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Openness and government size: A new empirical assessment

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Abstract

This paper provides a new empirical assessment of the relationship between openness and government size. Based on a sample of 124 countries for the period from 1980 to 2016, we estimate several panel data regressions. By the use of measures of trade openness, financial openness, and globalization, as well as samples of developing countries and high-income countries, we investigate the validity of compensation and efficiency hypotheses. The findings denote that while financial openness is not relevant to government size, trade openness and globalization cannot be neglected in the case of developing countries.

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1. Introduction

The relationship between economic openness and government size is an object of intense investigation. Most literature on this subject considers only international trade relationships as a proxy for openness. However, after the 2008 Global Financial Crisis, the effects on government expenditure due to financial openness and globalization became evident. This paper presents a new empirical assessment of the relationship between openness and government size, taking into account three indicators of openness: trade openness, financial openness, and globalization. We are considering three propositions for the investigation:

Proposition 1 – "compensation hypothesis" – increases in trade openness may lead to more demand for public expenditures to compensate for increasing external risk (see Cameron, 1978; and Rodrik, 1998);

Proposition 2 – "efficiency hypothesis" – financial openness may lead to the higher mobility of tax factors and leave governments with a reduced ability to maintain larger public sectors (see Liberati, 2007); and

Proposition 3 – such as in trade openness, globalization increases material inequality and economic insecurity thus creating incentives for governments to compensate the losers from globalization by increasing their economic policy activism (see Garret, 1998 and 2001).

The most comprehensive literature on trade openness and government size presents evidence favorable to a positive relationship between these variables (see, for example, de Mendonça and Cacicedo, 2015; Ram, 2009; Efipani and Ganci, 2008; Rodrik, 1998). Therefore, there exists evidence supporting the "compensation hypothesis". According to Rodrik (1998), a possible explanation for this phenomenon is that government spending appears to provide social insurance in economies subject to external shocks. However, this interpretation is not unanimous. Some authors like Benarroch and Pandey (2012 and 2008) found evidence that causality does not run from trade openness to government size.

Regarding the relationship between financial openness and government size, the conventional wisdom is that capital mobility may undermine the ability of governments to maintain larger public sectors. This view, that is, a negative relationship between capital openness and government size ("efficiency hypothesis") is supported by empirical evidence provided by Liberati (2007). However, Kimakova (2009) using a larger sample of countries did not find that greater financial openness leads to larger government size.

In summary, according to the theory, trade openness and financial openness can have opposite effects on the government size. In order to consider the net effect of these two opposite forces (trade openness and financial openness) on the government size, some authors investigate the effect caused by globalization. In general, globalization reduces the effectiveness of domestic policies and thus restrains governments by inducing increased budgetary pressure (Dreher, Sturm, and Ursprung, 2008). Hence, this globalization-induced welfare state retrenchment is potentially mitigated by citizens' preferences to be compensated for the costs of globalization (Epifania and Gancia, 2008). However, there is no convergence in the literature regarding the results. Dreher, Sturm, and Ursprung (2008) point out the irrelevance of globalization for government expenditures, while Epifania and Gancia (2008) warn that globalization may have led to inefficiently large governments.

In brief, there is too much noise in the literature for the relationship between openness and government size and thus further investigation is needed. To avoid bias in the empirical analysis we made use of a large sample of 124 countries for the period from

1980 to 2016. In order to analyze the effect of trade openness, financial openness, and globalization on government consumption expenditure, we perform a panel data analysis through fixed-effects and system of generalized method of moments. Furthermore, because some authors (for example, Benarroch and Pandey, 2012) point out that the results can be subject to the sample of countries, we provide additional evidence from subsamples of developing countries and high-income countries. Our results indicate that an increase in financial openness is not relevant for government size but trade openness and globalization cannot be neglected in the case of developing countries.

This paper is organized as follows. Section 2 describes data and variables as well as the empirical model and methodology. Section 3 presents the estimation results and the respective analysis. Section 4 concludes the paper.

