

RESEARCH ARTICLE



## Is political business cycle an enemy to human development? Empirical evidence from Africa

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### ABSTRACT

Extant literature has argued that, with major extension of democracy since the 1990s, political business cycle has become more intense and has made African political systems more fragile. In light of this, this paper examines both the existence of African political business cycles and their impact on human development. It confirms the existence of political business cycles in Africa. Estimates of a panel fixed effects and system-GMM regression techniques for 38 African countries from 1990 to 2015 also suggest that such cycles worsen human development in African countries. This finding is consistent if we limit our analysis to various sub-regions of Africa, and also at two different income levels.

### ARTICLE HISTORY

Received 9 January 2018  
Accepted 10 January 2019

### KEYWORDS

Political business cycle;  
human development; Africa

## Introduction and background

The expenditure directions in political business cycles are significantly challenging policy designs that aim at eliminating these cycles in most developing countries. Domestic policymakers may have some reservations when it comes to correcting the expenditure of incumbent governments in election years because of the pro-poor nature of such expenditures (employment generating) (Alesina, Roubin, and Cohen 1997; Nordhaus 1975; Labonne 2016). Political business cycle has been defined from two well-known models (opportunistic and partisan models) but the bottom line points to the fact that incumbent governments increase their expenditure in election years to brighten their re-election chances. This is often done by way of awarding contracts and kick-starting dormant contracts in pre-election and election years, as well as increasing its pro-poor expenditures and attempting to reduce unemployment in these years. The argument that political business cycle involves the outturn of unemployment and inflation points out good reasons to expect higher or lower human development as a result of its existence.

There is evidence of the existence of political business cycles and their effect on economic growth in Africa (see Block 2002; Block, Ferree, and Singh 2003; Mosley

and Chiripanhura 2016; Iddrisu and Bokpin 2018). In particular, Iddrisu and Bokpin (2018) confirm the existence of political business cycles in Africa and that they do not translate to economic growth in African economies; however, little is known about how human development is affected. Economic growth is used synonymously as welfare by some authors, assuming perfect positive correlation between economic growth and welfare (human development). This is recently challenged and evidence from several sources now indicate that GDP can grow even as poverty is on the rise. As indicated by Anand and Sen (2000), the effect of growth in a country, if not pro-poor, can lead to large inequality that will worsen welfare. Further, Ravallion (2007) has it that, even if economic growth is important in improving welfare, it should be pro-poor (redistributive), otherwise it may create inequality and negatively impact welfare.

Block (2002) argues that Africa is an ideal region for the study of political business cycle as it is concurrently undergoing a lengthy process of economic reform. He further points out that a clear transition in African politics was evident from the year 1989 to 1995 when 38 countries, as compared to nine countries in the previous five years, held competitive legislative elections. Today, almost all African countries run competitive legislative polls, indicating that democracy has been embraced in Africa and election cycles have come to stay.

Does political business cycle improve human development? We investigate this question using large representative data from Africa where welfare (human development) level is very low. Specifically, we first investigate whether government spending is higher in election years than non-election years and secondly whether such expenditures translate to human development. In effect, we examine whether human development in the light of government expenditure is high in election years than non-election years.

The contribution of this paper is two-folds: First, we establish that there are government expenditure differences between election and non-election years. Specifically, the average government expenditure in election years is more than in non-election years in Africa. Secondly, we find that political business cycles worsen human development in Africa, which is consistent across different African sub-regions and income groups, albeit with different magnitudes.

The remainder of the paper is organised as follows. We first offer a simple theoretical framework highlighting the relations between voter welfare maximisation and their voting behaviour. Next, we present a brief empirical review of the relevant literature. In the following section, we describe the model specification, estimation strategy and data, while the subsequent section contains the empirical findings and discussion of results. The final section contains conclusion and recommendations.

## Theoretical framework

In this section, we present a simple theoretical model that is consistent with the opportunistic-partisan model proposed by Nordhaus (1975). Nordhaus' model was used by Drazen (2004) specifically for analysing the trade-off between unexpected inflation and unemployment. However, our study incorporates human development into the model since our concentration is on how political business cycle influences human development.

Every elected official wants to maximise the chances of re-election; as a result, they pursue policies that are re-election maximisers. Thus, the election of the politician or political party may depend on the economic performance of the incumbent government.

On the basis of this, we argue that if the incumbent wants to remain in power, its economic performance will depend on the current inflation ( $\pi_t$ ) and the welfare of its citizens (human development ( $H_t$ )). The argument is that, for any voter to be dissatisfied with an incumbent government, there must be an increasing inflation and a worsening human development. Consistent with Nordhaus (1975), we represent the welfare function as:

$$W(H_t, \pi_t) = H_t + \theta \frac{(\pi_t)^2}{2} \quad (1)$$

where  $\theta$  is the perceived weight the voter places on inflation as compared to human development. Thus, a voter even when given the opportunity to cast his/her vote in addition to a proxy vote will prefer zero inflation so as to better his/her welfare. This means that as inflation decreases there will be a corresponding increase in welfare as human development rises.

