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Intergovernmental fiscal transfers and tactical political maneuverings

Evidence from Ghana's District Assemblies Common Fund

Abel Fumey*

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Abstract: This paper examines the influence of political considerations on intergovernmental fiscal transfers in Ghana. The two-step system GMM approach was used to estimate transfers and elections data for 167 districts from 1994 to 2014. The analysis was country-wide and covers swing districts as well as aligned districts, while the democracy transitions from ‘new’ to ‘mature’.

The results show that each district received on average Gh¢6.28 million *per year* and the amount generally increased by 8.4 per cent in election years. The increase favoured the swing districts over the non-swing ones, as the former received 5.2 per cent more than the latter. Aligned districts in the new democracy received 2.0 per cent more while it was 5.0 per cent more for swing districts in the mature democracy.

In conclusion, the study finds that the allocation formula was politically influenced and as a preventive measure, a revision of the formula at intervals of five years—backed by legislation—is recommended.

Key words: political economy, fiscal transfers, allocation formula, redistributive politics

JEL Classification: D72, H73, H77

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1 Introduction

The influence of tactical considerations on resource distribution is amply demonstrated in many studies (Colantoni *et al* 1975; Anderson and Tollison, 1991; Grossman, 1994; Bickers and Stein, 1996). The evidence from these studies reveal a strong relationship between resource transfers and political considerations, such as voting patterns, timing of elections, geographical locations and lobbying activities among others. In recent times, however, a completely different picture of distributive politics has emerged with studies including Dahleberg and Johansson, 2002; Ansolabehere and Snyder, 2006; Veiga and Pinho, 2007; and Cole, 2009. These new cases tend to focus on the ideological attachment of the voters and nature of politicians in a jurisdiction and how resources are targeted at them. Nonetheless, it is argued that for any resource distribution, the normative principles of equity and efficiency must supplant political motives. This principle assumes that central governments act as benevolent entities interested in maximizing social welfare, and by this assertion, the economic and institutional rationale for intergovernmental transfers is underscored (Oates, 1972 and Musgrave, 1983). Evidence from an evolution of political economy models has brought to light how politicians use transfers as tactical instrument to achieve certain political objectives. Cox and McCubbins' (1986) political-economy model explains that in partisan politics, resource sharing may reflect patronage objectives in favour of loyal political followers. In contrast, Dixit and Londregan (1996) argue that opportunistic politicians, who want to increase their chances of re-election, could design an allocation programme in favour of non-loyal supporters or 'swing voters'.

Given these two ideological positions, the empirical evidence is inconclusive with respect to which political type, partisan or opportunistic is relevant and which group of voters, swing or aligned, is favoured in the allocation of intergovernmental transfers. For instance, Johansson (2003) and Arulampalam *et al* (2009) support the claim that the design of intergovernmental transfers favours swing voters, while Levitt and Snyder (1995) and Ansolabehere and Snyder (2006) confirm that larger transfers go to areas where the incumbent party have a strong support base. Since politics affect resource allocations across different groups of politicians and political jurisdictions, it is imperative to extend the empirical evidence within different country settings. Therefore, this study contributes to the debate by examining how intergovernmental fiscal transfers are used as a tactical political tool in Ghana focusing on the District Assemblies Common Fund (DAF), a formula-based grant distribution system which was conceived in 1992 but only became operational in 1994.

The formula-based allocation system is meant to prevent tactical political influences over the transfers, and it is a common strategy in most decentralized countries in the developing world. However, it should be noted that such a system does not guarantee an objective and efficient distribution of resources. In many countries, the formula is manipulated in many ways to suit specific objectives including political, thereby altering the distribution of the funds. For example, in the mid-1990s, Russia's allocation formula was diluted with changes in assigned weights, hence was not consistently followed by the central government. This is because they discovered that the existing formula could not produce any politically desirable results (Martinez-Vazquez and Boex, 2001). Ekpo (2004) also reports of the tendency of some states in Nigeria to manipulate census data so that they can receive more revenue from the federation account, since the population factor constitutes 30 per cent of the sharing formula.

In the case of Ghana, since its inception in 1994, the allocation formula has undergone several changes, but four main factors continue to dominate, namely, 'need', 'equality', 'service pressure' and 'responsiveness'. While these factors have remained the same, their composition and their weights have changed many times, particularly the need factor. For instance, in 1994 the need

factor consisted of the 1992 GDP per capita and population; in 1996 however, the number of health and basic education facilities, as well as the 1992 GDP per capita were used. In 2000, the population per medical doctor and pupil per teacher ratios were considered while the 1992 GDP per capita was dropped. In 2002, the proportion of districts with access to safe drinking water was added, and in 2004, the mileage of tarred roads, as well as nurses per capita was added as indicators (Banful, 2007). In 2007, there was an increase in the percentage of taxable revenue from 5 per cent to 7.5 per cent, apparently to cater for additional districts created by the President¹. It should be noted that similar changes have also occurred in the other factors as well, and the most critical ones occurred in election years (1996, 2000, 2004, 2008 and 2012). *Appendix A* shows a summary of events over time in respect of the formula. These numerous and rampant changes have been the subject of much concern for many people including policymakers, particularly regarding the effective administration of the transfers system, devoid of any political motives. Despite this concern, there is a dearth of empirical studies on whether the Ghanaian formula system of allocation completely alienates tactical political influences. This paper therefore aims at examining the extent to which the DACF sharing formula eliminates political maneuverings. By undertaking this enquiry, an attempt is made to provide answers to the following questions: does the quest to entrench political support in aligned or swing districts affect the transfer system; and how do electoral outcomes affect political considerations of the transfers, as democracy evolves over time.

