

## **EXPLAINING THE GROWTH OF GOVERNMENT SPENDING IN GHANA**

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### **ABSTRACT**

Government spending is a reflection of government policy choices. However, the implications of government spending growth necessitate an understanding of the drivers of the growth of government spending. The present paper modifies the median voter model to explain the growth of government spending by introducing foreign aid, public debt, and democracy. The paper argues that these variables are important drivers of government spending for developing countries, hence a model explaining the growth of government spending of these group of countries that ignores the potential impact of foreign aid, public debt and democracy does not capture fully what determines the growth of government spending. Such a model is too simplistic and less relevant for policy purposes. The paper therefore makes use of annual time series data to determine the long-and short-run impact of per capita income, tax share, minimum wage, population growth, foreign aid, public debt and democracy on the growth of government spending in Ghana over the period 1980-2012. The autoregressive distributed lag (ARDL) bounds test for cointegration and the error correction model (ECM) procedures were used for the estimation. Additionally, the paper provides results of generalized forecast error variance decomposition in order to determine the effect of innovations in both the dependent and independent variables on the dependent variable. The findings reveal that per capita income, tax share, population growth, minimum wage, foreign aid, public debt, and democracy are key determinants of the growth of government spending in the long-run. With the exception of minimum wage, these variables are also key determinants of the growth of government spending in the short-run. Variance decomposition results suggest innovations in per capita income and population growth generally account for the largest variations in government spending over the horizon considered. Also, innovations in foreign aid, public debt, and democracy are responsible for significant variations in government spending. The findings and policy recommendations of the paper provide vital information for policy implementation in Ghana.

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### **INTRODUCTION**

Governments, like individuals, make choices since choice making is a characteristic of economic management. The choice of policy by a government is reflected in its spending on the provision of goods and services. What is worrying for many developing countries is that government spending often tends to exceed its revenue levels.

In Ghana, for example, government revenue as a percentage of GDP increased from 4.14 per cent in 1980 to 19.06 per cent in 2012. On the other hand, government

spending as a percentage of GDP increased from 11.19 per cent in 1980 to 31.19 per cent in 2012. The result is not different when we consider 5-year averages for the period 1980-2009 and 3-year average for the period 2010-2012 (see Table 1). As evident, Ghana's fiscal stance has been the result of expenditure growing faster than revenue on the average. It is not surprising therefore that fiscal deficit has been growing strong over the years.

It is also interesting to note that government spending as a percentage of GDP generally shows a fluctuating trend from 1980-2012. It followed a fluctuating trend for the period 1980-1991 though the levels were relatively lower, averaging 12.79 per cent of GDP. It was lowest in 1982 (9.14 per cent). This period coincided with the years of the Structural Adjustment Program (SAP) which was targeted at reducing fiscal imbalances. For this reason SAP years were those of relatively low government spending. Government spending trended upwards and averaged 18.3 per cent of GDP for the period 1991-1995. This period which coincided with the initial periods of democratization was characterized by fiscal indiscipline as the gains from SAP were severely eroded. For the period 1995-1999, government spending fell continuously from the previously high value of 24.3 per cent of GDP experienced in 1995, the highest for the 1980-1995 period. However, it was higher than the levels in the 1980s and the early 1990s, averaging 20.21 per cent of GDP. It then dipped in 1999 (16.81 per cent) and 2002 (17.1 per cent). The fall in government spending in 2002 can be attributed to the tightening of the economy after the elections in 2000 and the debt relief that occurred under the HIPC initiative. Government spending after 2002 began to fluctuate again though the trend has been upward, averaging 23 per cent of GDP for the period 2002-2012. More so, government spending, since 2002, peaked in election years (20.54 per cent in 2004, 24.4 per cent in 2008 and 31.2 per cent in 2012). This is the case because as often argued, election years' often come with increasing government spending.

**TABLE 1: REVENUE AND EXPENDITURE (% OF GDP, 1980-2012)**

Period	Revenue	Expenditure
1980-1984	6.50	12.21
1985-1989	11.75	13.84
1990-1994	9.78	15.83
1995-1999	11.18	20.21
2000-2004	15.72	20.24
2005-2009	16.73	22.41
2010-2012	18.30	27.62

*Source: Authors' elaboration using IMF's World Economic Outlook (2015) data.*

Growing spending above revenue receipts creates fiscal deficits that could harm economic growth (see Adam & Bevan 2005). Besides different ways of financing, growing spending may be economically destructive. For instance, if spending is financed through increasing taxation, it may serve as a disincentive to work (income taxes), investment (property, corporate, and sales taxes), and demand (goods and services taxes). If spending is financed through borrowing, it may create growing debts (both domestic and external), exchange rate depreciation and depletion of foreign reserves (from external

debts and debt servicing), inflation, interest rate hikes and crowding-out (domestic debts), among others. Notably, all these are current happenings in the Ghanaian economy (see ISSER 2013; IMF 2014). There is also the tendency for growing government spending to hinder innovation and allocation of resources, as well as fund “harmful” interventions (Ball & Mankiw 1995; Mitchell 2005). Moreover, large government size is not desirable as it affects the efficiency and competitiveness of the economy (see Berry & Lowery 1984; Tanzi & Schuknecht 2000). Finally, the sustainability of Ghana’s rising government spending has been recently questioned (see Kwakye & Owoo 2014; ISSER 2013; Bawumia 2014; IMF 2014). It becomes imperative that what drives the growth of government spending are well understood.

The present paper modifies the median voter model to investigate the long-and short-run impact of per capita income, tax share, minimum wage, population growth, foreign aid, public debt and democracy (see Wagner 1893; Musgrave & Musgrave 1984; Buchanan 1967; Baumol 1967; Feldstein 1996; Remmer 2004; Barua 2005; Mosley 2005) on the growth of government spending in Ghana. The paper introduces foreign aid, public debt, and democracy into the median voter model given their potential impact on government spending in developing countries. We do so because the literature has made it clear that (see Hausken et al. 2004; Osei et al. 2005; Battaglini & Coate 2006) these variables although ignored by other studies in Ghana (see, for example, Ohene-Manu 2000; Ofori-Abebrese 2012) are important drivers of the growth of government spending in developing countries (Osei et al. 2005; Sakyi 2013). Given these considerations, a model explaining the growth of government spending in Ghana that ignores the potential impact of foreign aid, public debt and democracy does not capture fully what determines the growth of government spending. Such a model is too simplistic and less relevant for policy purposes. The current paper is therefore the first attempt at introducing these variables in modeling government spending in Ghana. Additionally, the paper provides results of generalized forecast error variance decomposition in order to determine the effect of innovations in both the dependent and independent variables on the dependent variable.

