



THE LONDON SCHOOL  
OF ECONOMICS AND  
POLITICAL SCIENCE ■

# Regulatory Reform, Fiscal Crises and the Cost of Government Borrowing

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# Motivation

Four hypotheses on when reform takes place:

- Drazen and Grilli (1993), in times of fiscal crises
- Harberger (1993), when reformists/heroes dare
- Rodrik (2003, 2011), to achieve economic convergence
- Williamson (1994), “honeymoon period” just after election



# Research Questions

- Empirically investigate the correlated of regulatory reform
- Compare across hypotheses
- Test whether “soft budgets” weaken any of the hypotheses
- In particular, look at the effect of loose monetary policy

# Description of variables

Variable	Description
Reform	Dummy equal to 1 if a country implemented two or more positive reforms during the year and 0 otherwise. Source: Doing Business, <a href="http://www.doingbusiness.org">www.doingbusiness.org</a>
Reversals	Dummy equal to 1 if a country implemented one or more negative reforms during the year and 0 otherwise. Source: Doing Business, <a href="http://www.doingbusiness.org">www.doingbusiness.org</a>
Insolvency reform	Dummy equal to 1 if a country implemented 1 reform in the area of Doing Business resolving insolvency indicator during the year and 0 otherwise. Source: Doing Business, <a href="http://www.doingbusiness.org">www.doingbusiness.org</a>
Labor regulation reform	Dummy equal to 1 if a country implemented 1 reform in the area of Doing Business labor market regulation indicator during the year and 0 otherwise. Source: Doing Business, <a href="http://www.doingbusiness.org">www.doingbusiness.org</a>
GDP per capita	One year lag of natural log of GDP per capita (current USD). Source: WDI, World Bank
GDP per capita growth	One year lag of GDP per capita growth. Source: WDI, World Bank
Election	One year lag of dummy variable equal to 1 if an election took place 12 months prior to the start of the Doing Business reform period for the Lower House of the country and 0 otherwise. Source: Inter-Parliamentary Union (IPU) and website searches.
Oil&Gas	One year lag of dummy variable equal to 1 if over half of a country's fiscal revenue comes from oil and gas
FisCri 1	One year lag of dummy variable equal to 1 if a country's deficit is less than 0 and 0 otherwise. Source: IMF, Eurostat, various central banks.
FisCri 2	One year lag of dummy variable equal to 2 if country's deficit is less than 0; 1 if cash surplus is between 0 and 3; and 0 if more than or equal to 3. Source: IMF, Eurostat, various central banks.
FisCri 3	One year lag of dummy variable equal to 2 if a country's deficit is less than -3; 1 if between -3 and 0; and 0 if cash surplus is more than or equal to 0. Source: IMF, Eurostat, various central banks.
FisCri 4	One year lag of dummy variable equal to 3 if deficit is less than -3; 2 if between -3 and 0; 0 if cash surplus is between 0 and 3; and 0 if is more than or equal to 3. Source: IMF, Eurostat, various central banks.
Lending interest rate	One year lag of natural log of lending interest rate (%). Source: The Economist Intelligence Unit, WDI, World Bank



# Summary statistics

	Variables	Obs	Mean	Std. Dev.	Min	Max
Dependent variables	Reform	2,457	0.343508	0.474976	0	1
	Reversals	2,457	0.176638	0.38144	0	1
	Labor market regulation reform	2,457	0.057387	0.232628	0	1
	Resolving insolvency reform	2,457	0.079365	0.270363	0	1
Independent variables	GDP growth	2,308	2.462202	5.349173	-62.2144	104.6576
	GDP per capita (log)	2,331	8.501321	1.57577	4.782983	12.1738
	Deficit	2,201	-1.24745	7.454608	-40.31	122.19
	Lending interest rate (log)	2,193	2.293477	0.652425	0.318454	6.36123
	Election	2,160	0.221759	0.415526	0	1
	Oil&Gas	2,448	0.085784	0.280103	0	1
	FisCri 1	2,201	0.709223	0.454224	0	1
	FisCri 2	2,201	1.578828	0.710497	0	2
FisCri 3	2,201	1.094502	0.816963	0	2	
FisCri 4	2,201	1.964107	1.032685	0	3	



