Foreign Aid Fiscal Policy: Theory and Evidence

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Abstract

The paper provides theoretical and empirical justifications for the instrumentality of foreign aid in stimulating private investment and fixed capital formation through fiscal policy mechanisms. We propose an endogenous growth theory based on an extension of Barro (1990) by postulating that the positive effect of aid mitigates the burden of the taxation system on the private sector of recipient countries. The empirical validity is based on data from 53 African countries for the period 1996-2010. While the findings on the tax effort channel are overwhelmingly consistent with theory across specifications and fundamental characteristics, those of the 'government expenditure' channel are a little heterogeneous but broadly in line with the theoretical postulations. Justification for the slight heterogeneity and policy implications are discussed.

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1. Introduction

The issue of whether development assistance improves growth in recipient countries can be traced back to the two-gap model (Chenery & Strout, 1966), which to the best of our knowledge remains the most influential theoretical underpinning in the literature on aid effectiveness. According to the narrative, developing countries face serious constraints in savings and 'export earnings' that are not conducive for the growth of investment. In spite of severe criticisms since its inception, this model has provided a background for early aid policies (Easterly, 1999) and empirical specifications in many studies (Masud & Yontcheva, 1999). Accordingly, both the Harrod-Domar and Solow growth models which constitute the principal theoretical underpinnings in the foreign aid literature are based on the need for substantial aid-driven investment, with the purpose of reducing the poverty gap between developed and poor countries.

The effect of development assistance on private sector investment has long been an important issue of debate. Many economists have adopted the position that aid stimulates private investment in least developed countries (LDCs) by improving macroeconomic savings, while others have contended that aid has a negative effect on private investment because, inter alia, it: (i) is often wasted or counterproductive; (ii) generates the Dutch-disease (iii) enables the central government to drain resources from the private sector (Snyder, 1996)[1]. However, recent empirical evidence suggests that donors are concerned about how their aid is used, especially how it affects the fiscal behavior of recipient governments (Morrissey, 2012). Morrissey has reviewed the effects of aid and concluded that aid significantly affects government spending and tax effort in LDCs.

Our main contribution to the literature is twofold. On the one hand, we propose an endogenous theory of aid and on the other hand provide empirical validity for the proposed theory. The model we propose postulates that the positive effect of aid reduces that burden of the taxation system on the private sector which ultimately leads to economic growth in poor countries, especially when the amount of aid is high and the public sector is less effective. In essence, the goal of the study is to examine how aid affects private investment through fiscal policy channels. We postulate that the effects of aid on tax effort and government spending as

[1] For instance Snyder (1996) has concluded from a panel of 36 developing countries that nations which receive large aid allocations are associated with lower levels of private investment.

suggested by Morrissey (2012) could provide incentives for private investments and fixed capital formation, which are essential for economic prosperity.

In addition to the above contributions, the paper has policy implications in a number of areas. First, the global economic downturn has resurfaced issues about donors': (i) continued willingness 'to give' and (ii) commitment to development assistance (Ahmed et al., 2011). Therefore, investigating the effect of aid on investment could provide additional insights into the ongoing debate[2]. Second, a corollary of the first contribution is the shifting of policy- space to foreign aid alternatives from East Asia. Accordingly, the ability to learn from the East Asian success stories has been substantially hampered by an asymmetric bargaining power between Africa and her Western development partners[3]. Third, there have been considerable shifts in the objectives announced by the donor community which have evolved from intensive industrialization programs advocated in the 1950s to more recent poverty-reduction objectives such the Millennium Development Goals (MDGs). Fourth, by using comparatively more recent data (1996-2010) from 53 countries, we provide an updated account of the nexuses. Moreover, the richness of our dataset also avails room for more policy implications. Accordingly, in order to add subtlety to the analysis, we disaggregate the dataset into fundamental characteristics of investment (legal origins, petroleum-exporting quality, political instability/conflicts, regional proximity, income-levels, religious-domination and openness to sea).

The rest of the paper is organized as follows. Section 2 presents controversial views in the literature before proposing the endogenous theory. The data and methodology are discussed in Section 3. The empirical analysis is covered by Section 4. Section 5 concludes.

