



# Fiscal policy and the cycle in Latin America: the role of financing conditions and fiscal rules

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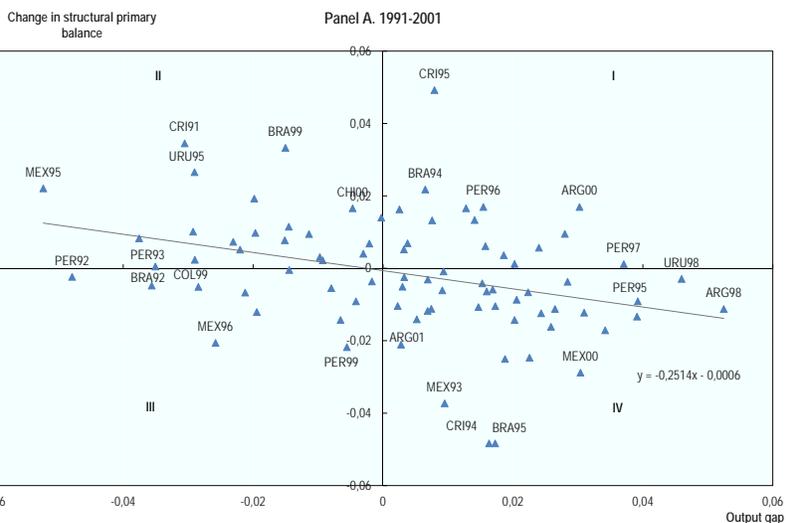


## Motivation

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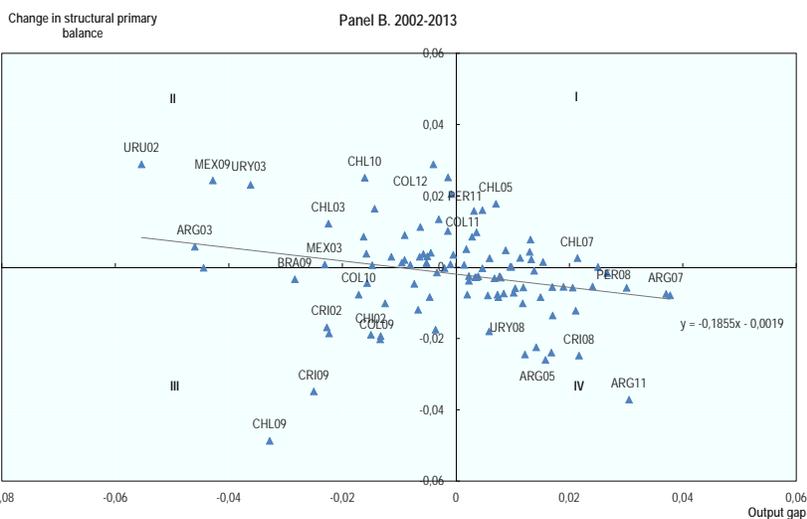
As in other emerging economies, fiscal policy is procyclical in Latin America...



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... although less so during the last decade, including stimulus packages to face the financial crisis



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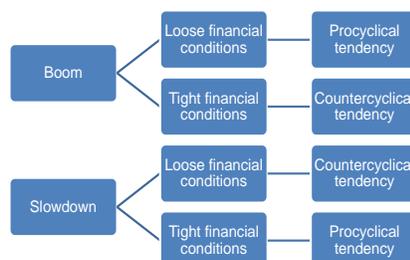
## Getting the story right: Countercyclical at last? If so, why?

- Discretionary fiscal policy in Latin America, has been traditionally procyclical (e.g. Gavin and Perotti, 1997; for Latin America, Klemm, 2014, among many others)
- A visual approach the structural fiscal stance in recent years (controlling for the economic cycle and commodities) show less procyclicality; and some episodes of countercyclicality (in response to the crisis in 2009)
- We explore the role on discretionary fiscal policy of:
  - Financial conditions
  - Fiscal rules

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## Getting the story right: Financial conditions

- Fiscal policy can be constraint by changes in financing conditions, determining the fiscal stance:
  - Public sector creditworthiness falls during recessions → more difficult financing & fiscal policy amplifies this negative outlook
  - Looser financing conditions during expansions & short-sighted governments → Incentives to run fiscal deficits



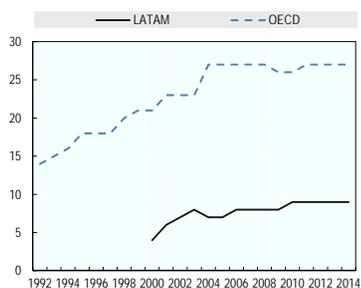
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## Getting the story right: Fiscal rules

