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Redistributive politics: the case of fiscal transfers in Ghana

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Abstract

Purpose – The purpose of this paper is to examine the effects of political influences on fiscal transfers from the central government to district assemblies in Ghana.

Design/methodology/approach – It adopted a redistributive politics model and estimated the two-step system generalized method of moment using electoral outcomes, and transfers data for 167 districts which were classified into swing and aligned, from 1994 to 2014.

Findings – The findings reveal that Gh₵6.28m on average was transferred to each district annually, which tend to increase by 8.4 percent in election years. Further, the swing districts received 5.2 percent more than the aligned districts.

Practical implications – The sharing mechanism is significantly influenced by political considerations as there exists a political budget cycle and a general dominance of swing effects.

Social implications – The fiscal transfer system disregards the social principles of fairness and efficiency. Therefore, a wider consultative process in reviewing the formula is proposed; and this should be done in intervals of five years to minimize the indiscriminate adjustments of the sharing formula.

Originality/value – The paper empirically examines the political economy dynamics of intergovernmental fiscal transfers in a decentralized unitary system.

Keywords Ghana, Allocation formula, Fiscal transfers, Redistributive politics

Paper type Research paper

1. Introduction

The economic rationale for any resource distribution is to achieve the normative principles of equity and efficiency (Oates, 1972; Musgrave, 1983). However, evolution of political economy models in recent times has shown how politicians use transfers as tactical instrument to achieve certain political objectives. As such, the greater concern of fiscal transfers programs world-wide has been the method of sharing the funds among beneficiaries. This has generated substantial debate among researchers regarding the redistributive politics of fiscal transfers in a country. For instance, Cox and McCubbins (1986) argue that in partisan politics, resource sharing may reflect patronage agenda by governments in favor of loyal political followers. On the other hand, Dixit and Londregan (1996) point out that opportunistic politicians who want to increase their chances of re-election could design an allocation program in favor of non-loyal supporters or "swing voters." This, therefore, creates the phenomenon of opportunistic political budget cycle (PBC) where Rogoff and Sibert (1988) posit that central governments tend to transfer larger resources to sub-national governments in election years in order to win more votes.

In view of these different ideological positions, a growing number of studies have sought to examine the influence of political factors in resource distribution within different

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JEL Classification — D72, H73, H77

political jurisdictions. Nonetheless, the empirical evidence on these two schools of thought is inconclusive with respect to which political type, partisan or opportunistic is relevant and which group of voters (swing or aligned) is favored in the design of transfer schemes. Hence, this study attempts to contribute to the debate by extending the empirical evidence to cover the case of Ghana by examining the District Assembly Common Fund (DACF) transfer system. This study, specifically seeks to contribute to the extant literature by examining the relationship between electoral objectives and fiscal transfers from the central government to the district assemblies in Ghana, and to know it has evolved over time as the country advances in its democratic dispensation.

The main questions that arise are: what role does electoral outcomes influence political maneuverings of the transfers, and how does the quest to entrench political support in aligned and swing districts affect the allocation system in Ghana and how has it changed over time as the democracy mature? The broad objective of this study is, therefore, informed by these questions. This is achieved by examining a balanced panel of fiscal, demographic, economic and political data set for 167 district assemblies from 1994 to 2014 in Ghana, to ascertain the influence of political factors on system of allocating DACF. Indices of "swing" and "aligned" districts are developed and their influences on the transfer scheme are assessed. The findings show that there are tactical maneuverings of the sharing formula for political gains in Ghana. Specifically, election years tend to be characterized by higher transfers; and the increases in transfers tend to favor swing districts more than aligned ones.

The rest of the paper is organized into four sections. Section 2 presents an overview of the DACF sharing formula in Ghana. The theoretical framework and the empirical model are in Section 4, while the estimation results are discussed in Section 5. Section 6 concludes with lessons for policy.

2. The DACF sharing formula in Ghana

Ghana's intergovernmental fiscal transfer system (the DACF) was created and preserved in the 1992 Constitution, as a vehicle to help achieve the bottom–up approach to development (that deals with excessive centralized bureaucracy) and bring management functions closer to the people at the grassroots. This transfer scheme is part of the broader fiscal decentralization strategy meant to ensure adequate transfer of financial resources from the central to sub-national governments with autonomy to allocate resources in the provision of public goods and services.