2. Foreign aid and development

Consistent with Asongu (2014a), the Official Development Assistance (ODA) programs that were instituted over five decades ago have led to widely debated and unsolved issues

[2] The debate has recently been reframed by Koechlin (2007) who has examined three ambitious book (Sachs's *The End of Poverty*, Bhagwati's *In Defense of Globalization*, and Easterly's *The Elusive Quest for Growth*) and concluded that, the insights and drawbacks of underlying books remind us that the 'status quo' is not working. The author has concluded that a rich understanding of globalization and development requires a serious reconsideration of alternative visions of each phenomenon. For instance, new ways of theorizing development in light of the globalized system of food production has involved the European Union heavily criticizing the USA-led 'genetically modified food aid' program to the Southern African region (Herrick, 2008).

[3] As a case in point, China's policy in Africa of non-interference in development assistance and foreign direct investment (FDI) is perceived as better alternatives (Asongu & Ssozi, 2015). Hence, the results of this study could either confirm or reject the narrative.

surrounding aid effectiveness. In 2005, Western countries devoted substantial efforts to save Africa. In July of this year, the Group of Eight (G8) agreed to double development assistance to Africa from $25 billion a year to $50 billion in order to finance the 'Big push', as well as cancel Africa's aid-loans contracted during previous attempts at a 'Big push'. According to most estimates, prior to this effort, Africa was already the most aid-intensive region in the world. World leaders gathered at the United Nations in September 2005 to further discuss progress towards mitigating poverty on the continent. As far as we have reviewed, Easterly (2005) best highlights some frustrating statistics. Accordingly, sub-Saharan Africa (SSA) contains more than 11% of the world's population but only accounts for 1% of the world's Gross Domestic Product (GDP). In the median African country, 43% of the population survives on less than $1 per day. On the list of the World Food Program, of the twenty-three countries with more than thirty-five per cent of malnourished population, seventeen (seventy-three per cent) are in Africa. Poverty has been sustained by the long and brutal civil wars in many countries (Angola, Chad, Sierra Leone, Somalia, Liberia…etc), Rwanda's genocide and recent carnages in Darfur-Sudan: with the Democratic Republic of Congo registering the world's highest casualties since World War 2. To put these stylized facts into greater perspective, eight of the eleven recent cases of total societal breakdown into anarchy have been in Africa, namely in: Angola, Burundi, Liberia, Sudan, Sierra Leone, Somalia, the Democratic Republic of Congo and Libya (beside Afghanistan, Iraq and Syria). As a means of reconstructing these war-torn countries, foreign aid would obviously be considered as a 'Big economic push'.

2. 1 Controversial views in the literature

While development assistance is necessary in the short-run owing to associated precarious circumstances (e.g. humanitarian concerns), there has been a heated debate on the effectiveness of aid on the one hand and linkages between aid, conditionality[4] and economic policies in recipient countries on the other hand. In international policy coordination, one of the most debated and controversial issue is foreign aid. A strand of protagonists has engaged the debate with a mixture of alleged altruism, economic interests, geo-strategic considerations and

[4] The conditionality oriented debate has recently intensified when some Western governments (British and US for instance) have threatened to cut-off aid from some African countries because of the prosecution of gays, lesbians and transsexuals by governments of recipient countries. In response, activists, analysts and African government officials have viewed the threat as an insult to African values in particular and moral wellbeing in general.

historical ties (Alam, 2004). The post-decolonization period has been characterized by substantial increase in grants and soft loans from Western donor agencies and governments (Oya, 2006). In essence, the Cold war and the battle for geopolitical control of Africa between superpowers are considered by many scholars as the most important determinants of foreign aid which increased sharply in the 1980s (Degnbol-Martinussen & Engberg-Pedersen, 2003). The debate has also been extended to policies by the International Monetary Fund (IMF)[5].

We will now discuss the major strands of the debate on the development outcomes of foreign aid. A substantial bulk of the literature has been devoted to the macroeconomic consequences of development assistance. However, mixed results have been reported and studies that have concluded on a significant and positive effect have faced heavy methodological criticisms. Inconclusive results with recently refined methodologies, heavy reliance on empirical evidence and the absence of analytical frameworks (Masud & Yontcheva, 2005), have left much room for debate on the aid-development nexus. Table 1 summarizes the debate in two main strands. Whereas the first strand acknowledges the positive sides of development assistance, the second sustains the negative consequences of aid.

