Economics Bulletin

Volume 40, Issue 3

The threshold effect of political institutions on the finance-growth nexus: Evidence from Sub-Saharan Africa

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Abstract

This study explores the effect of political institutions on the finance-growth nexus for a sample of 24 Sub-Saharan African countries over the period 2002-2011. Using the recent dynamic panel threshold model proposed by Seo and Shin (2016), we found that financial development has a growth-enhancing effect only in countries with strong political institutions. The results are robust across different institutional indicators.

Citation: Walid Benayed and Nouha Bougharriou and Foued Badr Gabsi, (2020) "The threshold effect of political institutions on the finance-growth nexus: Evidence from Sub-Saharan Africa", *Economics Bulletin*, Volume 40, Issue 3, pages 2484-2493
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Submitted: April 18, 2020. **Published:** September 24, 2020.

1. Introduction and theoretical background

The relationship between financial development and economic growth has been examined extensively in the past few decades. Compelling empirical evidence has shown that financial development is positively associated with economic growth (Levine et al., 2000; Beck and Levine, 2004; Zhang et al., 2012).

Another strand of literature emphasizes that the finance-growth relationship could be nonlinear. Interestingly, a large body of empirical research suggests that the effect of financial development on growth varies at different levels of financial development (Arcand et al., 2015; Samargandi et al., 2015; Botev et al., 2019). Other studies sustain that the finance-growth relationship seems to depend on a country's income level (Deidda and Fattouh, 2002; Rioja and Valev, 2004 ; Seven and Yetkiner, 2016).

Another line of literature highlights that the growth effect of financial development changes with the quality of economic institutions, suggesting that well-developed financial systems are growth-enhancing only in countries with strong institutional arrangements (Demetriades and Law, 2006; Law et al., 2013).

Surprisingly, the role of political institutions in the finance-growth nexus has been neglected in the recent literature on the topic. To the best of our knowledge, Slesman et al. (2019) is the only study that evaluates the nonlinear impact of political institutions on the relationship between financial development and economic growth. On the basis of the threshold model proposed by Kremer et al. (2013)[1], they suggest that a certain level of political institutions is needed to generate beneficial growth effects from financial development.

This paper contributes to the literature in several ways: First, we take a different approach than Slesman et al. (2019) and use the new dynamic panel threshold model proposed by Seo and Shin (2016) to capture the nonlinear effect of financial development on economic growth. This methodology extends those developed by Hansen (1999) and Kremer et al. (2013), allowing for the threshold variable to be endogenous. In fact, the main limit of the threshold regression models proposed by Hansen (1999) and Kremer et al. (2013) is the assumption of exogeneity of the transition variable. This may be a serious issue that hamper the usefulness of these models in the context of this study, especially that, endogenous bias is due essentially to the problem of reverse causality between economic growth and political institutions (Barro, 1996; Tavares and Wacziarg, 2001; Tan, 2010; Bougharriou et al., 2019).

Second, we make use of a variety of institutional indicators; each of them captures different aspects of a broad concept of institutional quality with a special emphasis on political institutions. Interestingly, a stable political environment that provides citizens with the rights to vote, the freedom of expression and a better legal protection under the rule of law and ensures a higher protection of the banking system from corruption and political interference, would improve the functioning of financial systems. In such democratic environment, political elites are subject to checks and balances and held accountable for their actions, which may prevent rent seeking behavior and constrain them from maintaining regulatory arrangements and implementing credit policy that favor their own interests. This would eventually minimize information asymmetry and agency costs in the financial sector, hinder investors from using their political connections to finance their projects and direct financial resources to more productive investments (Bhattacharyya, 2013).

[1] Who extend the cross-sectional threshold model of Caner and Hansen (2004) by using the forward orthogonal deviation transformation of Arellano and Bover (1995).

Third, our study focuses only on Sub-Saharan African countries. This is particularly important for two main reasons. Indeed, financial systems in many SSA countries remains underdeveloped compared to other regions of the world (Allen et al., 2012). Moreover, poor governance has limited the role of African financial institutions in financing the private sector (Benayed and Gabsi, 2020).

