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Institutions and pro-cyclicality of fiscal policy in Sub Saharan Africa

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Abstract

This paper identifies how institutional variables influence the pro-cyclicality of fiscal policy in Sub Saharan Africa. Prior to that main objective, we evaluate the cyclical nature of fiscal policy and which institutional variable influences the cyclical nature of fiscal policy in Sub Saharan Africa. We rely on the method of generalized moments in system for a sample of 42 countries over the period 1990-2014. From our empirical analysis, we derive the following results. (i) Fiscal policy in Sub Saharan Africa countries is pro-cyclical. (ii) Freedom from corruption accentuates the pro-cyclicality of fiscal policy in Sub Saharan Africa countries. (iii) Democracy reduces the pro-cyclicality of fiscal policy in Sub Saharan Africa.

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1. INTRODUCTION

The 2008-2009 global financial crisis has returned fiscal policy to the center stage as an instrument of macroeconomic stabilization. The importance of macroeconomic stabilization has been highlighted by Blinder (2004) who points out that fiscal policy is better suited for the role of macroeconomic stabilizer. For this purpose, the fiscal policy has to behave counter-cyclically. Counter-cyclicality refers to a situation where, during a boom, government expenditure fall or government revenues increase because of automatic stabilizers[2]. There is widespread evidence that fiscal policy tend to be counter-cyclical in developed countries, especially in OECD countries (Gali and Perotti, 2003). In less developed countries (LDCs) and emerging countries, fiscal policy is very often pro-cyclical (Ilzetzki and Vegh, 2008; Woo, 2009; Bergam and Hutchison, 2015), especially in Sub Saharan Africa (SSA) countries (Carmignani, 2010). A pro-cyclical fiscal policy involves higher (lower) government spending during booms (recessions). The pro-cyclicality of fiscal policy leads to macroeconomic instability for instance output volatility (Carmignani, 2010) and welfare costs (Loayza et al., 2007).

Why is fiscal policy pro-cyclical in many LDCs? From the abundant literature, we consider two main determinants, namely financing constraints and institutional distortions as in Kraay and Servén (2008). They demonstrate that in low-income countries, automatic stabilizers are pro-cyclical due to institutional failures and lack of access to finance during economic downturns. Concerning financial constraints, there is a distinction between internal and external financing constraints. Caballero and Krishnamurthy (2004) emphasize on the internal financing constraints and demonstrate that a country with a low financial depth will implement a pro-cyclical fiscal policy. On the other hand, Kuralbayeva (2013) bases its analysis on external financing constraints. He highlights that the weak opportunities for LDCs to access to international capital market explain the conduct of pro-cyclical fiscal policy. With respect to the institutional distortions, the literature gives numerous explanations to the cyclicality of fiscal policy and divergent conclusions. The pioneer papers, to the best of our knowledge, are the contribution of Tornell and Lane (1998, 1999) and their so called "*voracity effect*"[3]. They underscore that, in a context of a strong competition inside the political system, fiscal policy tends to be pro-cyclical. In other words, the competition among various interest groups for a common pool of resources leads to a more-than-proportional increase in public spending in response to a positive income shock. The contribution of Ilzetzki (2011) put forward the role of democracy. Indeed, in a democratic system, the divergent preferences of political parties can lead to an excessive accumulation of debt. Thus, the government in place will be willing to increase public expenditure, thereby generating a pro-cyclical fiscal policy. In this vein, Diallo (2009) uncovers a positive association between democratic institutions and counter-cyclical fiscal policy in a panel of African countries. On the contrary, Lledo et al. (2011) demonstrate that democracy and degree of political competition do not affect the pro-cyclicality of fiscal policy. Thornton (2008) insists on the influence of corruption and explains that government consumption is more pro-cyclical in less corrupt African countries. But, according to Alesina et al. (2008), the pro-cyclical bias of

[2] Automatic stabilizers are traditionally associated with the cyclical properties of taxes, transfers and government spending. Therefore, automatic stabilizers reflect revenue and some expenditure items that adjust automatically to cyclical changes in the economy. In other words, automatic stabilizers are those elements of fiscal policy that tend to mitigate output fluctuations without any explicit government action.

[3] The "voracity effect" can be defined as a more than proportional increase in the discretionary redistribution by public authorities in response to an expansion of activity economic.

fiscal policy seems to be the solution to the agency problem between voters and corrupt government. The existing empirical research gives contradicting channels through which institutions affect the pro-cyclicality of fiscal policy. For Acemoglu et al. (2005), those contradictions are explained by the fact that political institutions do not directly affect economic performance but through economic institutions. Although this conclusion is understandable, there are still unanswered questions and among them the following question: *how institutional variables influence the pro-cyclicality of fiscal policy?* The aim of our paper is to address this question in the context of SSA countries. Prior to that main objective, the paper has two specific objectives. First, the paper evaluates the cyclical nature of fiscal policy in SSA countries. Second, the paper examines which institutional variable influences the cyclical nature of fiscal policy in SSA countries.