Among studies in the first strand, we shall highlight that of Burnside and Dollar (2000) which has concluded that aid could be effective when policies are appealing (conducive). The Burnside and Dollar study has received abundant comments from scholars and policy makers (Guillaumont & Chauvet, 2001; Collier & Dehn, 2001; Easterly et al., 2003) with some claiming that corresponding findings are extremely data-dependent (Clemens et al., 2004). Whereas Clemens et al. (2004) have established that aid is beneficial in the short-term; Minou and Reddy (2010) have recently found that the beneficial effect could also be in the long-term. Gomanee et al. (2003) have emphasized that development assistance has both a direct effect on welfare and an indirect impact through public spending on social services. The indirect stance has been further consolidated by Mosley et al. (2004) on wellbeing and poverty in recipient countries. Development assistance has also been found to promote institutions in terms of its role on corruption (Okada & Samreth, 2012) and transition to democracy (Resnick, 2012).

[5] Accordingly, structural adjustment policies by the IMF have also been criticized. There is a wealth of literature documenting that the IMF's neoliberal policies have not been: (i) sound for South Korean development after the 1997 crisis (Crotty & Lee, 2002, 2006, 2009); (ii) the principal cause of the Argentinean crisis in the late 1990s and early 2000s (Levy & Duménil, 2006) and (iii) responsible for the failed privatization projects across Africa (Bartels et al., 2009).

The second strand is research that finds an insignificant effect of aid on investment, savings and institutions. For example, it concludes that aid promotes unproductive public consumption (Mosley et al., 1992) without a positive effect on investment. The latter stance has been sustained by Reichel (1995) and Boone (1996). Whereas Ghura (1995) has emphasized the negative impact of development assistance on domestic savings, Pedersen (1996) has established that foreign aid distorts development and leads to aid-dependency. In direct response to the Okada and Samreth (2012) position on a negative aid-corruption nexus, recent African aid literature has supported this second strand from an institutional standpoint. Accordingly, Asongu (2012a, 2013a) has engaged in a debate on the 'effect of foreign aid on corruption'[6].

Table 1: Summary of controversial views in the literature

Researchers	Main findings
	First-strand: Aid improves growth (development)
Ghura (1995)	Aid positively impacts savings for good adjusters.
Burnside & Dollar (2000)	Aid can be good when economic management and policies are appealing.
Guillaumont & Chauvet (2001)	Aid effectiveness is conditional on environmental factors (hazards and shocks).
Collier & Dehn (2001)	Aid effectiveness is contingent on negative supply shocks. Targeting aid conditional on negative supply shocks is better than a targeting based on good policies.
Collier & Dollar (2001)	The positive impact of aid on poverty depends on its effect on per-capita income growth and the effect of per-capita income growth on poverty mitigation.
Feeny (2003)	The sectoral allocation of foreign aid to Papua New Guinea has been broadly in line with a strategy to effectively mitigate poverty and increase human well being.
Gomanee et al. (2003)	Aid has both a direct impact on welfare and indirect effect via public spending on social services.
Clement et al. (2004)	Aid has a short-run appealing impact on growth.
Ishfaq (2004)	Though in a limited way, aid has helped in reducing the extent of poverty in Pakistan.
Mosley et al. (2004)	Aid has an indirect impact on wellbeing and poverty in recipient countries.
Addison et al. (2005)	Aid augments pro-poor public expenditure and has a positive impact on economic prosperity. Aid broadly works to reduce poverty, and poverty would be higher in the absence of aid.

[6] Whereas Okada and Samreth (2012) have concluded that aid mitigates corruption in developing countries, Asongu (2012a) in response has established that the Okada and Samreth (2012) findings may not be relevant for Africa because aid fuels (mitigates) corruption (the control of corruption) on the continent. In response to some informal discussions that the Okada and Samreth and Asongu (2012a) findings are not directly comparable, Asongu (2013a) has maintained his position in the African context without partially negating the empirical underpinnings of Okada and Samreth on the one hand and extending the horizon of inquiry from corruption to eight government quality variables.

