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Fiscal decentralization, fiscal rules and fiscal discipline

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HIGHLIGHTS

- Institutions matter for fiscal decentralization (*FD*) to achieve fiscal discipline.
- Fiscal rules (*FR*) are hypothesized to enhance the effectiveness of *FD*.
- Panel evidence show that the negative effect of *FD* on deficits increases with *FR*.
- Balanced-budget and expenditure rules enhance *FD*'s effectiveness.
- Debt rules have a direct negative effect on deficits.

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ABSTRACT

Fiscal decentralization (*FD*) and fiscal rules (*FR*) are institutional mechanisms that are implemented by varying degrees in increasing number of countries. This paper investigates empirically the effect of *FR* on the effectiveness of *FD* in achieving fiscal discipline. Panel evidence strongly supports that balanced budget and expenditure rules help *FD* to achieve this goal, while debt rule has a direct disciplinary effect.

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1. Introduction

Fiscal decentralization (*FD*) is an institutional mechanism that ideally helps to reveal preferences of local citizens and, hence, facilitates effective local public good provision via increased transparency and accountability. The potential benefits of *FD* have been studied widely following the seminal work of Oates (1972). Tanzi (2000, 2008) argues that structural and institutional conditions, particularly the country size and governance quality, affect the potential effectiveness of *FD*. Recent empirical studies have also reached a near-consensus that the positive effects of *FD* hinge upon the level of institutional and economic development (see, for example, De Mello, 2000; King and Ma, 2001; Neyapti, 2004, 2010; Zhang, 2006; Adam et al., 2008; Bouton et al., 2008; Kyriacou and Sagales, 2009). This explains why earlier studies presented mixed evidence on the macroeconomic benefits (often focusing on growth or efficiency) of *FD* (see, for example, Treisman, 2000; Fisman and Gatti, 2002; Jin and Zou, 2002; Martinez-Vazquez and McNab, 2006).

The absence of a supportive institutional environment, however, hinders *FD*'s effectiveness in achieving allocational and distributional efficiency. When large horizontal and vertical imbalances exist and local governments do not face sufficient incentives to internalize the burden of local spending, *FD* often fails to deliver its objectives. If fiscal policy guidelines and rules are not well defined or enforced at the aggregate level, decentralizing spending and revenue collection fails to deliver fiscal discipline. Duly, recent theoretical studies emphasize the important role that fiscal rules (*FR*) play for *FD* to attain the desired welfare gains. More specifically, they point at the role of rule-based transfer mechanisms and

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hard budget constraints to generate the incentives for local government efficiency (see, for example, Sanguinetti and Tomassi, 2004; Stowhase and Traxler, 2005; Akin et al., 2011).

Recent studies document the state of *FR* around the world and highlight the importance of rule-based fiscal mechanisms in improving fiscal outcomes.[1] Schaechter et al. (2012) point out that an increasing number of countries have adopted *FR*, and the significant role of crises on this trend. Budina et al. (2012) observe a negative relationship between *FR* and public debt. Litschig (2012) and Wyplosz (2012), on the other hand, caution about the manipulability of *FR*, indicating that rules without strong institutional backing and enforcement characteristics would not yield their intended goals; in particular, too strict rules are argued to be associated with weaknesses during implementation.

In view of the above, this paper presents an original empirical test of the hypothesis that *FR* play a significant role in the effectiveness of *FD*. Using the recent panel datasets on *FD* and *FR*, and controlling for the relevant structural and institutional characteristics, the hypothesis is tested for both expenditure and revenue decentralization. The empirical evidence indicate that balance budget rules, their formal enforcement procedures, and expenditure rules contribute to the effectiveness of *FD* in achieving fiscal discipline, while debt rules have a direct effect.

The rest of the paper is organized as follows. Section 2 presents the model and the data sources that are utilized in testing the above stated hypothesis. Section 3 reports the findings and, finally, Section 4 concludes.