The remainder of the paper is as follows. The econometric methodology is discussed in Section 2. Section 3 describes the data. Section 4 presents the main empirical results. Finally, section 5 concludes.

2.Empirical methodology

To evaluate the effect of institutional quality on the relationship between financial development and economic growth, we employ the dynamic panel threshold method proposed by Seo and Shin (2016).

In line with Law et al. (2013) and Slesman et al. (2019), we rely on the following non-linear empirical growth model:

$$Growth_{i,t} = (\alpha_1 Y_{i,t-1} + \beta_1 X_{i,t} + \phi_1 Credit_{i,t}) I(institutions_{i,t} \leq \gamma) + (\alpha_2 Y_{i,t-1} + \beta_2 X_{i,t} + \phi_2 Credit_{i,t}) I(institutions_{i,t} > \gamma) + \nu_{i,t} + \varepsilon_{i,t} \quad (1)$$

Where $Growth_{i,t}$ represents the growth rate of real GDP per capita of country i at time t, $Y_{i,t-1}$ is the initial value of GDP that should capture the conditional convergence hypothesis, $X_{i,t}$ includes as control variables population growth and gross fixed capital formation. We use *Credit* (measured by domestic credit to the private sector) as an indicator of financial development; I(.) is an indicator function which takes the value 1 if the argument in the parenthesis is true and 0 otherwise. *Institutions* is the threshold variable. γ denotes the threshold parameter. $\nu_{i,t}$ is the country-specific fixed effect and ε_{it} is the error term.

This framework allows us to take into account the effect of institutional quality in the finance-growth nexus by splitting the sample into two regimes depending on whether institutional quality is below or above the estimated threshold.

Following Seo and Shin (2016), Equation (1) is estimated using (GMM) estimator of dynamic panel threshold. This empirical methodology, based on the first-difference GMM estimator developed by Arellano and Bond (1991), allows for both the threshold variable and the explanatory variables to be endogenous.

3.Data

In this paper, we employ a panel of 24 Sub-Saharan African countries covering the period 2002-2011 (See Appendix for the country list). Our analysis is based on two financial development indicators widely used in earlier literature: the ratio of credit to the private sector as percentage of GDP and broad money (M2) as percentage of GDP. The data are taken from the World Development Indicators (WDI) database of the World Bank.

As threshold variable, we use a set of institutional quality indicators taken from World Governance Indicators (WGI) and Freedom House. The quality of political institutions is measured by three indicators, namely political stability and absence of violence, voice and accountability, as well as democracy. The first two ones are obtained from WGI. The last one is taken from Freedom house. The quality of economic institutions is captured by four indicators: control of corruption, rule of law, government effectiveness and regulatory quality.

Interestingly, it is important to notice that the six WGI indicators range from -2.5 to 2.5, with higher values indicating better institutional quality. Additionally, the Freedom House index ranges between 1 and 7, with 1 representing the highest level of democracy and 7 the lowest. Hence, to make the interpretation of the threshold easier, we have rescaled WGI indicators to lie between 0 and 5 and inverted the scale of freedom house index, so that higher values correspond to higher levels of democracy. The definitions of these institutional indicators are presented in the appendix.

Tables A.1 and A.2 of the Appendix display data sources and summary statistics of the variables employed in the study, respectively.

4.Estimation results

The results obtained from the bivariate model[2] are reported in table 1 and table 2. The first table presents the results using political institutions as threshold variable. The second one reports the results considering economic institutions as threshold. As can be seen, the bootstrap p-value of the linearity test confirms our main hypothesis that the effect of financial development on economic growth depends on the level of institutional quality. Hence, the observations of the sample can be divided into two regimes. The lower regime contains the observations below the estimated institutional quality threshold. The upper regime contains the observations above the estimated threshold. More specifically, when the level of institutional quality is below the estimated threshold, financial development hampers economic growth. However, above the institutional quality threshold, financial development tends to promote economic growth.