The question of the pro-cyclicality of fiscal policy is interesting and our paper complements and improves upon the existing literature in three main dimensions. First, the paper mainly focuses on African countries because macroeconomic volatility is higher in those countries. For instance, we calculated the volatility of output over the period 2000-2014 and found that the volatility is around 2.1 in SSA, 1.5 in Asia and 1.3 in European Union. Moreover, the study of Carmignani (2010), which is the only study devoted solely for African countries, mainly relies on cyclical nature of fiscal policy, leaving aside what could be the explanations of pro-cyclicality of fiscal policy. Second, many studies have empirically evaluated the effects of institutions in the pro-cyclicality of fiscal policy. But they have not yet included in a same study many institutional variables, both economic and political. We consider these two types of institutions to account for the above argument by Acemoglu et al. (2005) to the contradicting channels through which institutions affect the pro-cyclicality of fiscal policy. Third, using a sample of developed and LDCs countries within 1984 and 2008, Calderon et al. (2016) found that countries with strong (weak) institutions are more likely to adopt counter-(pro) cyclical macroeconomic policies. We extend this work by identifying how each institutional variable, among many political and economic institutions, affects the pro-cyclicality of fiscal policy. Indeed, instead of having a generic policy recommendation, notably the improvement of the quality of institutions, our paper will be able to come out with a specific policy implication.

The rest of the paper is organized as follows. Section 2 describes the methodology. Section 3 introduces the data and stylized facts. Section 4 exposes the results. Section 5 concludes.

2. METHODOLOGY

This section introduces the basic model and the empirical procedure of estimation in order to achieve the main objective of the study.

2.1. THE BASIC MODEL

The study on the cyclicality of fiscal policy is to estimate the reaction function of fiscal authorities as a result of a positive or negative shock. The reaction function of fiscal authorities, as a result of a shock, is captured by a Taylor rule applied to the fiscal policy. This reaction function takes the following form:

$$g_{i,t} = \alpha_0 + \beta_1 g_{i,t-1} + \beta_2 y_{i,t} + \beta_3 D_{i,t-1} + u_{i,t} \qquad (1)$$

g is an indicator of fiscal policy, y a measure of business cycle, D_{t-1} represents public debt and u stochastic disturbances. The subscripts i and t indicate the country and the time period, respectively. The presence of the lagged variable of dependent variable reflects the influence of the initial budgetary conditions on the budget decisions for a given period particularly, the inertia in the evolution of the fiscal variables due to the lags (Huart, 2011). In the literature, many indicators[4] are used to measure fiscal policy but many of them have been criticized. Especially, Frankel et al. (2013) consider that tax receipts are endogenous with respect to the business cycle. As in many studies, we capture the fiscal policy stance by the deviation of real public expenditures from its trend path. Concerning the business variable, we follow Benetrix and Lane (2013) and measure it by the real output gap defined as the deviation of real gross domestic product (GDP) from its trend path. The public debt is measured by the debt of central government as a ratio of GDP.

2.2. THE EMPIRICAL PROCEDURE OF ESTIMATION

Our estimation strategy is in two stages. The first stage seeks to determine the cyclical nature of fiscal policy through the estimation of equation (1). There are three possible configurations. First $\beta_2 > 0$, fiscal policy is pro-cyclical which means that an increase (decrease) in production induces an increase (decrease) of public expenditure. Second $\beta_2 < 0$, fiscal policy is counter-cyclical i.e an increase (decrease) in production is associated with a decrease (increase) of public expenditure. Third $\beta_2 = 0$, fiscal policy is a-cyclic describing its insensitivity to business cycle. In the second stage, we estimate equation (2).

$$g_{i,t} = \alpha_0 + \beta_1 g_{i,t-1} + \beta_2 y_{i,t} + \beta_3 D_{i,t-1} + \beta_4 Q_{i,t} + \beta_5 y_{i,t} Q_{i,t} + u_{i,t} \qquad (2)$$

According to our main objective, we introduce in equation (2) an interaction term between the business-cycle variable and a measure of institution (Q). The interaction between the institutional variable and the business cycle term permits us to demonstrate which institutional factor is predominant in explaining the behavior of fiscal policy as a response of positive or negative shocks. We will focus on the sign of parameter β_5. Relatively to the sign of the parameter, if $\beta_5 > 0$, the institutional variable amplifies the cyclical nature of fiscal policy and if $\beta_5 < 0$, the institutional variable reduces the cyclical nature of fiscal policy. The institutional variable does not influence the cyclicality of fiscal policy when $\beta_5 = 0$.

To estimate equations (1) and (2), we implement the method of generalized moments in system (GMM-SYS). This method is justified by the fact that specifications (1) and (2) are biased by the problem of endogeneity between the current and the lag variable of public expenditure. Also, there is an endogeneity problem between public expenditure and the output gap. The method of instrumentation differs with the nature of explanatory variables: (a) for strictly exogenous variables, the current variables are used as instruments, (b) for weakly exogenous variables, the lagged variables by at least one period are used as instruments, (c) for endogenous variables, the lagged variables by two or more periods are used as instruments variables. In our study, we use lags of the dependent variable and the regressors as instruments. To check the validity of the instruments, we perform the Hansen (1982) tests and the autocorrelation of residues test of Arellano and Bond (1991). We test the sensitivity of our

[4] These indicators include public expenditures, tax receipts, tax rate, budgetary balance etc.

results by using different de-trending methods and different specifications of equation (2). A potential problem when implementing the GMM methods is the proliferation of instruments notably in presence of a longer time dimension. Roodman (2009) discusses many of the pitfalls of instrument proliferation and its consequences. The literature gives at least two methods on how to handle this problem in GMM-SYS estimation. The first method suggests that, the number of instruments can be limited to certain lags (See Roodman, 2009). The second method recommends to use the stata command "collapse" (See Lledo and Poplawski-Ribeiro, 2013; Roodman, 2009). In our empirical estimation, we use the stata command and we limit the lags of instruments variables to 4.

