rule index	0 or + (6)
	Expenditure rule index	0 or + (6)
	Budget balance and debt rule index	0 or + (6)
	Supranational fiscal rules in Eastern Caribbean Currency Union	0 or + (3)
	Supranational fiscal rules in Central African Economic and Monetary Community	0 or + (3)
	National fiscal rule	0 or + (3)
	Budget balance rules in Low and Middle-Income Countries	0 or - (5)
Log GDP per capita	Maastricht Treaty (1997-2005)	+ (7)
Log GDP per capita	Index of fiscal discipline	+ (2)
Growth rate of GDP	Index of fiscal discipline	+ (2)
Fiscal performance		
Fiscal policy volatility	Budget balance rule	- (1)
Government budget balance (% of GDP)	Budget balance rule index	+ (4)
	Budget balance rule	+ (16)
	Debt rule	+ (16)
Government deficit (% of GDP)	Expenditure rule	0 (16)
	Budget balance rule	- (11); + (14)
	Legal enforcement* Budget balance rule	- (14)
	Expenditure rule	0 (11); 0 or + (14)
Real budget balance per capita	Debt rule	- (14)
	Fiscal rule	+ (13)
	Fiscal rule overall index	0 or + (8)
Cyclically-adjusted primary balance (% of GDP)	Fiscal rule coverage index	0 or + (8)
	Output gap * Fiscal rule dummy	+ (9)
	Budget balance rule	0 (16)
Cyclical correlation between government expenditure and GDP	Debt rule	0 (16)
	Expenditure rule	- (16)
	Budget balance rule	0 (16)
Cyclical correlation between government budget balance and GDP	Debt rule	0 (16)
	Expenditure rule	0 (16)
	Budget balance rule	0 (16)
	Debt rule	0 (16)
Government debt (% of GDP)	Expenditure rule	0 (16)
	Budget balance rule	0 (16)
	Debt rule	0 (16)
Other		
Government bond spread (10-year)	Balanced budget rule	0 or - (1)
	Fiscal rule index * Cyclical dummy	0 or - (10)
Government bond spread against the German Bund	Fiscal rules index	0 or - (12)
Standard deviation of the growth rate of real GDP per capita	Discretionary fiscal policy* Expenditure rule	0 or - (15)
	Discretionary fiscal policy* Revenue rule	0 or - (15)
	Discretionary fiscal policy* Budget balance rule	0 or - (15)
	Discretionary fiscal policy* Debt rule	0 or - (15)
	Discretionary fiscal policy* Fiscal rule	- (15)

Source: Schmidt-Hebbel, 2018a.

Effects of fiscal rules on macro variables (2)

- Fiscal rules tend to improve fiscal performance
- Several studies report positive and significant effects of different measures and types of fiscal rules on different measures of fiscal policy cyclicalities and solvency
- One study reports positive effects of fiscal rules on government deficits, but effects turn negative when the fiscal rule interacts with its legal enforcement
- Government debt levels are not affected by fiscal rules
- Results on effects of fiscal rules on fiscal policy cyclicalities are mixed
- Rules reduce government bond spreads
- Fiscal rules raise the standard deviation of per capita GDP growth (not reported in the table) but reduce it when rules are interacted with a measure of discretionary fiscal policy

3. World Evidence: Fiscal Rules and Fiscal Performance

Theory: Relations between different types of Fiscal Rules and Policy Objectives

	<i>Macroeconomic Stabilization: Cyclicality of government spending (correlations with GDP)</i>	<i>Fiscal sustainability and solvency: Government deficit and debt levels (ratios to GDP)</i>	<i>Size of Government: Government expenditure and revenue levels (ratios to GDP)</i>
1. Budget Balance Rules		(-)	
<i>Current BBR (annual)</i>	(+)	(-)	
<i>Current BBR (average over the cycle)</i>	(+), (0) or (-)		
<i>Structural BBR (annual)</i>	0		
<i>Structural BBR (average over the cycle)</i>	(-)		
2. Debt Rules		(-)	
<i>Current DR (annual)</i>	(+)		
<i>Current DR (average over the cycle)</i>	(+), (0) or (-)		
3. Expenditure Rules		(-)	(-)
<i>Current ER (annual)</i>	(0)		
<i>Current ER (average over the cycle)</i>	(-)		
4. Revenue Rules		(-)	(-)
<i>Current RR (annual)</i>			
<i>Current RR (average over the cycle)</i>			

Source: Schmidt-Hebbel and Soto, 2017b.

