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Do Government Expenditures and Institutions Drive Growth? Evidence from Developed and Developing Economies

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Purpose / Motivation – Most empirical studies on the government expenditure-economic growth nexus suggests negative relationship between the size of the government expenditures and economic growth especially government consumption expenditures. Given these findings, government should focus on development expenditures and reduce non-development expenditures for higher economic growth. However, we argue that this may not be the case since government consumption expenditures along with better institutional quality promotes growth via reduced corruption, reduction of political risks and good governance.

Design Methodology – This paper re-examines the impact of government expenditures on growth whilst controlling institutional factors for a sample of 30 developed and 91 developing countries from 1984 to 2017. Government expenditure is segregated into consumption and development expenditures.

Findings – Our results are consistent with existing findings where government consumption expenditures have negative effect on growth and government development expenditures contribute positively towards growth. However, when we conditioned government consumption expenditures with institutional variables, results suggest that in the presence of good institutions, both government consumption and development expenditures promote growth.

Practical implications – The findings in this paper suggest that in the presence of good institutions, government consumption expenditures will contribute positively towards growth. Results are relatively consistent for both developing and developed economies which suggests the importance of institutional factors leading to parallel movement towards long run growth path. In other words, long run economic growth is driven by similar institutional environment.

Originality / value – Both developed and developing countries show similar reactions towards consumption and development expenditures. This indicates that despite the level of development, government expenditures do contribute positively towards growth especially in the presence of better-quality institutions.

Keywords: Government expenditures, institutions, economic growth, developing and developed countries

JEL Classification: E02, H50, O43

1. INTRODUCTION

The quest for sustainable economic growth and 'catching up' by developing countries requires unprecedented commitment from the government and scaling up government spending and policies. The impact of government expenditures on economic growth has been intensively studied over the years with conflicting results. Several unresolved issues on the impact of government expenditure on growth includes whether the impact of government expenditure is positive or negative, the source of government financing, the size of government expenditure, effectiveness of government expenditures and the type of government expenditure (Grier & Tullock, 1989; Barro, 1991; Li, 2009; Hansson and Henreksson, 1994; Feder, 1982; Facchini & Melki, 2013). The majority of the empirical literature suggests that larger government size has negative impact on economic growth (Barro, 1991; Folstera & Henrekson, 2001; Angelopoulos & Philppopoulos, 2008; 2010; Alfonso & Furceri, 2010; Berg & Kaulsson, 2010; Wu et al., Butkiewicz & Yanikkaya, 2011; among others) due to various reasons such inefficiencies arising from higher tax burden or due to the crowding out effect as the public sector overshadows the private sector. If this is the case, then governments should focus on development expenditures and reduce non-development expenditures to promote economic growth. Armed with these empirical evidences, proponents of neoliberalism argued that the promotion of private sector initiatives coupled with reduction in the role of government expenditure is necessary to ensure efficiency, reduce crowding out effects and lessen the need for higher taxes to finance government expenditures hence, beneficial for long run economic growth. However, this may not necessarily be the case.

For developing countries, development activities are usually spearheaded by the government partly due to the risk averse nature of private investors. Private and public expenditure may have different effects on the long run economic growth. In addition, the presence of better institutional quality promotes economic growth because they foster trust and cooperation, encourage investment and deter free riding and rent seeking (Acemoglu et al, 2001, 2002; Hall & Jones, 1999). On the other hand, poor institutions translate into corruption, inefficiencies, weak governance which later lead to economic stagnation and discourages investment.

The nebulous impact of institutional quality on growth requires further investigation due to the complexity of the relationship. From the theoretical perspective, a country's territorial integrity, peacefulness emanating from lack of internal and external conflict, political stability, good governance and security are expected to provide a favourable ecosystem to accelerate economic growth and development. Likewise, events of terrorism, domestic crime or outright civil conflict may have negative effect on economic growth. Hausken et al.'s (2004) theoretical model shows government expenditures tend to reduce given an increase in democracy (when the system moves from pure autocracy to semi participatory system). In the case where semi-participatory system moves towards full democracy, government expenditure tends to increase. On the same note, Balamatisias (2018) showed that wealthier democracies increase government expenditure via better provision of public goods with taxes collected from the public.

Institutions proposed by North (1990) include both formal and informal norms as determinants on how people behave. Good institution provides a conducive environment for growth and development as it fosters cooperation between private and public entities, ensures trusts which is vital in economic transactions, encourages more investment and compensates for free riding or rent seeking. On the other hand, a country with poor institutions suggests proliferation of corruption, grafts, political instability which later translate into slower economic growth. In developing countries, corruption may facilitate business activities and bypass bureaucracy, thus expediting business transactions. From this perspective, corruption may have positive impact on economic growth.

The need for empirical investigation to re-examine the effects of government spending on economic growth by controlling institutional norms stems from the arguments whether the size of government expenditure should increase or decrease given the level of economic development. This study intends to show how institutions play an important role in ensuring prudent government expenditure and how this is achieved via effective institutions. An absence of effective governance in public sector may adversely affect productivity of government expenditures and its intended objectives (Keefer and Knack, 2007). In a weak and corrupt government, there would be a tendency to abuse government expenditures leading to unproductive activities and consumption. On a different note, it is theoretically assumed that government development expenditure would promote growth via capital accumulation and provision of adequate, and necessary infrastructure. Understanding this issue would lead to better policies for poverty eradication and accommodate the negative effects of income inequalities. Empirical evidence has shown mixed results on how government consumption expenditures affect growth. Whilst government development expenditures are shown to promote growth, the impact of government consumption expenditures on growth may be negative. In this paper we argue that in the presence of good governance, even government consumption expenditures promote growth since it provides a conducive environment to promote greater stability and trusts for investors to invest in a country.

This paper re-examines the empirical literature on how government expenditures affect growth by incorporating and conditioning on institutional variables in the analysis for the period 1984-2017. We intend to examine whether the impact of government expenditures on economic growth is dependent on the value of institutional variables. Therefore, we introduced interaction terms where institutional variables are interacted with both government consumption and development expenditures. Our study extends the work of Oto-Peralias and Romero-Avila (2013) and Nirola and Sahu (2019) by using a wider range of institutional variables. Empirical estimates include 30 developed economies and 91 developing economies using system GMM and fixed effect framework. The focus of this paper is on the nature of the impact of government expenditures on growth rather than the size of government expenditures. We segregate government expenditures into consumption expenditures and development expenditures. The sample is split into developed and developing countries. Results suggest that consumption expenditures have negative effect on economic growth whilst development expenditures promote growth which is consistent with existing literature. When government expenditures are conditioned upon institutional variables, the impact government consumption expenditures on economic growth becomes positive. In the

case of government development expenditures, the positive relationship continues in all specifications. Our results are robust to various specifications of institutions.

The paper is structured as follows. The next section overviews the relevant literature. Section 3 delve on the empirical methodology and discussion on the data. Section 4 discusses the findings and the final section concludes.

2. GOVERNMENT EXPENDITURES AND ECONOMIC GROWTH

The endogenous growth model (Romer 1986; Lucas, 1988) has been exhaustively used to examine the interaction of government expenditures, investment, human capital and institutions to drive economic growth. In other words, the endogenous growth theory posits that growth rate is largely determined by factors within the production processes such as increasing returns, economies of scale, technological changes and other internal factors rather than external factors such as population growth. Unlike the traditional Solow growth model which rely traditional labour and capital accumulation, the endogenous growth model offers explanation economic growth in the long run where savings and investment lead to persistent growth via endogenous technological improvements generated via day to day economic activities. The original work by Wagner (1883) (Barro, 1990) argue that government expenditures increase over time as it complements existing factor inputs. For example, public expenditure on health tend to lower mortality rates, education leads to more skilled workforce and increase productivity, expenditure on law and order allow businesses to operate in a peaceful and stable environment; all of which promotes expansion of the economy through economic growth. More specific theoretical work by Barro (1990) and later Barro and Sala-i-Martin (1992) illustrates the importance of government expenditures in the form of government purchases of goods and services in accelerating economic growth. Government expenditure addresses market failures which could hamper economic growth (Kahn, 2007; Stiglitz, 1989; Hansson and Henrekson, 1994; Sanz & Velazquez, 2007; Galasso & Profeta, 2004; Disney, 2007; among others). Market failures in the form of natural monopolies which leads to inadequate provision of public goods can be regulated by the government. Government expenditure on public goods is a form of government intervention to correct market failures and other negative externalities which could hinder economic growth and development (Kahn 2007; Stiglitz, 1989). Government expenditures further promote economic growth and development by injecting funds into the economy to create more jobs which later translate into higher income and higher GDP, leading to economic growth. Via job creation and potentially earning higher income, government expenditure indirectly remedies social inequalities and reduce poverty. With more income, the lower income household may realize their full potential, skills and talent to provide the much-needed human capital for economic development as envisioned by the endogenous growth model. Specifically, productive government expenditures on health and education can greatly reduce costs of social inequality (Sylwester, 2002; Birdsall *et al*., 1995) as educated and healthy society promotes greater innovations which is one of the important components for sustained economic growth. However, as population ages, government expenditure on health services and welfare expenses would also increase (Sanz & Velazquez, 2007; Galasso & Profeta, 2004; Disney, 2007).

The theoretical relationship between government expenditure and growth could be described based on Armey's (1995) curve. The theory proposed an inverted U-shaped relationship between the size of government vis-à-vis economic growth. The Armey curve posits a positive relationship between government spending and economic growth below a certain threshold whereas above this threshold, government expenditure is expected to generate negative effects. Empirical findings differ in accordance to the choice of estimation method adopted in the study. Linear models (Bergh and Henrekson, 2011) tend to generate either negative or positive effects. Non-linear models on the other hand, suggest a certain optimal government size or threshold exists which captures the turning point from positive to negative impact of government expenditure on growth (Asimakopoulous and Karavias, 2016; DiPeitro Anoruo, 2012; among others).

More recent empirical studies have focused on the size of government expenditure as one of the measures of inclusive growth (Bergh and Henrekson, 2011; Asimakopoulas and Karavias, 2016; Whajah, 2019; Zhour et al., 2019) which not only accounts for increase in GDP but also looks at the welfare of individuals and societal well-being as an attempt to achieve United Nation's sustainable development goals (SDGs). Ogbu (2012) suggested a good macroeconomic policy formulation such as directing industrial policies targeted at improving manufacturing and agricultural sector and investment in infrastructure, coupled with government expenditures warrant inclusive growth.