2. Data and methodology

In order to check the impact of openness on government size, this study takes into account three indicators of openness (*OPEN*). As a measure of trade openness (*TRADE*), we use the ratio of trade (sum of imports and exports of goods and services) to GDP gathered from World Bank national accounts data (https://data.worldbank.org/indicator/NE.TRD.GNFS.ZS). Our indicator of financial openness is a de jure measure of financial openness (*KAOPEN*) provided by Chinn and Ito (2006). It is an index based on information about restrictions in the International Monetary Fund's Annual Report on Exchange Arrangements and Exchange Restrictions and the first standardized principal component of the variables that indicate the presence of multiple exchange rates, restrictions on current account transactions, restrictions on capital account transactions, and the requirement to surrender export proceeds (http://web.pdx.edu/~ito/Chinn-Ito_website.htm). Our third indicator of openness is the globalization indicator (*GLOB*) as published by the KOF Swiss Economic Institute. This index was originally developed in Dreher (2006) and it captures the three main dimensions of globalization: economic integration, political integration, and social integration indicator (https://www.kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html). Furthermore, as a proxy for government size (*GOVSIZE*) such as Rodrik (1998), Kimakova (2009), Ram (2009), and Lim, Li, and Sim (2014), we use the General government final consumption expenditure (% of GDP) from World Bank national accounts data (https://data.worldbank.org/indicator/NE.CON.GOVT.ZS).[1]

The above-mentioned indicators of openness allow one to check three possibilities of effect on the government size: compensation hypothesis, efficiency hypothesis, and increase in inequality and economic insecurity (see figure 1).

Constrained to the availability of information, we consider up to 124 countries for the period from 1980 to 2016 with annual frequency. Besides indicators of openness and size of government, we use control variables (*X*) pointed out by the literature as relevant for the analysis regarding government size.[2] In this sense, we introduce the following variables in the models: real GDP per capita, the dependency ratio in the population, the urbanization rate, and population.[3]

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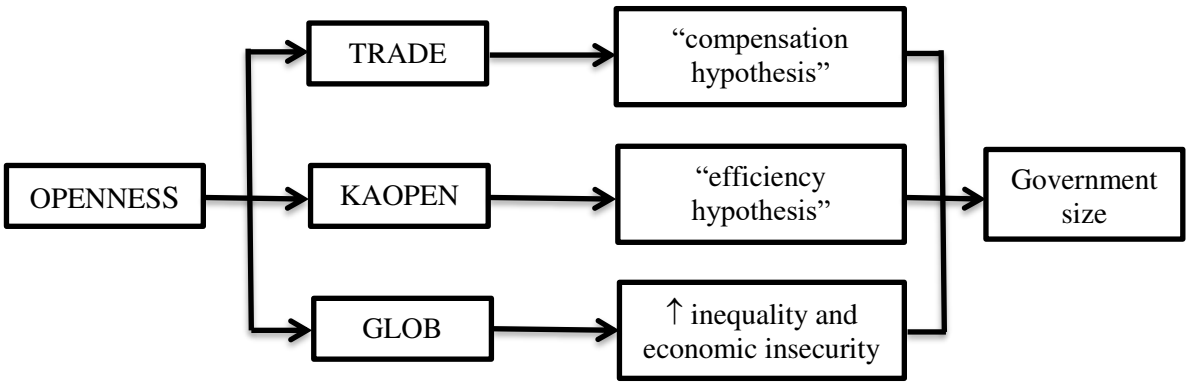
[1] It is important to note that we cannot use other proxies for government size because the data is not available for the set of countries covering the whole period under analysis.

[2] See, Rodrik (1998), Alesina and Wacziarg (1998), Ram (2009), Kimakova (2009), Benarroch and Pandey (2012), and Lin, Li, and Sim (2014).

[3] We do not introduce the type of the political system in the models (as suggested by Epifani and Gancia, 2008; and Kimakova, 2009) because the coefficient on this variable is not statistically significant.

Figure 1

Openness measures and government size



Therefore, in order to verify the effect of openness on government size, we use the following specification as a benchmark:

(1) $GOVSIZE_{i,t} = \alpha_0 OPEN_{i,t} + \alpha_1 X_{i,t} + \beta_i + \beta_t + \varepsilon_{i,t}$,

where $i = 1,2, \ldots, 124$ are the countries; $t = 1, 2, ..., 37$ are time periods (annual frequency) from 1980 to 2016; *GOVSIZE* is the government consumption in GDP; *OPEN* is the openness indicators in this study: *TRADE*, *KAOPEN*, and *GLOB*. *X* is a vector of control variables; β_i represents a vector of country-specific factors; β_t allows for time effects that capture common shocks to all countries; and $\varepsilon_{i,t}$ is the stochastic error term.

In equation (1) the sign of the coefficient α_0, which measures the effect of openness on the government size, is relevant in this analysis. We expect positive coefficient for trade openness ($\alpha_0>0$, which is consonance with the "compensation hypothesis") and a negative coefficient for financial openness ($\alpha_0<0$, which is in line with "efficiency hypothesis"). Moreover, we expect that the "compensation hypothesis" is stronger than the "efficiency hypothesis" and thus the net effect captured by globalization reveals a positive coefficient ($\alpha_0>0$). Hence, in order to check whether there exists evidence that supports this view, we provide several estimates of equation (1) based on panel data analysis. Because we are using annual data over the period from 1980 to 2016, the number of periods (t=37) is not small and thus the fixed-effects method performs well.