Table 1: The asymmetric effect of political institutions on the finance-growth nexus: bivariate model

	Democracy		***Voice and Accountability***		***Political Stability***	
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	*Lower regime*	*Upper regime*	*Lower regime*	*Upper regime*	*Lower regime*	*Upper regime*
credit	-0.663***	0.788***	-0.730***	0.860***	-0.476	0.835*
	(0.125)	(0.172)	(0.154)	(0.285)	(0.336)	(0.440)
Threshold	2.5		2.212		1.913	
Linearity test (p-value)	0		0		0	

Notes: *, ** and *** denote significance at the 10%, 5%, and 1% levels respectively. The p-value is obtained from 1000 bootstrap replications.

[2] The bivariate model can be written as follows : $Growth_{i,t} = \phi_1 Credit_{i,t} \; I(institutions_{i,t} \leq \gamma) + \phi_2 Credit_{i,t} \; I(institutions_{i,t} > \gamma) + \nu_{i,t} + \varepsilon_{i,t}$

Table 2: The asymmetric effect of economic institutions on the finance-growth nexus: bivariate model

	Government Effectiveness		***Regulatory Quality***		***Rule of Law***		***Control of Corruption***	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	*Lower regime*	*Upper regime*	*Lower regime*	*Upper regime*	*Lower regime*	*Upper regime*	*Lower regime*	*Upper regime*
credit	-0.587***	1.311***	-0.615**	0.732***	-0.573**	1.299***	-1.312***	1.400***
	(0.178)	(0.304)	(0.248)	(0.210)	(0.272)	(0.297)	(0.452)	(0.351)
Threshold	1.817		1.36		1.991		1.389	
Linearity test (p-value)	0		0		0		0	

Notes: *, ** and *** denote significance at the 10%, 5%, and 1% levels respectively. The p-value is obtained from 1000 bootstrap replications.

Table 3 reports the estimation results of equation (1) with political institutions as threshold variable in determining how institutional quality affects the relationship between financial development and economic growth. As noted earlier, we employ three measures of political institutions namely democracy, voice and accountability and political stability.

Table 3: The asymmetric effect of political institutions on the finance-growth nexus: additional controls

	Democracy		***Voice and Accountability***		***Political Stability***	
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	*Lower regime*	*Upper regime*	*Lower regime*	*Upper regime*	*Lower regime*	*Upper regime*
$lgdppc_{-1}$	-5.257**	10.695***	-15.41***	9.161**	-14.657**	5.29
	(2.485)	(8.702)	(4.259)	(3.999)	(7.03)	(11.43)
credit	-0.92***	0.462***	-0.635***	1.01***	-0.755***	0.235***
	(0.271)	(0.129)	(0.2)	(0.302)	(0.185)	(0.0724)
invest	-0.691	0.203**	-0.557**	0.574**	-0.429*	0.509***
	(0.463)	(0.098)	(0.265)	(0.236)	(0.22)	(0.194)
popg	-13.76***	11.98**	-19.03*	11.37	-8.523*	7.332
	(5.333)	(5.381)	(10.47)	(8.930)	(4.675)	(5.538)
Threshold	3.010		1.615		2.955	
Linearity test (p-value)	0		0		0	

Notes: *, ** and *** denote significance at the 10%, 5%, and 1% levels respectively. The p-value is obtained from 1000 bootstrap replications.

As can be seen, the results strongly confirm the existence of an institutional quality threshold for each of the three measures of political institutions. More precisely, in countries with weak political institutions, the relationship between financial development and economic growth is negative and statistically significant. However, beyond institutions threshold level, the effect of financial development on economic growth becomes positive and statistically significant. Our findings are in line with Slesman et al. (2019) who showed that the improvement in the quality of political institutions enhances the growth returns from financial deepening.

