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Openness and Government Size in Sub-Saharan African countries

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Abstract

Using a panel dataset of 40 Sub-Saharan African (SSA) countries covering the period 1990-2015, through several panel data analysis, this study provide an empirical assessment of the relationship between openness and government size. To measure openness, trade openness, financial openness and globalization are used. Results of fixed effects model reveal that while trade openness confirms the evidence of the compensation hypothesis, financial openness and globalization are relevant to government size and confirm the efficiency hypothesis. The robustness of initial findings by the System Generalized Method of Moments (SGMM) estimations shows that trade openness has a significant positive effect on government size - supporting the compensation hypothesis-, while financial openness is negatively and significantly related to government size - supporting the efficiency hypothesis. In addition, globalization does not appear to have a significant effect on government size.

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1. Introduction

The link between economic openness and government size has been a widely debated question over the past few decades. The major issue at the heart of the openness-government size nexus is about whether governments respond to the challenges of openness with the reduction of tax and social welfare expenditures that lead to a reduction in the size of the public sector (efficiency effect) or compensate the negative effects from internationalization through social welfare programs (compensation effect). According to Cameron (1978), the first to unveil this pattern for 18 Organization for Economic Cooperation and Development (OECD) countries, the integration into the world economy is associated with larger governments. This positive association is also confirmed in a seminal paper by Rodrik (1998) on a much broader sample including both low- and high-income countries. Similarly, a considerable body of empirical literature has established government size gains from openness. For instance, Ram (2009), de Mendonça and Cacicedo (2015), Efipani and Ganci (2008), and Lin et al. (2014) found that integration into the international trade leads to increase in government size. A similarly study by de Mendonça and Oliveira (2019) established that trade openness increases the government consumption expenditure in the case of developing countries but not in the case of high-income countries. However, despite abovementioned positive impact of trade openness, numerous empirical studies conducted by economists suggest that the relationship between trade openness and government size is not necessarily positive. For example, Benarroch and Pandey (2012 and 2008) found that trade openness is not robustly correlated with government size.

Some economists remain pessimistic about the relationship between financial openness and government size. According to Liberati (2007), financial openness may lead to higher mobility of tax factors and undermine the ability of governments to maintain larger public sectors. This negative view lends support to the results of Liberati (2007). However, Kimakova (2009) and de Mendonça and Oliveira (2019) concluded in their study that there is no conclusive and robust empirical evidence of a positive effect of financial openness on government size. Therefore, the sign of impact of trade and financial openness on government size is far from clear and leaves the debate open. In order to capture the net effect of these two determinants of the government size, some authors investigated the effect caused by globalization.

In support of the efficiency view, Dreher et al. (2008) argued that global integration leads to ineffectiveness of domestic policies and thus compresses governments by inducing increased budgetary pressure. Globalization may also lead to a race-to-the-bottom scenario with tax competition and reduction in governments spending, especially the social welfare state expenditures (Sinn, 2003). In line with these arguments, Dreher et al. (2008) point out that globalization does not turn out to be statistically significant in the relationship between globalization and government expenditures, while Kaufman and Segura-Ubergio (2001) and Busemeyer (2009) reported a negative effect of globalization on government spending. However, empirical findings are yet to converge on the negative impact of globalization, and it appears that globalization could be more benefits to developing countries. For example, Meinhard and Potrafke (2012), and de Mendonça and Oliveira (2019) concluded in their studies that globalization is positively correlated with government expenditures and government size respectively. Despite these relevant considerations, no study has examined the relationship between openness and government size in Sub-Saharan African countries (SSA), and therefore this study attempts to remedy this lacuna in literature by investigating this relationship in SSA countries. It contributes to extant cross-national scholarship on the openness–government size link in several key ways. Specifically, this paper extends the recent work by de Mendonça and Oliveira (2019) by investigating the effect of trade openness, financial openness and globalization on government size.