In order to consider the possible effect of the heterogeneity on the relationship between openness and government size, besides the estimations for the full sample of countries, we perform new estimations using different samples of countries. As pointed out by Benarroch e Pandey (2012) little work has been done examining whether the relationship between openness and government size differs between low and high-income countries. Therefore, we provide additional evidence through the re-estimation of the previous specifications using two samples regarding the classification of countries: 94 developing countries (classification made by International Monetary Fund, https://www.imf.org/external/pubs/ft/weo/2018/01/weodata/index.aspx) and 37 high-income countries (World Bank definition - https://datahelpdesk.worldbank.org/knowledgebase/articles/906519#High_income).[4]

Figure 2 presents a path of openness for the two subsamples under consideration (sample of developing countries - DEV; and a sample of high-income countries - HIC). In general, we observe that while trade openness does not present a substantial difference between developing and high-income countries, financial openness and globalization are

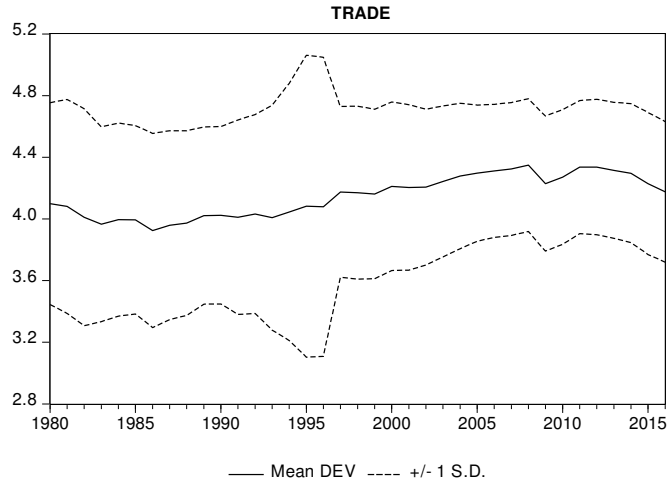
[4] Table A.1 (appendix) presents the description of the variables, sources of data, and descriptive statistics.

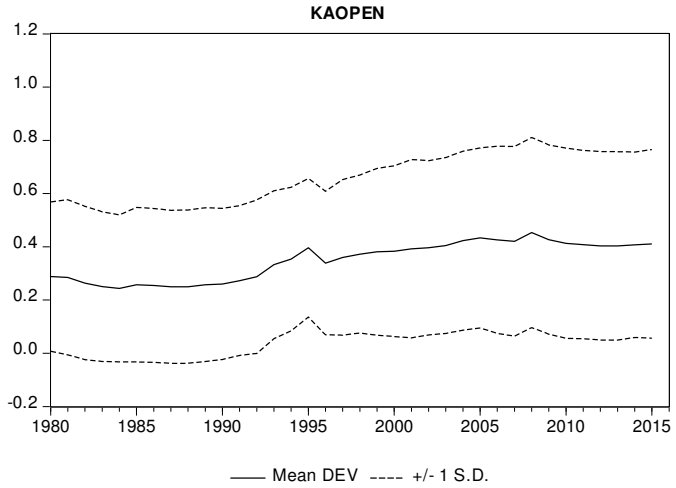
stronger in high-income countries.

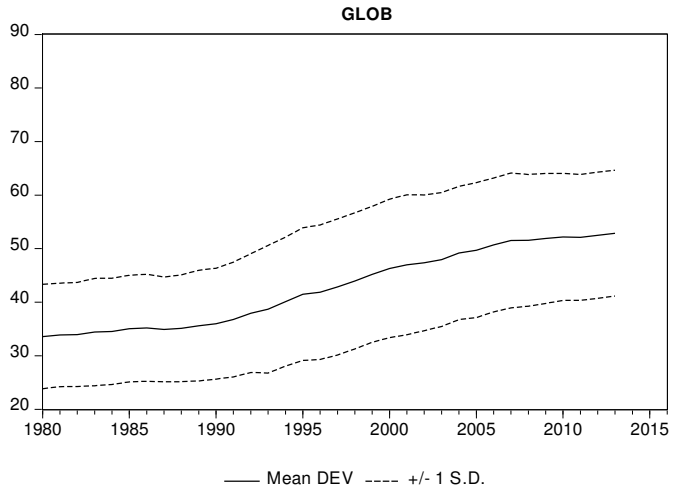
Figure 2

Openness measures (TRADE, KAOPEN, and GLOB)