At the end of the time period  $t$ , we can posit a retrospective voting function for an election as shown below:

$$V_t = \omega \left( \sum_{s=0}^{T-1} \gamma(s) L(H_{t-s}, \pi_{t-s}) \right) \quad (2)$$

Thus  $V_t$  stands for the number of votes for an incumbent government after vote loss as a result of bad economic performance ( $\omega' < 0$ ). The exogenous length of time between elections is  $T$  periods, and  $\gamma(s)$  is the weight voters put on a loss in  $s$  periods in the past. The assumption is that,  $\gamma(s)$  is decreasing in  $s$ , that is, past economic performance has little effect on votes at  $t$ . If  $\gamma(s)$  is decreasing rapidly in  $s$ , very recent events are weighted most heavily. The voters place heavy weight on recent events because they are still fresh in their minds and they take their decision to cast a vote right on issues fresh in their minds. This means that for the extreme, if  $\gamma(s) = 0$  for  $s > 0$ , their voting pattern is affected by the incumbent government's economic performance that is still fresh in their minds. However, there is no specific electoral mechanism, hence there is the possibility of an incumbent losing an election. This stochastic element can be modified in Nordhaus' model.

In our proposed argument, Nordhaus' model (Nordhaus 1975) is modified to include the natural rate of human development ( $H_t^N$ ) and actual inflation ( $\pi_t$ ) and expected inflation ( $\pi_t^e$ ). The augmented model is specified as follows:

$$H_t = H_t^N + (\pi_t - \pi_t^e) \quad (3)$$

We specify expectation for inflation in order to close the model. We argue that human development rate will increase if there is some form of expectation for backward-looking, so that we do not fully anticipate inflationary policy in an

election year. We formulate a standard adaptive determination of the expected rate of inflation:

$$\pi_t^e = \pi_{t-1} + \alpha(\pi_{t-1}^e - \pi_{t-1}) \quad (4)$$

where  $\alpha$  represents a coefficient between 0 and 1. It represents the speed with which expected inflation adapts to past expectational errors. This may be solved to yield  $\pi_t^e$  as a weighted declining sum of past inflation rates.

Over an electoral cycle, the four equations may be solved simultaneously for both inflation and human development. For an incumbent government that wants to maximise its chances of re-election, then voters must demonstrate elements of having 'short memories' ( $\gamma(S)$  small for  $S > 0$ ) so that a political business cycle will emerge.

## Empirical review

There has been extensive argument about political business cycle and its impact on the economic growth and development. Incidentally, the emerging literature has significantly illustrated the existence of political business cycle with few relating it with economic growth. In this section, we present an up to date review of suitable empirical literature regarding the existence of political business cycle and its effect on the economy. Starting with single country cases, Efthyvoulou (2011) documents a shift in partisan and economic policy outcomes and points out that as globalisation progresses these outcomes decline. He further notes that fiscal balance sub-components shift as the electoral fortunes shift. Funashima (2016) finds in the United States robust results even after controlling for the effects of government expenditure that, with the exception of the 1990s, the Federal Reserve was inclined to cut the funds rate before presidential elections. According to him, this political manipulation significantly affected output in many eras. However, he attributes his findings to changes in voters' preferences.

Cross country evidence about political business cycle is also not far-fetched. Block (2002) shows evidence of the presence of political business cycles in Sub-Saharan African countries by discovering systematic electorally-timed interventions in nine cases of fiscal and monetary policy in Africa. In a related development, Block, Ferree, and Singh (2003) find evidence in African states that political business cycles are noted in states with multiparty system and moderate in countries that have 'founding' elections. Still in Africa, Mosley and Chiripanhura (2016) claim that there is non-homogeneity in political business cycles and that they occur comparatively rarely in supposed 'dominant-party systems' where the incentive of a pre-election confers slight political advantage. Also, they contend that, institutional damage is not necessarily caused by election cycles in countries where they transpire. Nevertheless, whether there is damage or not does not depend so much on whether there exists an electoral cycle as on whether this cycle brings down or strengthens fears of unbalanced allocation of resources. Recently, Iddrisu and Bokpin (2018) find political business cycles are present in Africa, and that such cycles do not translate to economic performance in African countries. Away from Africa, Enkelmann and Leibrecht (2013) examine this phenomenon in East European countries and find that, in aggregate spending and in specific

sub-categories, election cycles exist in these countries. Finally, Higashijima (2016) argues that when dictators can reliably signal popularity through polls, they have a strong urge to overspend prior to the polls. He then assesses the subject in dictatorships and notes that in authoritarian regimes fiscal deficits are so pronounced than in their democratic counterparts' regimes. He also notes that autocrats with semi-competitive, less fraudulent elections among authoritarian regimes are quick to engage in expansionary fiscal policies before elections.