- Expansion of fiscal rules in Latin America during the last two decades:
  - Extended use of budget balance rules (all except Brazil) complemented with second rules (expenditure or debt)
  - Escape clauses
  - Correction mechanisms in case of non-compliance

Number of countries using fiscal rules



Countries with fiscal rules and date of validity

Fiscal rule Country	Expenditure rule	Revenue rule	Budget balance rule	Debt rule
Argentina	2000-2008		2000-2008	
Brazil	2000-2014			2000-2014
Chile			2001-2014	
Colombia	2000-2014		2011-2014	
Costa Rica			2001-2014	
Ecuador	2010-2014		2003-2009	2003-2009
Jamaica			2010-2014	2010-2014
Mexico	2013-2014		2006-2014	
Panama			2002-2003, 2009-2014	2002-2003, 2009-2014
Peru	2000-2014		2000-2014	



## Empirical strategy and data

## Empirical strategy

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–Procyclicality of fiscal policy in Latin America

- Test how **financial conditions** impinge on fiscal stance (Alberola and Montero, 2006):
  - Derive an indicator of debt sustainability: threshold balance (TB) and debt dynamics gap (DD)
  - Estimate the relationship fiscal stance & financial conditions
- Test the impact of **fiscal rules**
  - Estimate the relationship between fiscal stance, financial conditions and fiscal rules
  - Ad-hoc presence of fiscal rules; Quality of fiscal rules; ...

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## Data

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Argentina, Brazil, Chile, Colombia, Costa Rica, México, Peru and Uruguay;  
annual data 1990-2014

Structural primary balances *a la OECD* (Daude, Melguizo and Neut, 2011):

- Primary balances from ECLAC and IMF (non-financial public sector)
- Elasticities of tax receipts to the economic cycle (automatic stabilizers)
- Cyclical component referred to commodity-linked revenues
- Filter output to approximate potential output (HP-filter, 2019e)

Compute the structural primary balance as:

$$b^* = \frac{\left( \sum_{i=1}^4 T_i (Y^*/Y)^{\epsilon_{i,Y}} \right) - G + X}{Y^*} + R_c^*$$

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## Data: Automatic stabilizers

Automatic stabilizers in Latin America and the OECD



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## Data: Commodity revenues

–We control for commodity prices (price level over a 10-year moving average, IMF and WB commodity price databases; Marcel et al., 2001 and Vladkova-Hollar et al., 2008) in:

- Argentina, food: export taxes on agricultural products
- Chile, copper: *Codelco* (CIT and transfers) and royalties
- Colombia, oil: *Ecopetrol* dividends
- Mexico, oil: *Pemex* net income, royalties and IT
- Peru, copper, fishmeal, oil and gold: royalties and CIT

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## Results: Financial conditions

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## Measuring financial conditions: Threshold balance and Debt dynamics

- Financial conditions (FC)
  - Debt spread (JP Morgan EMBI, HIDD database)
  - Threshold balance (debt-stabilising primary balance,  $\Delta D=0$ ):

$$TB_t = \frac{(r_t - g_t)}{(1 + g_t)} D_{t-1}$$

We use two different measures of  $r$  : implicit real interest rate derived from dividing interest payments over the stock of debt, and market interest rate (spread+US10y)`.  $g$  reflects actual growth rates

- Debt dynamics gap (DD), measuring the current path of debt ('fear of a non-controlled debt increase'):

$$DD_t = PB_{t-1} - TB_{t-1}$$

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## Econometric approach: i) Financial conditions

Estimate  $\Delta SPB_{it} = \mu_i + \delta \Delta FC_{it} + \gamma DD_{it} + \beta GAP_{it} + u_{it}$

- We expect a positive  $\delta$ ; government saves more when financial conditions are worse (response to concerns over sustainability).
- We expect a negative  $\gamma$ ; reaction to sustainability concerns is expected to be a function of the sustainability problem
- $\beta$  shows the procyclicality of discretionary fiscal policy after controlling for the effects of financial conditions (if negative, procyclical)
- Controls: inflation and years-in-default
- FE and IV estimations

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## Financial conditions (FE estimation): They are the cycle

- Financial conditions, notably debt dynamics, explain procyclicality
- Expected signs, not significant in a stand-alone basis (especially spreads)