Fielding et al. (2006)	There is a straight forward positive impact of aid on development objectives.
Minou & Reddy (2010)	Aid positively impacts economic prosperity in the long-run.
Okada & Samreth (2012)	Aid mitigates corruption.
Resnick (2012)	Aid has promoted democratic transitions in the 1990s in African countries.
Second-strand: Aid does not lead to growth (development)	
Mosley et al. (1992)	Aid promotes unproductive public consumption and fails to promote growth.
Reichel (1995)	Aid does not encourage savings because of the substitution effect.
Ghura (1995)	Aid has a negative incidence on savings.
Boone (1996)	Aid is insignificant in promoting economic development on two main counts: poverty is not the effect of capital shortage and it is not optimal for politicians to adjust distortionary policies when they receive aid flows.
Pedersen (1996)	Aid distorts development and eventually leads to aid dependency.
Asongu (2012a)	Aid fuels (mitigates) corruption (the control of corruption).
Asongu & Nwachukwu (2015)	Aid has a negative nexus with government quality dynamics.
Asongu (2013a)	Aid is unappealing to institutional quality irrespective of initial levels of institutional development.
Asongu (2014a)	Aid leads to less pro-poor development.

Source (Authors)

It is also important to devote space to engaging some studies on the development outcomes of foreign aid that have established alternative conclusions to the two main strands summarised in Table 1. These include research on the impact of aid on growth and changes in recipient policies. Hansen and Tarp (2001) conclude that whereas the effect of development assistance on economic growth may not be contingent on 'good policy', human capital could be the driving factor behind economic prosperity. The narrative is in accordance with a recent strand of literature on soft economics (i.e. the human side of economic activities) (Kuada, 2015) and knowledge economy (Asongu, 2015a; Tchamyou, 2015; Asongu & Tchamyou, 2016). Furthermore, the emphasis on human capital is consistent with another recent stream of African development literature on the benefits of foreign aid in economic growth (Kargbo & Sen, 2014; Gyimah-Brempong & Racine, 2014) because the corresponding positive impact on economic growth is more apparent when development assistance is channeled through educational mechanisms (Asiedu & Nandwa, 2007; Asiedu, 2014).

Easterly (2003) has criticized the Burnside and Dollar (2000) model by establishing that while foreign aid may stimulate growth when correct policies are implemented, the data shows that the linkage between aid and recipients' policies is weak. The issue of exclusive growth in

Africa which has motivated a book by Kuada (2015) has also been the motivation behind another book by Fosu (2015ab) which is devoted to elucidating: (i) myths behind Africa's recent growth resurgence and (ii) the role of institutions in the underlying growth resurgence[7]. The concern about institutions is important because Bräutigam and Knack (2004) have concluded that high aid to Africa is linked to deteriorating governance and tax levels. The conclusions of Bräutigam and Knack (2004) on weak governance and low tax income are respectively in accordance with Asongu and Nwachukwu (2015) and Asongu (2015b) who have used more updated data. According to Bräutigam and Knack (2004), growth in GDP per capita is more linked to improvements in governance, as opposed to foreign aid.

Whereas the effect of development assistance is more straight forward to some scholars (Ishfaq, 2004; Addison et al., 2005; Fielding et al., 2006)[8], its impact on development outcomes may also be indirect. We have highlighted in one of the strands above that aid promotes unsound public consumption (Mosley et al., 1992) without a positive effect on investment. We have also highlighted in the introduction that aid affects development objectives through fiscal behavior channels (Morrissey, 2012). Therefore 'aid effects' on tax effort and government spending could provide incentives for the investment needed for economic prosperity.

2.2 Theoretical proposition: fiscal behavior as a transmission mechanism

2.2.1 Theoretical and empirical underpinnings

The theoretical underpinnings of the fiscal behavior channel in the aid-development nexus are broadly consistent with the 'Big-Push' model which maintains that Africa is poor because it is stuck in a poverty trap (Easterly, 2005). In order to emerge from the poverty pit, it needs a substantial aid-driven investment policy: a 'Big Push'. Both the Harrod-Domar and Solow growth models have been based on this intuition. Accordingly, the underlying assumption

[7] The narrative of Kuada (2015) on soft economics for employment, poverty alleviation and inclusive growth in Africa is substantiated by a recent stream of African development literature that has focused on mechanisms by which foreign aid can be tailored more effectively towards reducing poverty and boosting employment (Jones & Tarp, 2015; Simpasa et al., 2015; Jones et al., 2015; Page & Shimeles, 2015; Page & Söderbom, 2015; Asongu, 2015c).

[8] Addison et al. (2005) have established that development assistance encourages pro-poor public spending and has a positive effect on economic prosperity (growth) since it broadly aligns with poverty reduction. Their position that poverty would be higher in the absence of aid had earlier been raised by Ishfaq (2004). Among proponents of a positive aid-development nexus in the first strand of Table 1, Fielding et al. (2004) have been the most optimistic in their conclusion that aid has a straight forward positive effect on development objectives.

for the intuition is that, the 'Big-Push' is destined to bridge the saving-investment gap poor countries face (Rostow, 1960; Chenery & Strout, 1966; Easterly, 2005).