The sharing formula of the DACF is determined by the administrator of the fund who is appointed by the President. This formula consists of four main factors, namely, "need," "responsive," "service pressure" and "equality," which are linked to fiscal, budgetary, legislative and financial matters affecting the district assemblies. Though the main factors used in the formula have not changed but their compositions and weights have changed many times, especially the "need" principle.

The need factor measures a district's lack of services relative to other districts in the country. It is meant to address disparities in development of the district assemblies in the country. As such, a high proportion of the total fund, 40 percent on average, is allocated to the need factor. The weight increased sharply to 50 and 55 percent in 2002 and 2003, respectively, and has since hovered around the average. This factor has education and health services, and water coverage as its main measurement indicators, which is consistent with the considerations of the United Nations Human Development Index. Therefore, the need factor in the formula satisfies international development standards and recognizes development by government as fulfillment of basic human needs.

The responsiveness factor in the formula is meant to motivate districts to raise local revenue from their jurisdictions, thereby reflecting the efforts district assemblies put into generating their own incomes. The measurement indicator for this factor is the total

Internally Generated Fund collected over the fiscal year in each district. One major shortcoming of this factor is its ability to perpetuate disparities among the districts as the urban districts with strong tax bases tend to receive more funds than rural districts with weak tax bases. As a result, this could further aggravate the district imbalances in terms of growth and development. However, most of the districts are unable to raise much revenue internally despite their efforts due to the narrow tax bases of the districts. As a result, they depend quite heavily on the DACF for developmental projects.

The service pressure criterion in the allocation formula measures the intensity of use of public facilities in a district. The indicator of this factor is the population density of the district, and the factor has been 5 percent on average over the study period. This factor was created out of the adverse effects of urbanization due to rural–urban migration that has resulted in over-population of urban districts and under-population of rural districts. The over concentration of population in urban areas put undue pressure on urban facilities leading to rapid deterioration. The major disadvantage of this factor is that it tends to favor already developed and resource endowed districts which are predominantly urban. Accordingly, it widens the development gap between the rural and urban districts. Further, the population density indicator is affected by differences in population growth rates due to differences in demographic, ethnic, religious, social and economic characteristics. Then, failure to consider differences in growth rates may bias the allocation based on population criterion.

The equality factor represents a percentage of the DACF to be distributed evenly among the districts. This factor ensures that every district receives a certain equal proportion of the fund to enable them to provide basic services and undertake some developmental programs. The principle underlying this factor is that a district's action or inaction should not be a hindrance to access the needed funds for development in the country. On average, 45 percent weight is assigned to this factor and it is a guaranteed amount so that if other factors do not favor a given district, there is a minimum amount to undertake some development.

A trend graph of the assigned weights to the factors over the period is shown in Figure 1. In general, the need and the equality factors exhibit a rising trend, while service pressure and responsiveness factors show a declining trend, creating a wide gap between them. However, the
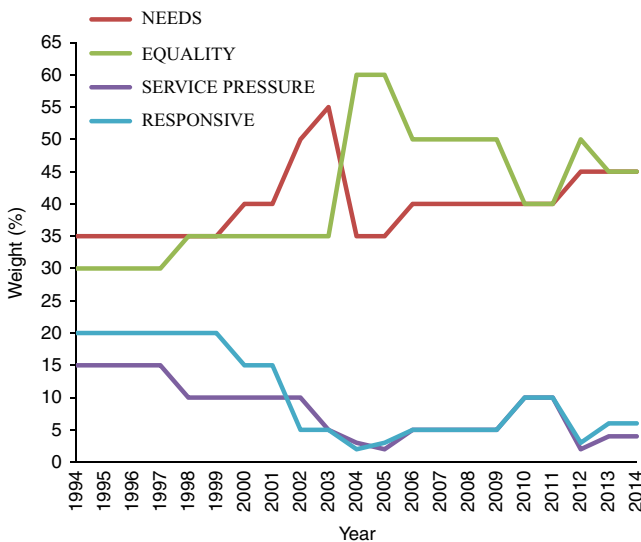
Figure 1.
Trend of weights assigned to factors of the DACF sharing formula

fluctuating contours shown by the factors are worrisome as they reflect the changing weights of the various criteria largely due to manipulations by politicians and/or bureaucrats.