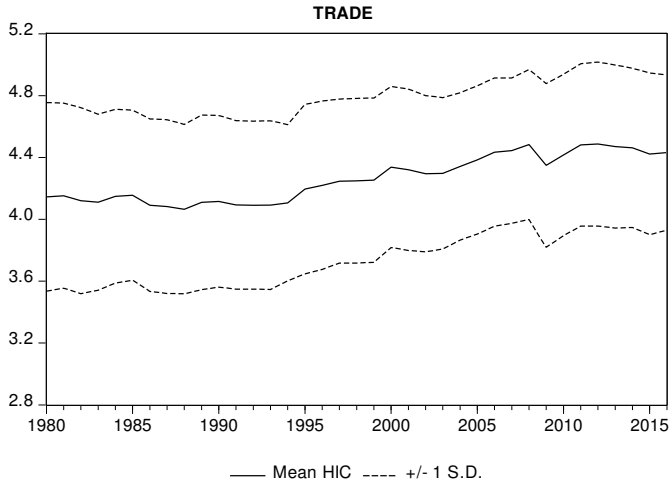
Developing countries

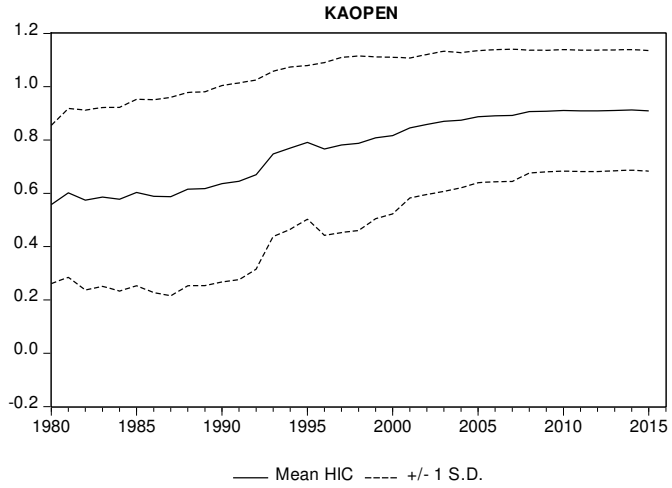


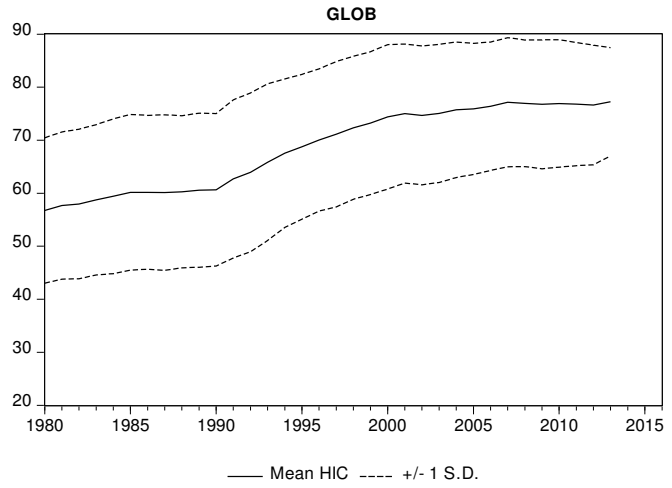




High income countries







Note: DEV - sample of developing countries (IMF) and HIC - sample of high income countries (World Bank).

Concerning a possible simultaneity problem between government size and

openness, we provide a robust analysis through re-estimation of the models using a method to deal with these issues, that is, the system generalized method of moments (Sys-GMM). With the intention to improve the efficiency of GMM models, Bond, Hoeffler, and Temple (2001, p. 9) propose an approach where it "combines the standard set of equations in first-differences with suitably lagged levels as instruments, with an additional set of equations at levels with suitably lagged first-differences as instruments". Although our samples are not small when the total number of instruments is greater than the number of cross-sections, the results of estimations can be biased due to the risk of overfitting the instrumented variables (Roodman, 2009). In this sense, as suggested by de Mendonça and Barcelos (2015), we take into account the ratio between the number of instruments and the number of cross-sections lower than 1 in all models. Moreover, in order to test the validity of instruments and absence of serial correlation, we perform tests of over-identifying restrictions (J-test) and tests of first-order (AR1) and second-order (AR2) serial correlation (Arellano and Bond, 1991).