Methodology

- World evidence on the contribution of fiscal rules to fiscal performance
- Effects of three types of rules – expenditure, budget balance, and debt rules, using *de facto* and *de jure* measures – on four indicators of fiscal performance – cyclicalities of government expenditure and fiscal balance, and levels of fiscal balance and government debt – controlling for 13 other determinants
- First stage: panel probit regression models for fiscal rules
- Second stage: dynamic panel data models for four fiscal performance measures (addressing potential endogeneity, dynamic responses, and unobserved heterogeneity)
- World sample: annual observations for 115 countries, 1985-2015
- Robustness testing

Determinants of the Procyclicality of Government Expenditure

	Base Model (1)	Clean Model (2)	BBR Model (3)	DR Model (4)	ER Model (5)
1 st lag Expenditure Procyclicality	0.639*** (0.000)	0.665*** (0.000)	0.659*** (0.000)	0.664*** (0.000)	0.652*** (0.000)
2 nd lag Expenditure Procyclicality	-0.203*** (0.003)	-0.195*** (0.002)	-0.190*** (0.003)	-0.188*** (0.003)	-0.194*** (0.004)
Development Level	-0.335** (0.028)	-0.210* (0.078)	-0.208* (0.070)	-0.205* (0.067)	-0.128 (0.273)
Government Stability	-0.0284 (0.110)	-0.0303* (0.089)	-0.0296 (0.117)	-0.0298* (0.096)	-0.0285 (0.142)
Business Cycles	6.000** (0.010)	6.800*** (0.005)	6.860*** (0.005)	6.910*** (0.004)	6.593*** (0.006)
Financial Openness	0.533*** (0.002)	0.401** (0.011)	0.406** (0.048)	0.406** (0.022)	0.522*** (0.005)
Price Instability	0.812 (0.108)	0.710 (0.102)	0.711 (0.100)	0.730* (0.091)	0.710 (0.111)
Revenue Instability	0.912** (0.017)	0.826** (0.046)	0.810* (0.054)	0.808* (0.058)	0.550 (0.188)
Exports Concentration	-0.241 (0.134)	-0.330** (0.031)	-0.325** (0.038)	-0.326** (0.039)	-0.332** (0.035)
Workers Remittances	0.0470 (0.151)				
Fixed Exchange Regime	-0.120 (0.225)				
Resource Rents Cycles	0.257 (0.298)				
Dependency Ratio	1.124 (0.174)				
Budget Bal. Rule			-0.0537 (0.905)		
Debt Rule				-0.0562 (0.944)	
Expenditure Rule					-1.434** (0.034)

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Source: Schmidt-Hebbel and Soto, 2017b.

Determinants of Fiscal Balance

	Base Model (1)	Clean Model (2)	BBR Model (3)	DR Model (4)	ER Model (5)
1 st Lag Fiscal Balance	0.376*** (0.006)	0.508*** (0.000)	0.526*** (0.000)	0.515*** (0.000)	0.513*** (0.000)
2 nd lag Fiscal Balance	-0.109* (0.062)	-0.143** (0.013)	-0.131** (0.016)	-0.139*** (0.009)	-0.132** (0.019)
Development Level	0.374 (0.719)	-0.0334 (0.961)	-0.524 (0.419)	-0.396 (0.537)	-0.504 (0.478)
Government Stability	0.277** (0.026)	0.363*** (0.003)	0.370*** (0.003)	0.360*** (0.003)	0.356*** (0.004)
Fixed Exchange Regime	1.874** (0.018)	2.591*** (0.000)	3.088*** (0.000)	2.723*** (0.000)	2.611*** (0.000)
Business Cycles	48.65*** (0.001)	67.70*** (0.000)	69.09*** (0.000)	67.15*** (0.000)	68.05*** (0.000)
Cycles in Resource Rents	4.772*** (0.002)	4.531*** (0.005)	5.214*** (0.002)	4.831*** (0.003)	4.971*** (0.002)
Price Instability	6.523* (0.064)	7.588** (0.039)	8.859** (0.021)	8.949** (0.013)	8.490** (0.026)
Workers Remittances	-0.316 (0.104)	-0.477** (0.036)	-0.410** (0.048)	-0.503** (0.019)	-0.421* (0.051)
Dependency Ratio	0.364 (0.961)				
Exports Concentration	0.249 (0.788)				
Revenue Instability	-3.020 (0.269)				
Financial Openness	0.490 (0.709)				
Budget Bal. Rule			5.595** (0.031)		
Budget Bal. Rule* Small State			-21.05 (0.103)		
Debt Rule				7.985** (0.022)	
Debt Rule* Small State				-39.83** (0.044)	
Expenditure Rule					6.774* (0.095)
Expenditure Rule* Small State					-20.64 (0.524)

Source: Schmidt-Hebbel and Soto, 2017b.

