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1249-078 Lisboa,
Portugal

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Rua Miguel Lupi, 20
1249-078 LISBOA
Portugal

Telephone: +351 - 213 925 912
E-mail: rem@iseg.ulisboa.pt

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The role of fiscal policy rating variables on economic growth in the LDCs[*]

António Afonso[$], M. Carmen Blanco-Arana[#]

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Abstract

We assess empirically the role of the World Bank's Country Policy so-called fiscal policy rating variables (fiscal rating, debt rating and revenue rating) on economic growth in the 46 Least Developed Countries (LDCs) in the world, during the period 1990-2022. We also investigate the role of key fiscal variables on economic growth (government debt, expenditure and tax revenue). The empirical evidence suggests that better fiscal policy rating strongly and positively affects economic growth. We also find that the influence of government debt and tax revenue can contribute to influence economic growth. Results are robust by applying a fixed effects model and GMM model.

Keywords: economic growth, LDCs, fiscal policy, fixed effects model
JEL classification: C23, G10, O10, O43

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[$] ISEG – Lisbon School of Economics and Management, Universidade de Lisboa; REM – Research in Economics and Mathematics, UECE – Research Unit on Complexity and Economics. CESifo Research Fellow (Center for Economic Studies and Ifo Institute). email: aafonso@iseg.ulisboa.pt. ORCID ID: 0000-0002-6926-2653
[#] Faculty of Economics and Business Studies, University of Malaga, Department of Applied Economics (Public Finance, Economic Policy and Political Economy), Spain. Email: c.blancoarana@uma.es. ORCID ID: 0000-0002-8241-6573

1. Introduction

Research on economic growth in lowest countries of the world is crucial. Among the most demanding problems confronted by the poorest countries in the world is that of balancing the government budget, burdened notably by the cost of development. The stickiness with which revenues grow and technical problems in controlling expenditures heighten this issue. In this line, fiscal policy can foster economic growth through a number of different channels. These channels can include the macro-economic factors such they can be taxes, expenditures or deficits (key fiscal variables). According to Clements et al. (2004), from a macroeconomic perspective, one of the central insights from past research on developing countries is that prudent fiscal policy—that is, low budget deficits and low levels of public debt—is a key ingredient for economic growth, which in turn is essential for reducing poverty and improving social outcomes. In this line, Afonso and Jalles (2012) assess how fiscal policy volatility affect growth.

Thus, it should establish optimal fiscal policies that support the growth of poorest countries. The issue of optimal fiscal policy is obviously a complex one. In this context, the World Bank's Country Policy and Institutional Assessment (CPIA) assesses the conduciveness of a country's policy and institutional framework to sustainable growth. In particular, there are three main so-called rating fiscal variables which can be analysed (CPIA fiscal policy rating, CPIA debt policy rating, CPIA efficiency of revenue mobilization rating) in order to know which of these variables has more impact on growth.

Therefore, we investigate whether fiscal policy measures can increase the economic growth of the LDCs. Our approach proceeds as follows. After this introduction, we explain the data and estimation strategy. Then, we present the results and discussion. Finally, we give the main conclusions.

2. Data and estimation strategy

This section describes the database and discusses the estimation strategy proposed to analyse the connection between fiscal policy and economic growth in the LDCs, which in 2023 comprised 46[1] countries. These countries constitute the poorest and weakest segment of the international community, and although there are significant differences

[1] List of the LDCs: Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Central Af. Rep, Chad, Comoros, Congo, Dem. Rep., Djibouti, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Lao PDR, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, S. Tome and Princ., Senegal, Sierra Leone, Solomon Islands, Somalia, South Sudan, Sudan, Tanzania, Timor-Leste, Togo, Uganda, Vanuatu, Yemen and Zambia.

among them, they present the lowest human development index ratings of all countries in the world.