The remainder of the paper is structured as follows. Section 2 reviews the literature on the determinants of the growth of government spending. The estimation methods and procedures are presented in Section 3 while Section 4 discusses the empirical results. The conclusions and policy recommendations are offered in the last section.

## **DETERMINANTS OF THE GROWTH OF GOVERNMENT SPENDING – A BRIEF SURVEY**

Several theories and empirical evidence exist to explain the extent to which per capita income, tax share, population growth, minimum wage, foreign aid, public debt, and democracy among others explain the growth of government spending. Among these theories are mentioned: Wagner’s Law, Baumol’s “Cost Disease”, Fiscal illusion theory, Peacock-Wiseman Displacement hypothesis and Development models. Wagner’s law (Wagner 1893) associates the growth of government spending to the growth of per capita income. The law points to a positive relationship between government spending and per capita income (Musgrave & Musgrave 1984), although for low-growth countries, this relationship could be negative (see Fan et al. 2013). Some studies find support for

Wagner's law (see Ohene-Manu 2000; Iyare & Lorde 2004; Akitoby et al. 2006; Gharthey 2007; Lledo et al. 2009; Sakyi 2013), while others do not (see Ziramba 2008; Babatunde 2008).

One factor that also leads to increases in government spending is the rise in the prices of the inputs used in the production of public sector goods (see Stigler 1970; Buchanan & Tullock 1977; Alesina & Perroti 1995). This is explained within Baumol's 'Cost Disease' theory (Baumol 1967) which indicates that wages increase faster than increases in productivity of labour, especially regarding services. Hondroyiannis & Papapetrou (2001), Neck & Getzner (2003), Alm & Embaye (2010), and Ofori-Abebbresse (2012), provide evidence of Baumol's 'Cost Disease'.

Fiscal illusion - often discussed under tax visibility, revenue-complexity, revenue-elasticity, flypaper effect, renter illusion, and debt illusion hypotheses (see Oates 1991; Dollery & Worthington 1996) - postulates that there will be 'excess' demand for public goods and services if certain features of the tax structure cause taxpayers to underestimate how much tax they really pay<sup>1</sup> (see Wagner 1976; Pommerehne & Schneider 1978). As taxes become more varying in their kind and indirect with respect to who pays them, the ability of the average voter to perceive their burden reduces. This will cause budgets to increase (Wagner 1976). The implication is that taxpayers will not correctly discern the tax-cost and incidence of goods and services provided by the government if the proportion of "less visible" taxes in tax revenue exceeds that of the "visible taxes" (Pommerehne & Schneider 1978) and if deficit finance exceeds spending. Gemmell et al. (1999) and Alm & Embaye (2010) provide evidence for fiscal illusion while Ohene-Manu (2000) and Thamae (2013) do not.

Other theories explaining the growth of government spending are the displacement effect (see Peacock & Wiseman 1961) and Development models of government spending (see Rostow 1960, and 1971). The displacement effect (see Peacock & Wiseman 1961) makes use of a "time pattern" analysis of government spending within the framework of a "social disturbance" theory. The theory argues that the median voter enjoys the benefits of public goods provided through government spending, but dislikes paying taxes to fund such spending. Given this, a tolerable level of taxation is created which sets constraints on government spending. The theory further argues that public spending will usually show upward trends in "normal times", but is likely to be disturbed during periods of shocks/crisis (may be social upheavals such as war, famine, large-scale social disaster, among others). Such periods of shocks/crisis may require increased government spending. This may require increased taxation to fund the increased levels of government spending. Voters' deep awareness of the social problems that arise during such periods of crisis create an "inspection effect". Hence, the citizens are likely to regard the increased tax levels as acceptable. Therefore, government spending is displaced upwards over the shock/crisis periods and is not likely to fall back to original levels even after the shock/crisis.

Rostow (1960, 1971) provides development models of government spending growth popularly referred to as the "Five Stages of Growth". The model argues that economic growth is characterized by five basic stages of varying periods; (i) the traditional stage, (ii) the precondition for take-off stage, (iii) the take-off stage, (iv) the drive to maturity stage, and (v) the age of high mass consumption. These stages can be classified into three: the early stages (i.e. the traditional stage and the pre-condition for

take-off), the middle stages (i.e. the take-off stage and the drive to maturity) and the maturity stage (i.e. the age of high mass consumption). Each of these classes of stages has implications on the growth of government spending and is characterized by a degree of spending, either public, private or both. For instance, the early stages of economic growth and development of an economy are associated with high public sector spending as a proportion of total spending. Such spending is necessary to facilitate the “take-off” into the middle stages of economic growth and development. Government spending moves “hand-in-hand” with private spending in the middle stages of economic growth and development. The maturity stage is characterized by more spending on health and welfare services compared to capital spending (Rostow 1971). Government spending increases at each stage of development due to market failures. Gradually, however, the share of government sector spending to GDP decreases over the period of development as total spending rises. Given that most developing countries are not yet at the maturity stage, government involvement in the economy in terms of spending are particularly crucial.

Population growth has also been argued to affect government spending<sup>2</sup> although the population-spending relationship is theoretically unclear. Notwithstanding, this effect is largely argued to depend on the degree of ‘publicness’ of the goods and services being produced (see Borcharding & Deacon 1972; Bergstrom & Goodman 1973; Feldstein 1996; Marlow & Shiers 1999). Empirical results generally tend to support a positive relationship. Hondroyiannis & Papapetrou (2001), Okafor & Eiya (2011), Ofori-Abebrese (2012), and Thamae (2013) provide support for a positive population-spending relationship whiles Ohene-Manu (2000) provides support for a negative relationship.

Foreign aid has the potential to drive government spending since it increases government revenue outlay and also possibly encourages rent-seeking activities through its ‘flypaper effect’ (see Heller 1975; Boone 1996; Remmer 2004; Outarra 2006; Fan et al. 2013). Unfortunately, efforts to control government spending are likely to be less in countries that depend heavily on foreign aid since such countries do not “sweat” for the monies they receive. What is worrying is that over reliance on foreign aid inflows has the potential of reducing revenue generation effort of aid receiving governments (Remmer 2004). However, the fact that foreign aid receipts can make revenue receipts unstable also implies that, foreign aid possibly reduces government spending (see Feyzioglu et al. 1998; Hudson & Mosley 2008). Morrissey (2015) indicates three conclusions on the effects of foreign aid; “aid finances government spending; the extent to which aid is fungible is over-stated and even where it is fungible this does not appear to make the aid less effective; and there is no systematic effect of aid on tax effort” (Morrissey 2015, pp.98). Yohou et al. (2016) and Clist (2016) largely support this assertion. The extent of the impact of foreign aid on the countries that receive them are often influenced by how their governments ‘behave’ since such aid goes through the public sector (McGillivray & Morrissey 2000). In the face of all these arguments, a positive relationship between foreign aid and government spending in Ghana is posited. With respect to the empirical evidence, the effect of foreign aid on government spending depends among others on factors such as the kind of government spending being considered (i.e. recurrent against capital expenditure – see Fagernas & Roberts 2004; Osei et al. 2005; Outarra 2006; or even developmental consumption spending against non-developmental consumption spending – see Outarra 2006),

country/region-specific characteristics (see Fagernäs & Roberts 2004; Fan et al. 2013), and time-period being considered (see Marc 2012).