Apart from its contribution to the extant literature on intergovernmental transfers, the novelty of this study—particularly concerning Ghana—is the use of the electoral outcomes (presidential and parliamentary) to construct indices of politically aligned and swing districts for the analysis. In addition, this paper examines the role of political factors on the transfers as the country's democratic status changes from 'new' to 'mature'. According to Brender and Drazen's (2005) classification of democratic periods, three alternative definitions are used to characterize 'new' and 'mature' democracy. These are: the period spanning the first four competitive elections; the first ten years of democracy; and the first fifteen years of a democratic period. The relevance of this classification is that pre-election fiscal manipulations and implementations of political budget cycles by incumbent governments are likely to occur in countries with a short electoral history (Viego and Pinho, 2007). Also, the estimation approach adopted is based on the Generalised Method Moments (GMM) in dynamic panel settings developed by Arellano and Bond (1991). This is unique because previous studies on Ghana were based on a fixed effects model within a static panel framework (see, Banful, 2007; and Miguel and Zaidi, 2003). However, model specifications in this framework assume a strict exogeneity of the dependent variable (in this case, the transfers). In view of the feedback effects generated by the districts' actions on the transfers, the assumption collapses and a likely problem of simultaneity bias is created which affects the reliability of the estimates. Hence, the current approach introduces a lag of the dependent variable as one of the explanatory variables to cater for this problem.

Following this first section, the rest of the study is structured into five sections. Section 2 presents the intergovernmental fiscal relations in Ghana, while section 3 reviews the literature with a focus on some empirical evidence. Section 4 covers the theoretical and empirical frameworks, as well as data and estimation techniques. Section 5 reports the empirical estimates and their interpretations. Section 6 concludes and provides some policy recommendations.

¹ Note: The President solely appoints the Administrator of the DACF and gives him/her the authority to come out with the sharing formula which is annually presented to the Members of Parliament.

2 Intergovernmental fiscal relation in Ghana

The intergovernmental fiscal relations describe all aspects of expenditure, revenue and service delivery arrangements between the national and sub-national levels of government. This includes the assignment of functions; authority for decision-making over resources and staffing; taxing and regulatory responsibilities; funding arrangements; financial management and accountability. The central government is responsible for the fiscal policy of the country and the subnational governments (District Assemblies) are guided by the policies of the central government. The central government generates revenue within its assigned taxing areas and undertakes revenue sharing with and/or transfer payments to local governments, while the district assemblies generate revenue within its assigned tax regime and receives transfer payments from central government.

The 1992 constitution and other legislative instruments² gave substantial powers and functions to the local governments in order to perform their mandated functions. The local Government Act, 1993 (Act 462) provides that 86 statutory functions of the state be shifted to local government bodies. These functions include provision of services like health, education, water, sanitation, roads, storm water drainage and electricity to the local citizens. These functions require huge expenditure outlays from the districts. As such, to meet these responsibilities, the Sixth Schedule of Act 462 provides local governments with relatively broad tax bases. These include entertainment duty, casino revenue, betting tax, and business registration charges. Others are gambling tax, rates and levies, fees and licenses, among others. However, variations in population size, income distribution, revenue base, degree of urbanization and administrative capacity means that the actual distribution of responsibilities and revenue collection differs extensively within and across local governments.

Therefore, the constitution acknowledges a system of intergovernmental transfers that significantly addresses the disparities in service delivery among district assemblies. The Intergovernmental transfers include the District Assemblies Common Fund (DACF), Recurrent Expenditure Transfers and Ceded Revenue. Districts also get income from other financial arrangements for their capital investments, and it can take different forms such as borrowing, investment fund and non-monetary arrangement that include community contributions. Although there are various sources of income for the districts aside transfers, they do not yield much revenue, so some districts depend almost entirely on the DACF. Therefore, DACF has become the single most significant source of funding for the majority of the district assemblies particularly the rural ones. However, with an average of 80 percent of the revenue of the district assemblies being derived from the DACF, the transfers generate a direct link between government influence and welfare of people at the district level. As a result, this situation creates opportunity for central governments to use the DACF as a political machine to produce gainful political outcomes.

The DACF is currently 7.5 per cent of total tax revenue accruing to the government excluding grants from development partners, which is distributed among the district assemblies through a formula. This relatively small share of the national revenue seems to disguise some important realities of district-level financing in Ghana. That is, in the absence of these transfers, some district assemblies would not be able to provide their residents with basic services, such as health and education. Moreover, increased demands on the district assemblies to undertake development projects and expand service delivery, has led to the DACF becoming such an important revenue source since 1994. It helps district assemblies to cover costs associated with mandated provision

² Local Government Act, 1993 (Act 463); Local Government Service Act, 2003 (Act 656); National Development Planning (system Act) 1994 (Act 480); District Assembly's Common Fund Act, 2003 (Act 455).

of socio-economic goods and services, particularly to the most deprived communities. The transfers are perceived by voters in Ghana as benefits emanating from a particular political party in office at the national level; hence, it has become a channel for politicians to manipulate its allocation to the districts. Therefore, it is important that the formula-based strategy of allocation be made to function as expected devoid of any political manipulations. The yearly releases of transfers from the government in millions of Ghana cedis, number of districts and the percentage of deductible taxable revenue are shown in *appendix B*.