The empirical results on how government expenditure varies with the sample size, countries included in the sample, estimation method used and duration of the study. In the 1980s and 1990s, most studies rely on OLS estimation method. Examples includes Landau (1983) who studied 96 developing countries, Engen & Skinner (1992) with 107 countries, Hansson & Henrekson (1994) with 14 OECD countries and 14 developed countries, Folster & Henrekson (2001) with 23 OECD countries and Knowles & Garces-Ozanne (2003) for Asian countries (1960-1985) found negative relationship between economic growth and government spending. On the other hand, Kormendi & Meguire (1986) studied 47 countries, Ram (1986) with 115 countries, Lin (1994) with 20 developed countries and 42 developing countries showed positive impact of government spending on economic growth. Gwartney et al. (1998) concluded a negative impact of government spending on growth using statistical inference based on 23 OECD countries and 5 rapidly developing countries. Based on VAR, Hsieh & Lai (1994) suggested no meaningful relationship between economic growth and government spending for G7 countries covering a sample period from 1970-1987. In contrary, Javid et al. (2009), found negative relationship for Pakistan for a sample period of 1971-2008 using VAR. Dar & Amir Khalkhali (2002) relied on random coefficient model to test the relationship and found a significant negative relationship for a sample of 19 OECD countries. In general, earlier literature suggests positive relationship exist for developing countries and negative or no impact for developed countries.

More recent studies use more sophisticated method to remedy the weaknesses of OLS. One of the most widely used method is the panel data estimation technique (Afonso & Furceri, 2010; Butkiewwicz & Yanikkaya, 2011; Agnello et al., 2013, Granado et al., 2013; among others). Afonso & Furceri (2010) studied 29 OECD countries and 15 EU countries from 1970-2004 found negative relationship. Similar results were inferred by Butkiewwicz & Yanikkaya (2011) with both developed and developing countries in

their sample from 1970-2004. Agnello et al. (2013 found positive relationship for 132 countries between 1960-2008 whilst Ravn et. Al. (2012) investigated four developed countries – UK, US, Canada and Australia and found positive relationship using panel SVAR. On contrary, Granado et al. (2012) suggest a procyclical relationship based on their findings for 150 countries from 1987-2007. A single country example by Hamdi & Sbia (2013) suggested a positive relationship using VECM for Bahrain. On a different note, Dzhumashev (2014) calibrated Kenya, Turkey and UK to capture low, middle and high income respectively and found negative relationship due to corruption. The ambiguity of the effect of government expenditures on economic growth is partly remedied by using inclusive growth as an alternative measurement for growth.

3. EMPIRICAL STRATEGY AND DATA SOURCES

Model Identification

The empirical framework is based on a synthesis of the models developed by Devrajan *et al.* (1996), Mittnik and Neumann (2003) and d'Agostino *et al*. (2011), which is structured around Barro's (1990) endogenous growth model. This approach allows for non-monotonic relationship between government spending and growth in the theoretical framework. Accordingly, the constant elasticity of substitution (CES) function is defined as follows:

$$y = [\alpha k^{-\zeta} + \beta G^{-\zeta}]^{-\frac{1}{\zeta}} ; \qquad \alpha + \beta = 1 \quad \text{and} \quad \vartheta \geq 1 \tag{1}$$

where *y* is a function of private capital stock, *k*, and government spending, *G*. *G* is assumed to be a non-perfect substitute for private input. The private input must satisfy the following condition:

$$\dot{k} = (1 - \tau)[\alpha k^{-\zeta} + \beta G^{-\zeta}]^{-\frac{1}{\zeta}} - c \tag{2}$$

where $\dot{k}$ captures growth of private input over time, τ denotes the rate of income tax and *c* is the consumption level of households. A rational representative agent maximizes lifetime utility, *U*, by choosing consumption level, c_t for period *t*.

Let ρ represent the discount rate and the assumption of an isoelastic utility function given by:

$$u(c_t) = \frac{(c^{1-\sigma}-1)}{(1-\sigma)} \tag{3}$$

where σ is the intertemporal elasticity of substitution of consumption.

Therefore, the representative agent maximizes the following utility function:

$$U = \int_0^\infty u\,(c_t) e^{-\rho t}.dt \tag{4}$$

The flat rate income tax is defined as follows:

$$\tau = \frac{G}{y} \tag{5}$$

The above equation can also be interpreted as the share of public spending on output or the size government in the economy.

To examine the impact of *G* on economic growth, let:

$$\gamma = \frac{\dot{c}}{c} = \frac{1}{\sigma}[(1 - \tau)y'] - \rho \quad (6)$$

where y' is the marginal product of private capital. d'Agostino *et al.* (2011) solved the model by substituting equation (3) into equation (4) and maximizing subject to equation (2) which yields:

$$\gamma = \frac{\dot{c}}{c} = \frac{1}{\sigma}\left[(1 - \tau)\alpha^{-\frac{1}{\zeta}}\right]\left[\frac{(1-\tau\beta^{-\frac{1}{\zeta}})^{(1+\zeta)} + \beta^{-\frac{1+\zeta}{\zeta\tau}+\zeta}}{(1-\tau\beta^{-\frac{1}{\zeta}})^{(1+\zeta)}}\right] - \rho \quad (7)$$

Equation (7) is the standard endogenous growth model, where γ is a linear function of τ and the parameter for government spending is represented by β.

The optimal level of government spending as a proportion of *GDP* is where τ is equal to the marginal effect of τ. In this paper, government expenditure is categorized into government consumption expenditure (g_1) and government investment expenditure (g_2) as defined in the following equation:

$$G = g_1 + g_2 = \tau y \quad (8)$$

The share of government spending on both g_1 and g_2 are captured by φ and $(1 - \varphi)$ respectively as in equations (9) and (10):

$$g_1 = \varphi\tau y \quad (9)$$

$$g_2 = (1 - \varphi)\tau y \quad (10)$$

Expressing equations (9) and (10) in the production function yields:

$$y = [\alpha k^{-\zeta} + \beta g_1^{-\zeta} + \delta g_2^{-\zeta}]^{-\frac{1}{\zeta}} \quad (11)$$

Let,

$$\frac{g}{k} = \{[\tau^{\zeta} - \beta\varphi^{-\zeta} - \gamma(1 - \varphi)^{-\zeta}]/\alpha\}^{\frac{1}{\zeta}} \quad (12)$$

and λ captures the steady state growth rate of consumption, then,

$$\lambda = \frac{\alpha(1-\tau)\{\alpha\tau^{\zeta}/[\tau^{\zeta} - \beta\varphi^{-\zeta} - \gamma(1-\varphi)^{-\zeta}]\}^{-\frac{1+\zeta}{\zeta}} - \rho}{\sigma} \quad (13)$$

From equation (12), the relationship between growth rate and government spending, g_1, is expressed as:

$$\frac{\partial\lambda}{\partial\varphi} = \frac{\alpha(1-\tau)(1+\zeta)[\alpha\tau^{\zeta}]^{-\frac{1+\zeta}{\zeta}}[\beta\varphi^{-(1+\zeta)} - \gamma(1-\varphi)^{-(1+\zeta)}]}{\sigma[\tau^{\zeta} - \beta\varphi^{-\zeta} - \gamma(1-\varphi)^{-\zeta}]^{-\frac{1}{\zeta}}} \quad (14)$$

If λ is positive, then,

$$(1 + \zeta)[\beta\varphi^{-(1+\zeta)} - \gamma(1 - \varphi)^{-(1+\zeta)}] > 0 \quad (15)$$

g_1 is productive if,

$$\frac{\partial\lambda}{\partial\varphi} > 0$$

The same assumptions apply to g_2.

Based on this setting, the estimation equation is based on the endogenous growth model following the special Cobb-Douglas production function:

$$Y_{it} = K_{it}^{\alpha} G_{it}^{\beta} (A_{it}L_{it})^{1-\alpha-\beta}, \quad 0 < \alpha < 1, \quad 0 < \beta < 1, \quad 0 < \alpha + \beta < 1 \qquad (16)$$

Y if the production of final good, *G* captures government expenditure which is segregated into government consumption expenditure and development expenditure and *K* is the capital stock. Afonso and Jalles (2016) suggest that *A* is the level of technology and is assumed to grow at an exogenous constant rate μ such that,

$$A_{it} = A_{i0} e^{\mu_i t + I_{it}\rho_i} \qquad (17)$$

with *I* denoting institutional quality that may affect the level of technology and efficiency in country *i* at time *t*. Equation (16) shows that the state of *A* depends not only on technological improvements determined by μ, but also the level of institutional quality. Based on the arguments purported by North (1990), the existence of an efficient and effective institutions warrants effective use of labour and other resources. In this case, effective institutions may accelerate a country's technological breakthroughs vis-à-vis another without an effective institution.

Taking logs on both sides of equation (16),

$$\ln y_{it} = A_0 + (1 - \alpha - \beta)\mu_i t + (1 - \alpha - \beta)\rho_i I_{it} + \alpha \ln k_{it} + \beta \ln g_{it} \qquad (18)$$

which implies growth is a function of institutional related variables which may change over time, government expenditure, physical capital and the level of output.

Empirical Strategy

In this paper, we estimate the dynamic interaction between economic growth, government expenditures and other control variables using two step GMM estimator for an unbalanced panel of 91 developing countries and 30 developed countries over the period 1984-2017. Observations are averaged over 5-year interval which is a fairly common practice (*inter alia* Flachaire et al., 2014; Nawaz, 2015), yielding at least six data points per country and totalling approximately 546 observations for developing countries and 180 observations for developed countries. Averaging is used to smooth out business cycle fluctuations. System GMM offers several advantages compared to its predecessors comprising of pool OLS, fixed and random effect model, difference GMM. These advantages include control for time-invariant country specific effects, deals with endogeneity problem of lagged dependent variables, assuage reverse causality, permits certain degree of endogeneity in other regressors and optimally combine information on cross-country variations in levels with that on within-country variation in changes (Fukase, 2010).