From Figure 1, the need factor rose sharply from an average of 35 percent in 1994 to 55 percent in 2003 and subsequently fell to 45 percent. In the case of the equality factor, it also increased from 35 percent between 1997 and 2004 to a peak of 60 percent in fiscal years 2004/2005, and then dropped to 50 percent afterwards. On the contrary, while the percentage shares of need and equality factors were generally rising, those of responsive and the service pressure were on the decline. For instance, the responsive factor was reduced from 20 percent in 2000 to 15 percent in 2001; and it was drastically reduced to 2 percent in 2004, but has since hovered around 5 percent. In respect of the service pressure, it started with 15 percent in 1994 and was reduced to 10 percent between 1995 and 2003. It declined significantly to 2 percent in 2005 and has since been kept at an average of 5 percent.

The utilization of the DACF at the district level is usually accompanied with guidelines. Though, the guidelines have undergone some variations over the years, but on average, 41 percent of the DACF has often been predetermined for districts in the following manner: not less than 2 percent as district education fund for the needy but brilliant students; 10 percent for self-help projects; and 20 percent for productivity improvement and employment generation. It also includes 1 percent for HIV/AIDS, 1 percent for malaria control, 5 percent to support sub district structures and 2 percent for capacity building programs by Institute of Local Government Studies. The remaining 59 percent has often been directed to be spent in the economic, social, environment and other local government expenditures at the district level[1].

This means that the allocation of the DACF is based on both conditional and unconditional grant allocation systems. The conditional part constitutes 40 percent and it is earmarked for projects designed to address inter-jurisdictional spillovers, meet national redistribution objectives, and help in the implementation of specific national priorities and policies. The unconditional part is 60 percent and it is a general-purpose allocation, but its usage is expected to conform with the overall objective of the government. It is used to correct the mismatch between revenue and expenditure functions; and also to enable the assemblies provide basic socio-economic services and deliver on their constitutional mandates as agents of local development.

3. Literature review
Two main theories that attempt to explain how a government's own interests promote tactical redistribution are the opportunistic political business cycles (PBCs) theory and the theory on tactical redistribution (Veiga and Pinho, 2007). The pioneering effort of Nordhaus (1975) on PBC model is well cited in the literature. The model advances the claim that identical voters with preferences for low unemployment and low inflation are considered to have short memories and lack the foresight in assessing the macroeconomic performance of an incumbent administration. As such, this provides an enabling environment for opportunistic governments to manipulate the economy for political gains over the course of their administrative tenures.

The seminal works of Cox and McCubbins (1986), together with the papers by Lindbeck and Weibull (1987, 1993), also began the formal theoretical exposition of the idea that when redistributing resources across a country, an incumbent government considers the extent of its political strength in different jurisdictions. They argue that politicians are investors seeking to maximize returns on their investments (in a form of public expenditure), and thus invest in votes by promising to redistribute resources among three groups of voters: support groups, opposition groups and swing groups. A variant of this theory can be seen in the work by Dixit and Londregan (1996, 1998). Their model is based on competition between two symmetric parties that make campaign promises in a bid to maximize their vote share (or probability of winning majority of seats in parliament) and gain power at one level of government. They further contend that differences in a party's ability to deliver on campaign promises to different group of voters result in different resource distribution outcomes.

The application of these theories on specific studies is shown in Table I (summary of recent empirical studies).

From the table, majority of the studies are based on countries outside sub-Saharan Africa. The two main political economy models are used but the dominant one is the tactical redistribution theory by Cox and McCubbins (1986). Also, the dominant estimation method is the fixed effect (FE) within a static panel framework. However, the major challenge with static models is that they assume strict exogeneity of the dependent variable (transfers in this case) but current period transfers tend to depend on past transfers. As a result, it creates a problem of simultaneity bias thereby affecting the reliability of the model estimates. Hence, to resolve this problem, the present study uses the two-step system GMM approach in a dynamic setting. The main findings are that there is influence of political factors on resource transfers in almost all the countries studied. However, the results are mixed regarding which political factor, swing or aligned, that influences fiscal transfers from national to sub-national governments. In addition, the empirical estimations based on the decomposition of the democracy period into new and mature is quite a novelty in Ghana.