3 Some empirical evidence

The issue of political parties allocating distributive resources to some set of targeted individuals or groups was first raised in the analysis of New Deal spending during the era of great depression in the United States. At the time, states in the West received far greater *per capita* transfers than the relatively poorer states in the South. Researchers observed that the redistributive decision is influenced by political factors rather than by economic ones (Arrington, 1969; Reading, 1973; Wright, 1974). Nevertheless, Wallis (1998) reveals that the results are very sensitive to measurement choices, but it can still be considered that the analysis of New Deal spending is the foundation of the literature on political distribution of resources. Beyond the New Deal analysis, however, many studies have considered how political factors affect intergovernmental transfers [See: Stein and Bickers, 1994; Levitt and Snyder, 1995; Diaz-Cayeros et al, 2006].

Distributive politics suggest that politicians have incentives to engage in targeted spending especially in decentralized political systems with weak parties and characterized by candidate-focused elections. In this regard, Fourniaies and Mutlu-Eren (2015) argue that in centralized political systems with party-centered elections, parties use intergovernmental transfers to advance their electoral fortune through performance spillovers across different levels of government. Using a new data set on partisan composition of local councils in England and central government's grant allocation from 1992 to 2012 and applying a difference-in-difference estimation technique, they provide evidence that governments allocate up to 17 per cent more money to local councils controlled by their own party. In addition, they show that the effect is strongest closer to local election years and in swing councils. In their study on intergovernmental fiscal transfers as pork barrel, Veiga and Veiga (2013) simultaneously analyse the determinants of intergovernmental fiscal transfers and the corresponding votes that are earned in subsequent legislative elections in Portugal. Using annual data from 1979 to 2005 on 278 municipalities of continental Portugal and by applying Generalized Method of Moments (GMM) on system of simultaneous equations, their result suggests that increases in central government's transfers to municipalities in election years secure additional votes, and that these transfers are targeted at jurisdictions where the government faces risk of losing support³.

To examine the effectiveness of strategies to prevent political manipulation of intergovernmental grant allocations, Arulampalam *et al* (2009) developed a model of resource allocation from the central government to the local governments. In this model, opportunistic central governments use political considerations as the criterion for transferring resources to local governments. Using India's state panel data, they validated the theoretical model which predicts that aligned states and

³ Sole-Olle and Sorribas-Navarro (2008), use data from 1993-2003 and find that partisan alignment has a significant effect on the amount of grants received by municipalities in Spain.

swing states receive more allocations than non-swing states⁴. The evidence of the prediction was that aligned states and swing states in the last election received 16 per cent higher grants than unaligned and non-swing states. To explore the relationship between politics and resource allocations, Maystadt and Salihu (2015) employ the instrumental variables approach to analyse the effects of opportunistic fiscal transfers on the electoral fortunes of incumbent politicians in Nigeria. By exploiting within-state variations from 2007 to 2015, the study finds that increases in VAT transfers—induced by higher oil windfalls—improve the electoral fortunes of incumbent government. Caldeira (2012) uses a micro-level public finance dataset to test whether Senegal’s system of transfers from the central government to the communes was driven by equity concerns. Based on the empirical results, the study concludes that the Senegalese system of redistribution is tactical as grant allocations target swing communes relative to partisan ones. Using a local public finance data set with election results in Ghana from 1994 to 2003, Banful (2007) applied a fixed-effect estimation technique to test the Dixit and Londregan (1996) model. The findings show that per capita grants are higher in districts where vote margins in the previous presidential election were lower, suggesting that swing districts are targeted. The study concludes that political characteristics of recipient districts matter in redistribution⁵.

An identifiable shortcoming in the literature is that most of the studies applied static panel framework in their estimation techniques (i.e. fixed and random effects), and the analysis are usually country-wide. This paper therefore contributes to the present literature by employing the 2-Step System GMM approach within the dynamic panel settings as the static models tend to generate a simultaneity bias problem because of the underlying assumption of strict exogeneity of the dependent variable. This paper further contributes by extending the empirical evidence to cover a break-up democracy period of ‘new’ versus ‘mature’ based on the Brenda and Drazen’s (2005) classifications.

4 The theoretical framework

The framework draws heavily on the models of redistributive politics by Dixit and Londregan (1995, 1996) as used in Dahlberg and Johansson (1999), as well as Banful (2007). Consider a country consisting of N subnational governments (districts) whose national government has the sole responsibility to make transfers to districts out of an endowment of size Y which is exogenously given. The transfer amount may differ across districts but individuals within a district receive the same amount. The ‘Government’ consists of one president who has agenda-setting power on the distribution of Y , and N members of parliament, one each from each district, who through their legislative votes can accept or reject the proposed distribution of Y .

There are two political parties competing to be in power, Party A is the party of the incumbent President and Party B the opposition party. The President is elected by winning a national majority at the presidential elections and a member of parliament by winning majority votes cast at the

⁴ Khemani (2007) compared two Indian institutions: a politically independent institution (Indian Finance Commission) and a political entity (Indian Planning Commission) in the implementation of fiscal transfer policy based on partisan influence. The result shows that allocation by the political body was in favour of states affiliated to the ruling party, and that among the affiliated states, more resources are devoted to states where the party controlled only a small share of seats in the national parliament (i.e. swing states) rather than to loyal states.

⁵ Miguel and Zaidi (2003), find evidence in Ghana of targeting core supporters and districts from where the ruling party won all the parliamentary seats. Specifically, in 1998, government spending per pupil in Ghana averaged US\$23 and was US\$15 higher in districts that had voted overwhelmingly for the political party of President Jerry John Rawlings.

parliamentary elections in the district. Voters have ideological preferences over the parties and decide which party to vote for, taking these preferences into consideration and the amount of transfers the incumbent government offers to each district, as well as the amount the opposition party promises to offer if elected.