We estimate the following growth model,

$$Y_{it} = \alpha_i Y_{it-1} + \beta_i Initial\ GDP_{it} + \theta_{it} gov_{it} + \rho_{it} X_{it} + v_i + \mu_t + \varepsilon_{it} \qquad (19)$$

where *i* indicates the country (*i*= 1, … , N) and *t* indicates the time period (*t* = 1…, T) Y_{it} captures the growth rate of country *i* at the end of period *t*, X_{it} is a vector of other

control variables hypothesized to affect output growth, gov_{it} represent government expenditures, α, β, θ and ρ are the parameters and vectors of parameters to be estimated, v_i are country-specific effects, μ_t are period specific effects and, ε_{it} is the error term. The control variables include the initial income (*Initial GDP*), population growth (*population*) and investment (*investment*).

Due to problems in pooled, fixed and random effect panel models, Arellano and Bond (1991) suggest the use difference GMM where the first differences of all variables are used to eliminate the fixed effects. Equation (1) is transformed into first difference and re-written as follows:

$$\Delta Y_{it} = \alpha_i \Delta Y_{it-1} + \beta_{i\Delta} Initial\ GDP_{it} + \theta_{it} \Delta gov_{it} + \rho_{it} \Delta X_{it} + \Delta v_i + \Delta \mu_t + \Delta \varepsilon_{it} \quad (20)$$

In equation (20), we follow Arellano and Bond (1991) by using appropriate lags of dependent and independent variables as instruments to over the problem of correlation between the lagged dependent variable and eh error term. Other problems emanating from lagged levels of regressors include weak instruments, first difference GMM estimator behave poorly, leading to large sample biases, absence of information on focus variables in level form leads to loss of substantial part of total variance in the data and weak instruments cannot address differenced variables in a difference estimator (Blundell and Bond, 1998). To assuage this problem Arellano and Bover (1995) and Blundell and Bond (1998) suggested the use of system GMM estimator which combines first difference and level variables. To calculate the system estimator, differenced variables are instrumented with lags of their own levels, and variables at levels are instrumented with lags of their own difference (Bond et al., 2009). Therefore, explanatory variables may be correlated with a country's specific fixed effect but their differences are not correlated which makes system GMM more asymptotically efficient in estimation. Roodman (2009) also proposes the use of system GMM instead of difference GMM for unbalanced panel data since different GMM tends to magnify gaps. We employed Windmeijer (2005) correction to reduce standard errors which tend to be downward biased (Roodman, 2009). Finally, we contain the problem of over-identifying instruments by 'collapsing' or forcing the use of only certain lags instead of all available lags (Viera et al., 2013; Roodman, 2009). Hansen J-test is used to test for over-identifying restrictions after applying Windmeijer correction. The standard Arellano and Bond (1991) AR(2) test for no autocorrelation in the second differenced error is used to test for serial correlation.

Another argument is the lack of efficiency for small samples when using GMM. In our case, the sample of developed countries is only 30. Although there has been studies which uses system GMM for small samples (see for example Nawaz, 2015), we supplement the results using fixed effects panel estimations in Appendix B.

Data Sources

The sample of countries are divided into developed and developing countries with reference to World Economic Situation and Prospects (WESP), United Nation (2018). The separation between developed and developing economies stems from the idea that

countries are on different growth phases hence, aggregation may undermine certain important information. In its original form, WESP classifies all countries into three broad categories – developed economies, economies in transitions and developing economies. Since the number of countries under economies in transition is small, we combine them with the developing economies. The sample of developed and developing countries are listed in table 1. The choice of countries in our sample is mainly dictated by data availability for most variables.

Table 1: List of selected developed and developing countries

Definition	Countries
Developing countries (91 countries)	Albania, Algeria, Argentina, Armenia, Bahamas, Bahrain, Bangladesh, Bolivia, Botswana, Brazil, Brunei, Burkina Faso, Cameroon, central African Republic, Chad, China, Chile, Colombia, Congo (DR), Congo (Rep), Costa Rica, Cote d'Ivoire, Cuba, Dominican Republic, Ecuador, Egypt, El Salvador, Ethiopia, Gabon, Gambia, Ghana, Guatemala, Guinea, Guinea- Bissau, Guyana, Haiti, Honduras, Hong Kong, India, Indonesia, Iran, Iraq, Israel, Jamaica, Jordan, Kenya, Kuwait, Korea (north), Lao, Lebanon, Liberia, Madagascar, Malawi, Malaysia, Mali, Mexico, Mongolia, Morocco, Mozambique, Myanmar, Namibia, Nicaragua, Niger, Nigeria, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Russian Federation, Saudi Arabia, Senegal, Sierra Leone, Singapore, South Africa, Sudan, Sri Lanka, South Korea, Suriname, Syrian Arab Republic, Tajikistan, Tanzania, Thailand, Togo, Trinidad & Tobago, Tunisia, Turkey, Uganda, UAE, Uruguay, Venezuela, Vietnam, Yemen, Zambia, Zimbabwe
Developed countries (30 countries)	Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Iceland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, United Kingdom, Canada, Japan, United States, Australia, New Zealand, Switzerland EU-13: Bulgaria, Cyprus, Czech Republic, Hungary, Malta, Poland, Romania

Note: The classification is based on World Economic Situation and Prospects, (WESP), United Nation (2018). WESP classifies all countries into three broad categories – developed economies, economies in transitions and developing economies. Since the number of countries under economies in transition is small, we combine include them under the developing countries.

Table 2 summarizes the data used in the empirical regression. Growth rates are proxied by GDP growth rates from World Development Indicator (WDI). Alternative proxies such as GDP growth from IMF's International Financial Statistics (IFS) are also used to test for sensitivity of the estimates. The signs are similar but size of the coefficient varies. Human capital is proxied by population growth. Other proxies such as the number of schooling years, labour from the age of 15 to 64 from WDI and population growth data from Bolt and Zanden (2014), The Madison Project are used as alternatives. Results using the alternative specification are similar in sign and significance, therefore we only report the results based on population growth by WDI. Capital is proxied using

investment data from Penn World Table 9.1. Investment as a proxy for capital stock is used by Flachaire et al. (2014). Institutional variables are proxied using data from ICRG, PRS which consist of twelve (12) sub-variables to capture different institutional norms in each country. Data has been re-index to ensure consistency and comparability in interpretation. For robustness test, we employ an alternative measure of institutions using the data from World Governance Index (WGI) which consists of six (6) sub-variables. These two sources of data may not be identical in description and interpretation but is adequate to illustrate the importance of institutional variables on economic growth.

TABLE 2. Definition and source of data

Acronym	Definition	Source	Expected sign
g	GDP growth rate	WDI	
Gov_cons	Government consumption expenditure /GDP	WDI	+/-
Gdp_{t-1}	Lag of growth rate of GDP	WDI	+/-
Gov_dev	Government development expenditures/GDP	WDI	+/-
Initial_Y	Initial income proxied by log of GDP of previous period	PWT8.0	+/-
Investment	Log of investment	PWT9.1	+/-
Population growth	Population growth proxied by annual change in population	WDI	+/-
Institutional variables	Institutional variables from ICRG (12 variables): 1. government stability 2. socio economic conditions 3. investment profile 4. internal conflict 5. external conflict 6. corruption 7. military in politics 8. religious tensions 9. law and order 10. ethnic tensions 11. democratic accountability 12. bureaucracy	ICRG, PRS	+/-
Institutional variables	Institutional variables from World Governance Index (WGI), World Bank 1. voice and accountability 2. political stability and absence of violence 3. government effectiveness 4. regulatory quality 5. rule of law 6. control of corruption	WB	+/-

Notes: WDI denotes World Development Indicator, World Bank; PWT denotes Penn World Table and ICRG, PRS denotes International Country Risk Guide, Political Risk Group. Brief explanation of the institutional variables is available in the Appendix A.

The corruption index by ICRG, PRS defines corruption involvement in illegal activities whether actual or potential form of excessive patronage, nepotism, job reservations, 'favour-for-favour', secret party funding or close ties between political leaders and businesses (Political Risk Survey Group, 2014). WGI has a broader coverage of corruption. WGI define control of corruption based on several indicators that measures

how public power is exercised for private gain such as institutional corruption by elitists with private interest, additional payments to get things done, among others. Kaufmann et al. (2009) used at least 23 sources to form the index and one of the sources include ICRG, PRS.

4. RESULTS AND DISCUSSION

Initial GDP is positive and significant in all cases for developing economies and developed economies. Results are fairly consistent across all samples. Trade openness is positive and significant for developing economies in all cases. Investment is expected to increase as countries began to develop better institutions, promote greater transparency and ultimately, increasing their return on investments. For developed economies, investment is positive and significant in government consumption expenditure regressions and also significant under government development expenditure regressions. These results suggest the importance of capital investment for growth in developed economies and developing economies. The impact of population on growth is generally insignificant for both developed and developing economies. A few macroeconomic-based studies found insignificant or negative significant relationship between human capital and economic growth (Benhabib and Spiegal, 1994; Pritchett, 2001; among others). Results are fairly consistent with our theoretical model (Equation 16 and 17).

We regress the 12 institutional indicators separately to examine the impact of each variables individually. Although it may seem that the variables may be related to each other, for example, law and order may be correlated with government stability and absence of internal conflict, the statistically strong correlation amongst the variables is not present (refer to Appendix C). In general, all 12 institutional indicators are expected to be positively related to growth, since less political risk and better institutions are expected to promote growth. Strong institutions are expected to reduce information asymmetries since they channel information about market conditions, market participants, and goods and services, hence expediting business transactions, which later translates into growth.

The results show government consumption expenditures tend to lower economic growth but government development expenditure promotes growth in long run for both developed and developing economies. The institutional variables affect growth in several ways. In the case of developing economies (Table 3), more stable government, reduced internal and external conflict, better socio-economic environment and better democratic accountability are precursors to growth. In developing economies, it may be case that corruption expedites business and trade processes especially when dealing with government agencies. On the other hand, lower corruption, less military intervention, less ethnic tension, less intervention of religion in politics and lower investment risks do not necessarily lead to higher growth under the government consumption expenditures regressions. Table 4 shows improvements in government stability promotes growth in the government development expenditure regressions. Lower military conflict, lower ethnic tension, better bureaucratic quality, lower investment risks and lower religion in politics do not lead to higher growth.

For developed economies, lower corruption, less internal conflict, better socioeconomic conditions and quality government are precursors to growth. Better bureaucratic

quality and lower investment risks, on the other hand, do not lead to higher growth. In an economy where, strong contract enforcement and regulations governing transactions is in place, businesses are expected to run smoothly and bribery or any form of corruption is minimized (Baliamoune-Lutz & Mavrotas, 2009; Morris and Klesner, 2010). In other words, corruption acts as an indicator for the prevailing level of (mis)trust. Results are illustrated in Table 5. Development expenditure has a positive impact on growth for developed economies as illustrated in Table 6. Institutional factors such as government stability, lower internal and external conflict and less religious factors in politics further support growth. Investment profile remain negative which imply lower risks do not necessarily lead to higher growth.