The study is relevant for several reasons. First, Although SSA is accounted for less than 16% of the ratio of government consumption expenditure over Gross Domestic Product (GDP) in 2015 (World Bank,, 2016); this ratio is expected to increase within the next decades in the region, given the ongoing economic, social and institutional reforms aimed at enhancing industrialization and economic diversification, creating more employment opportunities, reducing unemployment, increasing economic growth and improving welfare (Masaki and van de Walle, 2014). Second, SSA countries are experienced widespread and rapid opening up to trade, investment, finance and other flows and the reduction in government size over the last three decades (Sundaram et al., 2011). This decline in government size may cause SSA economies to expand their welfare states as argued in compensation hypothesis, thus raising legitimate concerns about the relationship between openness and government size. Third, government size enables government to produce and purchase goods and services, in order to fulfil their objectives- such as provision of public goods or redistribution of resources, which indicate that understanding the determinants of government size provides an empirical basis for an effective promotion of economic and social welfare. This study aims at investigating the effect of trade openness, financial openness and globalization on government size in 40 Sub-Saharan African (SSA) countries. The ratio of trade as a percentage of Gross Domestic Product (GDP), the KAOPEN index of Chinn-Ito (2015) and the KOF index of globalization developed by Dreher et al. (2008) are used as openness measures.

The rest of the paper is organized as follows. Section 2 describes data followed by the empirical analysis in the third section. Section 4 presents the empirical results and the discussion and Section 5 concludes the paper.

2. Data

This study uses panel dataset covering 40 low- and middle-income SSA countries between 1990 and 2015. The selection of the 40 countries is constrained by the availability of relevant data. To briefly illustrate the importance of these countries in the regional context, these forty countries accounted for more than 75% of the total GDP in SSA countries in 2015[1]. The choice of the period under analysis is based on the fact that during this period, SSA countries have experienced significant increase in economic, financial, social and political openness, which has led to a growing interdependence of fiscal policies affecting the government size (Adams and Sakyi, 2012; Tanzi, 2000). Data used in this study are taken mainly from the World Bank's World Development Indicators (WDI) and African Development Indicators (ADI) dataset (World Bank, 2016); Pen World Table (9.1) dataset (Feenstra et al. 2015); Freedom House (2017) and the KOF index of globalization dataset (Dreher et al., 2008).

The dependent variable is government size operationalized as General government final consumption expenditure (% of GDP). It includes all government current expenditures for purchases of goods and services. It also includes most expenditure on national defence and security, while it excludes government military expenditures that are part of government capital formation. It is important to note that this data is used as proxy for government size because of its availability for the set of countries covering the whole period under analysis. Also, this measure has been used in previous relevant studies as proxy for the government size (Rodrik, 1998; Kimakova, 2009; Ram, 2009; Lin et al., 2014; de Mendonça and Oliveira, 2019).

To measure openness, three indicators of openness are taking into account. With regard to the trade openness (Trade), the sum of exports and imports over the GDP is used, such as used exclusively in the past literature. It's expected to be associated positively with government size. In the current study, the indicator of financial openness is de jure measure of financial

[1] Author's calculation using data from the World Bank, World Development Indicators (2016).

openness known as Chinn-Ito index (KAOPEN). The KAOPEN index provided by Chinn and Ito (2015) measures a country's degree of capital-account openness and based on information about restrictions in the International Monetary Fund's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) indicators. This de jure measure attempts to capture the magnitude of capital controls, and also the country trend, i.e. how long restrictions have been in place or have been declining. The financial openness is expected to take a negative sign in the estimations. The third indicator of openness is the KOF index of globalization developed by Dreher et al. (2008) which covers more than 120 countries on a yearly basis from 1970. The composite index covers three dimensions: economic, social and political globalizations with equal weights. The composite index and its subcomponents take values between 0 and 100, higher values representing more globalization. Globalization is presumed to be positively related to government size and thus increases the government consumption.

To estimate the impact of openness on government size in SSA countries, a set of control variables capable of explaining government size are included to prevent omitted variable bias in the specification. The selection of these variables is based on economic reasoning and relevant literature (Alesina and Wacziard, 1998; Lin et al., 2014; de Mendonça and Oliveira, 2019). First, to account for the level of economic growth and economic resources available to a nation, Real GDP per capita (PPP adjusted) is included. A positive effect of the level of GDP per capita on government size is expected. In a study conducted by Adams and Sakyi (2012), increased level of national economic wealth in SSA countries significantly increases government size. To account for country size, population is included. Population is expected to be negatively associated with government size. Larger size leads to an increase in the demand for goods and services for the whole population and less per capita government consumption that cause less government share to GDP.