In each district, there is a distribution of ideological preferences, and given a certain level of district transfers, there will be a critical value (cut-point) that divides voters into those voting for party A and those for party B. The parties' ultimate objective is to move this cut-point in order to increase their vote shares, by using transfers to the districts. The amount of transfers a district receives will hence be positively correlated with the density at the cut-point. This theory further predicts that transfers are targeted at districts with low income, since voters with low income have higher marginal utility of money and thus can be more easily persuaded to vote for a party promising them high transfers. Given the parties' objective functions, and assuming that the distribution function is symmetric and single peaked, then there exists a one-to-one correspondence between the density at the cut-point and the closeness of the last election.

A more formal presentation of the theoretical framework is as follows:

There are two parties, A and B, maximizing the number of votes. The utility of a voter in district i is given by $U_i(y_i + G_i)$ where y_i is the income of a voter in district i , G_i is the transfer received and U_i is a utility function such that $U'_i > 0$ and $U''_i < 0$. A voter located in district i , with the preference X for Party A over Party B, will vote for Party B if:

$$U_i(y_i + G_i B) - U_i(y_i + G_i A) > X \quad (1)$$

The critical value or cut-point for district i whereby all citizens of district i with values of X less than X_i will vote for Party B and all the rest for Party A is defined as:

$$X_i = U_i(y_i + G_i B) - U_i(y_i + G_i A) \quad (2)$$

In each district, there is a distribution of X given by $\Phi_i(X)$, with density $\phi_i(X)$. The vote share for party B (VP_B) is then given by:

$$VP_B = \sum_{i=1}^N P_i \phi_i(X_i) \quad (3)$$

where P_i is the share of the population living in district i . This is maximized by the party by choosing the amount of transfers to distribute to each district, thus G_{ip} , $p = A, B$; subject to

$$\sum_{i=1}^N P_i G_{ip} = Y \quad (4)$$

where Y is the available endowment. In equilibrium, both parties choose the same transfers/promises given by the condition.

$$U_i(y_i + G_{ip}) \phi_i(X_i) = U_j(y_j + G_{jp}) \phi_j(X_j) \quad (5)$$

Therefore, transfers become an increasing function of the density at the cut-point, $\phi_i(X)$, and a decreasing function of income as higher income means lower marginal utility of income⁶.

4.1 Model specification

Based on the theoretical model, the baseline empirical model is expressed in a dynamic specification form as follows:

$$y_{it} = \sum_{j=1}^k \delta_j y_{i,t-j} + \beta' P_{it} + \gamma' X_{it} + v_i + \varepsilon_{it} \quad (6)$$

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 which may 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 the transfers, the empirical model includes lags (of order k) of the dependent variable.

Given the district specific-effects (v_i) in the model, ordinary least squares (OLS) estimation with the lagged dependent variables lead to a potential dynamic bias due to correlation between the lagged dependent variable and the error term. Pooled OLS estimation would also produce inconsistent results because of the assumption of constant slope and intercept over the cross section (districts) which is unrealistic in this case. As such, the fixed effects (FE) or random effects model is considered to be appropriate as it allows the intercept term to vary, thereby correcting for both cross-sectional and contemporaneous correlations. However, even if there were no serial correlation between the lagged dependent variable and the error term, the bias would still occur because there is a clear dominance of cross section ($N=167$) over the time component ($T=22$) in the data set. To overcome this bias problem, the study uses the system Generalized Method of Moment (GMM) estimator developed by Arellano and Bover (1995) as it controls for both district specific effects and the bias from the lagged dependent variable. This is done by first differencing equation (6) to remove the district specific effect (v_i), and using instrumental variables to estimate the resultant equation (7):

$$\Delta y_{it} = \Delta \sum_{j=1}^k \delta_j y_{i,t-j} + \beta' \Delta P_{it} + \gamma' \Delta X_{it} + \Delta \varepsilon_{it} \quad (7)$$

Due to the potential weakness of the instruments in the face of first differenced and persistent time series variables which may result in bias coefficients, the original equation in levels is added to the system. As a result, the appropriate instruments become the lagged values of the first-differences in the levels form equation. The post-estimation Sargan test of over-identification is used to validate the instruments. To ascertain if the models are well specified and devoid of autocorrelation among the variables, the autoregressive test of order 1, AR(1) and 2 AR(2) are used.

Equation (7) is applied to Rogoff and Sibert (1988) opportunistic political budget cycles prediction that central governments transfer larger resources to subnational governments in election years to

⁶ See Dixit and Londregan (1995, 1996) for a more detailed presentation.

raise their electoral fortunes. To examine this prediction, the study uses an election year dummy (ELYDum) which equals to one (1) in election years, and zero otherwise. The specification is expressed in equation (8) which is substituted into equation (7) for estimation.

$$\beta' P_{it} = \beta'_1 ELYDum + \beta'_2 PAL + \beta'_3 PSW + \beta'_4 ELYDum \times PAL + \beta'_5 ELYDum \times PSW \\ + \beta'_6 ELYDum \times (1 - PAL) + \beta'_7 ELYDum \times (1 - PSW) \quad (8)$$