The validity of the instruments for the two-step system GMM estimator is substantiated by Hansen test. We apply Hansen test of over-identifying restrictions and results no reason to reject the validity of the instruments. There is also no evidence of second order serial correlation.

Robustness test

We rely on six (6) institutional indicator by World Bank Governance Index which include voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and control of corruption. Although the indicators are not directly similar to the institutional variables discussed above, they provide similar intention to capture the institutional setup of a country. Generally, results show convergence between developed and developing economies where consumption expenditure leads to lower growth whilst development expenditure may stimulate growth. These findings are consistent even when different institutional variables are used.

For developing economies, voice and accountability, political stability and rule of law advocate growth even when consumption expenditure slower growth (Table 7). When development expenditure is used, political stability encourages growth but government effectiveness, regulatory quality and rule of law do not generate positive influences on growth (Table 8).

In the case for developed economies, government effectiveness has positive impact on growth, but regulatory quality may not produce the same positive effect on growth when consumption expenditure is used (Table 9). Table 10 shows development expenditure promoting growth along with positive impact of voice and accountability and political stability.

Interaction effect between institutions and government consumption expenditure

To further understand the quandary between economic growth, government expenditures and institution, we introduce the interaction term. The interaction term between government consumption expenditures and institutional variables shows some divergence from the benchmark regressions, as presented in Table 11 and 12. Whilst initial income, population growth and investment show the same behaviour as the benchmark regressions in Table 3 and 5, government consumption expenditures is now positive and the interaction term between government consumption expenditures and institutional variables are also positive. In the case of developing economies, the interaction between government consumption expenditures with corruption, democratic

accountability, military in politics, government stability, investment profile and quality of government are positive and significant. The results suggest lower corruption, good governance and little military intervention in economic decision would spur economic growth.

For developed economies, government stability, lower internal and external conflict, better investment profile and better quality of government, when interacted with government consumption expenditures yield positive and significant impact. This shows that in the presence of good institutions, government consumption spending is efficiently used, resulting in a positive impact on the economy in general. Furthermore, population is insignificant which can be due to the fact that labour has been extensively replaced by mechanization in these countries.

In summary, the findings so far demonstrate that government consumption expenditures affect growth in a negative manner, since consumption expenditures is normally channelled to unproductive usage. Examples include expenditure on welfare, subsidies, and other forms of aid. Conversely, government investment expenditures is channelled into productive activities such as infrastructure, roads, telecommunications, or bridges, which brings in more investment and expedites the production process and increases productivity, resulting in economic growth. As such, government investment expenditures positively affect growth. It is important to note that our empirical results are uniform in both benchmark regressions and in the robustness tests for both developed and developing countries. These findings are consistent with Feng (1997), Gradstein (2004) and, Kurtz and Schrank (2007), although the proxies for institutions differ.

In general, results show that institutional variables affect growth. Specifically, for developing economies all institutional variables except investment profile and quality of government have significant impact on growth in regressions with government consumption expenditures. Regressions with government development expenditures suggest the statistical importance of internal conflict, government stability, investment profit and socio-economic conditions. For the developed and politically mature economies, democratic accountability, bureaucratic quality, investment profiles and socio-economic conditions are significant factors for economic growth when government consumption expenditures are used. On a similar note, military in politics, government stability, internal and external conflict, socio economic conditions, religion in politics and quality of government are significant factors along with government development expenditures. Furthermore, the negative impact of government consumption expenditure diminishes when government consumption expenditures are interacted with the institutional variables.

In the case of interaction variables for the developed countries, the interaction between government expenditures and government stability, socioeconomic conditions, corruption, law and order, and external and internal conflict are almost consistently significant in the long run across all regressions. On the contrary, the impact of the interaction term almost diminishes with the introduction of other control variables. For this reason, results for developing countries should be interpreted with care. Therefore, government expenditures are necessary for economic development for both developed and developing countries. Policies should be geared toward development expenditures to enhance economic growth.

TABLE 3.
Two step system GMM (vce robust) estimation using government consumption expenditures (g_cons) for developing economies
Dependent variable: growth (gdpg)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$Gdpg_{t-1}$	-0.8499***	-0.8639***	-0.8678***	-0.8523***	-0.8581***	-0.8499***	-0.8466***	-0.8594***	-0.8368***	-0.8510***	-0.8537***	-0.8520***
	(0.0377)	(0.0407)	(0.0399)	(0.0402)	(0.0385)	(0.0392)	(0.0393)	(0.0429)	(0.0444)	(0.0377)	(0.0394)	(0.0392)
Initial_y	2.5207***	2.8082***	4.0437***	2.3624***	2.3007***	2.0398***	2.0506***	2.3087***	2.2370***	2.4935***	2.1740***	2.1748***
	(0.5370)	(0.5331)	(0.5659)	(0.5150)	(0.5967)	(0.5202)	(0.5233)	(0.5256)	(0.5118)	(0.5085)	(0.5169)	(0.5234)
Gov_cons	-0.2020***	-0.2202***	-0.2266***	-0.2497***	-0.2635***	-0.2398***	-0.2351***	-0.2136***	-0.2309***	-0.2252***	-0.2224***	-0.2462***
	(0.0376)	(0.0374)	(0.0365)	(0.0371)	(0.0361)	(0.0372)	(0.0372)	(0.0361)	(0.0371)	(0.0358)	(0.0364)	(0.0401)
Investment	0.0204***	0.0174***	0.0229***	0.0193***	0.0177***	0.0202***	0.0239***	0.0215***	0.0256***	0.0237***	0.0238***	0.0175***
	(0.0029)	(0.0018)	(0.0027)	(0.0025)	(0.0021)	(0.0016)	(0.0022)	(0.0025)	(0.0013)	(0.0019)	(0.0021)	(0.0022)
Population	0.0003	0.0005	0.0008	0.0006	0.0008**	0.0007	0.0003	0.0005	0.0008	0.0008	0.0005	0.0004
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Inst_var	-0.3281***	0.2536**	-0.45526**	0.1557***	0.2190***	0.0995***	-0.4773***	-0.0096	-0.0976***	0.3765***	-0.4978***	0.1327
	(0.1007)	(0.1241)	(0.1982)	(0.0119)	(0.0853)	(0.0186)	(0.1039)	(0.1501)	(0.0251)	(0.1121)	(0.1543)	(0.6967)
constant	0.1090	3.4566***	3.3075	0.7329	2.1324	0.9361	2.8386	3.3677	0.0986	1.5587	1.5489	1.0955
	(0.4813)	(0.6652)	(0.7302)	(3.1435)	(1.6512)	(0.8836)	(0.4813)	(2.9682)	(1.8619)	(0.4813)	(1.3783)	(1.0908
Observation	546	546	546	546	546	546	546	546	546	546	546	546
Instruments	94	94	94	94	0.1090	3.4566***	3.3075	0.7329	2.1324	0.9361	2.8386	3.3677
					(0.4813)	(0.6652)	(0.7302)	(3.1435)	(1.6512)	(0.8836)	(0.4813)	(2.9682)
Hansen test (p-value)	0.71	0.71	0.72	0.69	0.67	0.72	0.73	0.68	0.68	0.69	0.71	0.71
AR(2)	0.31	0.31	0.31	0.32	0.34	0.31	0.35	0.32	0.32	0.33	0.31	0.31

Notes: ***, ** and * denote significance at 1%, 5% and 10%. Standard errors are in parentheses. Institutional variables (inst_var) captured by each regression are as follows: Corruption (1), Democratic accountability (2), Military in politics (3), Government stability (4), Internal conflict (5), External conflict (6), Ethnic tension (7), Bureaucratic quality (8), Investment profile (9), Socioeconomic conditions (10), Religion in politics (11), Quality of government (12)

TABLE 4.
Two step system GMM (vce robust) estimation using government development expenditures (g_dev) for developing economies
Dependent variable: growth (gdpg)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$Gdpg_{t-1}$	-0.8644***	-0.8673***	-0.8618***	-0.8565***	-0.8579***	-0.8537***	-0.8569***	-0.8600***	-0.8484***	-0.8521***	-0.8644***	-0.8612***
	(0.0324)	(0.0347)	(0.0344)	(0.0326)	(0.0319)	(0.0331)	(0.0304)	(0.0338)	(0.0347)	(0.0322)	(0.0321)	(0.0317)
Initial_y	2.6939***	2.7836***	3.3312***	2.2004***	2.0051***	2.1115***	2.1826***	2.4864***	2.1483***	2.1664***	2.4093***	2.4931***
	(0.5370)	(0.4784)	(0.5218)	(0.4736)	(0.5193)	(0.0104)	(0.4676)	(0.4921)	(0.4734)	(0.4807)	(0.4753)	(0.4770)
Gov_dev	0.0434**	0.0397**	0.0430**	0.0438**	0.0462**	0.0408**	0.0451**	0.0380**	0.0389**	0.0428**	0.0386**	0.0409**
	(0.0176)	(0.0182)	(0.0176)	(0.0186)	(0.0187)	(0.0189)	(0.0182)	(0.0187)	(0.0187)	(0.0183)	(0.0182)	(0.0188)
Investment	0.0114**	0.0066**	0.0033	0.0110	0.0198**	0.0104**	0.0102**	0.0114**	0.0098**	0.0093*	0.0130**	0.016**
	(0.0049)	(0.0049)	(0.0050)	(0.0050)	(0.0050)	(0.0050)	(0.0049)	(0.0051)	(0.0050)	(0.0051)	(0.0051)	(0.0050)
Population	0.0004	0.0007	0.0011***	0.0007***	0.0010	0.0008**	0.0007	0.0007	0.0009	0.0009	0.0007	0.0006
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Inst_var	-0.2257	0.4532	-0.2842**	0.1388***	0.1241	-0.1676	-0.7861***	-0.0982***	-0.2901***	-0.6502	-0.2702***	-0.0943
	(0.2559)	(0.5991)	(0.1421)	(0.0694)	(0.2561)	(0.1987)	(0.0555)	(0.0021)	(0.0335)	(0.8653)	(0.0115)	(1.1121)
constant	0.2990	3.1043***	2.2975***	2.6298	2.8735*	0.3438	2.4121	2.2154	0.2407	1.3227	1.3794	2.6907
	(0.5455)	(0.8094)	(0.6121)	(3.9412)	(1.5970)	(0.5383)	(1.9050)	(2.6447)	(1.7008)	(1.3368)	(1.2720)	(2.6413)
Observation	546	546	546	546	546	546	546	546	546	546	546	546
Instruments	94	94	94	94	94	94	94	94	94	94	94	94
Hansen test (p-value)	0.61	0.55	0.60	0.61	0.66	0.61	0.62	0.69	0.66	0.65	0.651	0.61
AR(2)	0.32	0.33	0.31	0.41	0.43	0.32	0.31	0.31	0.32	0.37	0.36	0.35