Another driver of government spending is debt financing (see Tobin 1961; Breen & Lerner 1973; Blinder & Solow 1973, 1976; Buiters 1977; Barua 2005). Public debt allows the financing of government spending, avoiding distortionary taxation effect, at least in current periods. Potentially, democracy may also create a situation where political parties realizing (with some probability) they may not be able to determine future policies (even though they are currently able to do so) engage in huge borrowing in their regimes<sup>3</sup>. Therefore as long as borrowing remains a major source of government revenue to fund government spending (especially in developing countries such as Ghana) debt will continue to increase government spending. Mahdavi (2004) finds a negative relationship between debt and government spending for 47 developing countries while Okafor & Eiya (2011) indicates public debt increases government spending in Nigeria.

Aside the above mentioned determinants it is generally expected that government spending increases in democracies in order to meet the needs of the electorates (see Hicks & Swank 1992; Isham et al. 1997; Boix 2001, 2003; Stasavage 2005). As often argued, government spending reduces as a country moves from a purely autocratic system to a semi-participatory democracy, while it rises as a country moves from a semi-participatory system to a full democracy (see Boone 1996; Hausken et al. 2004; Blais et al. 2010). Governments that earn voters support in democracies are mostly those who spend more on social and community welfare programs (see Hicks & Swank 1992; Isham et al. 1997; Husted & Kenny 1997; Tavares & Wacziarg 2001; Boix 2001, 2003; Stasavage 2005; Aidt et al. 2006). It may therefore be said that democracy encourages prudent government spending (see Dizaji et al. 2016). Other “costs” of democracy which increases government spending include the cost of running local level and national parliamentary and presidential elections. This is actually the case in Ghana. Another important factor worth considering in democracies is the role of political parties (including political trusts and ideologies, see Rudolph & Evans 2005 and Magaloni 2008) and institutions (see Mosley 2005), as they remain key drivers of the growth of government spending in democracies. Effective institutions largely influence the levels of government spending. Such institutions provide checks and balances on the levels and frequencies of government spending behavior. What is worrying, however, is that these institutions may also act as veils that governments can evade<sup>4</sup>. There is evidence of a positive democracy-spending relationship (see Lindert 1994, 2004; Gonzalez 2002; Brown and Hunter 2004; Rudra & Haggard 2005). However, Mulligan et al. (2004) find no statistically significant difference between government spending in democracies and those in non-democracies.

## **METHODOLOGY**

### **Theoretical Background and Model Specification**

The Median Voter Model follows from the Median Voter Theorem (MVT). The MVT is a well-known political theory that explains the importance of the median voter’s choice in public choice decisions. As stated by Romer & Rosenthal (1979), the theory is generally attributed to Hotelling (1929), and Bowen (1943). MVT argues that there are

basically two characteristics of public goods. The first is that, the costs of providing these goods are mostly shared among community members. Secondly, how much to be supplied is also determined collectively. The enormity of the decision to be made in determining the quantity and costs of providing public goods is evident from the fact that every community is made up of different individuals with varying tastes, wealth levels, and “conflicting” interests, among others. This is crucial because given individual demand and costs conditions, the quantities supplied of public goods is equal to the “median of the quantities demanded by its citizens” for any community and that “the median quantities demanded is the quantity demanded by the citizen with the median income” (Bergstrom & Goodman 1973, pp. 281). This does not preclude the fraction of the cost or tax price to be borne by the median consumer given his/her demand for the public good. Therefore, by the arguments of the MVT, how many public goods are provided is determined by the income of the median consumer in the community. Hence, all the government would have to do is to simply find that *one voter* whose preferences for public goods is considered exactly in the “middle” of the distribution of the society’s preferences, and provide the amount of public goods that voter prefers. Romer & Rosenthal (1979) indicate that “the great advantage of the median voter paradigm is that it allows one to analyze social problems via the preferences of a single individual, the pivotal median voter”. Given that a country is made up of several communities, these community level arguments can be aggregated for countries as the conditions and circumstances surrounding the two are similar (see Borcharding & Deacon 1972; Bergstrom & Goodman 1973). It must be stated that the arguments made by the MVT will hold under a majority voting system (see Niskanen 1971; Bergstrom & Goodman 1973; Kurz 1974; Romer & Rosenthal 1978) like in most democracies.

In what follows, we follow Borcharding & Deacon (1972) and Bergstrom & Goodman (1973) and state the median voter’s demand function for public goods and services as:

$$X = MC^\alpha Y^\rho Z^\gamma \quad (1)$$

X = the quantity of public goods and services

C = the perceived unit cost of public goods and services paid by the median voter

Y = the per capita income

Z = other exogenous conditions affecting the demand for public goods and services

M is a scale parameter and  $\alpha$ ,  $\rho$ , and  $\gamma$  are parameters of the demand function.  $\alpha < 0$ ,  $\rho > 0$ ,  $\gamma > 0$ .

X and C are unobserved. However, one can safely assume the cost of providing public goods and services, X, to have a unit marginal cost equal to  $s$ . We further assume the median voter’s share of the unit cost of public goods and services to be  $\theta$ . With these assumptions, the median voter pays a perceived cost of public goods and services given as:

$$C = \theta s \quad (2)$$

Hence, government spending per capita is now given as  $sX$ .

We combine equations (1) and (2) to obtain:

$$sX = M\theta^\alpha s^{1+\alpha} Y^\rho Z^\gamma \quad (3)$$

Borcherding & Deacon (1972) and Bergstrom & Goodman (1973) also assume  $\theta$  to be equivalent to the per capita ratio of total government tax revenue to total government spending  $(Q)(1/N)$ , where  $Q$  is the share of total government tax revenue in total government spending and  $N$  is the number of voter-tax payers. The resulting equation is stated as:

$$\theta = (Q)(1/N) \quad (4)$$

It is assumed in equation (4) that voters are either unaware of or indifferent to the tax incidence of current fiscal deficits. From equation (4), when a balanced budget is considered, it is expected that the perceived unit cost of government spending reduces as the population increases.