3. DATA AND STYLIZED FACTS

This section describes briefly the definition and sources of data used in our empirical analysis. Then prior to our empirical analysis, we report some stylized facts. The study covers 42 SSA countries between 1990 and 2014. The series on public expenditure, GDP and debt of central government, expressed as constant prices, base year 2000, come from World Economic Outlook (2016). The cyclical components of public expenditure and GDP are obtained by de-trending the corresponding series in log using the Hodrick-Prescott filter with $\lambda = 100$ (HP100) and the Hodrick-Prescott filter with $\lambda = 6.5$ (HP 6.5). We have chosen the value of lambdas in the application of the HP filter because our study relies on annual data. We have also used the Baxter-King filter to de-trend the series but at the end, we did not have convincing results after estimation. The institutional variables include political institutions: democracy (*demo*), degree of political competition (*polcom*), corruption (*cor*), electoral cycle (*elec*), constraints on the executive (*exconst*), government efficiency (*egov*). The democracy variable assesses the democratic or autocratic nature of a regime. The indicator takes values between -10 (totally autocratic regime) and 10 (totally democratic regime). The degree of political competition measures the repression or non-repression of political competition in a country. The *polcom* indicator generally takes values between -10 (absence of political competition) and 10 (strong political competition). Concerning corruption, this variable assesses the level of corruption in a country and takes values between -2.5 (for the most corrupt economies) and 2.5 (for the less corrupt economies). Electoral cycle is constructed to account for electoral years in a country. The variable takes the value 1 at date *t* if there is an election and zero otherwise. The election may be presidential, parliamentary or regional. Referendums are also taken into account. Constraints on the executive highlight the nature of the constraints of the executive. The indicator usually takes values between 0 (if the constraints on the executive are non-existent) and 10 (if the constraints on the executive are strong). Government efficiency measures the perception of the quality of public services, the quality of economic policies as well as their implementation and the degree of credibility of governments. This indicator takes values between -2.5 and 2.5 (2.5 indicating greater government efficiency). We also incorporate economic institutions: freedom from corruption (*fcor*), government size (gsize), fiscal freedom (*ffiscal*) and fiscal rules (*rules*). The indicator freedom from corruption takes values between 0 (for economies where freedom of corruption is lower) and 100 (for economies where freedom of corruption is stronger). Government size is computed by the average between fiscal freedom's indicator and government spending. The indicator fiscal freedom measures the tax burden and takes values between 0 (for low or inexistent tax burdens) and 100 (for very high tax burdens). Regarding the variable fiscal rule, it's constructed to account for countries using a fiscal rule. This variable takes the value 1 at date *t* if the country uses a fiscal rule and 0 otherwise. The series on democracy, degree of political competition and constraints on the executive are extracted from Polity IV database. The variables, control of corruption and government efficiency are obtained from the

Worldwide Governance Indicators database. The series on government size, freedom from corruption and fiscal freedom are drawn from the Heritage Foundation database. These institutional variables are normalized to be comprised between 0 and 1.

Table 1 presents our sample. The sample includes only the SSA countries.

Table 1: Sample of countries

Angola	Eritrea	Niger
Benin	Ethiopia	Nigeria
Bissau Guinea	Gabon	Rwanda
Botswana	Gambia	Sao Tome and Principe
Burkina-Faso	Ghana	Senegal
Burundi	Guinea	Sierra Leone
Cameroon	Ivory Coast	Soudan
Cap-Verde	Kenya	South Africa
Central Africa Republic	Lesotho	Swaziland
Chad	Liberia	Tanzania
Congo	Malawi	Togo
Democratic Republic of Congo	Mauritania	Uganda
Djibouti	Mozambique	Zambia
Equatorial Guinea	Namibia	Zimbabwe

Table 2 reports summary statistics and number of observations from each variable. By construction, the mean value of cyclical component of public expenditure and output gap is zero but the standard deviations are respectively 0.006 and 0.009. The mean value of corruption is 0.377 with a standard deviation of 0.103 (Maximum value is 0.677, minimum is 0.211). For democracy, the value of the mean is 0.413 and the standard deviation is 0.181 (Maximum value is 0.835 and minimum value 0.131). Constraints on the executive and political competition are closed in terms of the value of mean (0.867 for constraints on the executive and 0.878 for political competition) and the value of standard deviation (0.108 for constraints on the executive and 0.111 for political competition). Electoral cycle and government efficiency have a mean value of 0.232 and 0.724 with standard deviation of 0.164 and 0.071 respectively. Their maximum values are respectively 0.428 and 0.607. The minimum value is zero for electoral cycle and 0.163 for government efficiency. With regards to the variable freedom from corruption, the mean value is around 0.272 and the standard deviation is 0.097 (Maximum value is 0.558, minimum value is 0.137). The mean value of fiscal freedom is 0.654 and the standard deviation is around 0.141 (Maximum value is 0.850, minimum value is 0.143). Concerning fiscal rule, the standard deviation is 0.102 with a mean value of 0.081 (Maximum value is 0.850, minimum value is 0.143). Finally, the variable government size has a mean value around 0.724 and a standard deviation of 0.164. The maximum and the minimum of that indicator are respectively 0.924 and 0.280. In general, the stylized facts reveal the poor quality of institutions in SSA countries. This observation has already been made in many empirical studies (For example Acemoglu and Robinson, 2010).