# Correlations between main variables

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1)	Reform	1												
(2)	Reversals	-0.0086	1											
(3)	Resolving Insolvency reform	0.29	0.0004	1										
(4)	Labor Market Regulation reform	0.2434	0.0994	0.0744	1									
(5)	GDP per capita (log)	0.0012	-0.0038	0.0844	0.1056	1								
(6)	GDP per capita growth	0.0783	-0.0311	-0.0294	-0.0033	-0.1765	1							
(7)	Election	-0.0169	0.0152	-0.0003	0.0044	0.057	-0.014	1						
(8)	Oil&Gas	0.0249	-0.0081	-0.034	-0.0295	0.151	0.0179	0.007	1					
(9)	FisCri 1	0.0494	0.052	0.057	0.0372	-0.1067	-0.1121	0.0221	-0.2677	1				
(10)	FisCri 2	0.0614	0.058	0.0606	0.0422	-0.1337	-0.0895	0.0248	-0.3641	0.9253	1			
(11)	FisCri 3	0.0538	0.0648	0.0887	0.0454	-0.0531	-0.1727	0.0265	-0.2171	0.8551	0.7912	1		
(12)	FisCri 4	0.0631	0.0683	0.0869	0.0486	-0.0869	-0.1491	0.0283	-0.3044	0.8729	0.9067	0.9601	1	
(13)	Lending rate (log)	-0.0055	0.0367	-0.0425	-0.0984	-0.6681	0.0965	-0.0305	-0.043	0.0492	0.0557	0.026	0.0372	1

# Base regression results: Logit

	(1)	(2)	(3)	(4)
Independent variables*:				
GDP per capita (log)		-0.173*** (0.0596)	-0.161*** (0.0601)	-0.174*** (0.0619)
GDP per capita growth		0.0389*** (0.0110)	0.0483*** (0.0119)	0.0479*** (0.0119)
Election			-0.143 (0.113)	-0.142 (0.113)
Oil&Gas				0.147 (0.171)
East Asia and Pacific	-0.310* (0.165)	-0.236 (0.180)	-0.287 (0.183)	-0.266 (0.184)
Europe and Central Asia	1.270*** (0.157)	1.290*** (0.183)	1.317*** (0.187)	1.325*** (0.187)
OECD High income	0.0948 (0.118)	0.602** (0.236)	0.641*** (0.239)	0.678*** (0.244)
Latin America and Caribbean	-0.191 (0.152)	0.0297 (0.181)	0.000549 (0.182)	0.0189 (0.183)
Middle East and North Africa	-0.277 (0.196)	-0.0235 (0.219)	0.0668 (0.221)	0.0545 (0.221)
South Asia	-0.117 (0.234)	-0.271 (0.244)	-0.309 (0.244)	-0.295 (0.245)
Sub-Saharan Africa	-	-	-	-
Constant	-1.477*** (0.200)	-0.151 (0.429)	-0.232 (0.433)	-0.160 (0.442)
Observations	2,457	2,203	2,130	2,130
Standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

# Logit coefficient estimates for reform

	(1)	(2)	(3)	(4)
Independent variables:				
GDP per capita (log)	-0.163** (0.0635)	-0.159** (0.0637)	-0.167*** (0.0635)	-0.164*** (0.0637)
GDP growth	0.0494*** (0.0123)	0.0499*** (0.0124)	0.0513*** (0.0124)	0.0518*** (0.0125)
Election	-0.140 (0.117)	-0.144 (0.117)	-0.143 (0.117)	-0.146 (0.117)
Oil&Gas	0.227 (0.184)	0.328* (0.191)	0.232 (0.182)	0.309* (0.187)
FisCri 1	0.240** (0.116)			
FisCri 2		0.226*** (0.0789)		
FisCri 3			0.163** (0.0643)	
FisCri 4				0.163*** (0.0531)
Constant	-0.417 (0.466)	-0.638 (0.480)	-0.397 (0.460)	-0.567 (0.470)
Observations	2,025	2,025	2,025	2,025

Standard errors in parentheses; years and regional dummies included but not reported.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1