Finally, Borcherding & Deacon (1972) and Bergstrom & Goodman (1973) assume the unit cost of providing public goods and services is determined by the average wage rate ( $W$ ) in the private sector and the number of voter-tax payers. That is:

$$s = DW^\tau N^\pi \quad 0 < \tau < 1; \pi > 0 \quad (5)$$

Where  $D$  is a scale parameter,  $\tau$  measures the 'productivity effect' or the extent of 'Cost Disease', with  $\pi$  measuring the 'crowding effect' or the degree of 'publicness'.

Putting equations (4) and (5) into (3) and assuming  $sX \equiv G$  produces:

$$sX = G = M \left[ Q \cdot \frac{1}{N} \right]^\alpha [DW^\tau N^\pi]^{(1+\alpha)} Y^\rho Z^\gamma \quad (6)$$

$$G = MD^{(1+\alpha)} Y^\rho (Q)^\alpha N^{[\pi(1+\alpha)-\alpha]} W^{\tau(1+\alpha)} Z^\gamma \quad (7)$$

Equation (7) represents the specification of the median voter model as given by Borcherding & Deacon (1972) and Bergstrom & Goodman (1973) as adopted in the literature by several authors (see Niskanen 1978; Borcherding 1985; Ashworth 1995). However, as already indicated in Section 1, the median voter model developed here does not capture fully what determines the growth of government spending in developing countries, of which Ghana is not an exception. For this reason, we specify  $Z$  to include



foreign aid ( $AID$ ), public debt ( $DEBT$ ), and democracy ( $DEM$ ). Therefore the modified median voter model is given as:

$$G = MD^{(1+\alpha)} Y^\rho (Q)^\alpha N^{[\pi(1+\alpha)-\alpha]} W^{\tau(1+\alpha)} AID^\omega DEBT^\delta DEM^\vartheta \quad (8)$$

The estimable form of equation (8) in logarithm terms is given by:

$$\ln G_t = \beta_0 + \beta_1 \ln Y_t + \beta_2 \ln Q_t + \beta_3 \ln N_t + \beta_4 \ln W_t + \beta_5 \ln AID_t + \beta_6 \ln DEBT_t + \beta_7 \ln DEM_t + \varepsilon_t \quad (9)$$

where  $\beta_0 = \ln(MD^{(1+\alpha)})$ ,  $\beta_1 = \rho$ ,  $\beta_2 = \alpha$ ,  $\beta_3 = [\pi(1+\alpha) - \alpha]$ ,  $\beta_4 = \tau(1+\alpha)$ ,  $\beta_5 = \omega$ ,  $\beta_6 = \delta$ ,  $\beta_7 = \vartheta$ , are parameters,  $\varepsilon_t$  is the error term,  $\ln$  is a natural logarithmic operator.  $\beta_0$  is the constant term since  $M$  and  $D$  are scale parameters.  $\beta_1 > 0$ , implies the presence of Wagner's law but  $\beta_1 < 0$  means Wagner's law is absent.  $\beta_2 > 0$  implies the presence of fiscal illusion but  $\beta_2 < 0$  implies the absence of fiscal illusion.  $\beta_3 = 0$ , implies services are considered 'pure public goods',  $\beta_3 = 1$  implies the cost of providing public goods is proportional to the population being served and  $\beta_3 > 1$  implies there is a crowding out effect associated with the unit cost of providing government goods and services.  $\beta_3 < 0$  implies there are economies of scale when government services are being provided. When  $\beta_4 > 0$ , private sector productivity rises faster than that of the public sector. When  $\beta_4 = 1$ , productivity does not increase but when  $\beta_4 < 0$ , public sector productivity is higher than the private sector. Also,  $\beta_4 > 0$  indicates income elastic demand for government services but  $\beta_4 < 0$  indicates income inelastic demand for government services.  $\beta_5 > 0$  indicates the absence of fungibility while  $\beta_5 < 0$  shows evidence of fungibility. There is evidence for 'deficit financing' when  $\beta_6 > 0$  but there is no such evidence when  $\beta_6 < 0$ .  $\beta_7 < 0$  for a country moving from autocracy to semi-participatory democracy, and  $\beta_7 > 0$  for a country moving from semi-participatory democracy to full democracy. Apart from  $\beta_2$  which is expected to be negative and statistically significant, the coefficient of all other variables are expected to be positive and statistically significant, a priori.

## Data

Annual data on Ghana for the period 1980-2012 are used. The dependent variable,  $G$ , is measured as real total government spending per capita. Real total government spending per capita is used in order to give a reflection of the trend in government spending growth in constant terms and also to reflect the annual government spending on the average citizen. This definition helps put the study into perspective, showing how much the average citizen 'benefits' from the ever increasing government spending. This

measure has been used by other authors (see Craigwell 1991 for Barbados; Ohene-Manu 2000 and Ofori-Abebrese 2012 for Ghana; Provopoulos 1982 and Hondroyiannis & Papapetrou 2001 for Greece; Neck & Getzner 2003 for Austria; Alm & Embaye 2010 for South Africa; and Thamae 2013 for Lesotho).  $Y$  is measured as real GDP per capita. Using real GDP per capita to proxy income is common in the literature (see Niskanen 1978; Hondroyiannis & Papapetrou 2001; Alm & Embaye 2010; Thamae 2013; Fan et al. 2013).  $Q$  is measured as the ratio of total government revenue to total government spending. It is used as an explanatory variable because it is assumed that deficit financing may cause the average voter to be fiscally 'illuded'. Ohene-Manu (2000), Alm and Embaye (2010) and Thamae (2013) have used this measure. Similar to Ofori-Abebrese (2012) we use the growth rate of the population instead of the level as it is actually this variable that matters for the growth of government spending (see Borcharding 1985). Its coefficient measures the degree of 'publicness' of government services. The price of public goods and services also determines the growth of government spending. The study therefore uses the minimum wage ( $W$ ) as a proxy for the price of public goods and services. The same variable was used by Ofori-Abebrese (2012). The foreign aid variable,  $AID$  is measured as the net Official Development Assistant (ODA) per capita. The public debt variable,  $DEBT$  is measured by the share of total (domestic plus external) central government debt to GDP. The most popular measures of democracy used by various authors are Polity2 (see Marshall & Jaggers 2014), Political Rights and Civil Liberties (see Freedom House 2014). We use principal component analysis to derive a composite index as a proxy for democracy ( $DEM$ ). A linear combination of the optimally-weighted initial variables is given by the first principal component. This point to a good proxy for all the three measures of democracy since it accounts for approximately 94.21% of the variations in the original democracy indicators. Data on total government spending and total government revenue were obtained from the International Monetary Fund, World Economic Outlook data files (2015). Data on real GDP per capita, foreign aid, and population growth are obtained from the World Bank's World Development Indicator, WDI (2014). Data on minimum wage was sourced from Wage Indicator Foundation. Polity2 data is obtained from Polity IV Project (Marshall & Jaggers 2014) while those on political rights and civil liberties are obtained from the Freedom House (2014). Data on public debt is obtained from Reinhart et al. (2010) for the period 1980-2005 and ISSER (2013) for the period 2006-2012.