4. Model specification and data

The empirical model used here is based on the theoretical model of redistributive politics by Dixit and Londregan (1995, 1996) as in the case of Johansson (2003) and consistent with Banful (2011). Therefore, the baseline empirical model for allocating the DACF is expressed in a dynamic form as follows:

$$y_{it} = \sum_{j=1}^{k} \delta_j y_{i,t-j} + \beta' P_{it} + \gamma' X_{it} + v_i + \varepsilon_{it} \tag{1}$$

where the dependent variable, y_{it}, is per capita transfers that a district i receives from the central government in year t; P_{it} is a vector of political variables that influence the distribution; X_{it} is a vector of control variables; δ_j is a parameter to be estimated, β' and γ' are vectors of parameters to be estimated, v_i represents unobserved effect specific to district i and ε_{it} denotes the error term. To account for autoregressive component of the time-series of grant allocations, the empirical model includes lags (of order k) of the dependent variable.

Given the presence of district specific-effects (v_i), in the model, the ordinary least squares (OLS) estimation technique with lagged dependent variables leads to potential bias result because of the correlation between the lagged dependent variable and the error term. Therefore, by assuming that the district effect (v_i) is fixed or random, then Equation (3) is estimated using FE or random effect (RE) technique. Though, the FE can eliminate potentially large number of unmeasured explanatory variables specific to district i, the bias still exists. Even if there were no serial correlation between the lagged dependent variable and the error term, the bias still occurs because there is a clear dominance of cross-section ($n = 167$) over time period ($T = 22$) in the data set. To overcome this problem, the generalized method of moment (GMM) estimator, developed by Arellano and Bond (1991), is used as it controls for both the district specific effects and the bias from the lagged dependent variable. This is carried out by first differencing Equation (1) to remove the district specific effect (v_i), and using instrumental variables to estimate the resultant the following equation:

$$\Delta y_{it} = \Delta \sum_{j=1}^{k} \delta_j y_{i,t-j} + \beta' \Delta P_{it} + \gamma' \Delta X_{it} + \Delta \varepsilon_{it} \tag{2}$$

Equation (2) is applied to test Rogoff and Sibert's (1988) opportunistic PBC prediction that national governments transfer larger resources to sub-national governments in

Author(s)	Theory	Method and Study Period	Finding
Fouirnaies and Mutlu-Eren (2015)	Opportunistic redistributive model of Cox and McCubbins (1986)	Difference-in-difference technique on central government's grant allocation from 1992 to 2012	Governments allocate up to 17% more money to local councils controlled by their own party
Maystadt and Salifu (2015)	Opportunistic redistribution theory by Cox and McCubbins (1986)	Instrumental variables approach on state variation in VAT transfers from 2007 to 2015	Increases in VAT transfers induced by higher oil windfalls improve the electoral fortunes of incumbent government in Nigeria
Lui *et al.* (2014)	Opportunistic redistribution theory by Cox and McCubbins (1986)	Panel fixed effect method on provincial data for 1995–2011 and county level data for 1995–2005	Better-off provinces/counties receive more tax rebate per capita than not-better off provinces/counties
Caldeira (2012)	Opportunistic redistribution theory of Cox and McCubbins (1986)	Fixed effect with a micro-level public finance data set	Senegalese system of redistribution is tactical as grants allocation target swing communes relative to partisan communes
Checherita *et al.* (2009)	The classical theory of convergence by Sala-i-Martin (1997)	Simultaneous equation model on EU structural and cohesion funds spent during 1994–1999 in a large sample of European regions	Net fiscal transfers tend to impede output growth and promote an immiserising convergence where growth rate in poor receiving regions declined by less than rich paying regions
Kalman (2007)	Tactical redistribution theory of Dixit and Londregan (1996)	Linear and probit panel regressions on a panel data set of Hungarian local government budgets from 1993 to 2003	There is political influence and politicians use intergovernmental grants to enhance their parties' chances of re-election in Hungary
Arulampalam *et al.* (2009)	Tactical redistribution model of Dixit and Londregan (1998)	Instrumental variables (IV) and ordinary least squares (OLS) for data from 1968 to 1996	Aligned states and swing states receive more allocations than non-swing states and unaligned states
Sole-Olle and Sorribas-Navarro (2008)	Tactical redistributive model of Lindbeck and Weibull (1987)	Triple-estimator approach for data from 1993 to 2003	Partisan alignment affects grants to Spanish municipalities; aligned municipalities receive more than unaligned
Veiga and Pinho (2007)	Political budget cycles model by Rogoff and Sibert (1988), and tactical redistribution theory of Cox and McCubbins (1986)	Panel GMM approach with Portuguese data from 1979 to 2002	Political factors evolve with maturation of Portugal's democracy, and allocations favor swing voters in early period of democracy
Banful (2011)	Tactical redistribution model of Dixit and Londregan (1996), and the Political Budget Cycles theory of Rogoff and Sibert (1988)	Seemingly unrelated regression and fixed effect method on Ghanaian data from 1994 to 2003	Per capita grants are higher in districts where vote margins are lower, suggesting that swing districts are targeted in Ghana
Gordin (2006)	Tactical distribution targeting model by Lindbeck and Weibull (1987)	Analysis is by panel corrected regression on transfers to provinces from 1972 to 2000	Provinces that are ruled by governors from opposition parties attract more federal transfers beyond social welfare criteria in Argentina