In this work, we take as relevant variables the Country Policy and Institutional Assessment (CPIA) indices from the World Development Indicators (World Bank, 2023). In order to perform our analysis, we work with an unbalanced panel for LDCs for the period 1990-2022, using the statistical information available. As noted by Beck et al. (2007), many countries do not have data for every year and therefore lack sufficient observations. As dependent variable, we use the GDP per capita growth, which corresponds to annual percentage growth rate of GDP per capita based on constant local currency. GDP per capita is gross domestic product divided by midyear population. GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. The computation does not consider deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. In general, the rate of growth of the GDP per capita or GDP per capita is used as an indicator of economic growth (see, for example, Levine et al., 2000; Levine, 2003; Afonso and Blanco-Arana, 2022; among others).

Regarding fiscal policy ratings, we first, estimate with these three main explanatory variables: [2]

- CPIA fiscal policy rating (1=low to 6=high): Fiscal policy assesses the short- and medium-term sustainability of fiscal policy (taking into account monetary and exchange rate policy and the sustainability of the public debt) and its impact on growth.
- CPIA debt policy rating (1=low to 6=high): Debt policy assesses whether the debt management strategy is conducive to minimizing budgetary risks and ensuring long-term debt sustainability.
- CPIA efficiency of revenue mobilization rating (1=low to 6=high): Efficiency of revenue mobilization assesses the overall pattern of revenue mobilization--not only the de facto tax structure, but also revenue from all sources as actually collected.

[2] See the data sources in the Appendix.

The main objective is to know which of these variables has more impact on growth in the LDCs and then go deeper into our analysis (using two samples, below and above of rating 3).

The more recent literature relies heavily of various sets of (country) fixed effects to help with causal inference. Acemoglu et al. (2019) is a good example on how to set up an empirical framework to analyse the impact of a measure of institutional quality on growth. We estimate a fixed effects model with panel data. The fixed effects estimator allows that differences between states are constant correlation. Thus, we estimate the panel data model conventionally with country fixed effects.

Thus, to examine the impact of fiscal policy on economic growth in the LDCs, the baseline model is as follows:

$$Growth_{it} = \beta_0 + \beta_1 Growth_{it-1} + \beta_2 FR_{it} + \zeta_i + \omega_{it} \qquad [1]$$

where $Growth_{it}$ refers to economic growth, FR_{it} denotes the respective fiscal policy rating variable of CPIA rating, ζ_i is the intercept for each country, and ω_{it} are the individual level residuals.

Additionally, we introduce a dummy variable, in order to interact with the fiscal policy CPIA rating variable, which takes a value of 1 if CPIA is above of 3 and 0 otherwise, as illustrated in the following specification:

$$Growth_{it} = \beta_0 + \beta_1 FR_{it} + \beta_2 FR_{it} * DUMMY_{it} + \zeta_i + \omega_{it}. \qquad [2]$$

Various dimensions to fiscal policy that can have an impact on economic growth (see, for example, Afonso and Alves, 2023). In particular, in our novel analysis, we use the key following so-called fiscal rating variables:

- Central government debt, total (% of GDP): Debt is the entire stock of direct government fixed-term contractual obligations to others outstanding on a particular date. It includes domestic and foreign liabilities such as currency and money deposits, securities other than shares, and loans. It is the gross amount of government liabilities reduced by the amount of equity and financial derivatives held by the government. Because debt is a stock rather than a flow, it is measured as of a given date, usually the last day of the fiscal year.

- Gross national expenditure (% of GDP): Gross national expenditure (formerly domestic absorption) is the sum of household final consumption expenditure (formerly private consumption), general government final consumption expenditure (formerly general government consumption), and gross capital formation (formerly gross domestic investment).
- Tax revenue (% of GDP): Tax revenue refers to compulsory transfers to the central government for public purposes. Certain compulsory transfers such as fines, penalties, and most social security contributions are excluded. Refunds and corrections of erroneously collected tax revenue are treated as negative revenue.