Notes: ***, ** and * denote significance at 1%, 5% and 10%. Standard errors are in parentheses. Institutional variables (inst_var) captured by each regression are as follows: Corruption (1), Democratic accountability (2), Military in politics (3), Government stability (4), Internal conflict (5), External conflict (6), Ethnic tension (7), Bureaucratic quality (8), Investment profile (9), Socioeconomic conditions (10), Religion in politics (11), Quality of government (12)

TABLE 5.
Two step system GMM (vce robust) estimation using government consumption expenditures (g_cons) for developed economies
Dependent variable: growth (gdpg)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$Gdpg_{t-1}$	-0.8502***	-0.8620***	-0.8668***	-0.8538***	-0.8580***	-0.8493***	-0.8467***	-0.8595***	-0.8391***	-0.8500***	-0.8540***	-0.8504***
	(0.0381)	(0.0414)	(0.0417)	(0.0399)	(0.0391)	(0.0393)	(0.0393)	(0.0431)	(0.0451)	(0.0373)	(0.0400)	(0.0391)
Initial_y	2.5285***	2.7828***	3.9350***	2.2958***	2.4282***	2.0397***	1.9971***	2.2840***	2.3096***	2.4900***	2.1348***	2.2660***
	(0.5333)	(0.5249)	(0.5659)	(0.5176)	(0.5867)	(0.5208)	(0.5266)	(0.5188)	(0.5050)	(0.5113)	(0.5213)	(0.5233)
Gov_cons	-2.5285***	-2.7828***	-3.9350***	-2.2958***	-2.4282***	-2.0397***	-1.9971***	-2.2840***	-2.3096***	-2.4900***	-2.1348***	-2.2660***
	(0.5333)	(0.5249)	(0.5659)	(0.5176)	(0.5867)	(0.5208)	(0.5266)	(0.5188)	(0.5050)	(0.5113)	(0.5213)	(0.5233)
Investment	0.0160**	0.0034	0.0009	0.0188**	0.0105***	0.0121**	0.0098**	0.0089*	0.0111**	0.0099**	0.0086*	0.0117**
	(0.0046)	(0.0045)	(0.0046)	(0.0046)	(0.0046)	(0.0047)	(0.0045)	(0.0045)	(0.0045)	(0.0046)	(0.0048)	(0.0047)
Population	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)
Inst_var	0.1168**	0.0890	-1.9831	0.0025	0.0225*	-0.1109	0.3177	0.6594**	-0.1665***	0.1176***	-0.1183	0.1190***
	(0.0584)	(0.2165)	(2.0044)	(0.1685)	(0.0111)	(0.2342)	(0.4398)	(0.3298)	(0.0630)	(0.0445)	(0.6529)	(0.3787)
constant	0.0148	0.2214***	0.2265***	0.1495	0.1126	0.0427	1.5937	0.1252	0.0397	0.7419	0.8978	0.5488
	(0.0336)	(0.0521)	(0.0609)	(0.2224)	(0.1010)	(0.0518)	(1.2668)	(0.1491)	(0.1414)	(0.7631)	(0.8666)	(0.5156)
Observation	180	180	180	180	180	180	180	180	180	180	180	180
Instruments	31	31	31	31	31	31	31	31	31	31	31	31
Hansen test (p-value)	0.71	0.73	0.77	0.77	0.65	0.68	0.71	0.72	0.69	0.68	0.66	0.65
AR(2)	0.12	0.11	0.11	0.12	0.14	0.13	0.15	0.12	0.11	0.11	0.13	0.11

Notes: ***, ** and * denote significance at 1%, 5% and 10%. Standard errors are in parentheses. Institutional variables (inst_var) captured by each regression are as follows: Corruption (1), Democratic accountability (2), Military in politics (3), Government stability (4), Internal conflict (5), External conflict (6), Ethnic tension (7), Bureaucratic quality (8), Investment profile (9), Socioeconomic conditions (10), Religion in politics (11), Quality of government (12)

TABLE 6.

Two step system GMM (vce robust) estimation using government development expenditures (g_dev) for developed economies

Dependent variable: growth (gdpg)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$Gdpg_{t-1}$	0.0460***	0.0423***	0.0407***	0.0598***	0.0477***	0.0304***	0.0325***	0.0243***	0.0361***	0.0385***	0.0437***	0.0412***
	(0.0177)	(0.0185)	(0.0188)	(0.0173)	(0.0180)	(0.0186)	(0.0191)	(0.0192)	(0.0184)	(0.0178)	(0.0176)	(0.0189)
Initial_y	2.5015***	2.4236***	2.7388***	2.0731***	2.4771***	2.2017***	2.1920***	2.6307***	2.0960***	2.3281***	2.1872***	2.3636***
	(0.4701)	(0.4843)	(0.5348)	(0.4532)	(0.5015)	(0.4614)	(0.4601)	(0.4790)	(0.4661)	(0.4592)	(0.4702)	(0.4757)
Gov_dev	0.2292***	0.2296***	0.2406***	0.2116***	0.1987***	0.2046***	0.2222***	0.2799***	0.1955***	0.1898***	0.2014***	0.2717***
	(0.0533)	(0.0511)	(0.0235)	(0.0345)	(0.0264)	(0.0288)	(0.0241)	(0.0325)	(0.0273)	(0.0302)	(0.0231)	(0.0202)
Investment	0.0114**	0.0091*	0.0080	0.0104**	0.0122**	0.0153**	0.0144**	0.0097*	0.0112**	0.0106**	0.0079***	0.0140***
	(0.0049)	(0.0052)	(0.0053)	(0.0048)	(0.0048)	(0.0049)	(0.0049)	(0.0050)	(0.0047)	(0.0048)	(0.0051)	(0.0051)
Population	0.0005	0.0008	0.0010***	0.0009	0.0009	0.0003	0.0002	0.0006*	0.0010***	0.0007	0.0007	0.0005
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Inst_var	0.2896	0.5767**	0.1922	0.2585***	0.1195**	0.5981**	0.0165	0.2556	-0.2825**	0.1111***	0.3010**	0.2559***
	(0.5211)	(0.2883)	(0.6117)	(0.1292)	(0.0597)	(0.2990)	(0.1129)	(1.8997)	(0.1412)	(0.0420)	(0.1505)	(0.0969)
constant	-5.6204**	-8.1279**	-6.9347**	-4.7235***	-6.4895***	-5.6068***	-7.4860***	-19.0180	-3.0995***	-3.5857***	-6.7729***	-14.3167***
	(2.4683)	(3.3174)	(3.2218)	(1.6203)	(2.4519)	(1.8654)	(2.7052)	(13.9052)	(0.9623)	(1.3398)	(2.1461)	(3.8834)
Observation	180	180	180	180	180	180	180	180	180	180	180	180
Instruments	31	31	31	31	31	31	31	31	31	31	31	31
Hansen test (p-value)	0.77	0.75	0.79	0.71	0.69	0.68	0.73	0.75	0.77	0.73	0.69	0.70
AR(2)	0.34	0.32	0.31	0.42	0.33	0.30	0.35	0.32	0.31	0.33	0.40	0.41

Notes: ***, ** and * denote significance at 1%, 5% and 10%. Standard errors are in parentheses. Institutional variables (inst_var) captured by each regression are as follows: Corruption (1), Democratic accountability (2), Military in politics (3), Government stability (4), Internal conflict (5), External conflict (6), Ethnic tension (7), Bureaucratic quality (8), Investment profile (9), Socioeconomic conditions (10), Religion in politics (11), Quality of government (12)

Robustness test

TABLE 7. Two step system GMM (vce robust) estimation using government consumption expenditures (g_cons) for developing **economies**
Dependent variable: growth (gdpg)

Variables	(1)	(2)	(3)	(4)	(5)	(6)
$Gdpg_{t-1}$	-0.8520***	-0.8750***	-0.8754***	-0.8694***	-0.8663***	-0.8571***
	(0.0347)	(0.0368)	(0.0369)	(0.0372)	(0.0349)	(0.0356)
Initial_y	4.8161***	5.8454***	5.9359***	4.2221***	3.3187***	4.1140***
	(1.0895)	(1.0550)	(1.0135)	(1.0253)	(1.1259)	(1.1000)
Gov_cons	-0.1931***	-0.2704***	-0.2983***	-0.2690***	-0.2726***	-0.2290***
	(0.0440)	(0.0450)	(0.0435)	(0.0418)	(0.0415)	(0.0426)
Investment	0.0147**	0.0075	0.0058	0.0087	0.0144**	0.0160***
	(0.0057)	(0.0058)	(0.0060)	(0.0058)	(0.0056)	(0.0057)
Population	-0.0491	-0.0019	-0.0208	-0.0797	-0.1702***	-0.0831
	(0.0524)	(0.0515)	(0.0489)	(0.0493)	(0.0551)	(0.0524)
Inst_var	0.2101**	0.0135***	0.0198	-0.1123***	0.0087***	-0.4376**
	(0.1050)	(0.0050)	(0.3288)	(0.0425)	(0.0032)	(0.2188)
constant	5.2451***	3.7415***	6.5817***	6.9417***	6.2608***	7.4563***
	(0.5974)	(0.6171)	(0.3128)	(0.5516)	(0.3375)	(0.3635)
Observation	546	546	546	546	546	546
Instruments	94	94	94	94	94	94
Hansen test (p-value)	0.67	0.69	0.68	0.71	0.69	0.70
AR(2)	0.33	0.32	0.31	0.32	0.31	0.33

Notes: ***, ** and * denote significance at 1%, 5% and 10%. Standard errors are in parentheses. Institutional variables (inst_var) captured by each regression are as follows: Voice & accountability (1), Political stability & absence of violence (2), government effectiveness (3), Regulatory quality (4), rule of law (5), Control of corruption (6)