### Panel data estimation of financial restrictions effects on fiscal policy in LA

Dependent variable: **D(SPB)** = change in structural primary balance

Fixed effects estimation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
GAP			-0.112 [0.063]*			-0.083 [0.058]			-0.092 [0.065]
D(Tb)				0.078 [0.061]	0.196 [0.059]***	0.178 [0.06]***			
Dd		-0.154 [0.038]***	-0.129 [0.04]***		-0.218 [0.038]***	-0.193 [0.041]***		-0.167 [0.039]***	-0.144 [0.042]***
D(spread)	0.071 [0.226]	0.185 [0.207]	0.174 [0.205]						
D(Tb-spread-based)							0.027 [0.055]	0.089 [0.052]*	0.071 [0.053]
R2	0.000	0.112	0.133	0.01	0.181	0.191	0.002	0.127	0.140
Observations	140	139	139	171	171	171	140	139	139
No. of countries	8	8	8	8	8	8	8	8	8

Robust standard errors in brackets. \*, \*\*, \*\*\* denote statistical significance at 10%, 5% and 1%, respectively

Outliers dropped: Argentina 2002-2006.

Change in spread in /0.01.

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## Financial conditions (IV estimation): ... robust to different estimations

### Panel data estimation of financial restrictions effects on fiscal policy in LA

Dependent variable: **D(SPB)** = change in structural primary balance

2SLS estimation with fixed-effects

	(1)	(2)
GAP		-0.029 [0.083]
D(Tb)	0.173 [0.08]**	0.166 [0.079]**
Dd	-0.339 [0.061]***	-0.323 [0.083]***
Hansen test (p-value)	0.657	0.557
Observations	163	163
No. of countries	8	8

Robust standard errors in brackets. \*, \*\*, \*\*\* denote statistical significance at 10%, 5% and 1%, respectively.

Instrumented with CTB (-2), PB (-2)-CTB (-2), GAP (-1) and SPB (-2).

Outliers dropped: Argentina 2002-2006.

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## Results: Fiscal rules

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## Econometric approach: ii) Fiscal rules

- Dummy variable for an existing fiscal rule (expenditure/budget/debt)
- Quality-adjustment (IMF Fiscal Rules Dataset, Budina et al., 2012): Coverage enforcement; Formal enforcement procedures; Legal basis; Supporting procedures

Estimate:

$$\Delta SPB_{it} = \mu_i + \delta \Delta TB_{it} + \gamma DD_{it} + \beta GAP_{it} + \nu (FR_{it} * GAP_{it}) + \sigma FR_{it} + u_{it}$$

where  $FR_{it}$  reflects the existence of a fiscal rule, the fiscal rule index or one of its sub-indexes

- If fiscal rules discipline discretionary fiscal policy, we expect a positive sign
- If fiscal rules increase public savings, we expect a positive sign
- Controls: inflation and years-in-default
- FE and IV estimations

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## Fiscal rules (FE estimation): *Rules work (!?)*

- Fiscal policy in countries with fiscal rules is neutral, or even countercyclical
- Fiscal rules do not directly affect public savings
- Financial conditions matter

Panel data estimation of fiscal rules effects on fiscal policy in LA

Dependent variable:  $\Delta(SP\mathbf{B})$  = change in structural primary balance

	(1)	(2)	(3)	(4)
<i>Fixed effects</i>				
GAP	-0.294 [0.066]***	-0.166 [0.066]**	-0.267 [0.062]**	-0.132 [0.064]**
D(Tb)		0.189 [0.06]**		0.186 [0.06]**
Dd		-0.208 [0.041]***		-0.197 [0.041]**
FISCAL RULE	0 [0.002]	0.001 [0.002]		
GAP:FISCAL RULES	0.245 [0.121]**	0.293 [0.112]**		
OVERALL INDEX			0.00 [0.001]	0.00 [0.001]
GAP:OVERALL INDEX			0.062 [0.041]	0.065 [0.038]*
R2	0.106	0.228	0.096	0.207
Observations	182	171	171	171
No. of countries	8	8	8	8

Robust standard errors in brackets. \*, \*\*, \*\*\* denote statistical significance at 10%, 5% and 1%, respectively.  
Outliers dropped: Argentina 2002-2006

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## Fiscal rules – Reverse causality?