In light of the summary of the literature presented in Section 2.1, our model will incorporate two channels for the influence of foreign aid: the investment destination of aid and the fiscal behavior mechanism as a channel to the investment. Hence, the goal of the present study is to: (i) propose an endogenous theory of aid and (ii) test the empirical validity of the proposed theory. In essence, we examine how aid affects private investment (and gross fixed capital formation) through tax efforts and government spending. The model is primarily based on the assumption that private investment and/or gross fixed capital formation are relevant for economic prosperity.

2.2.2 Theoretical proposition: extension of Barro (1990)

There is a wealth of literature substantiating that the taxation system adopted by a developing country creates large distortions that substantially affect the dynamics of the private sector and hence economic growth and development (Manly et al., 2006; Feredeand & Dahlby, 2012). As highlighted earlier, some of this vast literature has focused on the channels via which foreign aid affects economic prosperity in recipient countries (see Table 1). In the same vein, recent endogenous growth literature has elucidated the positive role of public spending, notably, in: education, health and infrastructure for economic growth (Alexiou, 2009). The underlying literature substantially draws from the Barro (1990) model.

In essence, Barro determines the optimal size of the State: public expenditure that maximizes the rate of economic growth. The simple growth model does not take into account the issue of budget deficit allocated to public spending. Hence, it is intuitively relevant to propose a model that incorporates development assistance destined to financing productive public expenditure. Therefore, the idea here is to extend Barro's simple growth model while taking into consideration the effect of foreign aid on private investment through the fiscal behavior of the State. From Barro's theoretical underpinnings, we suppose that productive investments may either be private investments or gross fixed capital formations that ultimately have positive effects on economic growth.

We consider a model similar to Barro (1990). The economy is characterized by the decision of a household representative agent who is a consumer and a producer with the following production function:

$$y = Ak^{1-\alpha} g^{\alpha} \qquad (1)$$

where k is physical capital, g the amount of composite productive public expenditure including: education, infrastructure and health. This public expenditure is financed by taxes and an allocation to foreign aid. That is:

$$g = \tau y + A \qquad (2)$$

where A is the amount of international aid which is indexed on national income and we suppose that it is determined in an exogenous manner.

For the purpose of simplicity, we further assume that the budget of the State is at equilibrium at every moment. Accordingly, the problem of our representative agent is to solve the dynamic program of decentralized economic growth given by:

$$\underset{c}{Max} \int_0^{\infty} \frac{c(t)^{1-\sigma} - 1}{1-\sigma} e^{-\rho t} .dt \qquad (3)$$

Subject to:

$$\dot{k}(t) = (1 - \tau)\, y(t) - c(t)$$
$$g(t) = \tau y(t) + A(t)$$
$$A(t) = a y(t)$$
$$k(0) > 0.$$

where c(.) represents per capita consumption, σ is the constant inter-temporal elasticity of substitution , ρ is the constant rate of time preference and a is the indexation rate of foreign aid allocated to the production of social infrastructure $g(.)$. This rate is exogenous, fixed and considered as 'given' by national economic agents.

We have already seen that a substantial bulk of the literature has focused on the effect of aid on growth and development. The theoretical and empirical relevance of aid to public spending has also been shown. Now we suppose that the objective of donor(s) vis-à-vis poor countries is the development of the private sector (liberal aspect of the contract). Hence, its (their) aid is supposed to be entirely and observably allocated directly to the financing of

productive public spending, which can be lacking in poor countries. Hence, the role of aid is to provide socio-economic infrastructure which improves private sector effectiveness. Within this framework, it can be established that the equation for budget equilibrium is given this time by:

$$\begin{aligned} &\tau y(t) + a y(t) = g(t) \Leftrightarrow \\ &g(t) = (\tau + a) y(t) \end{aligned} \qquad (4)$$

In the presence of foreign aid allocated for private sector promotion, while acknowledging that aid as an exogenous factor, public decision makers should therefore implement an endogenous economic growth program by the optimal choice of the income-related direct tax structure. Hence, taking the government's decisions as given, the representative agent chooses consumption, c, and capital, k, to maximize his/her welfare:

$$\underset{c}{Max} \int_0^{\infty} \frac{c(t)^{1-\sigma} - 1}{1-\sigma} e^{-\rho t} .dt \qquad (5)$$