2. Data and model specification

We consider that the primary objective of *FD* is fiscal discipline. The hypothesis tested here is that the effectiveness of *FD* in attaining fiscal discipline, measured by budget deficits, increases with the presence of fiscal policy rules. We employ the most recent and extensive panel data on *FD* (expenditure and revenue decentralization, denoted by *FDexp* and *FDRev*, respectively) provided by the World Bank.[2] The source of data on *FR* is the IMF, which, based on formal and objective evaluation criteria, classifies *FR* as balanced budget (*BBR*); debt (*DR*); expenditure (*ER*); and revenue (*RR*) rules.[3]

To test the hypothesis that *FR* enhances the effectiveness of *FD*, consider the following regression model:

$$Def_{it} = a + bDef_{it-1} + cFD_{it} + dFR_{it} + eFR_{it} * FD_{it} + fZ_{it} + \varepsilon_{it}$$

where the subscript *it* represents the country (i)–year (t) observations, and *Def* is the ratio of budget deficits to GDP. Z represents the set of control variables used commonly in the related literature, namely the government size (G, measured as the share of overall government spending in GDP), rate of economic growth (*gr*, measured as the percentage change in real GDP), governance (*gov*); and the country size (measured by the log of population: Log(*pop*)).[4] The rationale for these controls is as follows. Large governments can be associated with low fiscal discipline, hence G is expected to have a positive effect on deficits; *gr* accounts for business cycles and is expected to have a negative association with deficits that tend to be counter-cyclical. By the very nature of its measurement criteria,[5] *gov* is expected to be negatively associated with deficits. *pop* is a proxy for the heterogeneity in preferences that is one of the justifications for *FD*[6]; since heterogeneity may also worsen the common pool problem and increase budgetary imbalances, however, we do not have a strong prior on the sign of this variable. The main hypothesis of the paper states that *FD* itself may not be negative or significant (see, for example, Thiessen, 2003; Neyapti, 2010); given the possible nonlinear effects of *FD* we use it in logs to test this hypothesis.

Our null hypothesis is that it is not necessarily c or d, but it is e that is significantly negative in the above model; that is, *FD* may not achieve fiscal discipline if *FR* are not in place. In addition to the interactions between *FD* and *FR*, we also report the interactions of *FR* with a dummy variable that stands for the legal enforcement of *FR*: *Enforce*.[7] Given the autoregressive structure of deficits, the estimation involves the lagged values of *Def*.

The model is estimated using an unbalanced panel with a total of 137 observations.[8] The estimation of the above model calls for several cautions. First, the presence of the lagged dependent variable renders the use of fixed or random effects inappropriate due to the violation of the assumption of exogenous covariates.[9] Second, pooled OLS estimation is inconsistent if there are individual effects. The appropriate method therefore appears to be the dynamic panel data estimation with GMM instruments (AB-DPD), which yields consistent estimates (see Arellano and Bond, 1991). We also utilize this even though the use of the method reduces the number of observations to 34.

3. Estimation results

As a preliminary, we investigate whether there is any significant difference in sample average *Def* before and after the implementation of (any type of) *FR*; we find that the answer is no.[10] We next turn to the regression analysis to assess, in addition to the direct effect of *FR* on *Def*, its indirect effect via its impact on the effectiveness of *FD*.

[1] Alesina and Bayoumi (1996) discuss the benefits of *FR* for US budgeting. While Ma (1997) discusses the pros and cons of different fiscal transfer rules, Shah (2006) discusses the pros and cons of different agent types in charge of designing institutions, which govern fiscal grants.

[2] Various studies have pointed out the problems related to a consistent measurement of *FD* across countries (see, for example, Dziobek et al., 2011 and Martinez-Vazquez and Timofeev, 2009). We use the cash-based shares of subnational government expenditures and revenues, published online by the World Bank (2012).

[3] The *FR* dataset is composed of *de jure* numerical targets that have a minimum coverage of central government. Appendix provides the common set of countries, for which data on *FR* and the enforcement dummies (source: IMF, Fiscal Rules Dataset 2012) and the *FD* are both available.

[4] World Bank indicators of governance cover control of corruption, government effectiveness, political stability, regulatory quality, government effectiveness, and voice and accountability.

[5] We measure *gov* by averaging the six indices of governance (see Kaufmann et al., 2010): control of corruption; rule of law; political instability; governmental efficiency; voice and accountability; and regulatory quality.