Table 2: Summary statistics of the variables

	Mean	Standard Deviation	Observations
Cyclical component of public expenditure	0.000	0.006	930
Debt	88.586	102.111	826
Output gap	0.000	0.009	1358
Corruption	0.377	0.103	687
Democracy	0.413	0.181	1441
Government efficiency	0.351	0.102	687
Electoral cycle	0.232	0.071	1540
Constraints on the executive	0.867	0.108	1447
Political competition	0.878	0.111	1447
Freedom from corruption	0.272	0.097	739
Fiscal freedom	0.654	0.141	739
Fiscal rule	0.081	0.102	1540
Government size	0.724	0.164	739

Table 3 reports basic correlations amongst the variables, cyclical value of GDP, cyclical value of public expenditure and the institutional variables. Cyclical GDP is positively and significantly correlated with cyclical public expenditure (correlation of 0.374). All the institutional variables have a positive relation with the cyclical GDP even though only government efficiency and fiscal freedom are significant. But, those correlations make the independent contribution of institutional variables difficult to determine. This issue is addressed through the empirical estimation in section 4. From figure 1 to figure 10, we depict the relationship between the cyclical behavior of fiscal policy and the quality of institutions. More precisely, these figures show the cyclical component of public expenditure in the vertical axis and each of the ten institutional variables in the horizontal axis. The different plots seem to indicate a positive relation between the cyclical behavior of fiscal policy and each of the institutional variables. These features highlight that the various institutional indicators influence the degree of policy cyclicality. But the econometric analysis will give a clear conclusion on how each institutional variable influence the cyclicality nature of fiscal policy.

Table 3: Correlations

	g_{t-1}	y	*demo*	*cor*	*egov*	*elec*	*exconst*	*polcom*	*fcor*	*ffiscal*	*rules*	*gsize*
g_{t-1}	1.000											
y	0.374**	1.000										
demo	0.384**	0.217	1.000									
cor	0.191	0.224	0.644***	1.000								
egov	0.388**	0.336**	0.713***	0.852***	1.000							
elec	0.301*	0.059	0.259	-0.041	0.107	1.000						
exconst	0.174	0.105	0.134	0.352**	0.431***	0.015	1.000					
polcom	0.137	0.100	0.149	0.354**	0.343**	-0.006	0.890***	1.000				
fcor	0.127	0.213	0.644***	0.777***	0.781***	0.153	0.280*	0.290*	1.000			
ffiscal	0.314**	0.288*	0.292*	0.263*	0.417***	0.046	0.329**	0.175	0.092	1.000		
rules	0.115	0.141	0.051	-0.166	-0.149	0.410***	0.085	0.108	-0.226	-0.088	1.000	
gsize	0.356**	0.082	-0.148	-0.219	-0.073	0.386**	0.237	0.205	-0.166	-0.101	0.420***	1.000

Note: Significance level: (***) 1%; (**) 5%; (*) 10%.

4. RESULTS

Table 4 summarizes results for our fiscal policy specification. We estimate the reaction function of fiscal policy by the GMM-SYS and using two methods to de-trend our variables. First, we validate the instruments through the Arrelano and Bond (1991) test and the Hansen tests. Specifically, we do not reject the Hansen J and C tests. Second, the Wald test establishes that the overall model is significant. Third, all the estimated parameters are significant at different levels. The significance of the lagged dependent variable indicates the existence of a certain degree of persistence of fiscal policy. The significance of this result is that fiscal policy appears to have the same behavior over years in SSA countries. The positive sign of the coefficient of the real output gap confirms the pro-cyclicality of fiscal policies in SSA countries. This result confirms previous studies on the cyclicality of fiscal policy in LDCs in general and particularly in SSA countries. For instance, Carmignani (2010) and Bobbo (2016) have reached to the same conclusion. Thus, an improvement in economic activity leads to an increase in total public expenditure and a decline of economic activity will be followed by a reduction of public expenditure. The policy interpretation of this result is that fiscal policy is not a tool for stabilization in SSA countries. Finally, the different method of de-trending the series give closed results.