TABLE 8. Two step system GMM (vce robust) estimation using government development expenditures (g_dev) for developing economies
Dependent variable: growth (gdpg)

Variables	(1)	(2)	(3)	(4)	(5)	(6)
$Gdpg_{t-1}$	-0.8508***	-0.8470***	-0.8400***	-0.8479***	-0.8400***	-0.8477***
	(0.0368)	(0.0389)	(0.0392)	(0.0367)	(0.0354)	(0.0370)
Initial_y	3.0429***	3.2301***	3.0741***	2.6220***	2.6800**	2.9946***
	(0.9807)	(1.0145)	(0.9904)	(0.9615)	(1.0301)	(0.9821)
Gov_dev	0.0488**	0.0318**	0.0359	0.0546**	0.0560**	0.0552**
	(0.0219)	(0.0235)	(0.0230)	(0.0228)	(0.0226)	(0.0224)
Investment	0.0143**	0.0081	0.0054	0.0154**	0.0142**	0.0163***
	(0.0060)	(0.0063)	(0.0065)	(0.0061)	(0.0061)	(0.0060)
Population	-0.0976**	-0.0974**	-0.1268***	-0.1396***	-0.1527***	-0.1059**
	(0.0473)	(0.0478)	(0.0471)	(0.0456)	(0.0497)	(0.0480)
Inst_var	-0.1901	0.1877**	-0.5564***	-0.1129***	-0.3265**	-0.2876
	(0.5442)	(0.0938)	(0.2107)	(0.0427)	(0.1632)	(0.3241)
constant	0.1465	1.9804***	0.8205	1.8136	3.1193**	2.4258
	(0.4506)	(0.6438)	(0.7207)	(2.8303)	(1.3357)	(1.8163)
Observation	546	546	546	546	546	546
Instruments	94	94	94	94	94	94
Hansen test (p-value)	0.65	0.64	0.63	0.66	0.65	0.65
AR(2)	0.38	0.41	0.37	0.35	0.33	0.35

Notes: ***, ** and * denote significance at 1%, 5% and 10%. Standard errors are in parentheses. Institutional variables (inst_var) captured by each regression are as follows: Voice & accountability (1), Political stability & absence of violence (2), government effectiveness (3), Regulatory quality (4), rule of law (5), Control of corruption (6)

TABLE 9. Two step system GMM (vce robust) estimation using government consumption expenditures (g_cons) for developed economies
Dependent variable: growth (gdpg)

Variables	(1)	(2)	(3)	(4)	(5)	(6)
$Gdpg_{t-1}$	-0.8525***	-0.8713***	-0.8715***	-0.8705***	-0.8652***	-0.8574***
	(0.0349)	(0.0367)	(0.0371)	(0.0370)	(0.0358)	(0.0358)
Initial_y	0.8525***	0.8713***	0.8715***	0.8705***	0.8652***	0.8574***
	(0.0349)	(0.0367)	(0.0371)	(0.0370)	(0.0358)	(0.0358)
Gov_cons	0.0488**	0.0318**	0.0359	0.0546**	0.0560**	0.0552**
	(0.0219)	(0.0235)	(0.0230)	(0.0228)	(0.0226)	(0.0224)
Investment	0.0146**	0.0068	0.0056	0.0091	0.0144**	0.0158***
	(0.0057)	(0.0058)	(0.0061)	(0.0058)	(0.0055)	(0.0057)
Population	-0.0482	-0.0013	-0.0197	-0.0845*	-0.1984***	-0.0805
	(0.0527)	(0.0518)	(0.0487)	(0.0508)	(0.0558)	(0.0523)
Inst_var	0.8776	0.6650	**0.6653****	**-0.4873*****	0.1109	0.1125*
	(2.8653)	(1.9961)	**(0.3326)**	**(0.1845)**	(2.3862)	(0.0661)
constant	0.0542*	0.1440***	0.1363**	0.2714	0.0832	0.0104
	(0.0295)	(0.0452)	(0.0679)	(0.2736)	(0.0890)	(0.0485)
Observation	180	180	180	180	180	180
Instruments	31	31	31	31	31	31
Hansen test (p-value)	0.41	0.45	0.43	0.41	0.42	0.41
AR(2)	0.32	0.33	0.31	0.30	0.32	0.34

Notes: ***, ** and * denote significance at 1%, 5% and 10%. Standard errors are in parentheses. Institutional variables (inst_var) captured by each regression are as follows: Voice & accountability (1), Political stability & absence of violence (2), government effectiveness (3), Regulatory quality (4), rule of law (5), Control of corruption (6)

TABLE 10. Two step system GMM (vce robust) estimation using government development expenditures (g_dev) for developed economies
Dependent variable: growth (gdpg)

Variables	(1)	(2)	(3)	(4)	(5)	(6)
$Gdpg_{t-1}$	-0.8471***	-0.8392***	-0.8300***	-0.8505***	-0.8568***	-0.8540***
	(0.0362)	(0.0399)	(0.0389)	(0.0363)	(0.0358)	(0.0376)
Initial_y	3.0377***	3.0881***	2.8135***	2.3911***	2.5814**	3.2165***
	(0.9722)	(1.0189)	(1.0042)	(0.9252)	(1.0194)	(0.9490)
Gov_dev	0.0542*	0.1440***	0.1363**	0.2714	0.0832	0.0104
	(0.0295)	(0.0452)	(0.0679)	(0.2736)	(0.0890)	(0.0485)
Investment	0.0143**	0.0100	0.0098	0.0125**	0.0133**	0.0173**
	(0.0060)	(0.0065)	(0.0066)	(0.0060)	(0.0059)	(0.0059)
Population	-0.0989**	-0.1098**	-0.1470***	-0.1307***	-0.1716***	-0.0788*
	(0.1072)	(0.0482)	(0.0484)	(0.0439)	(0.0498)	(0.0467)
Inst_var	1.2118*	0.6252**	0.1132	-0.1225	0.9870	0.8765
	(0.7170)	(0.3126)	(2.8765)	(1.3428)	(1.9985)	(1.8251)
constant	0.0454	0.0468	0.0164	0.2277**	0.2326	0.1995
	(0.0339)	(0.0309)	(0.0254)	(0.1057)	(0.0900)	(0.1227)
Observation	180	180	180	180	180	180
Instruments	31	31	31	31	31	31
Hansen test (p-value)	0.43	0.42	0.43	0.41	0.41	0.44
AR(2)	0.15	0.12	0.11	0.12	0.13	0.14

Notes: ***, ** and * denote significance at 1%, 5% and 10%. Standard errors are in parentheses. Institutional variables (inst_var) captured by each regression are as follows: Voice & accountability (1), Political stability & absence of violence (2), government effectiveness (3), Regulatory quality (4), rule of law (5), Control of corruption (6)

TABLE 11. Two step system GMM (vce robust) estimation using government consumption expenditures (g_cons) for developing economies

Dependent variable: growth (gdpg)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$Gdpg_{t-1}$	-0.9311***	-0.9295***	-0.9342***	-0.9239***	-0.9245***	-0.9093***	-0.9216***	-0.9320***	-0.9309***	-0.9244***	-0.9368***	-0.9197***
	(0.0264)	(0.0261)	(0.0274)	(0.0276)	(0.0264)	(0.0272)	(0.0257)	(0.0247)	(0.0270)	(0.0261)	(0.0261)	(0.0265)
Initial_y	1.1537	1.5226***	2.3802***	1.9856***	2.4536***	2.7599***	2.4707***	1.1666*	2.0542**	1.4006*	1.2750**	1.5782**
	(0.6836)	(0.6505)	(0.7008)	(0.6540)	(0.6694)	(0.6826)	(0.6322)	(0.6593)	(0.6416)	(0.6471)	(0.6630)	(0.6700)
Gov_cons	0.5561***	0.5162***	0.4634***	0.4759***	0.4033***	0.3821***	0.4011***	0.6465***	0.5789***	0.5437***	0.4932***	0.4095***
	(0.1274)	(0.1175)	(0.1280)	(0.1337)	(0.1756)	(0.1418)	(0.1311)	(0.2891)	(0.1711)	(0.1345)	(0.1257)	(0.1473)
Investment	0.0104	0.0052	0.0229	0.0044	0.0075	0.0142	0.0173	0.0149	0.0234	0.0003	0.0131	0.0153
	(0.0235)	(0.0230)	(0.0221)	(0.0225)	(0.0233)	(0.0228)	(0.0229)	(0.0224)	(0.0222)	(0.0229)	(0.0225)	(0.0228)
Population	-0.1280**	-0.0745	-0.0292	-0.0830	-0.0625	-0.2316	-0.1356	-0.0297	-0.1511	-0.0023	-0.1757	-0.0015
	(0.3229)	(0.3068)	(0.2964)	(0.2770)	(0.3058)	(0.3082)	(0.3031)	(0.3281)	(0.3127)	(0.2978)	(0.3468)	(0.3350)
Inv *x* gov	0.3755***	0.5974**	0.3251***	0.2231**	0.1922	0.1664	0.1599	0.3432	0.4344*	0.4404	0.1316	0.2784**
	(0.1196)	(0.2529)	(0.1034)	(0.1097)	(0.3873)	(0.1259)	(0.1664)	(0.2636)	(0.2509)	(0.1430)	(0.1449)	(0.1128)
constant	0.1321**	0.1272**	0.1458***	0.1499**	0.1245***	0.2085	0.1287	0.0916	0.1374**	0.1382**	0.1323**	0.1228**
	(0.0667)	(0.0611)	(0.0540)	(0.0673)	(0.0601)	(0.0609)	(0.0560)	(0.0597)	(0.0590)	(0.0549)	(0.0634)	(0.0571)
Observation	546	546	546	546	546	546	546	546	546	546	546	546
Instruments	94	94	94	94	94	94	94	94	94	94	94	94
Hansen test (p-value)	0.61	0.65	0.55	0.57	0.53	0.61	0.66	0.65	0.54	0.53	0.58	0.57
AR(2)	0.11	0.12	0.11	0.11	0.13	0.13	0.15	0.11	0.11	0.13	0.11	0.12

Notes:***, ** and * denote significance at 1%, 5% and 10%.Standard errors are in parentheses. The interactive terms captured by each regression are defined as follows:

(1) Corruption × government consumption expenditures
(2) Democratic accountability × government consumption expenditures
(3) Military in politics × government consumption expenditures
(4) Government stability × government consumption expenditures
(5) Internal conflict × government consumption expenditures
(6) External conflict × government consumption expenditures
(7) Ethnic tension × government consumption expenditures
(8) Bureaucratic quality × government consumption expenditures
(9) Investment profile × government consumption expenditures
(10) Socioeconomic conditions × government consumption expenditures
(11) Religion in politics × government consumption expenditures
(12) Quality of government × government consumption expenditures

TABLE 12. Two step system GMM (vce robust) estimation using government consumption expenditures (g_dev) for developed economies

Dependent variable: growth (gdpg)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$Gdpg_{t-1}$	-0.9385***	-0.9305***	-0.9310***	-0.9262***	-0.9473***	-0.9284***	-0.9216***	-0.9220**	-0.9412***	-0.9230***	-0.9335***	-0.9374***
	(0.0268)	(0.0276)	(0.0282)	(0.0280)	(0.0266)	(0.0272)	(0.0279)	(0.0268)	(0.0272)	(0.0263)	(0.0275)	(0.0272)
Initial_y	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Gov_ cons	0.0461***	0.0495***	0.0382***	0.0538***	0.0509***	0.0375***	0.0494***	0.0434***	0.0529***	0.0533***	0.0485***	0.0447***
	(0.0123)	(0.0115)	(0.0121)	(0.0121)	(0.0128)	(0.0120)	(0.0119)	(0.0121)	(0.0116)	(0.0123)	(0.0120)	(0.0116)
Investment	0.0023	0.0048	0.0023	0.0054	0.0013	0.0029	0.0008	0.0004	0.0017	0.0028	0.0048	0.0067
	(0.0070)	(0.0071)	(0.0062)	(0.0065)	(0.0045)	(0.0055)	(0.0058)	(0.0091)	(0..61)	(0.0053)	(0.0069)	(0.0087)
Population	0.0039	0.0035	0.0015	0.0064	0.0030	0.0046	0.0051	0.0079	0.0023	0.0084*	-0.0085*	0.0073
	(0.0044)	(0.0043)	(0.0044)	(0.0044)	(0.0045)	(0.0044)	(0.0043)	(0.0045)	(0.0045)	(0.0045)	(0.0044)	(0.0045)
Inv *x* gov	0.3795	1.0422*	0.6021	**0.2202*** **	**0.3597***	**0.2382****	0.6385	4.2527	**0.1536*** **	0.2164***	0.0326	**11.0423*** **
	(0.4640)	(0.5375)	(0.5561)	**(0.0582)**	**(0.2013)**	**(0.1147)**	(0.3891)	(3.8497)	**(0.0536)**	(0.0774)	(0.3229)	**(3.8069)**
constant	0.1019*	0.0824*	0.0682	0.1058**	0.0895	0.0747	0.1024**	0.0857**	0.0952**	0.0802*	0.1053*	0.0960**
	(0.0543)	(0.0439)	(0.0477)	(0.0535)	(0.0478)	(0.0467)	(0.0455)	(0.0418)	(0.0461)	(0.0476)	(0.0589)	(0.0486)
Observation	180	180	180	180	180	180	180	180	180	180	180	180
Instruments	31	31	31	31	31	31	31	31	31	31	31	31
Hansen test (p-value)	0.61	0.65	0.55	0.57	0.53	0.61	0.66	0.65	0.54	0.53	0.58	0.57
AR(2)	0.11	0.12	0.11	0.11	0.13	0.13	0.15	0.11	0.11	0.13	0.11	0.12

Notes:***, ** and * denote significance at 1%, 5% and 10%.Standard errors are in parentheses. The interactive terms captured by each regression are defined as follows:

(1) Corruption × government consumption expenditures
(2) Democratic accountability × government consumption expenditures
(3) Military in politics × government consumption expenditures
(4) Government stability × government consumption expenditures
(5) Internal conflict × government consumption expenditures
(6) External conflict × government consumption expenditures
(7) Ethnic tension × government consumption expenditures
(8) Bureaucratic quality × government consumption expenditures
(9) Investment profile × government consumption expenditures
(10) Socioeconomic conditions × government consumption expenditures
(11) Religion in politics × government consumption expenditures
(12) Quality of government × government consumption expenditures

5. CONCLUSION AND POLICY IMPLICATIONS

Government expenditures have undeniably played a pivotal role in enhancing growth. The paper re-examines the impact of government expenditure on economic growth. In this paper, we segregated the sample into developing and developed economies and government expenditures is categorized into government consumption expenditures and government development expenditures. However, growth impact is conditioned upon the efficiency and effectiveness of government expenditures, which is the product of good governance and strong institutions. Countries with strong institutional environment implement effective policies, which eventually promote growth. In this paper, we show that effective institutions come in the form of more stable governments, better socioeconomic conditions, superior bureaucratic quality, and prudent law and order. In addition, factors such as minimal internal and external conflicts, corruption, ethnic and religious tensions, minimal interference of military in politics also play a part in mobilising the government expenditures toward enhancing growth.

The results can be summarized in two main points: (i) government consumption expenditures has a negative impact on economic growth for both developed and developing economies; (ii) government development expenditures has a growth enhancing effect in the long run; and (iii) government consumption expenditures have positive effect on economic growth when consumption expenditures is interacted with institutional variables. Results are fairly consistent for both developed and developed countries, suggesting homogeneous path for economic growth. In other words, economic growth requires similar factors to be effective. The introduction of interaction between government consumption expenditure and institutional variables yield positive impact on the economic growth, hence, suggesting that good governance promotes efficient use of government funds even in operational expenses which eventually promotes economic growth.

It should be noted that results are largely subject to country choice and data span. Nevertheless, the results established in this study are sufficient to infer the importance of government consumption and development expenditures in promoting economic growth. An important policy implication is that the governments should promote strong institutions and move consumption expenditures towards development expenditures. Corruption, ineffective economic policies, and other institutional discrepancies can potentially be corrected if civil society is strong; as the removal of such malaises will help to develop an efficient environment for growth.

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Appendix A: Definition of institutional variables

Government stability	Government ability to carry out policies and stay in office. Higher value indicates more stable government.
Socioeconomic condition	Socio economic pressures at work in society that might restrain government action or elevate social dissatisfaction and hence destabilize political regimes. A higher value indicates better socioeconomic conditions.
Investment profile	Assesses factors related to risk of investment that are not covered by financial and economic risk components such as contract viability, expropriation, profits repatriation, or payment delay. A higher value indicates less investment distortions.
Internal conflict	Measures political violence within the country and the actual and potential impact it has on governance. For example civil war, terrorism, political violence, or civil disorder. A higher value indicates less internal conflict. Internal conflict is absent if the value is 1.
External conflict	Risk to the incumbent government from foreign action for example diplomatic pressures, withholding aid or trade sanctions (non-violent external pressure), or cross-border conflicts such as war (violent external pressure).A higher value indicates less external conflict.
Corruption	Assesses the level of corruption. A higher value indicates less corruption.
Military in politics	Captures the influence of military groups in politics. This signals the fact that the government is not able to function effectively, thus indicating an unfavourable business environment. A higher value indicates less or minimal military interference in politics.
Religious tensions	Captures religious tension emerging from the domination of society or governance of a single religious group. For example, movements to replace civil with religious law or to exclude other religions from the political and social process. A higher value indicates minimal religious tensions.
Law & order	Characterizes the strength and impartiality of the legal system. A higher value indicates a stronger legal system.
Ethnic tensions	Represents the degree of tensions amongst ethnic groups attributable to racial, nationality and language division. A higher value indicates less ethnic tensions.
Democratic accountability	Accounts for democratic accountability of the government via responsiveness to its citizens, civil liberties, and political rights of the citizens. A higher value indicates better democratic accountability.
Bureaucracy	Denotes institutional strength and quality of bureaucracy. For example the ability to reduce policy revision whenever political figures change. A higher value indicates better quality bureaucracy.

Source: International Country Risk Guide (ICRG), Political Risk Group (PRS)

Appendix B:

TABLE 13. Fixed effect estimation using government consumption expenditures (g_cons) for developed economies
Dependent variable: growth (gdpg)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$Gdpg_{t-1}$	-0.0519**	-0.4761**	-0.0912***	-0.1149***	-0.1038***	-0.1057***	-0.0937***	-0.060***	-0.0883***	-0.0208***	-0.0669***	-0.1026***
	(0.0208)	(0.0221)	(0.0216)	(0.0262)	(0.0209)	(0.0195)	(0.0206)	(0.0219)	(0.0206)	(0.0206)	(0.0217)	(0.0207)
Initial_y	-0.6754	-0.4775	1.311**	2.3468***	-0.5564	1.5749***	0.9246*	1.3592***	1.1056**	0.9623**	1.0625**	1.3985***
	(0.5343)	(0.5484)	(0.5955)	(0.5251)	(0.5746)	(0.5821)	(0.4736)	(0.4768)	(0.4456)	(0.4639)	(0.4727)	(0.4827)
Gov_cons	-0.6417***	-0.6645***	-0.7177***	-0.6443***	-0.8501***	-0.7694***	-0.6783***	-1.0029***	-0.7182***	-0.6581***	-0.6844***	-0.6646***
	(0.0495)	(0.0434)	(0.0531)	(0.0895)	(0.2001)	(0.2289)	(0.0430)	(0.2284)	(0.0966)	(0.0838)	(0.0423)	(0.0732)
Investment	0.01505***	0.0054	0.0101**	0.0194***	0.0213***	0.0195***	0.0109***	0.0088**	-0.0141***	0.0143***	0.0128***	0.0151***
	(0.0042)	(0.044)	(0.0048)	(0.0048)	(0.0049)	(0.0049)	(0.0043)	(0.0042)	(0.0042)	(0.0043)	(0.0043)	(0.0043)
Population	0.5239***	0.3263***	0.3088***	0.2618**	0.3323**	0.2668**	0.2008*	0.3140***	0.1305	0.2163**	0.3332***	0.1867*
	(0.1072)	(0.1127)	(0.1127)	(0.1125)	(0.1326)	(0.1110)	(0.1044)	(0.1019)	(0.1018)	(0.1023)	(0.1035)	(0.1037)
Inst_var	3.2175***	2.986**	5.3439***	1.8753**	2.7833**	3.6355***	2.3173	1.1816	5.4123**	7.2578***	4.0345**	6.1160***
	(0.7199)	(1.1573)	(0.9484)	(0.8496)	(1.1657)	(1.1269)	(1.9156)	(1.7298)	(2.3766)	(2.0903)	(1.6497)	(2.0663)
constant	2.3066***	2.8962***	3.0615***	0.6133	1.6816*	0.7636	0.3875	1.1415**	0.9775***	1.0388**	0.6342	0.4167
	(0.5470)	(0.8185)	(0.6406)	(0.6847)	(0.8669)	(0.5663)	(0.4159)	(0.4525)	(0.3721)	(0.4521)	(0.4143)	(0.3980)
Observation	180	180	180	180	180	180	180	180	180	180	180	180
Wald ($\chi 2$)	27.31	44.35	15.22	56.51	32.57	16.99	15.88	23.25	44.55	32.89	33.24	23.88