### **Estimation Strategy**

We propose ARDL bounds test for cointegration (Pesaran et al. 2001) and the error correction model (ECM) for this study due to several advantages it has over other cointegration approaches which requires strictly  $I(1)$  stationary variables. The ARDL bounds test for cointegration approach is not only robust in the presence of strictly  $I(0)$ ,  $I(1)$  or a mixture of both but also appropriate for small sample study (which is the case in the present study with only 33 annual observations). To be sure that the variables in equation (9) are not  $I(2)$  stationary or even more we first investigate the time series properties of these variables. This is crucial when specifying an econometric model in the face of ARDL bounds test for cointegration. To achieve this, the parametric Augmented Dickey-Fuller (ADF) by Dickey & Fuller (1979; 1981) and the non-parametric Phillips-

Perron (PP) by Phillips & Perron (1998) unit root tests are used. For both test the null hypothesis of unit root (non-stationarity) is tested against the alternative hypothesis of the absence of unit root (stationarity).

Once the conditions of the unit root properties of the variables in equation (9) is satisfied, we proceed with the steps involved in the ARDL bounds test for cointegration. In the first step we estimate the conditional ECM of the following form by OLS by assuming  $Y$  and  $X$  are the dependent and the independent variables in equation (9) respectively:

$$\Delta Y_t = \omega_0 + \sum_{i=1}^k \omega_1 \Delta Y_{t-i} + \sum_{i=0}^k \omega_m \Delta X_{t-i} + \gamma_1 Y_{t-1} + \gamma_m X_{t-1} + \varepsilon_t \quad (10)$$

Where  $\Delta$  represents the first difference operator,  $m$  is the number of regressors, and  $\varepsilon_t$  represents the error term.

In the second step we test the null hypothesis that  $H_0 : \gamma_1 = \gamma_m = 0$  against the alternative hypothesis that  $H_1 : \gamma_1 \neq \gamma_m \neq 0$  by the use of F-test. That is, the coefficients of the lagged level variables are restricted to equal zero. Stochastic simulations are used to estimate the asymptotic distribution of the F-statistic which follows a non-standard distribution with a null of no cointegration, whether the variables involved are strictly  $I(0)$  or  $I(1)$  or both. Microfit 5.0 is used for the estimation. Two ‘extreme’ cases are set - the upper and lower critical value bounds. The null hypothesis of no cointegration is rejected if the computed F-statistic is greater than the upper critical value bound. The null hypothesis cannot however be rejected if the F-statistic is less than the lower critical bound. Inconclusive deductions will arise if the computed F-statistic lies within the critical value bounds. Given cointegration, the last step involves an estimation of the long-run and short-run coefficients of the chosen ARDL model. Per the suggestion of Pesaran & Pesaran (2009), the optimal lag structure ( $k$ ) is selected using the Schwartz Bayesian Criterion (SBC) as this provides a more parsimonious specification of the model in small samples.

### Variance Decomposition

To further explain the growth of government spending in Ghana, the study provides Generalized Forecast Error Variance Decomposition estimates for government spending. The results obtained follow the error-variance decomposition methods suggested by Koop et al. (1996) and developed further by Pesaran & Shin (1998). This method is variables-order-invariant as far as the Vector Error Correction Model (VECM) estimates are concerned. The analysis explains the amount of the forecast error variance for the dependent variable explained by shocks to each of the independent variables and the dependent variable itself for a continuum of time horizons. That is for  $h$ -steps ahead, innovations to the dependent variable are decomposed into aspects arising from the dependent variable and those that can be attributed to the independent variables. Moreover, this method is able to account for the effects of simultaneous innovations. It is also able to provide better results within VAR framework compared to existing traditional approaches. Significantly, this paper notes that even though causality tests

may be explored by other studies, they are deficient given the fact that such tests fail to capture the relative strength of the causal relationship so obtained over and above the time period considered. Such strengths are captured by forecast error variance decomposition estimates over the entire time horizons. Finally, the methodology is also appropriate where cointegration relationship is obtained between and among variables in a system (see Pesaran & Shin 1998).

The test is done to investigate the effects of innovations (shocks) to per capita income, tax share, population growth, minimum wage, foreign aid, public debt, democracy and government spending on government spending. Particularly, where innovations in per capita income, tax share, and minimum wage explain significant portions of the variations in government spending, further evidence of Wagner's Law, Fiscal Illusion, and Baumol's "Cost Disease" are found. In addition, if shocks (innovations) in foreign aid, public debt and democracy significantly explain portions of innovations in government spending, the results further support earlier assertions made that omitting these variables in any study that explains the growth of government spending in developing countries is likely to produce bias and naive results. It is expected that the largest variations in the dependent variable are explained by innovations to the dependent variable.

## **RESULTS AND DISCUSSIONS**

In this section, we present and discuss the empirical results on the determinants of the growth of government spending in Ghana<sup>5</sup>. We begin with a discussion of the results of the unit root and cointegration test, followed by the long-and short-run estimates, and the model adequacy, reliability and stability tests.

### ***Unit Root and Cointegration Test Results***

We present in Table 2 the results of the ADF and PP unit root test. Both test results clearly shows that the variables in equation (9) are integrated of either order one or zero (i.e.  $I[1]$  or  $I[0]$ ) regardless of whether we include trend or not in the underlying unit root test. The unit root test results lend support to the use of the ARDL bounds test for cointegration relationship.

TABLE 2: UNIT ROOT TEST RESULTS

Variable	ADF				PP			
	Level		First Difference		Level		First Difference	
	Trend	No Trend	Trend	No Trend	Trend	No Trend	Trend	No Trend
<i>lnG</i>	-	0.324	-	-	-	0.324	-	-
	4.454**			5.600**	4.383**			6.675**
	*			*	*			*
<i>lnY</i>	-0.203	3.010**	-	-	-2.422	3.010**	-	-
			5.833**				3.398**	
			*					
<i>lnQ</i>	-	-	-	-	-	-	-	-
	4.406**	4.669**			4.404**	4.682**		
	*	*			*	*		
<i>N</i>	-	-0.389	-	-	-3.557	-1.784	-	-
	4.119**			4.391**			3.576**	3.872**
				*				*
<i>lnW</i>	-1.275	-1.663	-	-	-1.264	-1.752	-	-
			5.816**	5.480**			6.312**	5.480**
			*	*			*	*
<i>lnAID</i>	-2.369	-1.363	-	-	-2.444	-1.363	-	-
			7.708**	7.820**			7.675**	7.629**
			*	*			*	*
<i>lnDEBT</i>	-1.420	-1.694	-	-	-1.424	-1.705	-	-
			5.660**	5.495**			5.660**	5.496**
			*	*			*	*
<i>DEM</i>	-	-	-	-	-	-	-	-
	4.437**	4.921**			6.180**	5.951**		
	*	*			*	*		

Source: Authors.