Table 4: Results of the estimation of the reaction function of fiscal policy

Dependent variable: Cyclical component of public expenditure		
VARIABLES	**GMM-HP100**	**GMM-HP6.5**
g_{t-1}	0.447***	0.434***
	(0.146)	(0.111)
D_{t-1}	-0.006**	-0.005**
	(0.003)	(0.002)
y_t	0.629**	1.002***
	(0.317)	(0.182)
CONSTANT	0.001	-0.002
	(0.004)	(0.002)
Observations	616	716
Number of countries	42	43
Wald-test	0.000	0.000
Hansen J-test	0.745	0.965
Hansen C-test	0.514	0.818
AR (1)	0.018	0.002
AR (2)	0.411	0.710

*Note: The numbers in parenthesis are the z-statistics of the coefficients. Significance level: *** (1%); ** (5%).*

More important now are the determinants of pro-cyclicality of fiscal policies in SSA countries. As documented earlier in this paper, there are several determinants identified in the literature. From table 5, we observe that only one institutional variable is statistically different from zero irrespective of the method of de-trend used i.e freedom from corruption. Freedom from corruption is significant at 1% level when we consider the two methods to de-trend the variables used in this study. In addition, democracy and government size are significant respectively at 5% and 1% level when we use the HP6.5 method. Thus, freedom from corruption, democracy and government size influence the dynamic of public expenditure. More interesting is the sign of the parameters which reflects that the institutional variables accentuate or reduce the pro-cyclicality of fiscal policies in SSA countries.

We find that only democracy reduces the pro-cyclicality of fiscal policy. On the other hand, freedom from corruption and government size accentuate the pro-cyclicality of fiscal policy in SSA countries. The other variables (degree of political competition, constraints on the executive, electoral cycle, corruption, government size, fiscal freedom and fiscal rule) do not explain the pro-cyclicality of fiscal policy in SSA countries. For robustness purpose, we run regressions for each institutional variable separately. This further analysis confirms that democracy, freedom from corruption and government size explain the pro-cyclicality of fiscal policy in SSA countries. However, there are two differences with the previous specification. One of the reasons is that including all the institutional variables in the same regression may result in the effect of some variables being influenced by the presence of other variables. The first difference is that many other institutional variables are now statistically different from zero. Irrespective of the HP filter used, corruption accentuates the pro-cyclicality of fiscal policy in SSA countries while fiscal freedom reduces the pro-cyclicality. The degree of political competition and the constraints on the executive influence the cyclical nature of fiscal policy only when the cyclical component of the variables is obtained by the HP6.5. The second difference is that government size now reduces the pro-cyclicality of fiscal policy in SSA countries.

Overall, some of the institutional variables have already been examined in the literature as highlighted above. For instance, we have democracy and our result contradicts the findings of Ilzetzki (2011). But, we provide further proof of Diallo (2009) outcome regarding the positive link between democratic institutions and counter-cyclical fiscal policy in Africa. The improvement of democratic process in many African countries these recent years can be a justification of our result. Also, our result does not confirm the political business cycle theory of Nordhaus (1975) since electoral cycle has no effect on the cyclicality of fiscal policy. In addition, our study confirms the findings of Lledo et al. (2011) by asserting that the degree of political competition does not affect the pro-cyclicality of fiscal policy.

5- CONCLUSION

There is widespread evidence that fiscal policy in SSA countries is pro-cyclical. Numerous studies have identified several factors that explain this pro-cyclicality, mainly focus on the quality of institutions. This paper has improved upon the existing literature by identifying how institutional variables explain the pro-cyclicality of fiscal policy in SSA countries. For this purpose, we consider many institutional variables, both economic and political, in a sample of 42 SSA countries over the period 1990-2014. The empirical procedure relies upon the estimation of a GMM in system and the sensitivity of our results has been tested by using different de-trending methods and specifications. From the stylized facts, we conclude that the quality of institutions is poor in SSA countries, as widely documented in the literature. Also, institutional indicators tend to influence the degree of fiscal policy cyclicality. Econometric analysis gives three main results. Firstly, fiscal policy in SSA countries is pro-cyclical since the sign of the real output gap is positive and significant. Secondly, only freedom from corruption influences the dynamic of public expenditures in all the cases i.e irrespective of the specification used. In fact, freedom from corruption accentuates the pro-cyclicality of fiscal policy in SSA countries. Thirdly, democracy reduces the pro-cyclicality of fiscal policy in SSA countries.

Table 5**:** Role of institutions in the pro-cyclicality of fiscal policy in SSA countries

Dependent variable: Cyclical component of public expenditure		
VARIABLES	HP100	HP6.5
DEMO* y_t	-16.25	-17.25**
	(8.738)	(7.793)
POLCOM* y_t	45.37	26.54
	(57.57)	(68.27)
EXCONST* y_t	-46.60	-29.80
	(57.60)	(63.64)
ELEC* y_t	-0.928	0.380
	(3.322)	(3.094)
COR* y_t	5.868	-1.031
	(16.88)	(21.56)
EGOV* y_t	2.406	31.74*
	(17.47)	(18.08)
GSIZE* y_t	9.361	10.71***
	(6.395)	(3.946)
FFISCAL* y_t	1.075	-1.580
	(7.627)	(6.449)
FCOR* y_t	39.40***	42.53***
	(15.07)	(14.11)
RULES* y_t	-0.566	6.308
	(2.282)	(15.56)
Constant	-0.0523	0.076
	(0.127)	(0.088)
Observations	459	441
Number of countries	40	40
Wald-test	0.000	0.000
Hansen J-test	0.612	0.973
Hansen C-test	0.456	0.922
AR (1)	0.004	0.002
AR (2)	0.931	0.201