[6] See Neyapti (2010) for empirical evidence of the significant effect of *pop* on the effectiveness of *FD*.

[7] We define *Enforce* as the sum of the enforcement dummies pertaining to all four types of rules provided in the *FR*-dataset (IMF) to account for its presence at large.

[8] The cross section composition is well-balanced with eight transition economies, 10 developed and seven less developed countries. Descriptive statistics of the data is reported as follows:

	DEF	*GR*	*gov*	*G*	*FDexp*	*FDrev*	log(*pop*)
Mean	0.91	3.49	0.40	27.48	28.40	24.48	16.43
Std. dev.	3.68	5.41	0.26	10.17	16.60	14.24	1.92
Maximum	16.9	15.8	0.86	51.76	60.30	53.20	20.90
Minimum	−19.5	−21.3	0.08	9.92	1.37	1.11	12.52

[9] See, for example, Greene (2011).

[10] Two years' averages are considered to maximize the number of observations before and after the adoption of a fiscal rule, leading to 65 and 53 observations,

Table 1
Arellano–Bond estimates with robust errors (dependent variable: *Def* = Deficits/GDP).

FR-type:	With *FDexp*			With *FDrev*		
	BBR	*ER*	*DR*	*BBR*	*ER*	*DR*
Def(-1)	0.11	0.12***	0.19***	3.35***	0.13**	1.89***
	(1.28)	(2.3)	(3.8)	(5.9)	(2.17)	(3.2)
FR	0.20***	0.59***	−0.073***	0.18***	−0.24*	−0.06***
	(3.13)	(4.3)	(−12.01)	(3.1)	−(1.9)	−(12.2)
*Enforce*FR*	−0.17***	(Dropped)	(Dropped)	−1.37**	(Dropped)	(Dropped)
	−(2.4)			−(2.1)		
FD	0.04**	0.02***	0.003	3.89***	0.03***	0.01
	(2.1)	(2.9)	(0.2)	(8.5)	(3.9)	(0.8)
*FD*FR*	−0.05***	−0.02***	0.02***	−4.83***	5.75*	0.15***
	−(3.1)	−(4.3)	(8.3)	−(3.1)	(1.9)	(8.4)
G	0.008***	0.008***	0.009***	0.71***	0.001***	0.01***
	(4.3)	(4.2)	(16.4)	(4.3)	(4.2)	(17.2)
gr	−0.001***	−0.001***	−0.198***	−0.12***	−0.001***	−0.002***
	−(3.1)	−(3.1)	−(7.5)	−(3.2)	−(3.3)	−(7)
Gov	0.02	−0.005	3.565	0.05	−0.04	3.67
	(0.2)	−(0.1)	(0.43)	(0.5)	−(0.4)	(0.39)
Log(pop)	−0.2***	−0.14***	−10.41***	−0.21***	−0.24***	−0.12***
	−(3.07)	(−2.84)	(−2.95)	−(5.8)	(−3.57)	−(3.4)
C	−3.22***	2.18***	1.64***	3.36***	4.06***	1.89***
	(−2.96)	(2.49)	(2.9)	(5.9)	(3.7)	−(3.2)
Wald chi2(5)	603***	22 592***	1861***	148***	700***	4636***

Notes: Figures in parentheses are the *t*-ratios.
* Indicate significance at 10% levels.
** Indicate significance at 5% levels.
*** Indicate significance at 1% levels.

Table 1 reports the results of the AB-DPD estimations with robust errors, using the alternative measurements of both *FD* and *FR*. The instrument list is composed of the GMM instruments of the covariates besides the *polity* index, which is considered exogenous.[11] The table shows that besides the lagged deficits term that exhibits significant persistence, some of our control variables are consistently significant with the expected sign: while *G* has significant positive effect on budget deficits, *gr* has a significant negative effect on *Def*. *gov* is not significant probably because *FD*, *FR* and *Enforce* may already be capturing the effects of governance quality. The negative significance of *pop* possibly reflects the effect of other country-specific or trend elements, given this variable's relative persistence over the limited time dimension in a given country.