Note: \*\*\* (\*\*) indicates rejection of the null hypothesis of unit root at 1 per cent (5 per cent) levels of statistical significance.

### Cointegration Test Results

The results from the cointegration test using the ARDL bounds test for cointegration relationship are given in Table 3. The ARDL (1, 1, 2, 2, 2, 1, 0, 0) is selected based on Schwarz Bayesian Criterion (SBC) with a maximum of 2 lags. As evident, the results clearly show that the computed F-statistic is greater than the upper bound critical value at 5 per cent significance level. Therefore, the null hypothesis of no cointegration is rejected. It can thus be concluded that the variables in equation (9) are cointegrated.

**TABLE 3: ARDL BOUNDS TEST FOR COINTEGRATION RELATIONSHIP**

Test statistic	6.312**
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Source: Authors

Note: \*\* implies that the null hypothesis of no cointegration is rejected at 5 per cent level of statistical significance. The ARDL model gives the 95 per cent lower and upper bounds as 2.881 and 4.380 respectively.

### *The Estimated Long-and Short-Run Results*

Tables 4 and 5 show the results for the long-and short run estimates respectively. The long-run results show a positive and statistically significant coefficient of the per capita income (Y) variable at 1 per cent level of significance. This satisfies the a priori expectation and indicates the existence of Wagner's law. This outcome is not surprising because the period studied covers most periods during and after the SAP which generally shows positive economic growth in the presence of a relatively peaceful and stable economic environment. Such an environment is growth enhancing and hence, generally leads to a rise in per capita income and correspondingly, per capita government spending. The result is not different when we consider that of the short-run. Hence, government spending increases along with the economic expansion of Ghana in both the long-and short-run. The results confirm similar evidence indicated by Ohene-Manu (2000) and Ghartey (2007) for Ghana, and Thamae (2013) for Lesotho, and Sakyi (2013) for other developing countries. It however contradicts the findings of Ofori-Abebrese (2012) for Ghana.

The long-run coefficient of the tax share variable (Q) is negative and statistically significant at 1 per cent level. This result which shows the absence of fiscal illusion satisfies the a priori expectation. This may give credence to the old Ricardian question that current generations properly discount the incidence of debt on future tax liabilities (see Barro 1974). In other words, the citizenry demand less government spending possibly because they know that they will eventually 'pay' for such spending. For instance, evidence on total tax revenue including exemptions and including oil for the 2012 fiscal year lends support to the fact that the proportion of 'less visible' taxes in tax revenue is less than the proportion of 'visible' taxes in tax revenue. Less visible taxes in Ghana include VAT, excise tax and NHIL, while visible taxes include taxes on property and income (such as personal income tax, company tax) and international trade taxes. For the 2012 fiscal year alone, receipts from less visible taxes was GHC 4,212.0 million (representing 33.65% of total tax revenue including exemptions and including oil of GHC 12, 517.3 million). Receipts from visible taxes for the same fiscal year was GHC 8,305.2 million, representing 66.35% of the total tax revenue including exemptions and including oil, stated above. The short-run coefficient also indicates there is no fiscal illusion. However, the coefficient of the 'lag' effect of tax share ( $\Delta Q1$ ) increases government spending in the short-run, implying fiscal illusion is present with a lag. The implication of the result from the 'lag' effect is that Ghanaians are able to discount future tax burden arising from previous government services, making such burdens look less to the current generation. The long-run results confirm evidence on Ghana provided by Ohene-Manu (2000). It also confirms evidence provided by Alm & Embaye (2010) for South Africa

and Thamae (2013) for Lesotho. The short-run coefficient however contradicts evidence indicated by Alm & Embaye (2010) and Thamae (2013).

The long-run coefficient on the minimum wage (W) variable is positive and statistically significant at 1 per cent level. This is consistent with the a priori expectation and implies that high cost of input in the public sector affects the growth of government spending in Ghana positively. This confirms the situation in Ghana where public sector productivity is generally perceived to be low relative to that of the private sector. The result lends support to the 'Baumol's Cost Disease' hypothesis. Therefore, over the period of the study, the growth of government spending was positively influenced by increases in the cost of providing public goods and services. In the short-run, however, the coefficient is not statistically significant. Ohene-Manu (2000) makes similar assertion from his results on Ghana which this paper largely confirms (see also Alm & Embaye 2010, for South Africa; Ramey 2009, for Nigeria; and Ofori-Abebrese 2012, for Ghana). The short-run coefficient contradicts the results of Hondroyiannis & Papapetrou (2001) for Greece, Alm & Embaye (2010) for South Africa; and Ohene-Manu (2000) and Ofori-Abebrese (2012) for Ghana.

The long-run coefficient of the growth rate of population (N) variable is positive and statistically significant at 5 per cent level. This satisfies the a priori expectation, and the coefficient (because it is greater than unity) indicates that there is a 'crowding out' effect of providing government goods and services. In other words, the unit cost of government spending on the provision of public goods and services may be over and above what is necessary and needed. This result can also be explained by several conditions. For example, the proportion of the population aged 65 and above is rising (2.9% of the total population in 1980 and 3.9% of the total population in 2012; WDI 2014). This may have necessitated increasing government social services for the aged. Possibly, the rise in government spending may be coming from increasing government consumption spending due to the increasing size of the population in general and indicates that the cost of government services is rising on the average. Finally, the positive sign of the estimated coefficient shows that economies of scale do not exist in the provision of government services. Not surprising, the short-run result largely confirms that of the long-run. Notwithstanding, the coefficient of the lagged population growth variable ( $\Delta N1$ ) is negative, indicating the existence of economies of scale in the provision of public goods and services in the short-run but with one period lag. Similar evidence is provided by Ofori-Abebrese (2012) for Ghana, and Fan et al. (2013) for other developing countries. However, the results from Ohene-Manu (2000) for Ghana and Hondroyiannis & Papapetrou (2001) for Greece indicate otherwise.

The long-run coefficient of the foreign aid (AID) variable is positive and statistically significant at 1 per cent level of significance. This is consistent with the a priori expectation and shows that in the long-run, receipts from foreign aid lead to increases in government spending in Ghana. This is so because it increases the amount of revenue available to spend. The result proves the importance of foreign aid as a determinant of the growth of government spending and confirms similar evidence given by Osei et al. (2005) for Ghana, and Hudson & Mosley (2008) and Fan et al. (2013) for developing countries. The result for the short-run is not different from that of the long-run, and consistent with the result provided by Fan et al. (2013) for developing countries. Interestingly, the result for the lag coefficient of foreign aid ( $\Delta AID1$ ) indicates a negative

relationship between foreign aid receipts and the growth of government spending in Ghana but with a period lag.