*Note: The numbers in parenthesis are the z-statistics of the coefficients. Significance level: *** (1%); ** (5%).*

Table 5**:** Continued

Dependent variable: Cyclical component of public expenditure		
VARIABLES	HP100	HP6.5
g_{t-1}	0.753***	0.426***
	(0.290)	(0.118)
D_{t-1}	-0.004	-0.00147
	(0.008)	(0.008)
GAP	-11.40	-15.14
	(8.559)	(10.12)
DEMO	0.004	-0.0269
	(0.085)	(0.052)
POLCOM	-0.413	0.747
	(0.636)	(0.777)
EXCONST	0.410	-0.779
	(0.677)	(0.826)
ELEC	0.048	0.033
	(0.032)	(0.021)
CORRUPTION	-0.035	0.068
	(0.436)	(0.276)
EGOV	-0.075	-0.323
	(0.666)	(0.376)
GSIZE	-0.0132	-0.0735
	(0.121)	(0.0673)
FFISCAL	0.0321	0.0413
	(0.154)	(0.0566)
FCORRUPTION	0.219	0.205
	(0.269)	(0.113)
RULES	0.041	0.004
	(0.025)	(0.014)
y_t	-11.40	-15.14
	(8.559)	(10.12)
Observations	459	441
Number of countries	40	40
Wald-test	0.000	0.000
Hansen J-test	0.612	0.973
Hansen C-test	0.456	0.922
AR (1)	0.004	0.002
AR (2)	0.931	0.201

*Note: The numbers in parenthesis are the z-statistics of the coefficients. Significance level: *** (1%); ** (5%).*

Table 6: Role of institutions in the pro-cyclicality of fiscal policy in SSA countries

Dependent variable: Cyclical component of public expenditures, GMM- HP 100										
VARIABLES	**DEMO**	**POLCOM**	**EXCONST**	**ELEC**	**COR**	**EGOV**	**FCOR**	**GSIZE**	**FFISCAL**	**RULES**
g_{t-1}	0.459***	0.499***	0.417***	0.468***	0.482***	0.345**	0.363***	0.122	0.254**	0.561***
	(0.138)	(0.136)	(0.137)	(0.134)	(0.157)	(0.169)	(0.102)	(0.119)	(0.110)	(0.104)
D_{t-1}	-0.007	0.002	0.004	0.002	-0.006	-0.003	-0.012**	-0.003	-0.006	0.008
	(0.009)	(0.011)	(0.011)	(0.008)	(0.005)	(0.005)	(0.006)	(0.006)	(0.005)	(0.009)
Q_t	0.008	-0.147	-0.150**	0.031***	-0.181**	-0.000	-0.140	0.0492	-0.137	0.0111
	(0.019)	(0.084)	(0.069)	(0.012)	(0.076)	(0.077)	(0.082)	(0.102)	(0.101)	(0.010)
y_t	2.648***	3.543**	3.835**	0.772**	-3.088	5.233**	-2.886**	3.886	3.571**	1.702**
	(0.880)	(1.711)	(1.931)	(0.318)	(1.775)	(2.444)	(1.212)	(2.090)	(1.765)	(0.747)
$Q_t * y_t$	-7.034**	-3.209	-3.644	0.629	11.30**	-18.75	14.19***	-4.779**	-4.307**	-2.097
	(2.873)	(1.931)	(2.184)	(1.258)	(5.429)	(9.678)	(4.996)	(2.407)	(1.957)	(1.138)
CONSTANT	0.009	0.140	0.140**	-0.008	0.072**	0.009	0.050**	-0.029	0.099	-0.009
	(0.010)	(0.081)	(0.063)	(0.007)	(0.030)	(0.028)	(0.025)	(0.079)	(0.071)	(0.009)
Observations	669	637	616	637	543	543	560	560	560	676
Number of countries	43	41	40	41	42	42	42	42	42	41
Wald-test	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.029	0.004	0.000
Hansen J-test	0.683	0.992	0.910	0.732	0.415	0.415	0.953	0.971	0.892	0.437
Hansen C-test	0.967	0.930	0.885	0.760	0.157	0.463	0.761	0.957	0.573	0.246
AR (1)	0.042	0.025	0.037	0.019	0.008	0.042	0.004	0.048	0.022	0.004
AR (2)	0.895	0.988	0.750	0.799	0.953	0.334	0.420	0.146	0.238	0.375

*Note: The numbers in parenthesis are the z-statistics of the coefficients. Significance level: *** (1%); ** (5%).*

Table 7: Role of institutions in the pro-cyclicality of fiscal policy in SSA countries