3. Empirical evidence

We present empirical evidence in three steps. In the first step, we present the results of estimates of the models based on equation (1) taking into account the fixed-effect method. In the second step, we provide evidence from two subsamples of countries: developing economies and high-income countries. In the third step, in order to check the robustness of the effect of openness on government size, we re-estimate the complete specification of the models using Sys-GMM.

3.1. Estimates of openness and government size (full sample)

Table 1 presents the estimation results for the full sample of countries regarding the effect of openness (*TRADE*, *KAOPEN*, and *GLOB*) on government size (*GOVSIZE*). Our evidence is in accordance with previous results found in the literature that there exists a positive empirical relationship between trade openness (*TRADE*) and government size (see Rodrik, 1998; Alesina and Wacziarg, 1998; Ram, 2009; and Lin, Li, and Sim, 2014). In brief, the positive and significant coefficients on *TRADE* in the models (α_0>0 in equation 1) suggests that the "compensation hypothesis" is correct.

Regarding the results concerning financial openness, the coefficient on *KAOPEN* is negative in all the models (α_0<0 in equation 1). However, there is no statistical significance associated with this coefficient in any specification. Hence, this result is not in consonance with "efficiency hypothesis" (see Liberati, 2007), and thus that an increase in financial openness can reduce the government size. In addition, this result does not support the result found by Kimakova (2009) that greater financial openness leads to larger government size. In brief, we find evidence that an increase in financial openness is not relevant to affect government size.

As observed in the case of trade openness, the coefficients on *GLOB* are positive (α_0>0 in equation 1) and significant in all models. This result runs into Garrett's view (1998) that globalization increases government size due to an increase in economic policy activism. In other words, such as pointed out by Dreher, Sturm, and Ursprung (2008), we observe that the presence of the demand-side effects of globalization can be associated with an increase in the social welfare programs.

Table 1

Effect of openness (TRADE, KAOPEN, and IGLOB) on government size – full sample

	Trade openness			Financial openness			Globalization		
Regressors:	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
GDPP	-1.748	-1.554	-1.848	-1.613	-1.469	-1.769	-1.938	-1.710	-2.046
	(1.470)	(1.676)	(1.572)	(1.890)	(2.096)	(1.945)	(1.822)	(2.065)	(1.920)
POP	-4.740**	-4.366**	-5.788***	-6.596**	-6.277**	-8.072***	-6.647**	-6.084**	-8.132***
	(1.946)	(2.200)	(2.147)	(2.814)	(3.109)	(3.079)	(2.739)	(3.003)	(3.062)
DEPEN		2.800	3.039		2.107	2.597		4.635**	4.874**
		(2.137)	(2.038)		(2.290)	(2.153)		(2.292)	(2.171)
URBAN			4.609***			6.195***			6.279***
			(1.583)			(2.150)			(2.212)
TRADE	2.438***	2.426***	2.280***						
	(0.393)	(0.402)	(0.410)						
KAOPEN				-0.594	-0.545	-0.359			
				(1.167)	(1.133)	(1.075)			
GLOB							0.093*	0.111**	0.097**
							(0.049)	(0.049)	(0.045)
N. observations	4295	4294	4294	4044	4043	4043	3965	3965	3965
Adjusted R^2	0.681	0.683	0.688	0.682	0.682	0.691	0.676	0.679	0.688
F-statistic	57.70***	57.71***	58.83***	54.79***	54.61***	56.50***	52.95***	53.43***	55.31***

Note: Marginal significance levels: (***) denotes 0.01, (**) denotes 0.05, and (*) denotes 0.1. White's heteroscedasticity consistent covariance matrix was applied in regressions. Robust standard errors between parentheses. Fixed effects with time dummies. The sample is an unbalanced panel of 124 countries from 1980 to 2016. Constant is included in the models but not reported for convenience.

Regarding our control variables, the results are in consonance with those observed in the literature. The coefficient of real GDP per capita (*GDPP*) is negative and not significant in all models. This observation is in consonance with a greater part of the literature (see Benarroch and Pandey, 2012; Ram, 2009; Epifani and Gancia, 2009; Rodrick, 1998; and Alesina and Wacziarg, 1998), which indicates a lack of support for the view that public expenditure rises as income growth expands (Wagner's law). The coefficient on population (*POP*) is negative and significant. This evidence is in line with the view that bigger countries may enjoy stronger terms-of-trade effects and thus have larger governments (see Epifani and Gancia, 2009; Benarroch and Pandey, 2012, Garret, 2001; and Alesina and Wacziarg, 1998). Such as Rodrik (1998), the coefficient on the dependency ratio (*DEPEN*) is positive. Furthermore, the coefficient on the urbanization rate is positive and significant (see Ram, 2009; and Kimakova, 2009).