**TABLE 4: THE ESTIMATED LONG-RUN COEFFICIENTS USING THE ARDL APPROACH**

Regressor	Coefficient	Standard Error
$\ln Y$	4.009***	0.439
$\ln Q$	-1.358***	0.322
$N$	1.926**	0.467
$\ln W$	0.036***	0.009
$\ln AID$	0.590***	0.094
$\ln DEBT$	0.323***	0.067
$DEM$	0.278**	0.102
$C$	-34.902***	4.375

*Source: Authors*

*Notes:  $\ln G$  is the dependent variable. \*\*\*(\*\*) indicate rejection of the null hypothesis at 1 per cent (5 per cent) level of statistical significance.*

The long-run coefficient of the public debt (DEBT) variable is positive and statistically significant at 1 per cent level. This is consistent with the a priori expectation and indicates that government spending in Ghana is partly funded by government borrowing. These debt increases the revenue outlay available to fund proposed spending. This result is not surprising given the fact that borrowing has always remained a major source of government revenue in Ghana and has been increasing tremendously in recent years. It is also possible that Ghana's democracy limits the ability of incumbent governments to fully internalize the future cost of increasing debt-financed government spending. The results therefore may be indicating a possible 'redistributive uncertainty' effect as stated by Lizzeri (1999) and further emphasized by Battaglini & Coate (2006). The short-run result is not different from that of the long-run, although the long-run coefficient as expected is much greater. The result confirms similar evidence given by Okafor & Eiya (2011) for Nigeria but contradicts that of Mahdavi (2004) for developing countries.

The long-run coefficient of the democracy (DEM) variable is positive and statistically significant at 1 per cent level. This satisfies the a priori expectation and indicates that democracy has positive influence on the growth of government spending in Ghana. This result is not surprising given the fact that Ghana practices a mix of parliamentary and presidential democracy with a hugely polarized political environment. Particularly, government policy is characterized by opportunistic cycles in economic policy with spending increasing mostly in election years. Political interest groups begin



to emerge, demand and enforce some levels of government spending when their ‘parties’ are in power, mostly during near-election and election years. Governments usually ‘bow’ to such pressures since they risk losing elections if they do not succumb. Possibly too, the citizenry under democracies are now better able to demand their ‘economic rights’, implying governments must increase spending in order to ‘appease’ the majority if they want to retain power. In addition, institutions in Ghana that are supposed to act as checks and balances on government spending levels are either ineffective or totally ‘blunt’ in their enforcements. Governments are therefore able to spend even more under democracy. The situation is further worsened by corruption which encourages corrupt and rent seeking behavior among the political elite. All these cause government spending to increase in Ghana. Given that democracy is expensive, the future implication of this result is that government spending is likely to increase as Ghana becomes more and more democratic. This result is also not different from that obtained for the short-run. The evidence here is similar to those indicated by Gonzalez (2002) and Brown & Hunter (2004) for developing countries.

**TABLE 5: SHORT-RUN RESULTS USING THE ARDL APPROACH**

Regressor	Coefficient	Standard error
$\Delta \ln Y$	1.740**	0.708
$\Delta \ln Q$	-0.371***	0.094
$\Delta \ln Q1$	0.416***	0.080
$\Delta N$	2.560***	0.728
$\Delta N1$	-2.679***	0.535
$\Delta \ln W$	0.003	0.008
$\Delta \ln AID$	0.263***	0.080
$\Delta \ln AID1$	-0.263***	0.064
$\Delta \ln DEBT$	0.228***	0.046
$\Delta DEM$	0.197***	0.061
$ecm(-1)$	-0.707***	0.094
$F - \text{Statistic}$	24.583***	

*Source: Authors*

*Note:  $\Delta \ln G$  is the dependent variable. \*\*\*(\*\*) implies the null hypothesis is rejected at 1 per cent (5 per cent) level of statistical significance.*

The statistical properties of the ARDL model determine its adequacy and reliability. For this reason, we have conducted several diagnostic and reliability tests on the estimated ARDL model. We test for functional form, normality, and the presence of serial correlation and heteroscedasticity by the use of Ramsey’s RESET test, the skewness and kurtosis of residuals, Lagrange multiplier, and regression of squared residuals on squared fitted values respectively. As evident (see Table 6) the estimated model is free from any of these diagnostic problems. The results are also not ‘spurious’ due to the

presence of a cointegration relationship. The coefficient of the error correction term, ECM(-1), is negative and statistically significant at 1 per cent level. This gives further proof of the cointegration results. In addition, it is reasonably large in absolute value and shows a high speed of adjustment in the long-run equilibrium every year after a short-run shock. Specifically, long-run equilibrium will adjust by 71 per cent every year after a short-run shock. The CUSUM and CUSUMSQ results clearly indicate no evidence of structural instability of the estimated ARDL model over the sample period.

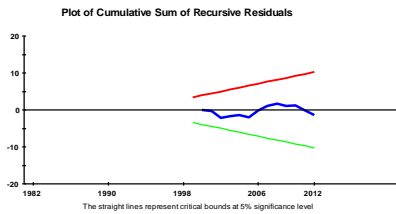
**TABLE 6: MODEL DIAGNOSTICS AND RELIABILITY TESTS**

Test Statistic	Results
Serial Correlation	0.865 (0.352)
Functional Form	3.238 (0.072)
Normality	2.020 (0.364)
Heteroscedasticity	0.409 (0.522)

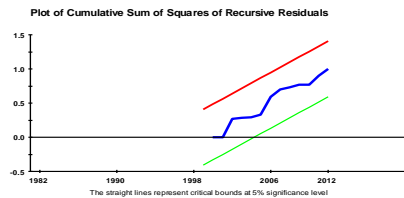
*Source: Authors.*

*Note: In parentheses are probability values*

**FIGURE 1. CUSUM**



**FIGURE 2. CUSUMSQ**



***Variance Decomposition Results***

Results for the variance decomposition analysis are given in Table 7. Ten (10) horizons are used. As already stated, the analysis presented here provides a novelty to the subject matter considered by the study. Such analysis is particularly important for a study such as this that attempts to explain the determinants of the growth of government spending. This

is especially so given the fact that a variance decomposition analysis will clearly show over a time horizon, the strength of the contributions of innovations in each of the variables including the dependent variable, to variations in the dependent variable.