The relevance of urbanization is accounted with the inclusion of urban population share, defined as the share of total population living in the urban areas (FAO, 2013). It is expected for the urban population share to be positively associated with government size. In studies conducted by Ram (2009) and Kimakova (2009), high urbanization rate leads to increase in government size. Similarly, dependency ratio is included. The dependency ratio is defined as the share of the young (under 15 years) and old (over 64 years) in relation to the working-age population. According to de Mendonça and Oliveira (2019), higher dependency ratio is positively associated with larger governments. To account for quality of institutions of the countries understudied, democracy index as an average of the political rights and civil liberties indices provided by Freedom House is included. Several studies have used these indices as democracy measure (see Knack, 2004; Jaunky, 2013). Democracy is expected to be positively associated with government expenditure.

The descriptive statistics of all the variables employed in this study are presented in Table A2 in Appendix. Table A3 in Appendix presents the correlation analysis between the explanatory variables considered in the regression models. From the rule of Thumb, if correlation coefficient is greater than 0.8, we conclude that there is multicolinearity but if the coefficient is less than 0.8 there is no multicolinearity. Overall, the coefficients of correlation between explanatory variables suggest the absence of damaging multicollinearity. This increases our confidence that the results are not distorted by spurious correlations between variables.

3. Empirical analysis

To investigate the relationship between openness on government size in Sub-Saharan African countries, a panel data model using following empirical specification is estimated.

$$Size_{it} = \beta + \theta_1 Open_{it-1} + \theta_2 CV_{it} + \delta_i + \varepsilon_{it}$$

Where $Size_{it}$ denotes the size of government, i and t represent the country and the time periods, $Open_{it-1}$ denotes one year lagged openness measures (Trade, KAOPEN, and Globalization), CV_{it} represents control variables. CV_{it} includes the real GDP, urbanization, population, dependency ratio and democracy. β is the intercept term, θ_1 and θ_2 the estimated parameters, δ_i represents country specific effect, ε_{it} is the error term.

With the understanding that openness is proxied by three indicators, we run additional regressions where the openness is replace by Trade, KAOPEN and Globalization.

Because this study is using annual data over the period from 1990 to 2015, and that a country-specific effect might be replicated throughout all the time periods, which invalidates the Ordinary Least Squares (OLS) estimates and thus the fixed-effects method performs well. To reduce potential problems of reverse causality, all independent variables are lagged one year. To check the robustness of our results, the system generalized methods of moments (SGMM) estimator developed by Arellano and Bover (1995) and Blundell and Bond (1998) is used. This estimation technique controls for unobserved country-specific effects, potential endogeneity issues and collinearity of regressors. As linear GMM estimators, the Blundell-Bond estimators have one- and two-step variants. As indicated by Bond (2002), the use of the two-step standard errors induces a more asymptotically efficient estimator than the first-step estimates in small samples, as in this study. This is why this paper employs the two-step standard errors.

4. Empirical results

This section examines how openness affects government size in SSA countries. The first sub-section presents the estimation results of the model based in equation using the fixed effect method. The second subsection considers the robustness check again the baseline fixed effect results taking into account the System GMM.

4.1 Openness on government size results

Table 1 presents the empirical results for the three regression specifications estimated regarding the effect of openness (Trade, KAOPEN and Globalization) on government size (Size) in Sub-Saharan African countries. The first three models show the results with trade openness, the following three models report the KAOPEN results while the last three models present the estimation results with Globalization. With regard to the first three models, the results show that trade openness is positively associated with government size. This result is in line with the findings of Rodrik (1998), Lin et al. (2014) and de Mendonça and Oliveira (2019) that reveal that trade openness significantly increases the government size. This finding appears to support the compensation hypothesis, emphasizing the role of government as insurer, compensating through social insurance mechanisms citizens from negative effects of internationalization. With reference to models (4), (5) and (6), the coefficient of financial openness retains a negative sign and significance. This result suggests that a higher level of financial integration into the international capital market is associated with smaller government size in SSA countries. The finding confirms the negative relationship between capital openness and government size, as reported in the work of Liberati (2007). Similarly, this finding appears to support the efficiency hypothesis that pointed out that increased financial liberalization leads to reduction in taxation and social welfare expenditures, thereby reducing the size of the public sector. Similarly, as in models (7), (8) and (9), the results reveal that the coefficient of globalization are negative but only significant in model (9), lending support to the study of Kaufman and Segura-Ubergio (2001) and Busemeyer (2009), who found a significant negative effect of globalization on government spending.