3.2. Estimates of openness and government size: developing countries and high-income countries

Some studies point out that the relationship between openness and government size differs when samples of developing countries and high-income countries are considered in the analysis. As suggested by Rodrik (1998) high-income countries have well-established transfer programs relative to developing countries, which in turn it may lead for high-income countries to provide greater welfare benefits to offset the negative impact from increases in openness (see Rudra, 2002). As pointed out by Garret (2001), high-income countries may be less vulnerable to the efficiency constraints of globalization and more sensitive to demands for compensation. In particular, high-income countries are able to maintain large government size even if it is inefficient and are subject to large political demands for government compensation. Furthermore, given the power of high-income countries in the international system, these countries might be able to shift the costs of globalization onto the developing countries. At last, the costs of tax collection are higher or administrative capacities are insufficient in developing countries to support greater government expenditure (Garen and Trask, 2005).

In brief, there exists a possibility for different results regarding the relationship between openness and government size when different samples of countries are used. Hence, such as, for example, Benarroch and Pandey (2012) we re-estimate the models in the previous section taking into account two different samples: developing countries and high-income countries.

Paying attention to our variable of interest in the models (openness indicators), we observe that the results of estimations from developing countries and high-income countries samples are quite different (see tables 2 and 3). While there are significant coefficients on *TRADE* and *GLOB* for the case of developing countries, there is no statistical significance of these coefficients for high-income countries. The result which is common between the samples is the coefficient on *KAOPEN*. It is negative and not significant in both cases. Therefore, the results suggest that the "compensation hypothesis" is valid only for the case of developing countries. In addition, as observed in the case of the full sample, the findings of both samples do not support the "efficiency hypothesis".

Table 2

Effect of openness (TRADE, KAOPEN, and IGLOB) on government size – developing countries

	Trade openness			Financial openness			Globalization		
Regressors:	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
GDPP	-2.371	-2.250	-2.598*	-2.406	-2.325	-2.633	-2.614	-2.485	-2.814
	(1.502)	(1.640)	(1.491)	(1.961)	(2.075)	(1.897)	(1.831)	(2.011)	(1.852)
POP	-3.481	-4.026*	-4.978**	-5.079	-5.560	-6.582*	-5.024	-5.990*	-7.166**
	(2.431)	2.385	(2.247)	(3.635)	(3.613)	(3.420)	(3.466)	(3.505)	(3.426)
DEPEN		3.362	3.091		2.539	2.343		5.394**	5.001**
		(2.276)	(2.181)		(2.202)	(2.092)		(2.424)	(2.307)
URBAN			4.431***			5.220***			5.150***
			(1.622)			(1.903)			(1.908)
TRADE	2.553***	2.550***	2.418***						
	(0.398)	(0.401)	(0.398)						
KAOPEN				-0.431	-0.405	-0.318			
				(1.333)	(1.295)	(1.267)			
GLOB							0.112**	0.128**	0.111**
							(0.049)	(0.051)	(0.045)
N. observations	3271	3270	3270	3039	3038	3038	2999	2999	2999
Adjusted R^2	0.634	0.635	0.641	0.630	0.630	0.637	0.627	0.631	0.638
F-statistic	43.84***	43.81***	44.58***	40.42***	40.24***	41.17***	40.08***	40.45***	41.32***

Note: Marginal significance levels: (***) denotes 0.01, (**) denotes 0.05, and (*) denotes 0.1. White's heteroscedasticity consistent covariance matrix was applied in regressions. Robust standard errors between parentheses. Fixed effects with time dummies. The sample is an unbalanced panel of 94 countries from 1980 to 2016. Constant is included in the models but not reported for convenience.

Table 3

Effect of openness (TRADE, KAOPEN, and IGLOB) on government size – high income countries