# Logit coefficient estimates for reform with interaction between deficit and lending rate

	(1)	(2)	(3)	(4)
Independent variables:				
GDP per capita (log)	-0.188*** (0.0698)	-0.183*** (0.0702)	-0.195*** (0.0697)	-0.192*** (0.0700)
GDP per capita growth	0.0436*** (0.0126)	0.0443*** (0.0127)	0.0449*** (0.0127)	0.0453*** (0.0127)
Election	-0.122 (0.118)	-0.126 (0.118)	-0.127 (0.119)	-0.130 (0.119)
Oil&Gas	0.273 (0.186)	0.365* (0.195)	0.293 (0.185)	0.373* (0.191)
FisCri 1	0.517 (0.425)			
FisCri 2		0.214 (0.285)		
FisCri 3			0.562** (0.237)	
FisCri 4				0.365* (0.194)
Lending rate log (lr)	-0.0308 (0.180)	-0.135 (0.236)	0.0649 (0.158)	0.0488 (0.202)
FisCri 1_lr (interaction)	-0.0957 (0.179)			
FisCri 2_lr (interaction)		0.0197 (0.121)		
FisCri 3_lr (interaction)			-0.160 (0.0998)	
FisCri 4_lr (interaction)				-0.0778 (0.0819)
Constant	-0.0981 (0.756)	-0.106 (0.835)	-0.251 (0.721)	-0.403 (0.780)
Observations	1,933	1,933	1,933	1,933
Standard errors in parentheses; years and regional dummies included but not reported.				
*** p<0.01, ** p<0.05, * p<0.1				



# Logit coefficient estimates for structural reforms

	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Independent variables:	Resolving Insolvency	Resolving Insolvency	Resolving Insolvency	Resolving Insolvency	Labor Market Regulation	Labor Market Regulation	Labor Market Regulation	Labor Market Regulation
GDP per capita (log)	-0.103 (0.118)	-0.106 (0.118)	-0.104 (0.118)	-0.105 (0.119)	-0.0226 (0.139)	-0.0213 (0.140)	-0.0259 (0.139)	-0.0237 (0.140)
GDP per capita growth	-0.00825 (0.0226)	-0.00936 (0.0226)	-0.000954 (0.0229)	-0.00271 (0.0229)	0.0347 (0.0265)	0.0341 (0.0265)	0.0386 (0.0265)	0.0381 (0.0265)
Election	-0.145 (0.207)	-0.148 (0.207)	-0.153 (0.208)	-0.155 (0.208)	0.000553 (0.236)	-0.00487 (0.237)	-0.00579 (0.237)	-0.00954 (0.237)
Oil&Gas	-0.344 (0.390)	-0.204 (0.405)	-0.275 (0.384)	-0.141 (0.394)	-0.426 (0.463)	-0.270 (0.481)	-0.447 (0.456)	-0.323 (0.467)
FisCri 1	0.541** (0.223)				0.440* (0.259)			
FisCri 2		0.398*** (0.154)				0.359* (0.183)		
FisCri 3			0.433*** (0.119)				0.271** (0.135)	
FisCri 4				0.364*** (0.100)				0.252** (0.115)
Constant	-3.251*** (0.890)	-3.499*** (0.914)	-3.368*** (0.889)	-3.616*** (0.906)	-3.668*** (1.040)	-3.951*** (1.075)	-3.638*** (1.030)	-3.866*** (1.053)
Observations	2,025	2,025	2,025	2,025	2,025	2,025	2,025	2,025
Standard errors in parentheses; years and regional dummies included but not reported.								
*** p<0.01, ** p<0.05, * p<0.1								

Logit coefficient estimates for structural reforms with interaction between deficit and lending rate