**TABLE 7: GENERALIZED FORECAST ERROR VARIANCE DECOMPOSITION FOR VARIABLE**

Horizon	<i>lnG</i>							
	<i>lnG</i>	<i>lnY</i>	<i>lnQ</i>	<i>N</i>	<i>lnW</i>	<i>lnAID</i>	<i>lnDEBT</i>	<i>DEM</i>
1	84.052	13.555	4.5651	22.515	0.76555	37.616	30.922	28.293
2	59.834	23.008	18.888	40.748	0.72844	37.188	20.829	16.228
3	51.294	25.164	20.947	46.766	1.3319	37.471	22.342	11.448
4	47.012	27.060	17.870	45.707	1.6060	37.608	25.741	9.4851
5	43.493	29.301	15.699	43.738	1.4112	34.847	27.777	8.8891
6	40.195	34.217	14.124	42.527	1.3836	32.065	26.712	8.2406
7	35.433	40.233	13.134	42.579	1.4432	28.314	24.040	8.6370
8	30.656	45.494	12.655	42.934	1.4084	24.584	21.218	9.8952
9	26.235	49.514	12.082	42.703	1.4043	21.065	18.635	11.969
10	22.367	53.225	11.435	42.150	1.5313	17.969	16.297	13.658

*Note: Based on 31 observations from 1982 to 2012. Order of VAR = 2.*

From the results, from time horizons 1 to 6, innovations to the dependent variable provide the largest explanations to variations in itself, even though the strength reduces from 84.05 per cent in period 1 to 40.20 per cent in period 6. Hence over the 10 horizons, the influence of shocks to the dependent variables on itself reduces from 84.05 per cent to 22.37 per cent. For horizons 7 to 10, shocks to Y account for from 40.23 per cent to 53.23 per cent of the forecast error variance of G. It is also important to note that over the entire period, shocks to W accounted for the least variations in government spending even though it increased from 0.77 percent to 1.53 per cent over the entire horizon.

We discuss the implications of the estimates obtained for the independent variables. For period 1, shocks to AID accounted for the highest (37.62 per cent) forecast error variation of government spending, with minimum wage responsible for the least (0.77 per cent). For periods 2, 3, 4, 5, 6, and 7, innovations to N accounted for 40.75, 46.77, 45.71, 43.74, 42.53, and 42.58 respectively of the variations in G, the highest for the periods. For periods 2 to 5, the variance decomposition results show AID, Y, DEBT, Q, DEM, and W followed after N in that order from the second highest to the least in terms of their contributions to variations in G. For periods 8 and 9, the order changed, with descending order as Y, N, AID, DEBT, Q, DEM and W. However, for period 10, shocks to DEM (13.658) accounted for more variations in G compared to Q (11.435), even though the order of contributions of the other variables remained same as in periods 8 and 9. The contributions of innovations in Y, Q and M to variations in G increased throughout the entire horizon, while that for DEM fell from periods 1 to 8 and rose again for periods 9 and 10. The contributions of AID fell throughout while those for DEBT and N generally fluctuate.

As already stated, the significant contributions of innovations in Y, Q, and M to the forecast error variance of G give further evidence to Wagner's Law, Fiscal illusion, and Baumol's "Cost Disease" respectively. The generally large contributions of N also point to a strong influence of "crowding-out" effect of government spending. Also,

gradually, shocks to DEBT seem to be catching up with shocks to AID in accounting for variations in G. Finally, there is strong evidence for the importance of AID, DEM and DEBT as determinants of the growth of government spending in Ghana and in developing countries as a whole, given the significant effect of innovations in each of them on government spending. Therefore, again, they cannot be ignored as determinants of government spending.

## **CONCLUSIONS AND POLICY RECOMMENDATIONS**

This paper has investigated the determinants of the growth of government spending in Ghana for the period 1980-2012. In order to address this issue, it has made use of a modified median voter model that controls for the impact of foreign aid, public debt, and democracy. In addition, the paper has employed the autoregressive distributed lag bounds test for cointegration and the error correction model appropriate for small sample time series study and variables integrated of order one, zero, or a mixture of both. The results suggest per capita income, tax share, population growth, minimum wage, foreign aid, public debt, and democracy are key determinants of the growth of government spending in the long-run. With the exception of minimum wage, these variables are also key determinants of the growth of government spending in the short-run. Variance decomposition results suggest innovations in per capita income and population growth generally account for the largest variations in government spending over the horizon considered. In addition, innovations in foreign aid, public debt, and democracy account for significant variations in government spending.

From a policy oriented point of view the absence of fiscal illusion over the period studied implies the government cannot continue raising a huge proportion of its tax revenue from 'visible tax'. Therefore, more creative, diversified, and innovative avenues of revenue generation must be explored by the revenue generating agencies. There must also be deliberate and sustained efforts at increasing productivity in the public sector above the cost of providing public services and activities. This is so because, efficient delivery of public goods and services will ensure that wages commensurate to productivity and hence, reduce the relative price of public goods and services so as to reduce growth in government spending. In this case, better technology can be introduced while bureaucracy is reduced. There should also be conscious efforts by government, policy makers, civil societies and policy think tanks to monitor and control the use of foreign aid and debt inflows in order to ensure that they are productively spent. In the face of threats of aid fungibility, policy makers must ensure foreign aid receipts only serve to 'augment' shortfalls in generated domestic revenues needed to fund government's anticipated spending and not serve as substitute for domestic revenue generation efforts. Finally, it will be appropriate that government ensure democracy encourages the formulation and implementation of more social and community programs instead of encouraging rent-seeking behavior among the political elite.

The results notwithstanding, it is important to note that this paper relied heavily on aggregated variables. Given this, future studies may try to instead explain the growth of the various components of government spending. Such an in-depth investigation will enhance the knowledge base on the factors that explain the growth of government spending in Ghana.

## ENDNOTES

<sup>1</sup> As stated by Buchanan, 'to the extent that the total tax load on an individual can be fragmented so that he confronts numerous small levies rather than a few significant ones, illusory effects may be created' (Buchanan 1967, pp. 135).

<sup>2</sup> For instance, as the population of the aged increases, spending on health, housing and social security rises with it (Feldstein, 1996). Similarly, spending on education increases as the population of the young increases (Marlow & Shiers 1999).

<sup>3</sup> This is because the future costs of such actions (i.e. possible reduction in future spending) may not be fully internalized (Battaglini & Coate 2006). This is what Lizzeri (1999) refers to as 'redistributive uncertainty'.

<sup>4</sup> For example, where there exists laws that determine spending thresholds, governments may design policies to cleverly escape such thresholds in order to be able to spend more (see Feld & Matsusaka 2003).

<sup>5</sup> We initially tested for multicollinearity among the independent variables using the VIF but find no support for it. These results are not reported for brevity but available upon request.

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