Dependent variable: Cyclical component of public expenditures, GMM- HP 6.5										
VARIABLES	**DEMO**	**POLCOM**	**EXCONST**	**ELEC**	**COR**	**EGOV**	**FCOR**	**GSIZE**	**FFISCAL**	**RULES**
g_{t-1}	0.272***	0.453***	0.441***	0.438***	0.589***	0.394***	0.401***	0.314***	0.438***	0.395***
	(0.074)	(0.102)	(0.110)	(0.112)	(0.197)	(0.103)	(0.130)	(0.082)	(0.089)	(0.144)
D_{t-1}	0.007	-0.007	-0.006	-0.004	-0.007	-0.011**	-0.007	-0.006	-0.009	-0.0173
	(0.006)	(0.007)	(0.007)	(0.003)	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)	(0.010)
Q_t	0.010	-0.183	-0.227	-0.046	-0.057	-0.076	0.048	-0.052	0.001	-0.058
	(0.017)	(0.121)	(0.153)	(0.068)	(0.030)	(0.039)	(0.044)	(0.064)	(0.023)	(0.0341)
y_t	4.235	5.095***	5.674**	1.403***	-9.468**	4.747	-6.591	7.555***	13.04***	1.933***
	(2.205)	(1.770)	(2.305)	(0.494)	(4.823)	(6.455)	(3.452)	(1.583)	(3.904)	(0.443)
$Q_t * y_t$	-14.27**	-4.815***	-5.614**	-3.267	32.06**	-13.19	35.26**	-7.709***	-17.21***	-12.49
	(6.70)	(1.787)	(2.406)	(2.238)	(16.03)	(23.72)	(17.00)	(1.822)	(4.879)	(14.51)
CONSTANT	-0.009	0.178	0.213	0.012	0.024**	0.035**	-0.007	0.042	0.004	0.037**
	(0.010)	(0.114)	(0.140)	(0.015)	(0.010)	(0.016)	(0.012)	(0.051)	(0.017)	(0.015)
Observations	642	645	625	678	514	451	536	536	536	670
Number of countries	43	41	40	41	42	42	42	42	42	43
Wald-test	0.000	0.000	0.001	0.000	0.001	0.000	0.028	0.000	0.000	0.000
Hansen J-test	0.665	0.665	0.684	0.916	0.819	0.571	0.535	0.635	0.690	0.321
Hansen C-test	0.605	0.429	0.288	0.616	0.839	0.532	0.740	0.580	0.524	0.248
AR (1)	0.014	0.004	0.005	0.001	0.003	0.002	0.002	0.000	0.001	0.0135
AR (2)	0.174	0.632	0.538	0.687	0.440	0.502	0.347	0.374	0.331	0.784

*Note: The numbers in parenthesis are the z-statistics of the coefficients. Significance level: *** (1%); ** (5%).*