The main finding that provides support for the hypothesis of this paper is the interactive effect of *FD* and *FR*, which is negative and significant in the case *FR* = {*BBR*, *ER*} when used with expenditure decentralization. *DR*, however, has a direct effect on *Def* that is negative and significant, when used along with both *FD* types. When the model is estimated using revenue decentralization, the hypothesis is supported only in the case of *BBR*, although the direct effects of *DR* and *ER* are also negative and significant.[12] Given the hypothesis of the paper, the mostly positive and significant direct effects on *Def* of both *FDexp* and *FDrev* should not come as a surprise; they indicate that *FD* generally fails to achieve fiscal discipline in the absence of *FR*. The coefficients of the interactions between *FR* and the *Enforce* dummy are negative and significant for *FR* = *BBR* in the cases of both *FDexp* and *FDrev*, while this interaction term is dropped due to collinearity for estimations using the rest of the *FR* terms.

The above findings are in support of the recent literature that stresses the important role of fiscal institutions for the effectiveness of *FD* in delivering economic efficiency. It further presents original empirical evidence on the significant role of the centrally imposed budget constraints and debt rules, as well as the existence of fiscal rule enforcement procedures, in reaping the benefits of *FD*.[13]

4. Conclusions

Recent literature suggests that the effectiveness of *FD* in delivering fiscal efficiency depends on structural and institutional characteristics of a country. Using recent panel datasets of *FR* and *FD*, this paper presents original evidence on the significant interactive effects of these variables on budget deficits. The evidence presented here indicate that the effectiveness of both expenditure and revenue decentralization on reducing budget deficits significantly depends on the existence of *FR*, particularly *balanced-budget* rules. *Debt rules*, on the other hand, have significant direct effects on fiscal discipline. While the current findings are based on a limited sample, they pose important policy advice for fiscal institutional design: countries that intend to decentralize their fiscal activities can increase their fiscal efficiency with the proviso that they also adopt *FR* and improve their enforcement procedures.

respectively.

	Before			After		
	Def	*FDrev*	*FDexp*	*Def*	*FDrev*	*FDexp*
Mean	−1.15	26.32	61.90	−1.09	27.83	62.88
Stdev	15.7	248.1	493.8	12.3	218.8	525.9
No of obs	53	56	53	65	42	41
Difference *t*-ratio				0.011	0.484	0.209

[11] *Polity* measures the extent of democracy (source: Polity IV Database, Center for Systemic Peace).
[12] Estimation cannot be performed for the case of *FR* = *RR* due to insufficient data size (see the Appendix).
[13] A theoretical model developed by Akin et al. (2011) demonstrates the importance of budget rules for the efficiency of *FD*.

Table A.1
Dummies for *FR* and enforcement by country–year observations. (*cc* stands for country codes, *yr* are the enactment years of *FR*; source: IMF).