Table 4 shows the results of estimating equation (1) using economic institutions indicators as threshold variable. In accordance with the results of table 3, we found that below the

economic institutions threshold, financial development is negatively related to growth. In the upper regime, an increase in finance enhances economic growth. Our findings, in line with Law et al. (2013) and Slesman et al. (2019), suggest that a more developed financial system is growth-enhancing only after attaining a certain level of institutional quality.

Table 4: The asymmetric effect of economic institutions on the finance-growth nexus: additional controls

	Government Effectiveness		***Regulatory Quality***		***Rule of Law***		***Control of Corruption***	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	*Lower regime*	*Upper regime*	*Lower regime*	*Upper regime*	*Lower regime*	*Upper regime*	*Lower regime*	*Upper regime*
$lgdppc_{-1}$	-7.45***	10.906**	-11.55**	3.790	-6.635*	8.764***	-13.10*	5.275**
	(3.09)	(5.85)	(4.826)	(10.12)	(3.693)	(3.367)	(7.757)	(2.582)
credit	-0.282***	0.97**	-0.757***	0.991***	-0.912***	0.808***	-1.543***	1.381***
	(0.0872)	(0.467)	(0.269)	(0.355)	(0.236)	(0.268)	(0.176)	(0.188)
invest	-0.0428	0.332***	-0.515**	0.863***	-0.411***	0.373***	-0.685**	0.972***
	(0.0544)	(0.118)	(0.208)	(0.318)	(0.202)	(0.171)	(0.315)	(0.341)
Popg	-2.243***	8.803***	-10.30*	-7.365*	-14.05**	12.24**	-6.801***	5.707***
	(0.623)	(2.040)	(6.071)	(3.909)	(6.954)	(5.691)	(1.77)	(1.23)
Threshold	2.19		1.876		1.447		1.291	
Linearity test (p-value)	0		0		0		0	

Notes: *, ** and *** denote significance at the 10%, 5%, and 1% levels respectively. The p-value is obtained from 1000 bootstrap replications.

5.Robustness check

As robustness check, we re-estimate equation (1) using M2 as an alternative measure of financial development. As can be seen from table A.3 and A.4 of the annex, our conclusions remain the same, thus confirming previously obtained results.

6.Conclusion

The aim of this study is to explore the potential influence of institutional quality on the relationship between financial development and economic growth in sub-Saharan Africa over the period 2002-2011. The main contribution of the paper is the use of the dynamic panel threshold model developed by Seo and Shin (2016). The empirical results confirm the existence of a non-linear relationship between financial development and economic growth. More precisely, below the estimated institutional quality threshold, financial development exerts a negative effect on economic performance. This effect becomes positive for countries with institutional quality above the threshold. These findings suggest that building a strong institutional environment is essential to benefit from the growth-enhancing effect of financial development.

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Appendix

Country list (24 SSA countries)

Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Congo Dem. Rep., Congo Rep., Cote d'Ivoire, Gabon, Gambia The., Ghana, Guinea, Kenya, Lesotho, Mali, Mozambique, Senegal, Tanzania, Togo, Uganda, Zambia.

Table A.1: Variables description and data Sources

Variables	Description	Sources
credit	The ratio of credit to the private sector to GDP	WDI
M2	Broad money M2 as percentage of GDP	WDI
democracy	The average of political rights and civil liberties indices. The political rights index captures the extent to which free and fair elections are held and the civil liberties index assesses to what extent fundamental rights and freedoms, such as freedom of expression and associational rights and rule of law are respected.	Freedom House
Voice and Accountability	The index sums up a number of aspects, including the ability of citizens to participate in the selection of their government, freedom of expression, freedom of association and the independence of the media.	WGI
Political Stability and Absence of Violence	The index measures the likelihood that the government will be removed by unconstitutional and violence means, including terrorism.	WGI
Rule of Law	The index evaluates the confidence of agents in the rules of society, especially the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.	WGI
Control of Corruption	The index captures the extent to which officials will use their power for private gain, including both petty and grand forms of corruption, as well as state capture.	WGI
Regulatory Quality	The index determines to what extent the government is able to formulate and implement sound policies and regulations encouraging private sector development.	WGI