	Trade openness			Financial openness			Globalization		
Regressors:	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
GDPP	-2.428	-1.615	-3.350**	-2.430*	-1.483	-3.449*	-2.809**	-1.456	-3.177*
	(1.283)	(1.552)	(1.687)	(1.325)	(1.600)	(1.817)	(1.173)	(1.472)	(1.752)
POP	-8.360***	-5.098	-7.204*	-9.547***	-6.360	-7.370	-10.213***	-6.027	-7.430
	(1.846)	(4.363)	(4.217)	(2.352)	(4.955)	(4.639)	(2.336)	(4.933)	(4.714)
DEPEN		3.863	3.259		3.969	4.064		5.532	5.527
		(3.353)	(3.073)		(3.440)	(3.063)		(3.853)	(3.545)
URBAN			9.008***			10.587***			9.582***
			(2.898)			(3.101)			(3.506)
TRADE	0.695	1.046	0.032						
	(1.225)	(1.303)	(1.497)						
KAOPEN				-0.698	-0.612	-0.350			
				(1.283)	(1.350)	(1.302)			
GLOB							0.0725	0.068	0.034
							(0.050)	(0.053)	(0.051)
N. observations	1316	1316	1316	1254	1254	1254	1215	1215	1215
Adjusted R^2	0.820	0.822	0.831	0.817	0.820	0.830	0.830	0.835	0.844
F-statistic	80.68***	81.12***	85.57***	76.42***	76.94***	81.69***	83.14***	85.120***	89.866***

Note: Marginal significance levels: (***) denotes 0.01, (**) denotes 0.05, and (*) denotes 0.1. White's heteroscedasticity consistent covariance matrix was applied in regressions. Robust standard errors between parentheses. Fixed effects with time dummies. The sample is an unbalanced panel of 37 countries from 1980 to 2016. Constant is included in the models but not reported for convenience.

3.3. Robustness analysis

We perform an additional analysis to confirm the robustness of our results in the previous sections. In order to avoid the possibility of the results to be biased due to simultaneity problem in the models, we re-estimate the models using Sys-GMM for the three samples (full countries, developing countries, and high-income countries). The results show that there are no overidentification and autocorrelation problems in the models. All sys-GMM regressions have valid over-identifying restrictions (J-statistic > 0.10) and do not present serial autocorrelation problems (see AR(1) and AR(2) tests - table 4).

In a general way, independent of the sample for consideration, the use of Sys-GMM does not change the signs and the statistical significance of the coefficient of our variables of interest (*TRADE, KAOPEN* and *GLOB*) in the fixed effect models. In short, the results confirm the relevance of the trade openness and globalization for increasing the government size ("compensation hypothesis") in the cases of full and developing countries samples. In addition, regarding the coefficients of financial globalization, the findings are in consonance with previous evidence that there is no evidence of "efficiency hypothesis" in any sample.

Table 4

Effect of openness (TRADE, KAOPEN, and IGLOB) on government size – SGMM

	Trade openness			Financial openness			Globalization		
Regressors:	FULL	DEV	HIC	FULL	DEV	HIC	FULL	DEV	HIC
GOVSIZE(-1)	0.687***	0.762***	0.741***	0.724***	0.657***	0.771***	0.676***	0.737***	0.772***
	(0.003)	(0.004)	(0.010)	(0.002)	(0.005)	(0.019)	(0.003)	(0.003)	(0.009)
GDPP	-0.289***	-0.071***	-1.636***	-0.223***	-0.313**	-1.148	-0.392***	-0.201***	-0.512**
	(0.034)	(0.027)	(0.337)	(0.029)	(0.137)	(0.822)	(0.052)	(0.027)	(0.242)
POP	-0.410***	-1.398***	-0.782***	-0.223***	-0.446**	-0.015	-0.641***	-1.284***	-0.423*
	(0.088)	(0.078)	(0.239)	(0.055)	(0.203)	(0.371)	(0.101)	(0.094)	(0.244)
DEPEN	0.176**	0.366***	0.315	0.088*	1.394***	1.262***	0.590***	0.204***	0.916***
	(0.085)	(0.126)	(0.199)	(0.051)	(0.374)	(0.405)	(0.107)	(0.052)	(0.279)
URBAN	2.666***	1.781***	11.904***	2.176***	2.735***	11.733***	2.570***	1.250***	4.298***
	(0.170)	(0.099)	(2.290)	(0.079)	(0.275)	(4.127)	(0.204)	(0.081)	(0.694)
TRADE	0.069**	0.490***	0.284						
	(0.031)	(0.021)	(0.173)						
KAOPEN				-0.028	-0.204	-0.187			
				(0.040)	(0.148)	(0.175)			
GLOB							0.017***	0.022***	0.008
							(0.004)	(0.002)	(0.006)
N. observations	2746	1785	795	2679	1707	827	2639	1682	750
N.Inst/N. cross sec	0.911	0.925	0.838	0.952	0.830	0.703	0.871	0.925	0.750
J-statistic	119.185	86.723	23.045	121.072	83.960	21.939	117.909	86.677	27.863
P-valor	0.198	0.284	0.575	0.263	0.158	0.344	0.134	0.287	0.144
AR(1)	-0.498	-0.521	-0.520	-0.501	-0.494	-0.529	-0.497	-0.523	-0.520
P-valor	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AR(2)	0.024	0.032	0.042	0.028	-0.002	0.034	0.022	0.029	0.051
P-valor	0.207	0.220	0.249	0.146	0.930	0.337	0.245	0.270	0.176