Thus, in a deeper analysis, to examine the impact of key fiscal variables on economic growth in the LDCs, the model is proposed as follows:

$$Growth_{it} = \beta_0 + \beta_1 Growth_{it-1} + \beta_2 FV_{it} + \zeta_i + \omega_{it} \quad [3]$$

where $Growth_{it}$ refers to economic growth, FV_{it} denotes the respective fiscal rating variables, ζ_i is the intercept for each country, and ω_{it} are the individual level residuals.

3. Empirical results and discussion

3.1. Baseline results

The empirical evidence suggests that CPIA fiscal policy rating strongly and positively relates to economic growth. However, when we take into account the three fiscal rating dimensions at the same time, only fiscal policy rating (that assesses the short- and medium-term fiscal sustainability) positively affects economic growth significantly. Fiscal rating is the most relevant variable in determining the economic growth of LDCs showing that the countries that make the better efforts to improve their fiscal (position) rating progress in a better way (see Table 1).

In fact, discriminating between countries, which are below and above the rating of 3 (see respectively Tables 1A and 1B) we find that countries with better levels of fiscal rating (better fiscal sustainability prospects) do have better growth prospects. On the other hand, when the fiscal rating indicator is below 3, there is no statistically significant effect of those fiscal ratings on economic growth.

These results are contrasted in Table 1C, with the inclusion of the dummies. The fact of interacting with fiscal policy CPIA rating, we find that good fiscal rating has significantly better effect on growth. In addition, with regard to the debt rating we find

that countries with higher levels of fiscal rating also do have also more probability of improving their growth.

Table 1. Fixed effects models

VARIABLES	(1)	(2)	(3)	(4)
$Growth_{it-1}$	**0.071***	**0.097****	**0.100*****	**0.068***
	[0.038]	[0.038]	[0.038]	[0.038]
Fiscal rating	**2.020*****			**1.856*****
	[0.438]			[0.466]
Debt rating		**0.721***		0.252
		[0.386]		[0.396]
Revenue rating			**1.340***	0.628
			[0.725]	[0.735]
Constant	**-4.822*****	-0.723	-2.766	**-7.151*****
	[1.402]	[1.250]	[2.365]	[2.633]
Observations	743	743	743	743
Number of countries	46	46	46	46

Note: standard errors are in brackets. Level of significance: *** p<0.01, ** p<0.05, * p<0.1.

Table 1A. Fixed effects models (CPIA rating<=3)

VARIABLES	(1)	(2)	(3)	(4)
$Growth_{it-1}$	-0.069	-0.061	-0.062	-0.070
	[0.053]	[0.053]	[0.053]	[0.054]
Fiscal rating	1.898			1.843
	[1.358]			[1.471]
Debt rating		0.257		-0.127
		[0.968]		[1.023]
Revenue rating			1.304	0.792
			[1.909]	[1.960]
Constant	-4.881	-0.343	-3.290	-6.590
	[3.685]	[2.265]	[5.195]	[6.113]
Observations	162	162	162	162
Number of countries	22	22	22	22

Note: standard errors are in brackets. Level of significance: *** p<0.01, ** p<0.05, * p<0.1.

Table 1B. Fixed effects models (CPIA rating>3)

VARIABLES	(1)	(2)	(3)	(4)
$Growth_{it-1}$	-0.015	-0.003	0.003	-0.020
	[0.077]	[0.077]	[0.077]	[0.077]
Fiscal rating	1.695**			1.375*
	[0.791]			[0.822]
Debt rating		1.443*		1.081
		[0.772]		[0.797]
Revenue rating			1.184	0.514
			[1.081]	[1.106]
Constant	-3.273	-2.618	-1.184	-8.280*
	[3.022]	[3.115]	[3.992]	[4.960]
Observations	190	190	190	190
Number of countries	18	18	18	18

Note: standard errors are in brackets. Level of significance: *** p<0.01, ** p<0.05, * p<0.1.