Source: Compiled by authors

Table I.
Summary of recent empirical studies

election years. They do this with the aim of winning more votes from electorates during elections. To examine this proposition, an election year dummy (ELYDum), which equals 1 in election years and 0 otherwise, is employed. The specification is expressed in the following equation, the empirical counterpart of Equation (2):

$$\beta' P_{it} = \beta'_1 ELYDum + \beta'_2 PAL + \beta'_3 PSW + \beta'_4 ELYDum \times PAL + \beta'_5 ELYDum \times PSW$$
$$+ \beta'_6 ELYDum \times (1-PAL) + \beta'_7 ELYDum \times (1-PSW) \tag{3}$$

According to Arulampalam *et al.* (2009), the model predicts that aligned and swing districts are allocated higher transfers relative to a non-swing district. To test this thesis, political variables representing *Swing* and *Alignment* are constructed. To allow for the influence of political considerations on the transfers to vary according to the party and electoral dynamics in the country, the vector of political variables is specified in the form of interacted regressors. The dynamics of this prediction is shown in Equation (4), and it is subsequently substituted into Equation (2) for estimation:

$$\beta' P_{it} = \beta_1 PAL_{it} + \beta_2 PSW + \beta_3 PAL_{it} \times PSW_{it} + \beta_4 PAL_{it} \times (1-PSW_{it})$$
$$+ \beta_5 (1-PAL_{it}) \times PSW_{it} + \beta_6 (1-PAL_{it}) \times (1-PSW_{it}) \tag{4}$$

where, PAL_{it} is an indicator variable for political alignment that equals 1 if the same party is at national and districts i levels at time t, and 0 otherwise. The variable PSW_{it} denotes the proportion of the constituencies in districts i at time t identified as swing during elections.

Specifically, the variable (PSW_{it}) measures the difference in vote shares, expressed in percentage terms, between the incumbent party at the center and its main opponent, in the last parliamentary election in each district. Thus, this variable captures the closeness of the parties in the last parliamentary election at the district level. Following Case (2001), Dahlberg and Johansson (2002) and Veiga and Pinho (2007), it is used as a proxy for the number of swing voters. This variable helps to test the Dixit and Londregan (1995, 1996) prediction that districts with many swing voters are targeted by the ruling party as a strategy to win the subsequent election.

To test whether the effects of political factors on the transfers (if any) have changed over time since 1994, the study adopts the classifications of democratic period by Brender and Drazen (2005). Based on this, Ghana's democracy is considered to be mature as it is over two decades old. Following Veiga and Pinho (2007), two dummies are created, *newdem* and *matdem* to separate the democratic period into new and mature. Equation (1) is then augmented with interaction terms of *newdem* and *matdem* with all variables in vector P_{it} to yield the following equation:

$$y_{it} = \delta_j y_{i,t-j} + \varphi'(P_{it} \times DEM) + \gamma' X_{it} + v_i + \varepsilon_{it} \tag{5}$$

where *DEM* in the case of *newdem* takes the value of 1 for years 1992–2004, and 0 afterwards; for the case of *matdem*, *DEM* is a dummy variable with a value of 1 after 2004, and 0 for earlier years.