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Expenditure Rule					
Expenditure Rule* Small State					-20.64 (0.524)

Source: Schmidt-Hebbel and Soto, 2017b.

Summary of Results

Fiscal Outcomes	Budget Balance		Debt Rule		Expenditures Rule	
	Rule					
	<i>de jure</i>	<i>de facto</i>	<i>de jure</i>	<i>de facto</i>	<i>de jure</i>	<i>de facto</i>
Procyclicality of government expenditures						
<i>Is there any effect on procyclicality?</i>	No	No	No	No	Reduced	Reduced
<i>Small states are more/less procyclical?</i>	No	No	No	No	No	No
<i>LAC countries are more/less procyclical?</i>	No	No	No	No	No	No
Procyclicality of fiscal balances						
<i>Is there any effect on procyclicality?</i>	No	No	No	No	No	No
<i>Small states are more/less procyclical?</i>	More	No	No	No	No	No
<i>LAC countries are more/less procyclical?</i>	No	No	No	No	Less	No
Fiscal Balance						
<i>Do fiscal balances improve?</i>	Yes	Yes	Yes	Yes	Yes	No
<i>Small states have higher/lower balances?</i>	No	No	Lower	No	No	No
<i>LAC countries have higher/lower balances?</i>	No	No	No	No	No	No
Government debt						
<i>Is debt reduced?</i>	No	No	No	No	No	No
<i>Small states have higher/lower debt?</i>	Lower	No	No	No	No	No
<i>LAC countries have higher/lower?</i>	No	No	No	No	No	Higher

Source: Schmidt-Hebbel and Soto, 2017b.

4. Conclusions

Conclusions

- (1) Best-practice fiscal frameworks comprise complex institutional arrangements that include fiscal rules
- (2) Theory: different types of rules have different (often contradictory) effects on the cyclical spending, fiscal balance, and debt. But different rules contribute to fiscal sustainability (lower deficit and debt levels)
- (3) Fiscal rules are adopted massively since the 1990s
- (4) World empirical evidence: some rules affect fiscal performance significantly:
 - ERs lower expenditure pro-cyclicality
 - BBRs, DRs, and ERs raise the fiscal balance

References

1. Elbadawi, I., K. Schmidt-Hebbel and R. Soto: “Why Do Countries Have Fiscal Rules?”, in R. Caballero and K. Schmidt-Hebbel (editors): **Economic Policy in Emerging-Market Economies: Festschrift in Honor of Vittorio Corbo**. Santiago: Central Bank of Chile, 2015.
2. K. Schmidt-Hebbel and R. Soto: “Fiscal Rules in the World”, in L. Ódor (ed.): **Rethinking Fiscal Policy After the Crisis**. Cambridge: Cambridge University Press, 2017a.
3. K. Schmidt-Hebbel and R. Soto: “Fiscal Rules and Fiscal Performance: World Evidence”, **manuscript**, Catholic University of Chile, September 2017b.
4. K. Schmidt-Hebbel: “The Role of Economic Institutions in Supporting Growth and Development”, in D.W. Beuermann and M.J. Schwartz: **Nurturing Institutions for a Resilient Caribbean**. Washington, DC: Inter-American Development Bank, 2018a.
5. K. Schmidt-Hebbel: “Exchange-rate and other Macroeconomic Regimes: Lessons from World Experience for MENA Countries”, **manuscript**, Catholic University of Chile, 2018b.
6. Martínez, I., K. Schmidt-Hebbel and R. Soto: “Fiscal Rules in Small Open Economies”, **work in progress**, Catholic University of Chile, January 2019.

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Ministry of Finance of Chile – IMF Conference

Enhancing Chile's Fiscal Framework:

Lessons from Domestic and International Experience

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