Table 1C. Fixed effects models with dummies

VARIABLES	(1)	(2)	(3)	(4)
Fiscal rating	**1.960*** **			**1.731** **
	[0.699]			[0.730]
Fiscal rating *dummy	0.085			0.117
	[0.214]			[0.217]
Debt rating		0.422		-0.364
		[0.565]		[0.581]
Debt rating *dummy		0.244		**0.377***
		[0.242]		[0.243]
Revenue rating			1.366	0.699
			[1.079]	[1.092]
Revenue rating*dummy			0.038	0.038
			[0.266]	[0.267]
Constant	**-4.636** **	-0.052	-2.729	**-5.892***
	[1.968]	[1.513]	[3.150]	[3.541]
Observations	744	744	744	744
Number of countries	46	46	46	46

Note: standard errors are in brackets. Level of significance: *** p<0.01, ** p<0.05, * p<0.1.

Moreover, analysing the effects of the key fiscal variables on economic growth in the LDCs, we corroborate that tax revenue and gross national expenditure affect negatively and significantly economic growth in the LDCs. Thus, on the one hand, we verify how household final consumption expenditure of these countries does not help economic growth. This could establish, in the framework of our current results that total gross national expenditure might be insufficient, leading to a lack of efficacy and even to an unexpected effect. On the other hand, regarding tax revenue, one can question the respective efficient functioning (see Table 2).

In addition, surprisingly, central government debt does not seem to affect growth. It is true that, in terms of the debt burden in the LDCs there is a great heterogeneity. Indeed, the debt ratio ranges from 2.90% of GDP to 289.84% of GDP. Moreover, there are some issues related to lack of information, and when we only include in the model this variable the sample reduces to 16 countries.

Table 2. Fixed effects models (key fiscal variables estimation)

VARIABLES	(1)	(2)	(3)
$Growth_{it-1}$	**0.221****	0.003	**0.201*****
	[0.085]	[0.030]	[0.042]
Debt (% GDP)	-0.011		
	[0.010]		
Gross expenditure (% GDP)		**-0.020***	
		[0.015]	
Tax (% GDP)			**-0.037***
			[0.022]
Constant	**1.611****	**3.774****	**2.594*****
	[0.755]	[1.774]	[0.372]
Observations	161	1,036	468
Number of countries	16	39	30

Note: standard errors are in brackets. Level of significance: *** p<0.01, ** p<0.05, * p<0.1

3.2. Robustness analysis

As an additional robustness test, we introduce a dynamic variant of the baseline model. We apply the system-generalized method of moments (GMM) estimator that was developed by Arellano and Bover (1995) and Blundell and Bond (1998). This method

estimates a system of equations in both first differences and levels, in which the instruments in the level equations are the lagged first differences of the variables. This dynamic approach allows the inclusion of lagged values of growth as an explanatory variable, which controls for omitted variables that change over time, in contrast with fixed effects estimations, which control for country characteristics.

Results turn out to be similar. Indeed, by applying a dynamic panel data approach with one and two lags of the dependent variable, fiscal rating is always the most relevant variable in determining the economic growth of LDCs. In addition, revenue rating also has an impact. Moreover, tax revenue and gross national expenditure affect negatively and significantly economic growth in the LDCs, questioning the respective efficient functioning. Obviously, in both analyses the growth rate is also, here, quite autoregressive (see Tables 3A and 3B).

We have checked for the Sargan test of over-identifying restrictions (with the joint null hypothesis that the instruments are valid instruments, i.e., uncorrelated with the error term,), which suggests that the instruments are indeed valid, while the Arellano–Bond test for second-order autocorrelation reveals that there is no significant serial correlation, and thus the estimator should be consistent.