Notes: ***, ** and * denote significance at 1%, 5% and 10%. Standard errors are in parentheses. Institutional variables (inst_var) captured by each regression are as follows: Corruption (1), Democratic accountability (2), Military in politics (3), Government stability (4), Internal conflict (5), External conflict (6), Ethnic tension (7), Bureaucratic quality (8), Investment profile (9), Socioeconomic conditions (10), Religion in politics (11), Quality of government (12)

TABLE 14. Fixed effect estimation using government development expenditures (g_dev) for developed economies
Dependent variable: growth (gdpg)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$Gdpg_{t-1}$	-0.9417***	-0.9056***	-0.9578***	-0.9374***	-0.9249***	-0.9465***	-0.9102***	-0.9138***	-0.9149***	-0.9145***	-0.9103***	-0.9079***
	(0.2698)	(0.0274)	(0.0278)	(0.0287)	(0.0264)	(0.0258)	(0.0272)	(0.0276)	(0.0284)	(0.0271)	(0.0261)	(0.0271)
Initial_y	-1.3165***	-1.6748***	-1.3575**	-2.8344***	-0.3548	-1.9637***	-1.3238***	-1.7583***	-1.7165***	-1.4496***	-1.6754***	-1.7067***
	(0.4928_	(0.4405)	(0.5407)	(0.4730)	(0.5265)	(0.5424)	(0.4395)	(0.4361)	(0.4239)	(0.4504)	(0.4391)	(0.4473)
Gov_dev	0.0481***	0.0694***	0.0530***	0.0677***	0.0369***	0.0525***	0.0615***	0.0589***	0.0630***	0.0565***	0.0572***	0.0601***
	(0.0125)	(0.0113)	(0.0124)	(0.0127)	(0.0132)	(0.0123)	(0.0116)	(0.0114)	(0.0111)	(0.0117)	(0.0119)	(0.0115)
Investment	0.0176***	0.0105***	0.0111**	0.0145***	0.0158***	0.0162***	0.0082**	0.0088**	0.0122***	0.1176***	0.0123***	0.1253***
	(0.0040)	(0.0037)	(0.0044)	(0.0044)	(0.0044)	(0.0046)	(0.0039)	(0.0038)	(0.0039)	(0.0040)	(0.0040)	(0.0039)
Population	0.41662***	0.1328	0.2159*	0.1856*	0.3575***	0.2658**	0.1552	0.2144**	0.1118	0.1477	0.2577**	0.1611
	(0.1128)	(0.1070)	(0.1177)	(0.1123)	(0.1299)	(0.1176)	(0.1077)	(0.1056)	(0.1079)	(0.1087)	(0.1073)	(0.1086)
Inst_var	2.6208***	8.1667***	4.0390***	1.6339**	4.1054*	2.0525	2.4581	2.2487	5.2487**	6.8221***	4.9301***	4.2458**
	(0.7005)	(2.8290)	(0.8669)	(0.7612)	(2.2657)	(1.3096)	(1.7862)	(3.2004)	(2.6503)	(1.8999)	(1.7119)	(1.8869)
constant	1.6057***	-0.7760	1.8418***	0.0209	0.5559	0.0174	0.0561	1.2332***	1.0063***	1.6316***	1.1662***	0.0475
	(0.5110)	(0.4926)	(0.6091)	(0.6103)	(0.7540)	(0.5661)	(0.3785)	(0.3868)	(0.3343)	(0.4084)	(0.3574)	(0.3691)
Observation	180	180	180	180	180	180	180	180	180	180	180	180
Wald ($\chi 2$)	55.42	23.67	66.22	43.86	33.57	51.25	29.76	33.69	50.11	42.60	45.39	47.65

Notes: ***, ** and * denote significance at 1%, 5% and 10%. Standard errors are in parentheses. Institutional variables (inst_var) captured by each regression are as follows: Corruption (1), Democratic accountability (2), Military in politics (3), Government stability (4), Internal conflict (5), External conflict (6), Ethnic tension (7), Bureaucratic quality (8), Investment profile (9), Socioeconomic conditions (10), Religion in politics (11), Quality of government (12)

APPENDIX C:

DESCRIPTIVE STATISTICS

Variable	Observations	Mean	Std dev	Minimum	Maximum
g	1867	4.24	4.05	-9.53	33.99
gov	1869	14.88	6.09	3.22	76.22
gcf	1858	21.74	7.23	-2.42	54.48
initial	1873	4.66	0.76	2.95	7.03
open	1863	76.72	53.17	76.72	562.06
pop	1871	1.98	1.20	-2.96	11.18
inf	1805	6.94	5.58	-3.20	37.38
hcap	1876	67.70	64.05	2.8	334.5
fdi	1841	3.05	4.40	-9.87	51.89
gstab	1863	0.62	0.18	0.1	1
socio	1862	0.45	0.16	0.08	0.92
inv	1862	0.59	0.19	0.1	1
intcon	1862	0.69	0.20	0.1	1
cor	1862	0.47	0.18	0.1	1
dem	1862	0.60	0.27	0.1	1
bur	1862	0.51	0.26	0.1	1
extcon	1862	0.79	0.17	0.16	1
mil	1861	0.55	0.27	0.1	1
law	1857	0.55	0.21	0.07	1
ethnic	1847	0.63	0.23	0.01	1
relig	1857	0.07	0.23	0.01	1

CORRELATION MATRIX

	g	gov	gcf	initial	open	pop	inf	hcap	fdi
g	1.000								
gov	-0.1077	1.0000							
gcf	0.2761	0.0738	1.0000						
initial	0.1205	-0.0402	0.2634	1.0000					
open	0.0834	0.1462	0.2728	-0.1396	1.0000				
pop	0.0449	0.0102	-0.1186	-0.2865	-0.0229	1.0000			
inf	0.00313	-0.1274	-0.0343	-0.0125	-0.2315	0.0151	1.0000		
hcap	-0.0320	-0.2045	-0.3744	-0.3925	-0.3557	0.4115	0.1556	1.0000	
fdi	0.0933	0.0225	0.1750	-0.0552	0.4824	-0.1280	-0.0600	-0.1693	1.00000

CORRELATION MATRIX

	g	gstab	socio	inv	intcon	cor	dem	bur	extcon	mil	law	ethnic	relig
g	1.0000												
gstab	0.1220	1.0000											
socio	0.0808	0.1047	1.0000										
inv	0.0811	0.5481	0.4099	1.0000									
intcon	0.0753	0.4289	0.3299	0.4404	1.0000								
corr	-0.0478	-0.0281	0.3683	0.0865	0.2804	1.0000							
dem	-0.0676	0.0210	0.0346	0.2224	0.2131	0.3385	1.0000						
bur	0.0030	0.1425	0.5064	0.3638	0.3159	0.5089	0.2558	1.0000					
extcon	0.0168	0.3253	0.1453	0.3314	0.5622	0.1428	0.2442	0.1796	1.0000				
mil	-0.0346	0.1051	0.4251	0.4205	0.5200	0.4052	0.3128	0.5136	0.3587	1.0000			
law	0.0958	0.3280	0.4732	0.3787	0.6226	0.4704	0.1302	0.4641	0.3180	0.4490	1.0000		
ethnic	0.0015	0.2406	0.2582	0.2374	0.5282	0.2665	0.1023	0.1879	0.3013	0.3504	0.4169	1.0000	
relig	-0.0217	0.0553	0.1322	0.1527	0.3919	0.2930	0.1637	0.0426	0.2752	0.3309	0.1864	0.4028	1.0000

APPENDIX D

Selected literature: Economic growth – government expenditures nexus

Author(s)	Countries/Sample	Method	Result
Landau (1983)	96 Developed countries	OLS	Negative
Ram (1986)	115 countries	OLS	Positive
Kormendi & Meguire (1986)	47 countries	OLS	Positive
Engen & Skinner (1992)	107 countries	2SLS	Negative
Lin (1994)	20 developed & 42 developing countries	OLS 2SLS 3SLS	Positive
Hsieh & Lai (1994)	G7 (1970 -1987)	VAR	No relationship
Hansson & Henrekson(1994)	14 OECD & 14 developed countries (1970 – 1987)	OLS	Negative
Cashin (1995)	23 developed countries (1971 – 1988)	OLS	Positive
Gwartney et al. (1998)	23 OECD countries & 5 rapidly developing countries	Statistical inference	Negative
Folster & Henrekson (2001)	23 OECD countries	OLS	Negative
Dar &Amir Khalkhali (2002)	19 OECD countries	Random coefficient model	Negative
Knowles & Garces-Ozanne (2003)	Asian countries (1960 – 1985)	OLS	Negative
Javid et al. (2009)	Pakistan (1971 – 2008)	VAR	Negative
Li (2009)	G7 (1959 – 2005)	Quantile Regression, LAD & OLS	Results differ according to method and proxy used
Afonso & Furceri (2010)	29 OECD countries & EU15 (1970-2004)	Panel Data	Negative

Butkiewwicz & Yanikkaya (2011)	Develop & developing countries (1970 – 2004)	Panel Data	Negative
Ravn et al. (2012)	US, UK, Canada & Australia (1975 – 2005)	PanelSVAR	Positive
Agnello et al (2013)	132 countries (1960 – 2008)	Panel Data	Positive
Granado et al. (2013)	150 countries (1987 – 2007)	FE, FE-IV, system GMM	Procyclical
Hamdi & Sbia (2013)	Bahrain (1960 – 2010)	VECM	Positive
Dzhumashev (2014)	Kenya (low), Turkey (middle) & UK (high income)	Calibration	Negative (corruption)