According to Arulampalam et al (2009), the theory predicts that aligned and swing districts obtain higher transfers relative to a non-swing district. To also test this prediction, the study considers the political variables as *Swing* and *Alignment*, which are constructed as dummy variables. 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 variable is specified in the form of interacted regressors. The dynamics of this prediction is shown in (9), and it is subsequently substituted into equation (7) for estimation.

$$\beta' P_{it} = \beta_1 PAL_{it} + \beta_2 PSW + \beta_3 PAL_{it} \times PSW_{it} + \beta_4 PAL_{it} \times (1 - PSW_{it}) \\ + \beta_5 (1 - PAL_{it}) \times PSW_{it} + \beta_6 (1 - PAL_{it}) \times (1 - PSW_{it}) \quad (9)$$

where, PAL_{it} is an indicator variable for political alignment that equals one (1) if the same party is at national and districts i levels at time t , and zero otherwise. PSW_{it} is the political swing variable which is a dummy that equals 1 when district i at time t is identified as swing or 0 otherwise.

In particular, PSW_{it} measures the difference in vote shares, which is expressed in percentage terms, between the incumbent party at the center and its main opponent, in the last parliamentary election in each district. This variable reflects the closeness of the last parliamentary election at the district level. Following Dahlberg and Johansson (1999) as well as Veiga and Pinho (2007), it is a proxy for the number of swing voters. Using the results of electoral outcomes of previous presidential and parliamentary elections in district i , a variable *votediff*⁷ is constructed. Based on the computed values, a district, i is classified as swing if *votediff* is weakly less than cutoff value of 67 per cent and 0 when *votediff* is strictly more. The choice of the cutoff point follows the theoretical requirement that the swing variable should be a relative measure. In addition, rather than being an arbitrary value, the cutoff point captures a relevant aspect of the multi-party environment typical of Ghana's democratic dispensation. 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 law⁸. As such, it is the desire of every party in government to win two-thirds majority in every parliamentary election, so they can unilaterally enact or amend legislations without bargaining with rival parties.

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 Brenda and Drazen (2005).

⁷ *Votediff* index is computed by considering a multiparty democratic system with M contesting parties in electoral constituency, c of district i . Assume that party A, with a vote share of V_a gains the highest share of total votes casts in i , and party B is the second placed party with total votes share of V_b . Therefore: $votediff = \left(\frac{V_a - V_b}{\sum_{k=1}^M V_k} \right) \times 100$

⁸ 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'.

Based on this, Ghana's democracy is considered to be mature as it is over two decades old. Following Viegas and Pinho (2007), two dummies are created, *newdem* and *matdem* to partition the democratic period into new and mature. Equation (6) is then augmented with interaction terms of *newdem* and *matdem* with all variables in vector P_{it} to yield equation 10.

$$y_{it} = \delta_j y_{i,t-j} + \phi' (P_{it} \times DEM) + \gamma' X_{it} + v_i + \varepsilon_{it} \quad (10)$$

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

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 (*%CHD*), and elderly 65 years and above (*%ELD*). This vector reflects features of government tax and spending behaviour 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 (Viegas 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.

4.2 Data sources

A panel of dataset from 1994 to 2014 on 167 district assemblies was obtained from various sources to carry out the analysis. Specifically, data on Ghana's local government public finance was sourced from the annual reports of the Ministry of Local Government and Rural Development in Ghana. This report contains information on revenue and expenditure of each district. The Socioeconomic and demographic data—such as population distribution of the districts⁹ and growth rate of the gross domestic products (GDP)—were extracted from the Economic Review of Ghana's Statistical Service. Data on allocation and disbursement of the District Assemblies Common Fund (DAF) was also obtained from annual reports of the DAF Administrator's Office. The political data was also acquired from Election reports of the National Electoral Commission (NEC) of Ghana.

2. The district population figures were based on 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.

5 Results and discussions

Presented in Table 1 are the descriptive statistics of the variables which show the number of observations, mean, standard deviation, minimum and maximum values of the data.

5.1 Descriptive statistics

Table 1. Descriptive statistics of study variables

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
Per Capita Transfer (PCTransf)	2795	6.28	7.47	0.06	86.79
Election Year (ELYDum)	2795	0.25	0.43	0.00	1.00
Political Alignment (PAL)	2795	0.58	0.49	0.00	1.00
% Vote Difference (VoteDiff)	2795	33.88	24.75	2.00	98.00
Political Swing (PSW)	2795	0.78	0.42	0.00	1.00
% Popn below 15 years (%CHD)	2795	40.02	3.57	24.00	53.00
% Popn above 65 years (%ELD)	2795	5.03	0.67	3.18	9.28
GDP Growth Rate (GDPGR)	2795	6.21	2.51	3.47	14.03
Trend	3507	11.00	6.06	1.00	21.00
Trend square	3507	157.67	137.19	1.00	441.00

Source: Author's own.

From the table, the average Transfer per capita is Gh¢6.28 million Ghana cedis at constant 2006 prices and it is used as the benchmark for the analysis. This amount may seem relatively small but its critical role in the socio-economic agenda of the district assemblies cannot be downplayed. This is because the absence of these transfers in the districts, particularly the rural ones, could severely affect their developmental goals as they will not be able to provide basic needs of their populace.

5.2 The 2-step system GMM estimates of DACF transfers (1994–2014)

Table 2 reports the results of all districts for the sample period on how political forces influence intergovernmental fiscal transfers in Ghana. Column 1 of Table 2 shows results of testing the presence of Political Budget Cycles (PBC) by Rogoff and Sibert (1988), in the allocation of the 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. 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, transfers *per capita* increase by 8.4 per cent relative to the benchmark value of Gh¢6.28 in election years.