Government Effectiveness	The index evaluates 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.	WGI
growth	Real GDP per capita growth	WDI
lgdppc	Real GDP per capita (constant 2005 US$) (in logarithm)	WDI
invest	The ratio of gross fixed capital formation to GDP	WDI
popg	Population growth rate	WDI

Table A.2: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
growth	240	2.223771	3.2452	-8.552866	18.99058
lgdppc	240	6.152855	.875783	4.419827	8.384246
invest	240	20.36374	6.934073	4.598619	46.44408
popg	240	2.379895	.6529532	.8682454	4.156065
credit	240	15.43006	10.02376	.6827951	64.48612
M2	240	25.31324	12.90753	4.196875	83.94139
democ	240	4.041667	1.475155	1.5	7
VA	240	2.011421	.6391421	.802947	3.470096
PS	240	2.05139	.920184	-.0237846	3.605562
GE	240	1.778427	.5211476	.7543173	3.225896
RQ	240	1.910475	.4770893	.8162783	3.294563
RL	240	1.842981	.603274	.7846425	3.230522
CC	240	1.873096	.5935144	.9747566	3.716737

Table A.3: The asymmetric effect of political institutions on finance-growth nexus: an alternative measure of financial development

	Democracy		***Voice and Accountability***		***Political Stability***	
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	*Lower regime*	*Upper regime*	*Lower regime*	*Upper regime*	*Lower regime*	*Upper regime*
$lgdppc_{-1}$	-12.73**	15.86***	-11.48***	-8.28	-13.07***	8.64**
	(2.67)	(7.04)	(9.38)	(6.43)	(4.65)	(3.54)
M2	-0.194***	0.274**	-0.732***	0.894***	-1.44***	1.85***
	(0.038)	(0.124)	(0.163)	(0.252)	(0.38)	(0.45)
invest	-0.861***	0.537***	-0.264**	0.51**	-0.45	0.692***
	(0.216)	(0.126)	(0.105)	(0.216)	(0.285)	(0.312)
popg	-15.1**	5.2	-16.96*	12.78	-13.70**	4.39
	(6.94)	(11.11)	(10.23)	(10.22)	(6.03)	(8.87)
Threshold	4.02		1.85		2.89	
Linearity test (p-value)	0		0		0	

Notes: *, ** and *** denote significance at the 10%, 5%, and 1% levels respectively. The p-value is obtained from 1000 bootstrap replications.

Table A.4: The asymmetric effect of economic institutions on finance-growth nexus: an alternative measure of financial development

	Government Effectiveness		***Regulatory Quality***		***Rule of Law***		***Control of Corruption***	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	*Lower regime*	*Upper regime*	*Lower regime*	*Upper regime*	*Lower regime*	*Upper regime*	*Lower regime*	*Upper regime*
$lgdppc_{-1}$	-8.61*	1.96	-14.11***	7.72***	-16.85***	10.34**	-5.71*	1.801
	(4.69)	(9.72)	(1.52)	(2.34)	(4.65)	(4.82)	(3.46)	(1.81)
M2	-0.68***	0.69***	-0.426***	0.568***	-0.459***	0.48***	-0.14***	0.116***
	(0.128)	(0.151)	(0.104)	(0.171)	(0.115)	(0.081)	(0.038)	(0.223)
invest	-0.19*	0.225***	-0.212**	0.679***	-0.132	0.272***	-0.52**	0.308***
	(0.108)	(0.077)	(0.088)	(0.201)	(0.124)	(0.102)	(0.185)	(0.095)
Popg	-11.41***	8.21	-5.73**	3.20**	-13.89*	10.69	-3.9**	10.08
	(4.41)	(6.03)	(2.73)	(1.29)	(7.93)	(8.44)	(2.29)	(6.501)
Threshold	1.76		1.97		1.89		1.83	
Linearity test (p-value)	0		0		0		0	

Notes: *, ** and *** denote significance at the 10%, 5%, and 1% levels respectively. The p-value is obtained from 1000 bootstrap replications.