Following the political business cycle debate and given the fact that efforts have not been made to examine how political business cycle affects human development, the current study is devoted to filling this vacuum in the literature.

### Model specification, estimation strategy, and data

To examine the effect of political business cycle on human development, the paper seeks to analyse the influence of election cycle on human development in the light of government expenditure. We adopt the model used by Iddrisu and Bokpin (2018) and Mosley and Chiripanhura (2016) as follows:

$$\begin{aligned}
 HDI_{c,t} = & \beta_0 + \beta_1 ELE_{c,t} + \beta_2 PREELE_{c,t} + \beta_3 GOVEXP_{c,t} + \beta_4 (ELE_{c,t} * GOVEXP_{c,t}) \\
 & + \beta_5 GDP\_GROWTH_{c,t} + \beta_6 DOM\_CREDIT_{c,t} + \beta_7 CAP\_FORM_{c,t} \\
 & + \beta_8 PHONE_{c,t} + \beta_9 PRR_{c,t} + \alpha_c + \rho_t + \pi_{c,t}
 \end{aligned} \tag{5}$$

where *HDI* represents human development index; *ELE* is an election dummy which equals 1 in presidential an elections year and 0 otherwise; *PREELE* is a pre-election dummy which takes the value 1 in a pre-election year, and 0 otherwise; *GOVEXP* is government expenditure proxied by general final government expenditure; (*ELE\*GOVEXP*) represents political business cycle measured by government expenditure in an election year; *GDP\\_GRWTH* stands for economic growth measured by annual percentage growth of GDP; *DOM\\_CREDIT* is financial sector development measured by domestic credit to private sector (% of GDP); *CAP\\_FORM* refers to investment measured by gross fixed capital formation (% of GDP); *PHONE* represents infrastructure measured by fixed telephone subscription (per 100 people) and *PRR* is political rights rating indicator which awards high scores to countries with less freedom and low scores to countries where residents have freer environment, included as control variables.  $\alpha_c$  stands for country fixed effects which control for time-invariant unobserved country characteristics.  $\rho_t$  represents year fixed effects which control for macroeconomic changes.  $\pi_{c,t}$  is the random error term of the equation.

The estimation strategies are the fixed effect (FE) and random effect (RE) estimation techniques. The system-GMM, i.e. the Arellano and Bover (1995) technique, is also used to estimate Equation (1) as well as our subsequent robustness cheques. The use of the FE panel estimation technique is to provide more consistent estimator, while the one-step system GMM is used to correct the problem of endogeneity in our model. This method, unlike the Arellano and Bond (1991) estimation technique, addresses the problem of individual fixed effects in addition to the problem

of endogenous variable arising from the use of lag dependent variable as a regressor. With reference to the work of Amuakwa-Mensah, Marbuah, and Mubanga (2016), the system-GMM model is specified as follows:

$$HDI_{t,c} = \alpha_1 HDI_{t,c-1} + \alpha_2 ELE_{t,c} + \alpha_3 GOVEXP_{t,c} + (ELE_{t,c} * GOVEXP_{t,c}) + \sum_{j=3}^k \alpha_j X_{ij} + \varepsilon_{it}$$

$$\varepsilon_{it} = \mu_i + \nu_{it}$$

$$E[\mu_i] = E[\nu_{it}] = E[\mu_i \nu_{it}] = 0$$

(6)

where  $HDI_{t,c-1}$  is human development in the same county in the previous year. All the other variables are defined as above, the variable  $X_{ij}$  represents a set of control variables as above,  $\alpha$ 's the parameter vectors and  $\varepsilon_{it}$  the unobserved time-invariant. Here the disturbance term  $\varepsilon_{it}$  has two components:  $\mu_i$  is an unobserved time-invariant country-specific effect, and  $\nu_{it}$  is the disturbance term.

We source data on all variables from World Bank's World Development Indicators (WDI) (<https://data.worldbank.org/products/wdi>), UNDP database (<http://hdi.undp.org/en/data>), Freedom House (<https://freedomhouse.org/report/freedom-world-2016/table-scores>), and self-computation for 39 African countries from 1990 to 2015. Our choice of countries is based on the availability of data.

Human development index (HDI), as defined by the UNDP, is a summary composite index that measures a country's average achievements in three basic aspects of human development, namely health, knowledge, and standard of living. Health is measured by life expectancy at birth. Knowledge is measured by a combination of the adult literacy rate and the combined primary, secondary, and tertiary gross enrolment ratio. Standard of living is defined by GNI per capita (purchasing power parity US\$) (UNDP 2010).