	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Independent variables:	Resolving Insolvency	Resolving Insolvency	Resolving Insolvency	Resolving Insolvency	Labor Market Regulation	Labor Market Regulation	Labor Market Regulation	Labor Market Regulation
GDP per capita (log)	-0.0827 (0.132)	-0.0794 (0.133)	-0.0883 (0.133)	-0.0837 (0.133)	-0.0525 (0.159)	-0.0567 (0.160)	-0.0510 (0.159)	-0.0583 (0.159)
GDP per capita growth	-0.0115 (0.0228)	-0.0123 (0.0228)	-0.00549 (0.0231)	-0.00679 (0.0231)	0.0290 (0.0271)	0.0291 (0.0271)	0.0303 (0.0269)	0.0299 (0.0269)
Election	-0.132 (0.208)	-0.137 (0.208)	-0.144 (0.209)	-0.147 (0.209)	-0.0218 (0.241)	-0.0293 (0.241)	-0.0400 (0.243)	-0.0421 (0.242)
Oil&Gas	-0.348 (0.393)	-0.179 (0.409)	-0.256 (0.387)	-0.106 (0.397)	-0.367 (0.470)	-0.229 (0.487)	-0.362 (0.462)	-0.244 (0.473)
FisCri 1	0.751 (0.797)				1.954** (0.881)			
FisCri 2		0.525 (0.567)				1.134* (0.621)		
FisCri 3			0.718* (0.412)				1.494*** (0.450)	
FisCri 4				0.577 (0.357)				1.150*** (0.386)
Lending rate log (lr)	0.161 (0.360)	0.168 (0.497)	0.229 (0.304)	0.275 (0.401)	0.476 (0.399)	0.562 (0.542)	0.583* (0.345)	0.810* (0.442)
FisCri 1_lr (interaction)	-0.0892 (0.345)				-0.753** (0.382)			
FisCri 2_lr (interaction)		-0.0399 (0.249)				-0.395 (0.273)		
FisCri 3_lr (interaction)			-0.123 (0.178)				-0.603*** (0.202)	
FisCri 4_lr (interaction)				-0.0860 (0.155)				-0.443*** (0.171)
Constant	-3.635** (1.502)	-3.998** (1.695)	-3.851*** (1.422)	-4.283*** (1.548)	-4.357** (1.750)	-4.737** (1.939)	-4.550*** (1.668)	-5.175*** (1.780)
Observations	1,933	1,933	1,933	1,933	1,933	1,933	1,933	1,933

Standard errors in parentheses; years and regional dummies included but not reported.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1



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# Robustness Checks

### Rich countries

### Poor countries

	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Independent variables:								
GDP per capita growth	-0.0151 (0.0278)	-0.0164 (0.0279)	-0.00812 (0.0282)	-0.0103 (0.0282)	0.0796*** (0.0142)	0.0810*** (0.0143)	0.0788*** (0.0143)	0.0803*** (0.0143)
Election	-0.000912 (0.203)	-0.0128 (0.203)	-0.0194 (0.205)	-0.0283 (0.205)	-0.180 (0.139)	-0.183 (0.140)	-0.179 (0.139)	-0.181 (0.139)
Oil&Gas	0.413 (0.323)	0.631* (0.361)	0.543* (0.317)	0.752** (0.345)	0.159 (0.208)	0.223 (0.212)	0.126 (0.206)	0.165 (0.209)
FisCri 1	0.512** (0.213)				0.154 (0.135)			
FisCri 2		0.379*** (0.144)				0.185** (0.0935)		
FisCri 3			0.447*** (0.117)				0.0329 (0.0753)	
FisCri 4				0.364*** (0.0967)				0.0740 (0.0627)
Constant	-0.582* (0.345)	-0.836** (0.389)	-0.711** (0.340)	-0.955*** (0.370)	-1.801*** (0.263)	-2.003*** (0.292)	-1.716*** (0.256)	-1.836*** (0.275)
Observations	578	578	578	578	1,447	1,447	1,447	1,447
Standard errors in parentheses; years dummies are included but not reported.								
*** p<0.01, ** p<0.05, * p<0.1								

## Logit coefficient estimates for reversals

	(1)	(2)	(3)	(4)
Independent variables:				
GDP per capita (log)	-0.00904 (0.0761)	-0.00740 (0.0763)	-0.0123 (0.0761)	-0.0107 (0.0763)
GDP growth (1 year lag)	-0.00141 (0.0152)	-0.00135 (0.0152)	0.000523 (0.0153)	0.000503 (0.0153)
Election	0.0998 (0.137)	0.0969 (0.137)	0.0976 (0.137)	0.0953 (0.138)
Oil&Gas	-0.0382 (0.228)	0.0186 (0.235)	-0.0267 (0.226)	0.0191 (0.231)
FisCri 1	0.171 (0.144)			
FisCri 2		0.151 (0.0982)		
FisCri 3			0.126 (0.0785)	
FisCri 4				0.119* (0.0652)
Constant	-4.471*** (0.882)	-4.606*** (0.893)	-4.468*** (0.877)	-4.578*** (0.884)
Observations	2,025	2,025	2,025	2,025

Standard errors in parentheses; years and regional dummies included but not reported.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1



## Preliminary conclusions

1. Find robust support for Drazen and Grilli hypothesis
2. Find some support for Rodrik hypothesis
3. No support for Williamson hypothesis
4. (Yet to test Harberger hypothesis)
5. Loose monetary policy weakens the beneficial effect on reforms
6. Exception: labor reform