4.1 Data sources and measurement of variables

A panel of data set from 1994 to 2014 on 167 district assemblies is obtained from various sources for the analysis. The socio-economic and demographic data, such as population distribution of the districts[2] and growth rate of the gross domestic products (GDP), are obtained from the Economic Review publications of Ghana Statistical Services. The allocation and disbursement of the DACF are also obtained from annual reports of the DACF Administrator's Office. The political data are derived from Election reports of National Electoral Commission of Ghana.

The political swing (PSW) variable is measured by using the results of electoral outcomes of previous presidential and parliamentary elections in district i, a variable *votediff* is constructed. For electoral constituency c in district i, *votediff* equals the difference in percentage votes shares between the two leading contestants with majority of votes in c. On this basis, an electoral constituency c is classified as swing if *votediff* is a value less than or equal to a cutoff value of 67 percent. The choice of the cutoff point is in line with the theoretical framework which requires the swing variable to be a relative measure. Also, rather than an arbitrary value, this cutoff point captures an important aspect of the multi-party setting typical of the democratic dispensation in Ghana. The constitutional requirement under article 291(3) is that a vote of at least two-thirds of all the members of parliament is needed to pass a resolution on a bill to become a binding law[3]. As such, it is the desire of every party in government to win a two-thirds majority in every parliamentary election, so they can unilaterally enact or amend legislations without bargaining with rival parties. The empirical work does not use *votediff* as a regressor but employs a dummy variable, denoted by *PSW*, which takes value of 1 when *votediff* is weakly less than 67 percent and 0 when *votediff* is strictly more.

The vector of control variables, X_{it}, consists of demographic and economic variables that allow for the analysis of whether intergovernmental transfers improve the well-being of people in the districts. The demographic variable used is the age composition of a district's population which is described by the percentage shares of children under 15 years (percent*CHD*), and elderly 65 years and above (percent*ELD*). This vector reflects features of government tax and spending behavior of the districts assemblies. Therefore, the dependent age composition of the population in a district indicates how cost disadvantages and possible economies of scale in service delivery are driven by key clients of the district assemblies. Given that districts are tasked with providing services such as basic education for the children as well as healthcare services for the elderly, the coefficient estimates associated with the variables on percentage age composition are expected to be positive because these groups of the population exert specific influence on the spending priorities of local governments (Veiga and Pinho, 2007).

The macroeconomic performance of the country affects the tax revenue collected by the national government; hence, the amount of funds transferred to the district assemblies. To proxy the macroeconomic condition of the country, the growth rate of GDP at 2006 constant prices (ΔGDP_{it}) is used. A positive sign is expected for the coefficient associated with this variable. To control for passage of time, time trends (*Trend*) and quadratic time trends (*Trendsqr*) is used to capture the time effects that affect the distribution of transfers equally across all municipalities. The coefficients are expected to be positive depicting an increase of the funds over time. All variables in this vector, except the trend, are lagged one year because it takes some time for the demographic and economic date to be released and for policymakers to take them into consideration in the grants allocation process.

5. Estimation results and interpretations
Reported in Table II are the descriptive statistics of the variables. The table shows the number of observations of the variables. It also reveals the minimum and the maximum values of the variables as well as the mean and the standard deviations of the data. Statistically, the average transfer per capita is Gh¢6.28m at constant 2006 which is used as the benchmark for the analysis. This amount may seem small but its relevance to the districts, particularly the rural ones, cannot be overemphasized as the absence of this transfers could lead to some districts inability to provide basic needs of the people.

5.1 The system GMM estimates of DACF transfers (1994–2014)
Table III presents the results of all districts for the sample period on how political forces influence intergovernmental fiscal transfers in Ghana. Column 1 of Table II shows the results of testing the presence of Rogoff and Sibert's (1988) PBCs in the allocation of the

Variable	Obs.	Mean	SD	Min.	Max.
(PCTransf)	2,795	6.28	7.47	0.06	86.79
(ELYDum)	2,795	0.25	0.43	0.00	1.00
(PAL)	2,795	0.58	0.49	0.00	1.00
(VoteDiff)	2,795	33.88	24.75	2.00	98.00
(PSW)	2,795	0.78	0.42	0.00	1.00
(%CHD)	2,795	40.02	3.57	24.00	53.00
(%ELD)	2,795	5.03	0.67	3.18	9.28
(GDPGR)	2,795	6.21	2.51	3.47	14.03
Trend	3,507	11.00	6.06	1.00	21.00
Trend square	3,507	157.67	137.19	1.00	441.00