## Empirical results and discussion

This paper examines the existence of political business cycle and how it translates to economic growth in the African continent. The empirical analysis is as follows: First we present the descriptive statistics and a brief discussion on it, next we provide the empirical results and discussions on the key findings from the study. Finally is a robustness checks involving different sub-regions and two different income levels.

### Descriptive analysis

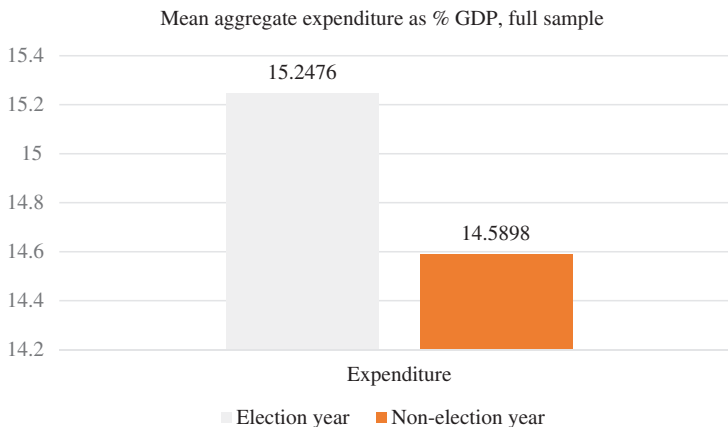
This section presents discussions of some descriptive statistics of the variables. Table 1 below details the summary statistics considered for the pooled sample for the period under consideration.

In Table 1, standard deviation shows how disperse the variables are from their means. Large standard deviation indicates the presence of outliers which may affect the data significantly. The difference between the maximum and minimum values is also

**Table 1.** Summary statistics of variables, 1990–2015.

Variables	Mean	Stand dev.	Minimum	Maximum	Skewness	Kurtosis
<i>HDI</i>	0.4395	0.1247	0.216	0.777	0.5874	2.8846
<i>ELE</i>	0.1741	0.3794	0.000	1.000	1.7190	3.9550
<i>PREELE</i>	0.1824	0.3863	0.000	1.000	1.6451	3.7064
<i>GOVEXP</i> (aggregate)	14.7041	6.5011	2.0576	63.935	1.8222	9.9385
<i>GOVEXP</i> (elec. year)	15.2476	6.6630	4.5732	42.308	1.4735	6.1230
<i>GOVEXP</i> (Non-ele)	14.5899	6.4653	2.0576	63.935	1.9033	10.8747
<i>GDP_GROWTH</i>	4.1184	7.1281	-51.031	106.280	1.5342	57.3298
<i>DOM_CREDIT</i>	18.8954	23.2127	0.1983	160.125	3.5796	17.6812
<i>CAP_FORM</i>	19.3908	8.4065	-2.4244	59.7231	0.8382	4.7513
<i>PHONE</i>	2.8398	5.6189	0.000	31.5035	3.2401	13.6459
<i>PRR</i>	4.3462	1.9161	1.000	7.0000	-0.2611	1.7640

Data source: Authors' computation using STATA.



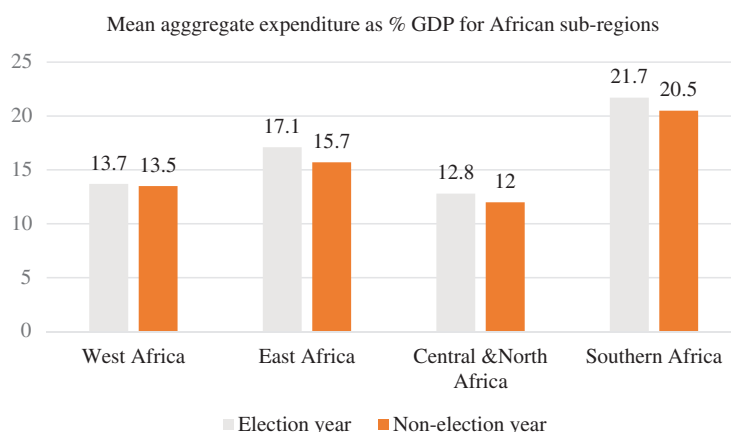
**Figure 1.** Mean aggregate government expenditure in election (1) and non-election (0) years in Africa.

essential in determining the spread: the bigger it is, the larger the standard deviation of that variable will be.