Turning to the control variables, we observe uniformities in the signs of the coefficients across models (1)–(9), albeit with different significance levels. The coefficients of real GDP per capita (GDP) are positive and significant in all the models, indicating that public

expenditure rises as income growth expands. The findings confirm the significance of general economic development for increasing government size, as reported in the work of Adams and Sakyi (2012). As expected, the coefficients of population enter negatively and highly significant in all regressions, suggesting that bigger countries are associated with smaller government size. This is also consistent with the findings by Alesina and Wacziard (1998), and de Mendonça and Oliveira (2019). The results reported in Table (1) also reveal that the coefficients of urbanization are positive but only significant in model (9), suggesting that high urbanization rate leads to a large government. The findings are in line with the results of Ram (2009) and Kimakova (2009) who found the positive and significant impact of urbanization on government size. As reported in all the models (3), (6) and (9), the coefficients of democracy are positive and significant. This evidence is consistent with cross-national regressions of Persson and Tabellini (2003) which revealed that democracy is positively correlated with government expenditure and government revenues as well as welfare and social security spending as percentages of GDP. The results also reveal that the coefficients of dependency ratio are positive but insignificant.

Table 1. The fixed effect regression

	Trade openness			Financial openness			Globalization		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Real GDP	2.768***	2.717***	2.423***	3.665***	3.545***	3.239***	3.136***	3.030***	2.839***
	(0.685)	(0.688)	(0.689)	(0.709)	(0.714)	(0.719)	(0.751)	(0.754)	(0.754)
Population	-4.203***	-4.839***	-4.915***	-5.100***	-6.191***	-6.426***	-3.052**	-4.179**	-4.079**
	(1.210)	(1.457)	(1.487)	(1.231)	(1.449)	(1.474)	(1.456)	(1.635)	(1.626)
Urbanization		0.042	0.069		0.077	0.087		0.083	0.097*
		(0.054)	(0.055)		(0.054)	(0.055)		(0.054)	(0.056)
Democracy			0.294***			0.267***			0.358***
			(0.087)			(0.088)			(0.090)
Dependency			0.024			0.001			0.001
			(0.025)			(0.025)			(0.027)
Trade	0.014**	0.014**	0.012**						
	(0.005)	(0.005)	(0.005)						
KAOPEN				-4.942***	-4.916***	-4.649***			
				(0.783)	(0.782)	(0.785)			
Globalization							-0.062	-0.065	-0.093**
							(0.041)	(0.041)	(0.032)
Observations	915	915	915	930	930	930	936	936	936
Countries	40	40	40	40	40	40	40	40	40
R^2-within	0.025	0.026	0.039	0.059	0.061	0.071	0.019	0.021	0.038
F-Stat	0.000	0.000	0.000	0.000	0.000	0.000	0.024	0.000	0.000

Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1; Constant is included in all the models but not reported for convenience. All the explanatory variables are lagged one year in all the models.

4.2 Robustness analysis

To check the robustness of the results, all the three models are re-estimated using SGMM. The consistency of the estimated parameters of the three models is based on the diagnostic test results from the estimated SGMM indicated by presence of first-order autocorrelation [AR (1)] and the absence of second-order autocorrelation [AR (2)] in the residuals of the model. All SGMM regressions do not present serial correlation problems (see [AR (1)] and [AR (2)] tests -Table 2). The Hansen test statistic of over identifying restrictions is insignificant, suggesting that the set of instruments employed fulfills the exogeneity condition required to obtained consistent estimates in all the models.