Subject to:

$$\dot{k}(t) = (1 - \tau)\, y(t) - c(t)$$
$$g(t) = (\tau + a) y(t)$$
$$k(0) > 0.$$

Proposition 1:
In the presence of foreign aid:
i) the economic growth rate is given by the following rate:

$$\gamma_a = \frac{1}{\sigma}\left[A^{\frac{1}{1-\alpha}} (1-\tau)(a+\tau)^{\frac{\alpha}{1-\alpha}} - \rho \right] \qquad (6)$$

ii) The tax rate that maximizes national economic growth is therefore given by:

$$\alpha - a(1-\alpha) = \tau^* > 0 \Leftrightarrow \alpha > \frac{a}{1+a} \qquad (7)$$

It is immediately observable that the positive effect of aid reduces that burden of the taxation system on the private sector of poor countries, especially when the amount of aid is high and the public sector less effective. Hence, it is apparent that aid granted to developing countries directly benefits them in terms of private sector dynamism which ultimately leads to economic growth while reducing the size of the national public sector (Remmer, 2004; Payne & Kumazawa, 2005).

3. Data and Methodology

3.1 Data

We examine a panel of 53 African countries with data from African Development Indicators (ADI) of the World Bank for the period 1996-2010. Limitation to the time span is motivated by the interest of providing results with updated and more focused policy implications. Moreover, the focus on Africa and the time span enable follow-up of a recent foreign aid debate that has had some influence in academic and policy making circles[9]. The dependent variables are private investment and gross fixed capital formation. While the former is used in baseline regressions, the latter is employed for robustness checks.

3.1.1 Determination of fundamental characteristics

It is important to discuss the determination of fundamental characteristics which are crucial for the relevance of the empirics. Macroeconomic characteristics have the limitation of being time-dynamic. Thus, the same non-dummy threshold may not be consistent over time. This justification is even more relevant when short-run (business cycle) disturbances loom substantially. Hence, we are consistent with recent comparative literature in categorizing countries in terms of conflict-affected (or political instability), petroleum-exporting, legal origins, income-levels, regional proximity, religious-domination and landlockedness (Weeks, 2012; Asongu, 2014b). From intuition, foreign aid, private investment and fiscal policy substantially depend on the above categories.

[9] The time span is consistent with those employed by Okada and Samreth (2012), Asongu (2012a) and Asongu (2013a) in the highlighted debate. The first authors have use data from 120 developing countries for the period 1995-2009, the second has used data from 52 African countries for the period 1996-2010 whereas the third has used data for the period 1996-2010 from 53 African countries.

It is difficult to establish an objective definition of a conflict country. Since, few countries on the continent are completely conflict-free, the distinction is made on the basis of degree of significance of conflict-span, relative to the period of study. Based on the information (53 countries over the period 1996-2010), two categories emerge: civil wars and political strife. With respect to the first category on civil wars, few would object to the inclusion of Angola (1975-2002), Burundi (1993-2005), Chad (2005-2010), the Central African Republic (series of failed coup d'états between 1996-2003 and the 2004-2007 Bush War), the Democratic Republic of Congo, Côte d'Ivoire (1999 coup d'état, 2002-2007 civil war, rekindled in 2011), Liberia (1999-2003), Sierra Leone (1991-2002), Somalia and Sudan. For the second category, in spite of the absence of some formal characteristics of civil war, we also include Nigeria and Zimbabwe due to the severity of their internal strife.

Second, on how to determine petroleum countries, a critical categorical objection arises because some petroleum countries also clearly qualify as conflict-affected (Angola and Sudan for instance). In this study a country may fall into many categories if it has the relevant categorical characteristics. Another concern that emerges is arbitrariness if a country qualifies for only part of the time period, either because of: (i) a recent discovery of oil fields or (ii) a substantial decline in production. In the same vein, another objection could be that some resource-rich countries (e.g. Botswana) display macroeconomic features that are similar to those of petroleum-exporting countries because of intensive extractive industries. We take a minimalistic approach to the issue by strictly adhering to the petroleum category and including only countries whose exports have been oil-dominated for over a decade during the span 1996-2010. These include: Algeria, Angola, Cameroon, Chad, Congo Republic, Equatorial Guinea, Gabon, Libya, Nigeria and Sudan.