This evidence supports the findings of Banful (2007) that in election years, districts can expect to receive twenty-five (25) percentage points more in disbursement than they receive in non-election years. The finding therefore confirms the theoretical prediction by Rogoff and Sibert (1988) that the incumbent government tends to increase transfers to subnational governments in order to improve its popularity and the chances of re-election. According to Brender and Drazen (2005), political budget cycles may come about because democracy is far more likely to collapse in an election year than any other year. Therefore, 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.

Table 2. The 2-step system GMM estimates of DACF transfers (1994–2014)

	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	.99	0.98
Sargan (P-Value)	0.46	0.47	0.48
No. of Observation	2628	2628	2628
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: ***, 1%; ** 5%; * 10%.

Source: Author's own.

The empirical evidence fails to support the Cox and McCubbin's (1986) assertion that politicians favour their supporters in resource distribution, as the political alignment (PAL) variable is not statistically significant but positively signed as expected. To ascertain if the political budget cycles favour politically aligned districts or not, the empirical evidence suggests the contrary in the sense that neither of the alignment groups is supported with more transfers. This is seen in the statistically insignificant results of the interaction variable between election year and political alignment (ELYDum*PAL), as well as election year and political unaligned, ELYDum*(1-PAL). This evidence is corroborated by Dahlberg and Johnsson (2002) for Sweden and Veiga and Pinho (2007) for Portugal. Column 2 of Table 2 presents the estimation for the case of swing and non-swing districts in relation to transfers during election years. In this case, there is also an evidence of PBCs, and this is shown by the statistical significance of the election year dummy variable (ELYDum), and the transfer per capita increased by 7.5 per cent compared to the sample average.

To determine which class of swing districts is favoured in the transfer process, the result reveals that swing districts are given more support than non-swing districts. The results show a statistically significant and negative coefficient of the political swing dummy (PSW) variable as expected. All else being equal, the transfers increased by 3 per cent relative to the average suggestive that swing districts are tactically targeted in the transfer process in order to enhance their chances of electoral victory. This evidence confirms Dixit and Londregan (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*PSW) is statistically significant and negative. It implies that the increase in transfers during election years goes to support swing districts in order to win more votes. This evidence can be attributed to the rampant changes to the formula with the major ones happening in election years.

Column 3 in Table 2 provides estimates for six political characteristics of the districts that may affect the distribution. From the result, three out of the six political variables are statistically significant while the other three are not. The aligned variable is not statistically significant but it has the expected sign of positive. However, the coefficient estimate of the swing variable is significant and negative as expected which implies that transfers increase by 3.5 per cent for political swing districts. Given that this tactical distribution of transfer exists, the study further examined whether there is a swing effect in the distribution or not. This is carried out by interaction of swing dummy variables with politically aligned and unaligned variables. The empirical evidence shows that both interaction variables are statistically significant and negatively signed, meaning that the negative swing effect dominates the positive alignment effects. However, the magnitude of change in aligned-swing (PAL*PSW) districts exceeded that of unaligned-swing (1-PAL)*PSW districts. The estimates show that the former changed by 0.56 per cent compared to the latter's change of 0.20 per cent suggestive of the dominance of the swing effects.

As regards the vector of control variables, the estimated signs are the same for the three models as shown in Table 2. The demographic control variables show that the estimates of the proportion of young people below age 15 is statistically significant and positive as expected. However, the percentage of the elderly above 65 years is statistically significant and negative contrary to expectation. This suggests that the transfers to the districts favour the larger group of younger population and do not support small, aging groups of the districts. This may be partially ascribed to the announced objectives of these transfers of which many are connected to ensuring free basic education and child health at the districts and the benefit of scale economies. The economic control variable which is the growth rate of GDP is included in the model to capture the macroeconomic performance of the country. The results show that it has the expected positive sign and is statistically significant. This implies that as the economy improves, it impacts on the amount of tax revenue that accrues to the nation, hence the statutory deduction that goes into the DACF also increases. Concerning the time trend variables which control for the passage of time, the coefficient estimates of both *Trend* and *Trendsqr* variables are statistically significant and positive. This means that the transfers are not only increasing over time but also growing at an increasing rate.

5.3 The estimates over time: new versus mature democracy

Reported in Table 3 are the empirical findings on effects of political factors on the transfers as democracy transitions from new to mature. The new democracy period ranges from 1994 to 2004, while the mature democracy covers 2005 to 2014. Column 1 of Table 3 gives the results of how politically aligned and unaligned districts have evolved over time in respect of the transfers. The results indicate that in the new democracy, the incumbent government allocates more transfers to aligned districts while in the mature democracy, more transfers go to unaligned districts. This evidence is shown by the statistical significance of the coefficient estimates of the interaction

between aligned districts and new democracy (Aligned*NewDem) and unaligned districts and mature democracy (Unaligned*MatDem). The results show that swing districts are favoured with more transfers in the mature democracy.

This outcome suggests that in the new democracy voters' loyalty is rewarded as there may be lower transparency in the allocation processes coupled with inexperience of both politicians and voters. However, as democracy matures, politicians and voters become wiser and could easily denounce their allegiance to any party. In this case, the incumbent government undertakes tactical targeting of transfers to swing districts in order to increase votes. In view of the targeted transfers, the results show that a relatively higher amount is given to the swing districts than to the aligned districts. Other things being constant, the swing districts are expected to receive 5 per cent more while the aligned districts receive 1.8 per cent more than the average transfer amount.