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Annexes

Fig. 1: Cyclical component of public expenditures and corruption efficiency

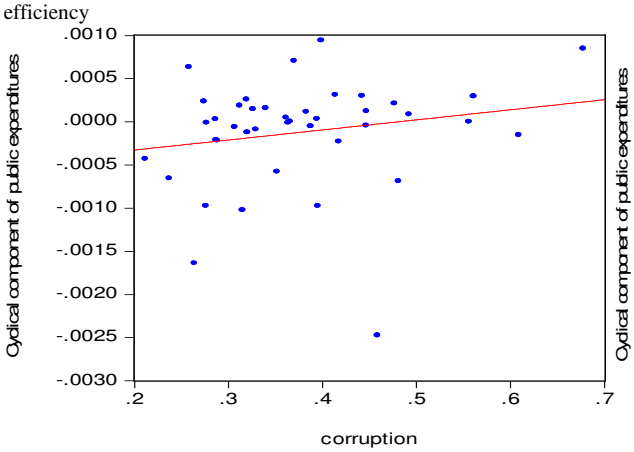

Fig 2: Cyclical component of public expenditures and government

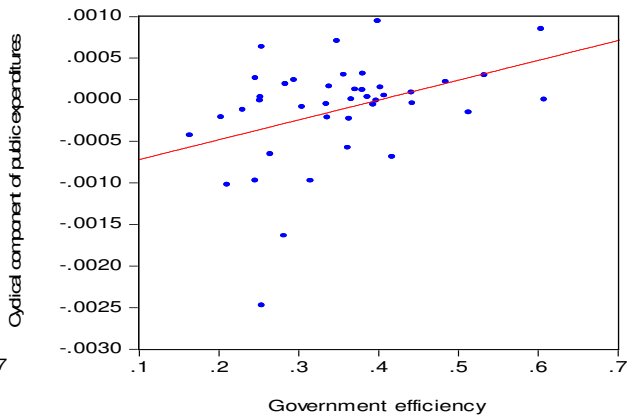

Fig. 3: Cyclical component of public expenditures and democracy

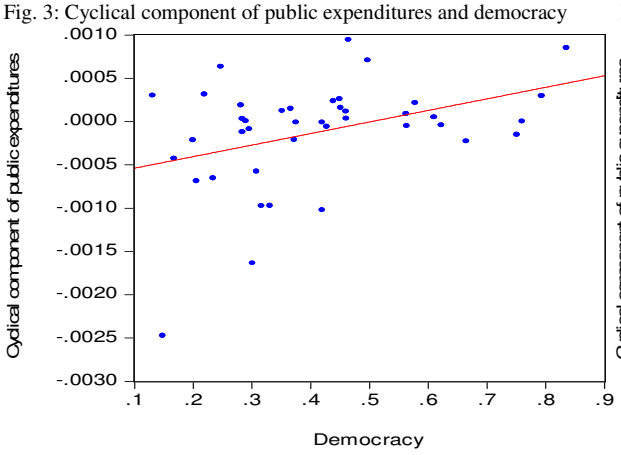

Fig. 4: Cyclical component of public expenditures and executive constraint

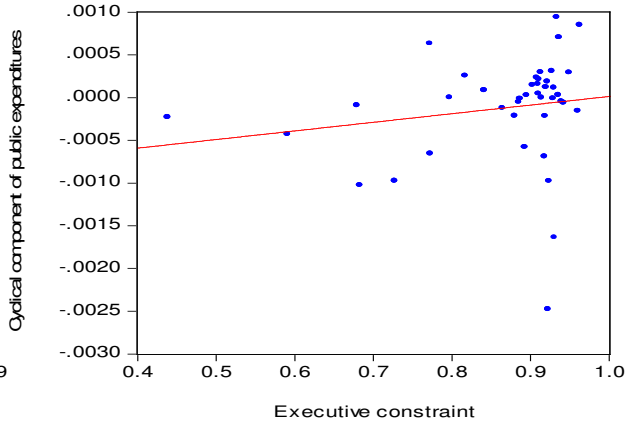

Fig. 5: Cyclical component of public expenditures and political competition

Fig 6: Cyclical component of public expenditures and electoral cycle

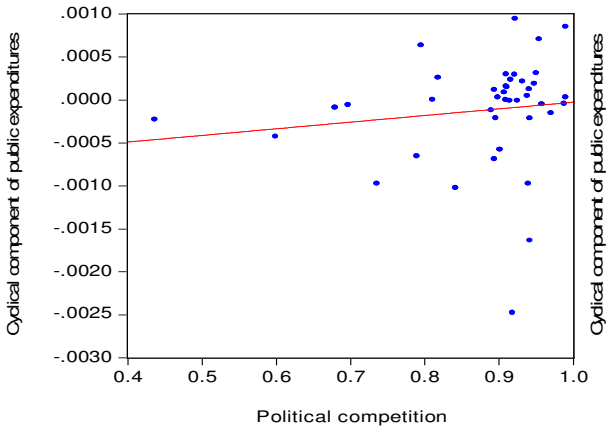

Fig. 7: Cyclical component of public expenditures and freedom from corruption

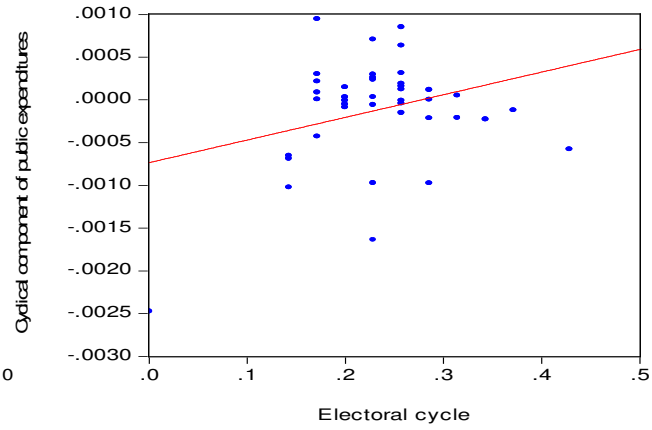

Fig 8: Cyclical component of public expenditures and fiscal freedom

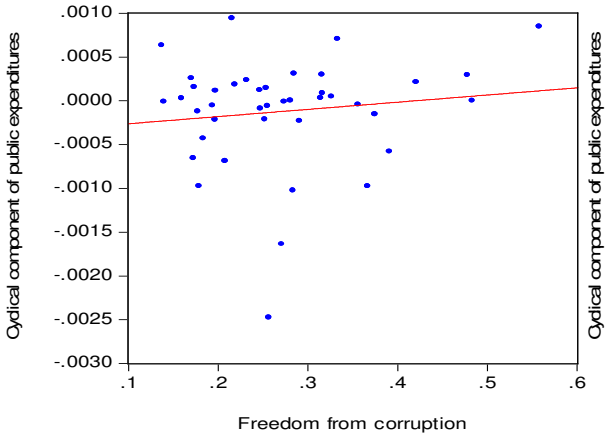

Fig. 9: Cyclical component of public expenditures and fiscal rules index

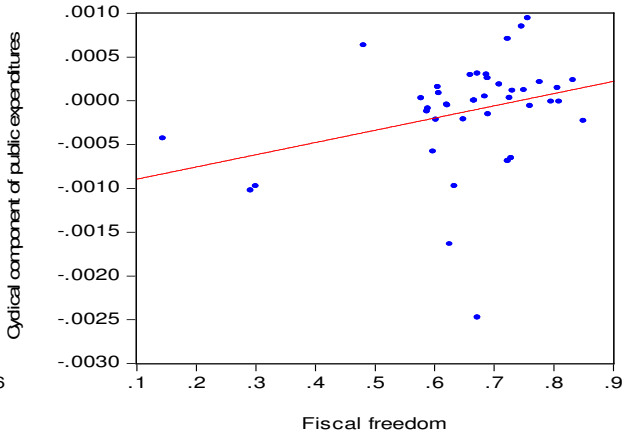

Fig 10: Cyclical component of public expenditures and government size