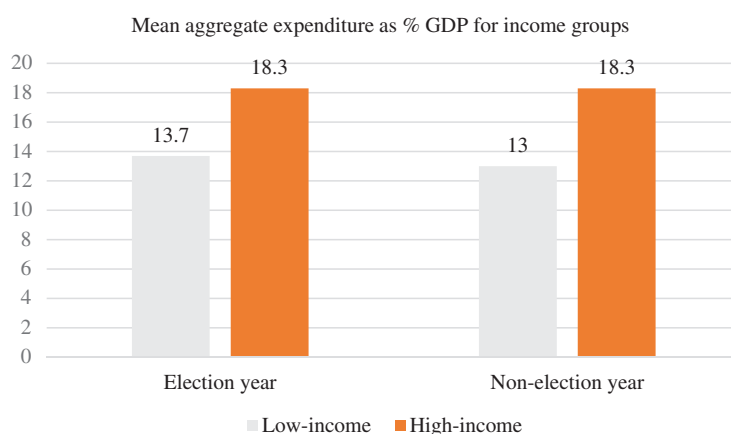
Among the statistics in Table 1, government expenditure (*GOVEXP*) in an election year averaged about 15.24%, and about 14.59% in a non-election year. This shows that African governments spend more in election years than in non-election years, thereby confirming the existence of political business cycles. These are visualised in Figures 1–3.

Figures 1–3 also show evidence of political cycles in the various sub-regions of Africa as well as for income groups, even though with some marginal differences. However, the concern of this paper is whether such cycles translate to human development. Table 2 shows the correlation among the variables used in this study.

The correlations between all the variables are generally low (below 0.50) except between the following: per capita human development index (*HDI*) and infrastructure (*PHONE*), with a correlation coefficient of about 0.72; *HDI* and financial sector development (*DOM\_CREDIT*), about 0.52; and finally about 0.55 between *PHONE* and *DOM\_CREDIT*. The high correlation between *PHONE* and *HDI* indicates that infrastructural development leads to human development. Also, the correlation of *PHONE* and *DOM\_CREDIT* means that infrastructural development contributes to financial sector development.



**Figure 2.** Mean aggregate government expenditure for African sub-regions in election (1) and non-election (0) years in Africa.



**Figure 3.** Mean aggregate government expenditure for income groups in election (1) and non-election (0) years in Africa.

**Table 2.** Correlation matrix of variables.

	HDI	ELE	PREELE	GOVEXP	GDP_G	DOM_C	CAP_F	PHONE	PRR
HDI	1.000								
ELE	0.03	1.000							
PREELE	0.03	-0.22*	1.000						
GOVEXP	0.41*	0.03	0.02	1.000					
GDP_G	0.01	-0.02	-0.00	0.01	1.000				
DOM_C	0.52*	0.04	0.02	0.27*	-0.03	1.000			
CAP_F	0.43*	0.03	0.02	0.31*	0.17*	0.16*	1.000		
PHONE	0.72*	0.03	0.02	0.41*	-0.01	0.55*	0.32*	1.000	
PRR	-0.37*	-0.10*	-0.01	-0.32*	-0.09*	-0.44*	-0.27*	-0.42*	1.000

Data source: Authors' computation using STATA. (\*) indicates significance at 5% level

### Empirical results and discussion

We obtain the results in Table 3 by estimating Equations (5) and (6). We present the results for RE, FE and system-GMM technique. We focus on the FE model for our discussion because our Hausman test in Appendix opts for it. In order to ensure the



**Table 3.** Estimates of Equation (1) using RE, FE and system-GMM, 1990–2015.

Dependent variable: Human development index (HDI)

Independent variables	RE	FE	System-GMM
	(1)	(2)	(3)
<i>HDI</i> <sub><i>t</i>-1</sub>			0.957*** (0.0177)
<i>ELE</i>	0.0197** (0.00809)	0.0197** (0.00793)	0.00400 (0.00275)
<i>PREELE</i>	0.00523** (0.00244)	0.00523** (0.00239)	-0.000148 (0.00121)
<i>GOVEXP</i>	0.000723 (0.000827)	0.000723 (0.000810)	0.000302* (0.000167)
<i>ELEGOVEXP</i>	-0.00121** (0.000519)	-0.00121** (0.000508)	-0.000369* (0.000223)
<i>GDP_GROWTH</i>	0.000419* (0.000216)	0.000419* (0.000212)	0.000139* (8.31e-05)
<i>DOM_CREDIT</i>	0.00219** (0.00106)	0.00219** (0.00104)	3.13e-05 (0.000137)
<i>CAP_FORM</i>	0.00228*** (0.000552)	0.00228*** (0.000540)	0.000376** (0.000158)
<i>PHONE</i>	0.00222 (0.00265)	0.00222 (0.00260)	0.00105 (0.00113)
<i>PRR</i>	-0.00301 (0.00242)	-0.00301 (0.00237)	-0.00152* (0.000870)
Constant	0.400*** (0.0238)	0.349*** (0.0201)	0.0140* (0.00767)
Country Effect	Yes	Yes	Yes
Observations	859	859	828
<i>R</i> -squared	0.3233	0.323	
Number of country	36	36	36
Sargan's test			237.85(104)
1st Order autocorr.			-3.1134***
2nd Order autocorr.			0.43283