This result is similar to that of Brender and Drazen (2005), as well as Viega and Pinho (2007) whose findings indicate that central governments distribute grants strategically among municipalities run by mayors with party affiliation with the central government in Portugal during the new democracy period.

In Table 3 column 3, the study considers all the possible political factors in terms of swing and aligned that could impact on the transfer process contemporaneously. The estimates reveal that aligned districts received more transfers as the political alignment variable is significant and positive. The increase however, occurred in the new democracy period showing 2 per cent above the average. This is shown in the table by the positive statistical significance of the interaction term between the political alignment variable and the new democracy dummy (Aligned*NewDem).

Table 3. Estimates over time: new versus established democracy (1994–2014)

	1	2	3
PCTransf(-1)	0.6393*** (11.37)	0.6375*** (11.36)	0.6268*** (12.64)
PAL	0.1134*** (3.69)		0.2172*** (7.345)
PSW		-0.3242** (-3.73)	-0.3753 (-1.61)
NewDem	0.2554 (5.59)	0.2809 (5.64)	0.3124 (1.05)
MatDem	0.0831 (1.47)	0.0823 (1.54)	0.0811 (1.59)
PAL*NewDem	0.0927*** (3.66)		0.1178** (3.71)
(1-PAL)*NewDem	-0.0787 (-1.18)		-0.0224 (-1.05)
PAL*MatDem	0.0394 (1.50)		0.1094 (1.60)
(1-PAL)*MatDem	-0.0354** (-2.54)		-0.1317 (0.85)
PSW*NewDem		-0.0743 (0.27)	-0.5776 (0.98)
(1-PSW)*NewDem		0.2372 (0.47)	0.2574 (0.48)
PSW*MatDem		-0.1120** (0.43)	-0.2479*** (-3.14)
(1-PSW)*MatDem		0.0436 (1.71)	0.03171** (2.06)
%CHD(-1)	0.1429*** (3.62)	0.1507** (3.51)	0.1698** (3.77)
%ELD(-1)	-0.0317** (-2.48)	-0.0385** (-2.49)	-0.0302** (-2.97)

GDPGR ₍₋₁₎	0.0194*** (5.81)	0.0248*** (5.53)	0.0214** (5.69)
Trend	0.2688*** (4.63)	0.3087*** (4.40)	0.3493*** (4.26)
Trend Square	0.0115** (6.23)	0.0127*** (5.98)	0.0198** (5.82)
AR(1)	-4.13	-4.14	-4.20
AR(2)	0.84	0.86	0.89
Sargan (P-Value)	0.45	0.43	0.42
No. of Observation	2628	2628	2628
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: ***, 1%; ** 5%; * 10%.

Source: Author's own.

The results also show that interactions between the swing and mature democracy variable (Swing*MatDem) as well as non-swing and mature democracy [(1-Swing)*MatDem] are statistically significant with the expected sign. This further suggests that swing districts are favoured with more transfers in the mature democracy period. The empirical findings indicate that swing districts received approximately 4 per cent increase compared to the average transfer, while the non-swing districts receive about 0.5 per cent more in the mature democracy.

Overall, the political influence on the transfers over the democratic period as shown in Table 3 indicates that while there is a seemingly mixed aligned and swing effect over the two periods, the aligned effect dominates in the new democracy while swing effect dominates in the mature democracy. This suggests a loyalty patronage in the new democracy due to inexperience of the political players as well as weak institutions to monitor the process. However, in the mature democracy period, there is tactical targeting of swing districts to increase vote for re-election by the incumbent governments. Another possible cause of this is the general public doubt in the functioning of new democracies, where citizens have little faith in the survival and efficacy of democracy in delivering good economic outcomes in its budding stages. This perception compels governments to increase transfers to the districts in order to convince the public that there are gains in democracy.

6 Conclusion and policy recommendations

To prevent political maneuverings over intergovernmental transfers, many countries including Ghana have developed a sharing formula to guide them in distributing their fiscal resources in order to ensure fairness. In the light of this, the study makes use of the District Assemblies' Common Fund (DACF) transfers, which is a formula-based scheme that became operational in 1994 to examine the influence of political considerations on the distribution, and in particular, its dynamics as the 4th democratic dispensation evolves from new to mature.

The study draws on the theory of redistributive politics by Dixit and Londregan (1995, 1996) to develop an empirical framework for the analysis. Using a panel data set of election results, transfers *per capita* to the districts and selected control variables from 1994 to 2014, for 167 district assemblies, this research employs the system GMM approach of dynamic linear panel for the empirical estimations.

The empirical outcomes reveal political maneuverings of the sharing formula for political gains as there exists a political budget cycle in the allocation mechanism. The evidence shows that election

years tend to be characterized by higher transfers of about 8.4 per cent more, relative to the average transfers of Gh¢6.28 to the districts. More importantly, the increases in transfers favour swing districts more than aligned ones. 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. Specifically, swing districts received 5 per cent more, while aligned districts get 1.8 per cent over the average amount. This suggests that incumbent governments were more opportunistic in the mature democracy period. In general, the utilization of the transfers tends to have a bigger impact on the younger population below age 15 years whose needs, such as basic education, seem to be accommodated more by the districts than the needs of the elderly above 65 years. The study also shows that the transfers to the districts are generally growing at an increasing rate corresponding to the economic performance of the country.