Table 2 shows that the lagged variables of government size reveal the influence of past behavior of government in the current government consumption expenditure. In fact, current government size is strongly influenced by previous government size. This coefficient is in line

with literature and expectations (de Mendonça and Oliveira, 2019; Epifani and Gancia, 2009). As reported in the models (10), (11) the results reveal that the use of SGMM does not change the signs and the significance of the coefficients of trade openness and financial openness (Trade, KAOPEN) in the fixed effect models. Indeed, the results confirm the significance of the trade openness for increasing the government size - supporting the compensation hypothesis, while financial openness is negatively associated with government size - supporting the efficiency hypothesis. With reference to the model (12), the results reveal that there is no consistent evidence of a significant impact of globalization on government size. This is consistent with the finding by Dreher et al. (2008) and Adams and Sakyi (2012).

Turning to the control variables, the coefficients of real GDP are positive and significant in all the models. As in models (10), (11) and (12), population is negatively associated with government size. Similarly, urbanization is negatively related to government size in all the models. In addition, across all the models in Table 2, the results also reveal that the coefficients of democracy are positive and significant, revealing the significance of democratic institutions for increasing the government size. The results reported in Table 2 also reveal that dependency ratio does not significantly relate to government size.

Table 2. The system GMM regression

	Trade openness	Financial openness	Globalization
	(10)	(11)	(12)
L.Size	0.716***	0.654***	0.620***
	(0.074)	(0.079)	(0.088)
Real GDP	2.134**	1.836**	1.989*
	(0.879)	(0.836)	(1.025)
Population	-2.131**	-2.374**	-2.357**
	(0.919)	(0.835)	(0.979)
Urbanization	-0.066**	-0.057*	-0.079*
	(0.026)	(0.030)	(0.040)
Democracy	0.219*	0.443***	0.400**
	(0.132)	(0.147)	(0.174)
Dependency	0.049	-0.014	-0.002
	(0.039)	(0.029)	(0.048)
Trade	0.027***		
	(0.009)		
KAOPEN		-2.098*	
		(1.236)	
Globalization			-0.006
			(0.078)
Observations	910	924	930
Number of countries	40	40	40
Number of instruments	24	24	24
AR(1) p-value	0.000	0.000	0.000
AR(2) p-value	0.713	0.412	0.388
Hansen test p-value	0.611	0.836	0.608

Notes: Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1; Constant is included in all the models but not reported for convenience.

5. Conclusions

This paper assesses the effect of trade openness, financial openness and globalization on government size in 40 Sub-Saharan African countries. The fixed effect and System GMM estimation techniques are used to account for unobserved heterogeneity and to correct for potential endogeneity. Findings from this study are summarized as follows. First, in relation to the relationship between trade openness and government size, our empirical results reveal

that trade openness is associated with larger governments, indicating that the gains in term of international trade outweigh the cost in term of increase of government size in Sub-Saharan African countries. This is consistent with the findings of de Mendonça and Oliveira (2019), Rodrik (1998) and Lin et al. (2014). Second, with regard to the relationship between financial openness and government size, the findings also reveal that financial openness is negatively associated with government size. The findings lend support to the results of Liberati (2007). This may result from the fact that the financial sector of SSA countries is not sufficiently developed to make a positive contribution to government size. Third, the results also indicate that while globalization has negative and significant effect on government size when using fixed effect estimates, the irrelevance of globalization for government size is confirmed when using SGMM estimations.

The findings have broad implications. First, the positive impact of trade openness on government size suggests that SSA countries have to improve the trade liberalization gradually. However, to take the full advantage of trade openness SSA countries should adjust and endogenize technological spillovers, eliminate trade distorting policies and improve their productivity and competitiveness. Second, policies promoting financial sector, capital controls, institutional quality and governance practices, good macroeconomic policies, which include fiscal, exchange rate and monetary policies appear to help SSA countries derive the benefits of financial openness and globalization. Moreover, it is possible that financial openness is associated with smaller government size during its first stages. In addition, our results reveal that general economic, democracy are keys to increase government size in Sub-Saharan African countries, indicating that policy instruments such as policies targeted improving productivity of economic sector and democratic institutions should be included as components of government consumption increasing strategies.

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