Endogeneity problem: fiscal rules may not be an instrument to discipline governments, but the result of the preferences for a sounder fiscal policy

- We use instrumental variables, based on the durability of the political regime (*Polity IV Dataset*):
  - Correlated with fiscal rules (institutions are developed when regimes are consolidated; Acemoglu and Robinson, 2006)
  - Dummy variable that takes value 1 when a country has a regime durability of 20 years or more, and 0 otherwise (as Rose, 2004 for participation in international trade)

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## Fiscal rules (IV estimation): Results hold

### Panel data estimation of fiscal rules effects on fiscal policy in LA

Dependent variable: **D(SPB)** = change in structural primary balance

2SLS	-1	-2
GAP	-0.280 [0.14]**	-0.287 [0.15]*
D(Tb)	0.200 [0.065]***	0.169 [0.089]*
Dd	-0.225 [0.054]***	-0.319 [0.071]***
GAP*FISCAL RULES	0.682 [0.47]	0.757 [0.414]*
Hansen J test (p-value)	0.131	0.343
Kleibergen-Paap underidentification test	0.032	0.031
Observations	170	162
No. of countries	8	8

Robust standard errors in brackets. \*, \*\*, \*\*\* denote statistical significance at 10%, 5% and 1% respectively.

Outliers dropped: Argentina 2002-2006.

In (1) instruments are Durability-dummy and Durability-dummy (t-1).

In (2) instruments are Durability-dummy and Durability-dummy (t-1), PB(-2)-CTB(-2), GAP (-1) and SPB (-2).

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## Conclusions, caveats and next steps

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## Conclusions

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- In the last 20 years discretionary fiscal policy has been procyclical in Latin America. It became procyclical during the financial crisis, but have turned procyclical again in recent years.
- Financial conditions have influenced heavily the fiscal policy, explaining the fiscal stance.
- In the last few years, there have been episodes of countercyclical fiscal policy, at a time of implementation of fiscal rules (compensating benign financial conditions). In other word, fiscal rules are associated with a more stabilizing role for fiscal policy.

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## Next steps

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- Increase time span until 2016
- Increase country coverage
- Interaction between financial conditions and GAP
- Open to more

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## Main quoted references (among many others)

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## Annex: Fiscal policy over time

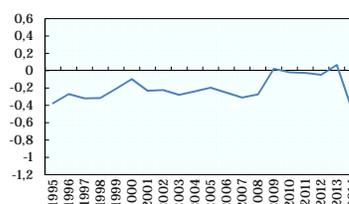
- Discretionary fiscal policy (i.e. variation of the structural primary balance) has been procyclical
  - Persistently procyclical until 2007
  - Less procyclical (even neutral) starting with the response to the 2009 crisis, before fallin back to normal in 2014

FE estimation of fiscal stance in Latin America

Fiscal stance in Latin America			
Dependent variable: $\Delta(\text{SPB})$ = change in structural primary balance			
OUTPUT GAP	(1)	(2)	(3)
Full sample	-0.222 [0.056]***		
1991-2001		-0.259 [0.06]***	
2002-2014			-0.177 [0.08]**
R2	0.08	0.12	0.05
Observations	182	83	99
No. of countries	8	8	8

Robust standard errors in brackets. \*\*\*, \*\*, \* denote statistical significance at 10%, 5% and 1%, respectively.

Fiscal stance in Latin America (7y rolling-window)

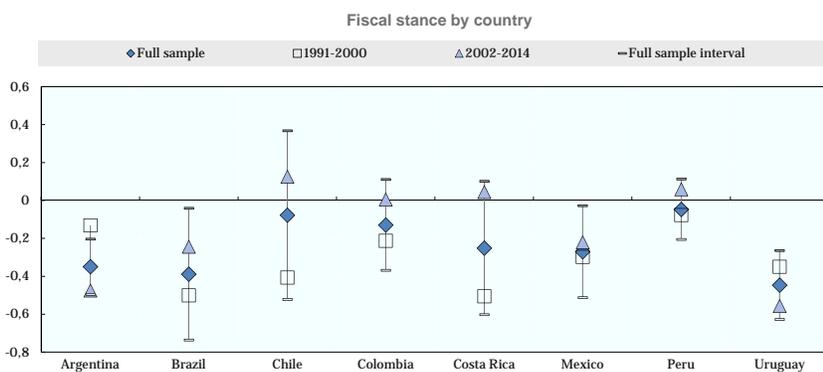


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## Annex: Fiscal policy by country

- Procyclicality of fiscal policy in Argentina, Uruguay and (weakly) Mexico.
- Improvement in the 2000s in Brazil, Chile, Colombia, Costa Rica, Peru and, to a lesser extent, Mexico. Episodes of (non-significant - small sample) counter-cyclical policies