For purposes of initiating a policy to insulate the sharing formula from political influences, it is recommended to set up a team of experts to design the allocation formula in consultation with stakeholders, such as Non-Governmental Organizations (NGOs), Civil Society Organizations (CSOs) and the District Assemblies (DAs). In addition, since Ghana is a developing country, there is the need to observe policies to develop over time, so the paper proposes that changes to the formula be made in intervals of five years—after comprehensive review of the existing one—and that the formula changes would be legally binding. These measures will help minimize the rampant changes that has bedeviled the formula since its inception, and also bring about separation of powers between those who design the formula and those responsible for its implementation. In this case, Parliament's role would be to ensure that the formula operates within the legal framework and the distribution is done according to the established law.

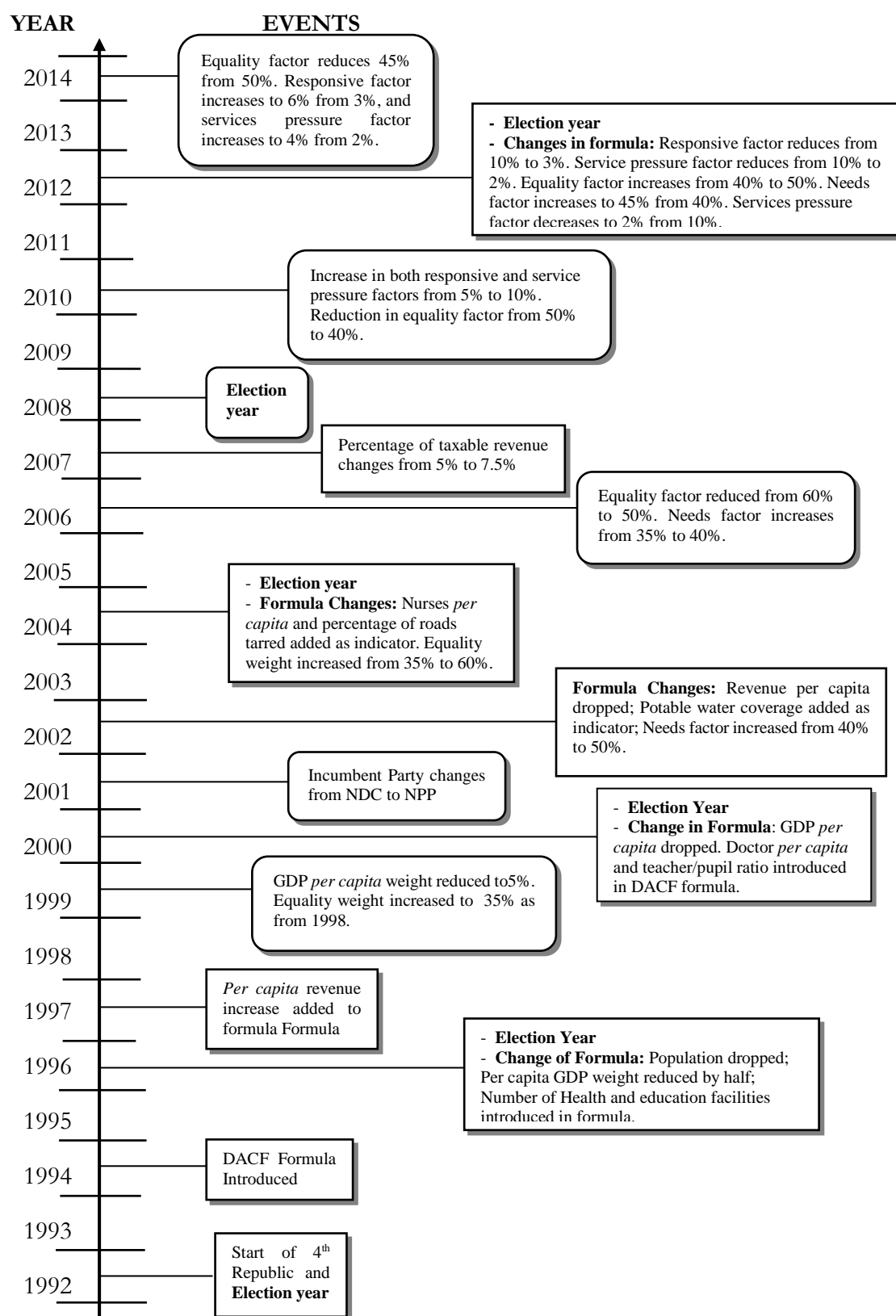
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Appendix A

Figure A1: Event timelines in DACF administration and Ghana's politics



Source: Author's illustration based on DACF annual reports and political events.

Appendix B

Table B1. Annual releases of the DACF (1992-2014) in millions of Ghana Cedis (Gh¢)

Year	Amount	% Increase	No. of Districts	% of Taxable Revenue
1994	2.60		110	5
1995	5.40	107.69	110	5
1996	7.80	44.44	110	5
1997	7.90	1.28	110	5
1998	15.53	96.58	110	5
1999	11.24	-27.62	110	5
2000	14.95	33.01	110	5
2001	18.87	26.22	110	5
2002	26.53	40.59	110	5
2003	64.86	144.48	138	5
2004	85.86	32.38	138	5
2005	70.19	-18.25	138	5
2006	139.26	98.26	138	5
2007	173.34	24.56	170	7.5
2008	217.01	25.19	170	7.5
2009	188.57	-13.11	170	7.5
2010	340.40	80.52	170	7.5
2011	392.96	15.44	170	7.5
2012	571.70	45.49	216	7.5
2013	648.13	13.37	216	7.5
2014	772.44	19.18	216	7.5
Total	3845.33			

Source: Author's compilation based on data from DACF annual reports.