cc	yr	*BBR*	*Enforce*	cc	yr	*DR*	*Enforce*	cc	yr	*ER*	*Enforce*	cc	yr	*RR*	*Enforce*
ARG	2000	1	1	ARM	2008	1	0	ARG	2000	1	1	AUS	1998	1	0
AUS	1998	1	0	AUS	1998	1	0	AUS	1985	1	1	AUS	1985	1	1
AUS	1985	1	1	AUT	1995	1	na	BEL	1993	1	1	BEL	1992	1	na
AUT	1995	1	1	BEL	1992	1	na	BEL	1995	1	1	BEL	1999	1	1
BEL	1992	1	na	BEL	1999	1	na	BEL	1996	1	1	BEL	1993	1	na
BEL	1999	1	na	BEL	1993	1	na	BEL	1998	1	1	BEL	1995	1	1
BEL	1993	1	na	BEL	1995	1	na	BGR	2006	1	0	BEL	1996	1	1
BEL	1995	1	na	BEL	1996	1	na	BRA	2000	1	1	BEL	1998	1	1
BEL	1996	1	na	BEL	1998	1	na	BWA	2003	1	0	DNK	2001	1	0
BEL	1998	1	na	BGR	2006	1	1	CAN	1998	1	0	DNK	2007	1	0
BGR	2006	1	0	BGR	2003	1	1	DEU	1992	1	0	DNK	2009	1	0
CAN	1998	1	0	BRA	2000	1	1	DEU	2008	1	0	FRA	2006	1	0
CHE	2003	1	1	CAN	1998	1	0	DNK	1994	1	0	KEN	1997	1	0
COG	2002	1	na	COG	2002	1	na	DNK	2001	1	0	LTU	2008	1	1
COG	2008	1	na	COG	2008	1	na	DNK	2007	1	0	NLD	1994	1	1
CPV	1998	1	0	CPV	1998	1	0	DNK	2009	1	0				
CZE	2004	1	na	CZE	2004	1	na	FIN	2003	1	0				
DEU	1992	1	0	DEU	1992	1	na	FIN	2007	1	0				
DEU	2008	1	0	DEU	2008	1	na	FRA	1998	1	0				
DNK	1994	1	0	DNK	1992	1	na	FRA	2006	1	0				
DNK	2001	1	0	DNK	1994	1	na	ISL	2004	1	0				
DNK	2007	1	0	DNK	2001	1	na	ISR	2005	1	0				
DNK	2009	1	0	DNK	2007	1	na	LTU	2008	1	1				
DNK	1992	1	0	DNK	2009	1	na	LUX	1990	1	0				
DOM	1998	1	na	DOM	1998	1	na	LUX	1992	1	0				
ESP	1992	1	na	DOM	2006	1	na	LUX	2004	1	0				
ESP	2003	1	0	ESP	1992	1	na	NLD	1994	1	1				
ESP	2006	1	0	ESP	2003	1	na	PER	2000	1	0				
EST	1993	1	1	ESP	2006	1	na	PER	2003	1	0				
EST	2004	1	1	EST	2004	1	na	SWE	1997	1	0				
FIN	2003	1	0	FIN	1995	1	0	SWE	2000	1	0				
FIN	2007	1	0	FIN	1999	1	0	USA	1999	1	1				
FIN	1995	1	na	FIN	2003	1	0	USA	2002	1	1				
FIN	1999	1	0	FIN	2007	1	na								
FRA	1998	1	na	FRA	1992	1	na								
FRA	2006	1	na	FRA	1998	1	na								
FRA	1992	1	na	FRA	2006	1	na								
GBR	1992	1	na	GBR	1992	1	na								
GBR	1997	1	0	GBR	1997	1	0								
GRC	1992	1	na	GRC	1992	1	na								
HUN	2004	1	0	HUN	2004	1	na								
IDN	2004	1	0	IDN	2004	1	0								
IND	2004	1	0	IRL	1992	1	na								
IRL	1992	1	na	KEN	1997	1	0								
ISR	2005	1	0	LKA	2003	1	0								
ISR	1992	1	0	LTU	2004	1	0								
JPN	1997	1	0	LTU	2008	1	0								
JPN	1998	1	0	LTU	1997	1	0								
LKA	2003	1	0	LUX	1992	1	0								
LTU	2008	1	na	LUX	2004	1	0								
LTU	2004	1	na	LUX	1990	1	0								
LUX	1992	1	na	MLT	2004	1	na								
LUX	2004	1	na	MUS	2008	1	1								
MEX	2006	1	1	NLD	1992	1	na								
MLT	2004	1	na	NLD	1994	1	na								
NLD	1994	1	na	NZL	1994	1	0								
NLD	1992	1	na	PAN	2002	1	0								
NOR	2001	1	0	POL	2004	1	1								
NZL	1994	1	0	POL	2006	1	1								
PAN	2002	1	0	POL	2008	1	1								
PER	2000	1	1	POL	1999	1	1								
PER	2003	1	1	PRT	1992	1	0								
POL	2004	1	na	ROM	2007	1	na								
POL	2006	1	0	SVK	2004	1	na								
POL	2008	1	na	SVN	2004	1	0								
PRT	1992	1	na	SVN	2005	1	na								
ROM	2007	1	na	SVN	2000	1	0								
SVK	2004	1	na	SWE	1995	1	na								
SVN	2004	1	na	SWE	1997	1	na								
SVN	2005	1	na	SWE	2000	1	na								
SWE	1997	1	na												
SWE	2000	1	0												
SWE	1995	1	na												
USA	1986	1	1												

Appendix

See Table A.1.

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