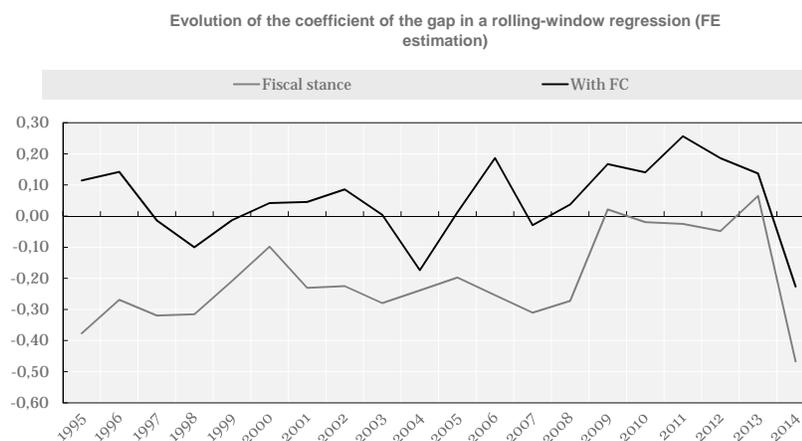


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## Annex: Summing up the whole picture: Financial conditions ...

- **Financial conditions** are needed to explain the recent – procyclical - fiscal history in Latin America



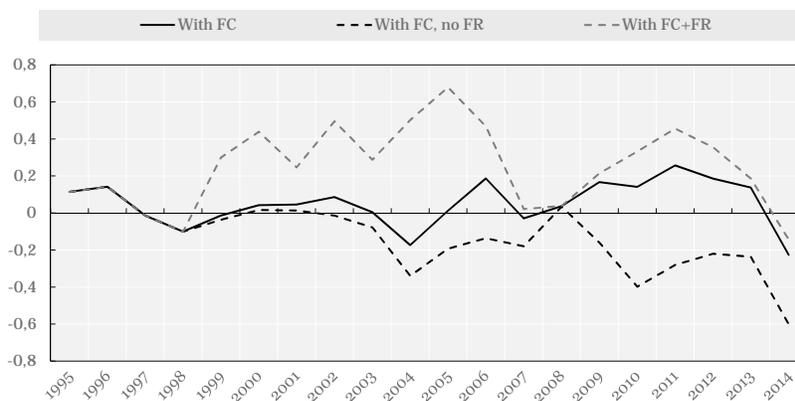
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## Annex: Summing up the whole picture: ... and fiscal rules

- Countries with **fiscal rules** have run neutral fiscal policies (recently even countercyclical)

Evolution of the coefficient of the gap in a rolling-window regression (FE estimation)

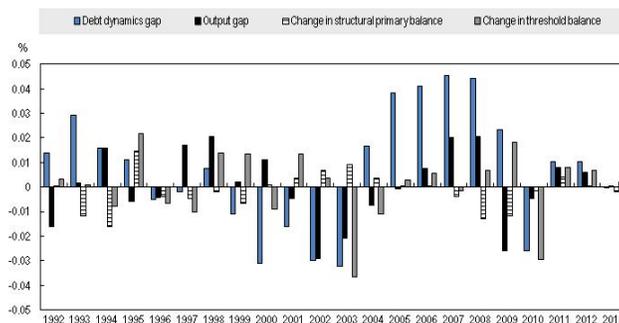


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## Annex: Describing financial conditions and fiscal stance

- 1998-2003: Tight financial conditions and strong procyclicality
- 2004-2008: Fast decreasing debt and positive evolution of output gap
- 2009-2010: Strong countercyclical reaction to the crisis
- 2011-2012: Fiscal savings together with decreasing debt and positive output gaps (i.e. countercyclical also in good times?).



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## Annex: Financial conditions summary statistics

	Mean	Std. Deviation
Market-based interest rate	5.92%	3.69
Implied interest rate	2.99%	1.66
Market-based TB	0.086%	2.56
Implied TB	0.075%	1.96

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## Annex: GMM

Dependent variable:  $D(SPB)$  = change in structural primary balance

	GMM
GAP	-0.308 [0.062]***
GAP*FISCAL RULES	0.421 [0.203]**
D(TB)	0.064 [0.093]
Debt dynamics gap	-0.182 [0.062]***
Hansen J test (p-value)	1.000
Arellano-Bond AR(1) (p-value)	0.024
Arellano-Bond AR(2) (p-value)	0.263
Observations	164
No. Of countries	8

Robust standard errors in brackets. \*, \*\*, \*\*\* denote statistical significance at 10%, 5% and 1% respectively

Outliers dropped: Argentina 2002 and 2003

GMM-type of instruments for D(TB), Debt dynamics gap and fiscal rules

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