Notes: Robust standard errors in parentheses; \*\*\* $p < .01$ , \*\* $p < .05$ , \* $p < .1$ . The coefficients of the country dummies are not stated for conciseness. In the Sargan's test we present the chi-square value and the degree of freedom in parentheses. We present the z-values for the autocorrelation test.

robustness of our results, and considering the fact that past human development may have an effect on the present one, we also include the system-GMM to address that endogeneity. For correcting heteroskedasticity and serial correlation, we report the robust standard errors in parenthesis. Table 3 shows the results.

In Table 3, the coefficient of *ELEGOVEXP* is negative and statistically significant across all regressions. Therefore, we do not reject the hypothesis that government expenditure leads to human development in election years less than non-election years. We follow the outcome of the Hausman test and concentrate on the results of the FE model, subsequently, we concentrate on the estimates of the system-GMM since it accounts for endogeneity. To be specific, the results in column two indicate that for every extra percentage point increase in government expenditure, human development increases by 0.001 units in non-election years over and above any increment we see in election years; while the results of the system-GMM in column three indicates 0.0004 units increment in human development in non-election years over and above any increment we see in election years, all else equal.

To conclude, our results support the hypothesis of a negative and significant impact of *ELEGOVEXP* on human development. That is, political business cycles worsen human development in African countries at the aggregate level. This finding

is in line with other studies that have argued that some incumbents in advanced countries manipulate economic policies prior to elections thereby fuelling fiscal deficits leading to high inflationary tendencies in election years (Kohno and Nishizawa 1990; Alesina, Cohen, and Roubini 1992; Reid 1998). The implication is that human development does not improve if the incumbent government is allowed to manipulate the economy to benefit his/her electoral fortunes. This outcome is also consistent with the opportunistic model in the sense that voters always get dissatisfied because of low human development. This is evident from the frequent change of government in African counties, or chaos in election years.

As a robustness check, we also try to see if there are regional differences within the African region that might be driving our findings the way it is. As stated above, this time we use only the system-GMM estimation technique and the results are presented in Table 4.

As can be seen from Table 4, the coefficients of *ELEGOVEXP* under East Africa and Central and North Africa confirm our earlier findings. However, for some reasons the coefficients are not statistically significant for West and Southern African sub-regions. In effect, we still do not see any evidence of political business cycles improving human development in any of the sub-regions.

**Table 4.** Estimates of Equation (1) using system-GMM, 1990–2015.

Dependent variable: Human Development Index (HDI)				
	West Africa	East Africa	Central and North	Southern Africa
Independent variables	(1)	(2)	(3)	(4)
<i>HDI</i> <sub><i>t</i>-1</sub>	0.932*** (0.0296)	0.873*** (0.0350)	0.984*** (0.0266)	0.873*** (0.0885)
<i>ELE</i>	-0.000232 (0.00200)	0.00920** (0.00448)	0.0114*** (0.00424)	-0.0338 (0.0252)
<i>PREELE</i>	0.000746 (0.00205)	0.000405 (0.00171)	7.86e-05 (0.00158)	0.00188 (0.00203)
<i>GOVEXP</i>	-0.000196 (0.000307)	0.000478*** (0.000150)	0.000200 (0.000227)	0.000439 (0.000698)
<i>ELEGOVEXP</i>	-9.53e-05 (0.000165)	-0.000481*** (0.000145)	-0.000789*** (0.000299)	0.000785 (0.00120)
<i>GDP_GROWTH</i>	-7.96e-05 (0.000134)	5.50e-05 (9.93e-05)	0.000600*** (0.000156)	-7.73e-05 (0.000532)
<i>DOM_CREDIT</i>	0.000239 (0.000159)	0.000486 (0.000317)	0.000395 (0.000271)	-0.000274** (0.000106)
<i>CAP_FORM</i>	0.000170 (0.000112)	0.000581*** (0.000162)	0.000221 (0.000193)	-0.000340*** (0.000115)
<i>PHONE</i>	0.00262 (0.00182)	0.000572 (0.000445)	0.00116 (0.00233)	0.00729 (0.00502)
<i>PRR</i>	-0.00198*** (0.000719)	-0.000730 (0.000718)	0.000158 (0.00144)	0.00474*** (0.00132)
Constant	0.0324** (0.0140)	0.0342*** (0.00917)	-0.00290 (0.00916)	0.0283 (0.0284)
Country Effect	Yes	Yes	Yes	Yes
Observations	349	222	159	98
Number of country	16	9	7	4
Sargan's test	168.58(104)	114.52(101)	97.73(94)	96.31(75)
1st Order autocorr.	-2.4958**	-2.5324**	-1.7973*	-1.3095
2nd Order autocorr.	0.43399	0.42603	0.7893	0.84672

Notes: Robust standard errors in parentheses; \*\*\* $p < .01$ , \*\* $p < .05$ , \* $p < .1$ . The coefficients of the country dummies are not stated for conciseness. In the Sargan's test we present the chi-square values and the degree of freedom are in parentheses. We present the z-values for the autocorrelation test.