Source: Compiled by authors

Table II.
Descriptive statistics of study variables

	1	2	3
PCTransf(−1)	0.6754*** (11.86)	0.6759*** (11.87)	0.6095*** (7.51)
ELYDum	0.5343*** (9.31)	0.4723*** (8.26)	
PAL	0.1081 (0.69)		0.1135 (1.45)
PSW		−0.2122*** (−3.91)	−0.2235*** (−3.58)
ELYDUM × PAL	0.0201 (0.77)		
ELYDum × (1−PAL)	0.3644 (1.00)		
ELYDum × PSW		−0.0292*** (−3.37)	
ELYDum × (1−PSW)		0.0256 (0.59)	
PAL × PSW			−0.0353** (−2.49)
(1−PAL) × PSW			−0.0128** (−2.24)
PAL × (1−PSW)			0.0190 (1.21)
(1−PAL) × (1−PSW)			0.0715 (0.87)
%CHD(−1)	0.0430*** (9.41)	0.0459*** (9.57)	0.0415*** (9.36)
%ELD(−1)	−0.2486** (−3.77)	−0.2431** (−3.74)	−0.2813*** (−4.72)
GDPGR(−1)	0.1863*** (4.27)	0.1874*** (4.31)	0.0328** (5.78)
Trend	0.2744*** (5.30)	0.2324*** (4.17)	0.2938*** (3.96)
Trend Square	0.0250** (6.52)	0.0216** (6.58)	0.0239*** (6.54)
AR(1)	−3.61	−3.61	−4.70
AR(2)	0.97	0.99	0.98
Sargan (p-value)	0.46	0.47	0.48
No. of observation	2,628	2,628	2,628
No. of districts	167	167	167

Notes: System GMM estimation of linear models for panel data which combines levels and first differences equation by using STATA 13 econometric software; two-step results using robust standard errors corrected for finite samples; t-statistics are between parentheses. *,**,***Significance level for which the null hypothesis is rejected: at 10, 5, 1 percent, respectively

Table III.
The two-step system GMM estimates of DACF transfers (1994–2014)

DACF transfers and its impact on politically aligned (PAL) and unaligned (1-PAL) districts. From the estimates, the statistical significance of the lagged transfer per capita, PCTransf (−1), suggests that there is some level of inertia in the disbursement of the DACF. In confirmation of the PBC, the result indicates that transfers increase during election years. This is indicated by the positive statistical significance of the election year variable (ELYDum). Other things being equal the transfers per capita increased by 8.4 percent (above the benchmark of Gh₵6.28) during election years.

This evidence supports Banful's (2011) findings that in election years, districts can expect to receive 25 percentage points more in disbursement than they receive in

non-election years. The finding, therefore, confirms Rogoff and Sibert's (1988) theoretical prediction that an incumbent government tends to increase transfers to sub-national governments in order to improve its popularity and the chances of re-election. This sits well with the argument made by Brender and Drazen (2005) that PBCs may come about because democracy is far more likely to collapse in an election year than any other year. The election years are considered critical points for the survival of democracy because it is the period many people tend to strongly register their dissatisfaction with the system in various forms including violent protests. This is usually common in developing countries where democratic and political institutions are weak. Hence, it becomes a technical point of disruption in democratic dispensations. On account of this, governments tend to provide more transfers in election years under the guise of consolidating democratic gains.

The empirical evidence fails to support Cox and McCubbin's (1986) assertion that politicians favor their supporters in resource distribution, as the political alignment (PAL) variable is not statistically significant. From Column 1, Table III, the statistically insignificance between election year and political alignment variables ($ELYDum \times PAL$), and that of election year and politically unaligned, $ELYDum \times (1 - PAL)$, indicate that the aligned districts are not favored by more transfers. This evidence is in consonance with the findings of Dahlberg and Johansson (2002) for Sweden and Veiga and Pinho (2007) for Portugal.