Table 3A. GMM models with 1-lag

VARIABLES	(1)	(2)	(3)	(4)
$Growth_{it-1}$	**0.086****	**0.124*****	**0.121*****	**0.086****
	[0.039]	[0.039]	[0.039]	[0.039]
Fiscal rating	**2.426*****			**2.590*****
	[0.518]			[0.561]
Debt rating		0.112		-0.731
		[0.496]		[0.515]
Revenue rating			**1.491***	0.584
			[0.888]	[0.904]
Constant	**-6.152*****	1.191	-3.299	**-6.219****
	[1.653]	[1.607]	[2.895]	[3.121]
Observations	696	696	696	696
Number of countries	46	46	46	46
Sargan test	0.0066	0.0094	0.0097	0.0085
Arellano-Bond-test	0.1915	0.3095	0.3080	0.1855

Note: standard errors are in brackets. Level of significance: *** p<0.01, ** p<0.05, * p<0.1.

Table 3B. GMM models with 2-lags

VARIABLES	(1)	(2)	(3)	(4)
$Growth_{it-1}$	**0.083****	**0.124*****	**0.122*****	**0.083****
	[0.039]	[0.039]	[0.039]	[0.039]
$Growth_{it-2}$	**-0.121*****	**-0.094****	**-0.096****	**-0.121*****
	[0.038]	[0.039]	[0.039]	[0.038]
Fiscal rating	**2.666*****			**2.811*****
	[0.522]			[0.563]
Debt rating		0.198		-0.690
		[0.498]		[0.514]
Revenue rating			**1.600***	0.613
			[0.888]	[0.901]
Constant	**-6.675*****	1.101	-3.466	**-6.907****
	[1.657]	[1.607]	[2.894]	[3.119]
Observations	695	695	695	695
Number of countries	46	46	46	46
Sargan test	0.0113	0.0135	0.0142	0.0139
Arellano-Bond-test	0.4443	0.6063	0.5791	0.4735

Note: standard errors are in brackets. Level of significance: *** p<0.01, ** p<0.05, * p<0.1.

Table 4A. GMM models with 1-lag (key fiscal variables estimation)

VARIABLES	(1)	(2)	(3)
$Growth_{it-1}$	**0.161***	-0.039	**0.146*****
	[0.086]	[0.031]	[0.042]
Debt (% GDP)	-0.001		
	[0.016]		
Gross expenditure (% GDP)		**-0.045****	
		[0.019]	
Tax (% GDP)			**-0.040****
			[0.020]
Constant	1.083	**6.714*****	**2.770*****
	[1.079]	[2.191]	[0.347]
Observations	141	996	427
Number of countries	16	39	29
Sargan test	0.5797	0.0639	0.0618
Arellano-Bond-test	0.1704	0.1853	0.2237

Note: standard errors are in brackets. Level of significance: *** p<0.01, ** p<0.05, * p<0.1.

Table 4B. GMM models with 2-lags (key fiscal variables estimation)

VARIABLES	(1)	(2)	(3)
$Growth_{it-1}$	**0.137***	-0.028	**0.145*****
	[0.084]	[0.033]	[0.042]
$Growth_{it-2}$	-0.073	-0.046	0.005
	[0.091]	[0.032]	[0.042]
Debt (% GDP)	0.003		
	[0.017]		
Gross expenditure (% GDP)		**-0.036***	
		[0.020]	
Tax (% GDP)			**-0.040****
			[0.020]
Constant	1.205	**5.744****	**2.859*****
	[1.127]	[2.293]	[0.357]
Observations	134	964	417
Number of countries	15	39	28
Sargan test	0.1468	0.0448	0.0396
Arellano-Bond-test	0.2674	0.4717	0.0368

Note: standard errors are in brackets. Level of significance: *** p<0.01, ** p<0.05, * p<0.1.

4. Conclusions

We have studied the role of fiscal policy ratings (fiscal rating, debt rating and revenue rating) and fiscal variables (government debt, expenditure and tax revenue) on economic growth in 46 LDCs during the period 1990-2022.