Since the income level of a country may influence political business cycles, and pooling lower income countries and higher income countries together can influence our finding the way it is, to further check robustness, we group countries into 'high growth' and 'low growth' groups based on their GNI per capita. The growth dummy takes the value 1 if GNI per capita of a country is above the yearly threshold of lower income<sup>1</sup> and 0 otherwise. The classification is done based on yearly thresholds because some countries can switch income level over two consecutive years. Using the system-GMM, the results are presented in Table 5. From Table 5, we can also see that the coefficients of *ELEGOVEXP* are negative across all regressions but significant for low-income countries indicating that political business cycles worsen welfare in low growth countries. The coefficient's insignificance for high growth countries leaves us with no enough evidence to draw any conclusion for that group. However, one thing is clear: we still do not find any evidence of political business cycles doing good to human development. We, thus, conclude that government expenditures in election years are inflationary and does not improve human development in Africa.

The results for some of the control variables (as shown in Table 3) are consistent with our expectations. To start with, the election and pre-election dummies (*ELE*

**Table 5.** Estimates of Equation (1) using system-GMM, 1990–2015.

Independent variables	High Income	Low Income
	(1)	(2)
<i>HDI<sub>t-1</sub></i>	0.845*** (0.0901)	0.906*** (0.0214)
<i>ELE</i>	0.00374 (0.00486)	0.00313 (0.00236)
<i>PREELE</i>	-0.000488 (0.000734)	0.000598 (0.00155)
<i>GOVEXP</i>	-2.18e-05 (0.000368)	0.000350** (0.000176)
<i>ELEGOVEXP</i>	-0.000335 (0.000290)	-0.000338** (0.000145)
<i>GDP_GROWTH</i>	0.000309 (0.000304)	5.56e-05 (7.47e-05)
<i>DOM_CREDIT</i>	-7.59e-05 (0.000115)	0.000428*** (0.000156)
<i>CAP_FORM</i>	-0.000135 (0.000198)	0.000452*** (0.000163)
<i>PHONE</i>	0.00161 (0.00138)	0.00563*** (0.00212)
<i>PRR</i>	0.00164 (0.00157)	-0.00255*** (0.000884)
Constant	0.0795 (0.0493)	0.0302*** (0.00839)
Country effect	Yes	Yes
Observations	264	564
Number of countries	18	28
Sargan's test	169.60(104)	232.733(104)
1st Order autocorr.	-1.7706*	-3.427***
2nd Order autocorr.	1.0283	-0.65318

Notes: Robust standard errors in parentheses; \*\*\* $p < .01$ , \*\* $p < .05$ , \* $p < .1$ . The coefficients of the country dummies are not stated for conciseness. In the Sargan's test we present the chi-square values and the degree of freedom are in parentheses. We present the z-values for the autocorrelation test.

and *PREELE*) are positive and statistically significant under the FE and RE models, indicating that there is high human development in election and pre-election years than in other years. However, after accounting for endogeneity, they lose their significance and in Table 4, only *ELE* is positive and significant under East, North and Central African countries. Nevertheless, their significance and for that matter, the high human development in those years can be attributed to other factors apart from government expenditure.

Government expenditure (*GOVEXP*) is also positive across all regressions but statistically significant under the system-GMM, indicating that increase in government expenditure leads to improvement in human development. The coefficient is also positive and significant in Table 4 for East African countries as well as in Table 5 for low-income countries. This confirms that the human development effect of government expenditure is more obvious in low-income countries than high-income countries and it is true from the data that almost all the East African countries belong to the low-income group.

For the annual GDP growth (*GDP\_GROWTH*), the coefficients indicate significant positive influence on human development in Table 3 as well as for Central and North African countries in Table 4. This is intuitive and consistent with our expectation that growth in GDP should translate to human development.

The coefficient of financial sector development denoted by domestic credit to private sector (*DOM\_CREDIT*) is positive across all regressions in Table 3 but statistically significant under the RE and FE estimations, meaning that increase in domestic credit to the private sector improves human development, which is logical. This finding is repeated for low-income countries in Table 5. However, contrary to our expectation, the reverse is found for Southern African countries in Table 4, probably as a result of inadequate observations.