Note: Marginal significance levels: (***) denotes 0.01, (**) denotes 0.05, and (*) denotes 0.1. White's heteroskedasticity consistent covariance matrix was applied in regressions. Standard errors between parentheses. S-GMM – uses two-step of Arellano and Bover (1995) without time period effects. Tests for AR (1) and AR (2) check for the presence of first order and second-order serial correlation in the first-difference residuals. Full - total sample of countries; DEV - sample of developing countries (IMF); and HIC - sample of high income countries (World Bank).

4. Conclusion

This paper provided empirical evidence on the relationship between openness and government size from a sample of 124 countries for the period 1980 to 2016. Taking into account three indicators of openness (trade openness, financial openness, and globalization) we checked the validity of "compensation hypothesis" and "efficiency hypothesis" for a different sample of countries. Our results support the view that an increase in trade openness may increase the government consumption expenditure in the case of developing countries but not in the case of high-income countries. In addition, we do not find evidence that financial openness is significant enough to affect government size.

Our results indicate that we cannot consider financial openness as a tool for reducing government size. When we consider a large period (36 years) together with a number of countries (124), which allow one to use different samples in the estimations, the "efficiency hypothesis" is not observed. Regarding trade openness and globalization, our evidence points out that the possible increase in external risk demands an increase in the government consumption expenditure only in the case where most sample consists of developing countries. In brief, the evidence in this paper is a clear alert for the necessity of developing countries search for policies against the effect of increasing the government size due to globalization.

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Appendix

Table A.1

Description of the variables, sources of data, and descriptive statistics

Variable name	Variable description	Data source	Mean			Standard deviation			Minimum			Maximum			Observations		
			FULL	*DEV*	*HIC*	*FULL*	*DEV*	*HIC*	*FULL*	*DEV*	*HIC*	*FULL*	*DEV*	*HIC*	*FULL*	*DEV*	*HIC*
GOVSIZE	General government final consumption expenditure (% of GDP).	World Development Indicators	16.05	15.06	19.25	6.51	6.53	5.18	1.38	1.38	9.43	84.51	84.51	47.19	4336	3287	1318
TRADE	Sum of exports and imports of goods and services measured as a share of GDP (log).	World Development Indicators	4.19	4.15	4.27	0.61	0.60	0.54	-3.86	-3.86	2.53	6.28	6.28	5.79	4366	3337	1318
KAOPEN	Principal component - presence of multiple exchange rates, restrictions on current account transactions and, restrictions on capital account transactions, and the requirement of the surrender of export proceeds.	Chinn and Ito (2006) http://web.pdx.edu/~ito/Chinn-Ito_website.htm	0.46	0.35	0.77	0.37	0.32	0.32	0.00	0.00	0.00	1.00	1.00	1.00	4177	3146	1261
GLOB	Index takes into account as long distance flows of goods, capital and services as well as information and perceptions that accompany market exchanges.	Dreher (2006) https://www.kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html	49.76	42.96	68.78	18.74	13.46	15.18	10.56	10.56	22.09	92.63	87.29	92.63	4116	3117	1236
GDPP	GDP per capita (constant 2010 US$) - is GDP divided by midyear population (log).	World Development Indicators	8.22	7.65	10.03	1.56	1.19	0.79	4.75	4.88	5.85	11.43	10.51	11.43	4442	3362	1326
DEPEN	Age dependency ratio (% of working-age population) - people younger than 15 or older than 64 - to the working-age population - those ages 15-64 (log).	World Development Indicators	4.21	4.29	3.94	0.28	0.27	0.15	3.32	3.32	3.32	4.73	4.73	4.53	4585	3475	1369
URBAN	Urban population (% of total) - refers to people living in urban areas as defined by national statistical offices (log).	World Development Indicators	3.82	3.68	4.23	0.58	0.57	0.41	1.47	1.47	2.12	4.61	4.56	4.58	4586	3476	1369
POP	De facto definition of population, which counts all residents regardless of legal status or citizenship.	World Development Indicators	16.00	15.93	15.91	1.83	1.93	2.04	11.03	11.03	11.03	21.04	21.04	21.04	4585	3475	1369

Note: Full - total sample of countries; DEV - sample of developing countries (IMF); and HIC - sample of high income countries (World Bank).