"Good" fiscal policies should aim at the efficient use of government expenditure and taxation to influence positively the economy. In this sense, the role and objectives of fiscal policy should gain prominence in countries with lesser resources in order to jump-start growth, promoting strong and sustainable growth, and to mitigate the impact of their critical situation on more vulnerable groups.

We find that better so-called fiscal policy ratings are associated with higher economic growth. The influence of a better performance regarding government debt, budget balance and tax revenue can contribute to increase economic growth. These conclusions could suggest that well-targeted gross national expenditure may foster economic growth for the countries analysed in the present study, notably directly fostering growth, and indirectly by reducing the costs of sovereign funding in capital markets.

In addition, fiscal rating is the most relevant variable in determining the economic growth of LDCs confirming that countries, which make better efforts to improve their fiscal sustainability rating, can also progress economically in a better way. Therefore, our results offer insights for policy makers in LDCs on the appropriate design of fiscal policies, institutional frameworks, and the impact of fiscal policy decisions.

REFERENCES

Acemoglu, D., Naidu, S. Restrepo, P., Robinson, J.A. (2019): "Democracy Does Cause Growth", Journal of Political Economy, 127(1): 47-100.

Afonso, A., Alves, J. (2023): "Does Government Spending Efficiency Improve Fiscal Sustainability?", *European Journal of Political Economy*, forthcoming.

Afonso, A., Blanco-Arana, M.C. (2022): "Financial and economic development in the context of the global 2008-09 financial crisis", *International Economics*, 169: 30-42.

Afonso, A., Jalles, J.T. (2012): "Fiscal volatility, financial crises and growth", *Applied Economics Letters*, 19(18): 1821-1826.

Arellano, M., Bover, O. (1995): "Another Look at the Instrumental Variable Estimation of Error-components Models." *Journal of Econometrics,* 68: 29–51.

Beck T., Demirgüç-Kunt A., Levine R. (2007): "Finance, inequality and the poor", *Journal of Economic Growth*, 12(1): 27–49.

Blundell, R., Bond, S. (1998): "Initial Conditions and Moment Restrictions in Dynamic Panel Data Models." *Journal of Econometrics,* 87: 115–143.

Clements, B. J., Gupta, S., Inchauste, G. (2004). *Helping Countries Develop*. USA: International Monetary Fund.

Levine, R. (2003). Stock market liquidity and economic growth: Theory and evidence. In Finance, Research, and Education, and Growth. Palgrave MacMillan, New York.

Levine, R., Loayza N., Beck, T. (2000): "Financial intermediation and growth: Causality and causes", *Journal of Monetary Economics*, 46 (1):31–77.

World Bank (2023). Global Financial Development 2023. World Bank, Washington DC.

Data Appendix

Table A1 – Fiscal ratings and fiscal variables (World Bank database, 2024)

Acronym	Indicator Name
Debt rating	CPIA debt policy rating (1=low to 6=high)
Fiscal rating	CPIA fiscal policy rating (1=low to 6=high)
Revenue rating	CPIA efficiency of revenue mobilization rating (1=low to 6=high)
Debt (% GDP)	Central government debt, total (% of GDP)
Gross expenditure (% GDP)	Gross national expenditure (% of GDP)
Tax (% GDP)	Tax revenue (% of GDP)

Sources: World Development Indicators (World Bank, 2023).

Table A2 – Summary statistics (World Bank database, 2024)

VARIABLES	Obs.	Mean	Std. Dev.	Min.	Max.
Growth	1,372	1.428839	5.727725	-48.39246	60.09054
Fiscal rating	777	3.148005	0.6657871	1	4.5
Debt rating	777	3.166023	0.894631	1	5
Revenue rating	777	3.24453	0.5115159	2	4.5
Debt (% GDP)	167	66.12303	51.8997	2.902222	289.8447
Gross expenditure (% GDP)	1,073	114.8224	19.81398	61.06148	264.766
Tax (% GDP)	477	14.0742	12.52528	0.0000787	147.6612

Sources: World Development Indicators (World Bank, 2023).