Column 2 of Table III presents the estimation for the case of swing and non-swing districts which reveals the existence of PBCs. This is shown by the statistical significance of the election year dummy variable (ELYDum), and the transfer per capita increased by 7.5 percent relative to non-election years. In addition, the statistically significant and negative coefficient of the political swing dummy (PSW) means that swing districts are given more support than non-swing districts. This suggests that swing districts are tactically targeted in the transfer process to improve electoral fortunes. The evidence confirms Dixit and Londregan's (1995) proposition that the political players tend to target swing voters to increase their votes in elections. The results also show that the interaction between election years dummy and political swing ($ELYDum \times PSW$) is statistically significant and negative. It suggests that the increase in transfers during election years goes to support swing districts for electoral benefits (see Fouirnaies and Mutlu-Eren, 2015; Veiga and Veiga, 2010; Brollo and Nannicini, 2012). This evidence plausibly explains the rampant changes to the formula in terms of components of its factors and assigned weights with the major ones happening in election years.

Column 3 in Table III provides estimates for six political characteristics of the districts that may affect the distribution. From the results, three out of the six political variables are statistically significant, while the other three are not. The aligned variable is not significant but positive in line with a priori expectations. However, the coefficient estimate of the swing variable is significant and negative as expected. The implication of this outcome is that transfers to swing districts increased by 3.5 percent. Given that this tactical distribution of transfer exists, the study proceeds to examine whether there is a swing effect in the distribution or not. This is carried out by an interaction of swing dummy variables with politically aligned and unaligned variables. The results show that both interaction variables were statistically significant and negative, implying that the negative swing effect dominates the positive alignment effect. However, the magnitude of the increase in aligned-swing ($PAL \times PSW$) districts (0.56 percent) exceeded that of unaligned-swing $(1 - PAL) \times PSW$ districts (0.20 percent), suggestive of the dominance of the swing effects in the transfer process.

Next are the results of the control variables. The demographic control variables show that the estimates of proportion of young people below age 15 is statistically significant and positive. However, the percentage of the elderly above 65 years is statistically significant

and negative, contrary to expectation. This suggests that transfers to the districts tend to favor the larger group of the younger population relative to the small, ageing groups. This may be attributed to the announced objectives of these transfers of which are mostly connected to ensuring free basic education and child health at the districts.

6. Conclusion and lessons for policy

To prevent political maneuverings over intergovernmental transfers, many countries including Ghana have developed a sharing formula to guide them in distributing their fiscal resources to ensure fairness. This study, therefore, examined the relationship between the transfers and the electoral outcomes, and its dynamics as the fourth republic democracy evolves over time. It draws on the theory of redistributive politics and adopts a system GMM panel approach of empirical analysis to examine the electoral outcomes and the DACF transfers from 1994 to 2014, for 167 district assemblies.

The findings show that there are tactical maneuverings of the sharing formula for political gains in Ghana. In particular, there exists PBC in the allocation mechanism. As such, election years tend to be characterized by higher transfers. More importantly, the increases in transfers tend to favor swing districts more than aligned ones. This implies a tactical targeting of the swing districts for political fortunes.

The findings further show that as democracy evolves over time, more transfers were allocated to aligned districts in the new democracy era, while in the mature democracy swing districts received more. This suggests that incumbent governments were more opportunistic in the mature democracy period. The implication is that as a result of relatively weak political institutions coupled with naive voters, political patronage prevails in the new democracy periods while the mature democracy era was characterized by sophisticated political players such as voters who are difficult to persuade by politicians, hence governments need to sway them with more transfers to get their votes.

For purposes of policy, since Ghana is a developing country, there is the need to observe policies to develop over time; thus, the study proposes that changes to the formula be made at intervals of five years which will coincide with every first year after an election when a thorough review of the existing one through wider consultation including the district assemblies. This will ensure its stability over time and also insulate the formula from political manipulations.

Notes

1. DACF guidelines, 2005.

2. The district population figures were based as estimates from 1986, 2000 and 2010 population census figures given the annual growth rates of the various districts. The district level election results were derived from summation of constituency results within a given district.

3. The 1992 Constitution Article 291 clause 3 "Where Parliament approves the bill, it may only be presented to the President for assent if it was approved at the second and third readings of it in Parliament by the votes of at least two-thirds of all the members of Parliament."

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