Further, domestic investment denoted by gross fixed capital formation (*CAP\_FORM*) is positive and statistically significant across all regressions in Table 3, showing that increase in investment leads to increased human development, all else equal. The coefficient is also positive and significant for low-income countries in Table 5 and for East African countries in Table 4, but shows a reverse effect for Southern African countries probably because of inadequate observations. Clearly, its positive effect on human development is logical and expected.

A country's infrastructural development proxied by the number of fixed telephone lines (*PHONE*) is not statistically significant in all regressions except for low-income countries in Table 5 where it is positive and significant. This means that infrastructural development leads to improved human development in low-income countries.

Finally, we observe that political rights rating (*PRR*) as a measure of political risk has a negative and significant impact on welfare in column three of Table 3, for West African countries in Table 4 and for low-income countries in Table 5. The *PRR* indicator awards high scores to countries with less freedom and low scores to countries where residents have freer environments. As a result, the negative impact of political rights is in line with our expectation that greater freedom contributes to better welfare. However, for Southern African countries, the coefficient is positive and significant.

## Conclusion and recommendations

The paper aims at confirming the existence of political business cycles in Africa and assessing their impact on human development in the region. It uses the human development index from UNDP to measure human development. To assess the effect of government spending in an election year on human development, we use an interactive term consisting of government expenditure *GOVEXP* and the election dummy *ELE* to get *ELEGOVEXP*. The *ELE* dummy equals 1 in the presidential elections year and 0 otherwise. We control for factors that may also influence human development, this is to minimise the error term. This study estimates a panel model using Equation (5) and employing data from 38 African countries covering the period 1990–2015. It presents robust estimations of the FE, RE and the system-GMM Models. The essence of the robust estimation is to get rid of serial correlation and heteroskedasticity. Relying on the Hausman test rejection of the null hypothesis that no correlation exists between the unobserved heterogeneity and the regressors, which suggests the appropriateness of the FE model over the RE model, we concentrate on the results from the FE model and subsequently on the system-GMM results because they account for endogeneity. From our summary statistics, we confirm the existence of political business cycles demonstrated by the average government expenditure differences in election and non-election years. We also find a negative and significant relationship between government expenditure and human development in an election year, indicating that at the aggregate level political business cycles worsen human development in Africa. We thus conclude that government expenditure in election years is inflationary and does not improve human development in Africa.

As for policy recommendations, the fact that political business cycle is sensitive to human development should be of interest to policymakers. Domestic policymakers of African countries battling with low human development in their respective countries can improve it if they implement policies that are geared towards eliminating or lessening the scale of political business cycles. Key among them is to organise sensitisation programmes for their voting population about the dangers of political business cycle on human development. This could help eliminate or lessen the scale of such cycles.

## Disclosure statement

No potential conflict of interest was reported by the authors.

## Note

1. These are as follows; 1990-US\$610, 1991-US\$635, 1992-US\$675, 1993-US\$695, 1994-US\$725, 1995-US\$765, 1996-US\$785, 1997-US\$785, 1998-US\$760, 1999-US\$755, 2000-US\$755, 2001-US\$745, 2002-US\$735, 2003-US\$765, 2004-US\$825, 2005-US\$875, 2006-US\$905, 2007-US\$935, 2008-US\$975, 2009-US\$995, 2010-US\$1,005, 2011-US\$1,025, 2012-US\$1,035, 2013-US\$1,045, 2014-US\$1,045, 2015-US\$1,025. This classification is done by the World Bank, and is found in the World Bank GNI per capita Operational, Guidelines and Analytical Classifications.

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## Appendix

Hausman specification test.

	Coefficients			
	(b) FE	(B) RE	(b-B) Difference	sqrt (diag (V_b-V_B)) Standard Errors
<i>ELE</i>	0.0196971	0.0200692	-0.0003721	-
<i>PREELE</i>	0.0052344	0.0052529	-0.0000185	-
<i>GOVEXP</i>	0.0007227	0.0008612	-0.0001385	0.0000439
<i>ELEGOVEXP</i>	-0.001209	-0.0012368	0.0000278	-
<i>PRR</i>	-0.0030128	-0.0029757	-0.0000371	0.0001299
<i>CAP_FORM</i>	0.0022826	0.0023478	-0.0000652	0.0000128
<i>PHONE</i>	0.0022155	0.0031208	-0.0009053	0.0002222
<i>DOM_CREDIT</i>	0.0021929	0.0020656	0.0001273	0.0000634
<i>GDP_GROWTH</i>	0.0004188	0.0004075	0.0000113	-

b=consistent under Ho and Ha; obtained from xtreg

B=inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi-square (6)=(b-B)'[(V\_b-V\_B)^(-1)](b-B)  
= 18.93

Prob > chi-square = 0.0258

**therefore (V\_b-V\_B is not positive definite)**

Data source: Authors' computation using STATA.

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