Third, the basis of legal origin is founded on the premise that legal origins place different emphasis on private property rights vis-à-vis State power (La Porta et al., 1998, 1999). According to this narrative, English common law countries place more emphasis on private property rights, whereas French civil law focuses more on State power. The intuition for this category as discussed in prior work accords with African institutional quality (Asongu, 2015d) and property rights (Asongu, 2012b) literature. The underlying logic for this segmentation is that the institutional web of formal rules, informal norms and enforcement characteristics affect the

climate of investment. The legal origin classification is according to La Porta et al. (2008, p. 289).

Fourth, the basis for including income-levels to examine wealth-effects is founded on two premises. On the one hand, economic prosperity could be associated with higher levels of private investment. On the other hand, recent African institutional literature has shown that wealth-effects matter in institutional quality (Asongu, 2012c; 2013b) that ultimately determines investment. The choice of income-levels is in accordance with the Financial Development and Structure Database (FDSD) of the World Bank.

Fifth, there is an investment cost of being landlocked (Arvis et al., 2007). Moreover, in order to add subtlety to the analysis for more policy implications, we include: (i) religious dominations (Christianity and Islam) in accordance with the Central Intelligence Agency's (2011) World Fact book and (ii) regional proximity consisting of SSA and North African countries.

3.1.2 Endogenous explaining, instrumental and control variables

The fiscal policy measures of government expenditure and tax revenues are consistent with the discussed literature. The instrumental variables include: Total Net Official Development Assistance (NODA), NODA from Multilateral Donors (MD), NODA from the Development Assistance Committee (DAC) countries and Grants excluding technical cooperation. We employ only two control variables due to constraints in degrees of freedom required for the Sargan over-identifying restrictions (OIR) test for instrument validity[10]. The control variables are corruption and 'voice and accountability' and are included to reduce the degree of identification when development assistance instruments are not valid. The choice of the control variables from African Development Indicators of the World Bank is consistent with recent African institutional literature (Asongu, 2012a, 2013a). These institutional variables are determinants of a country's investment climate.

Variable definitions (with corresponding data sources) are provided in Table 2, whereas Appendix 1, Appendix 2 and Appendix 3 respectively provide details about the summary statistics, correlation matrix (showing the basic correlations between key variables used in this paper) and categorization of countries.

[10] Please see last paragraph of Section 3.2 for further insights.

Table 2: Variable Definitions

Variables	Signs	Variable Definitions (Measurement)	Sources
Corruption Control Index	CC	"Control of corruption (estimate): captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as 'capture' of the state by elites and private interests".	World Bank (WDI)
Voice & Accountability	V&A	"Voice and accountability (estimate): measures the extent to which a country's citizens are able to participate in selecting their government and to enjoy freedom of expression, freedom of association and a free media".	World Bank (WDI)
Government Expenditure	Gov. Ex	Government Final Consumption Expenditure (% of GDP)	World Bank (WDI)
Tax Revenue	Tax rev.	Tax Revenue (% of GDP)	World Bank (WDI)
Fixed Capital Formation	GFCF	Gross Fixed Capital Formation (% of GDP)	World Bank (WDI)
Private Investment	Priv. Ivt	Gross Private Investment (% of GDP)	World Bank (WDI)
Foreign Aid (1)	Total Aid	Total Net Official Development Assistance (% of GDP)	World Bank (WDI)
Foreign Aid (2)	DAC Aid	NODA from DAC Countries (% of GDP)	World Bank (WDI)
Foreign Aid (3)	DAC Aid	NODA from Multilateral Donors (% of GDP)	World Bank (WDI)
Grants	Grants	Grants excluding technical cooperation (% of GDP)	World Bank (WDI)

WDI: World Bank Development Indicators. NODA: Net Official Development Assistance. DAC: Development Assistance Committee.

3.2 Methodology

The study uses a Two-Stage Least Squares (2SLS) Instrumental Variable (IV) estimation strategy for a twofold reason: the empirical strategy is consistent with the problem statement and also addresses the issue of endogeneity. The adopted IV procedure is in accordance with recent foreign aid (Asongu & Nwachukwu, 2015) and development (Tchamyou, 2015) literature. The purpose of adopting an IV approach is to have some bite on endogeneity. Moreover, the line of inquiry is consistent with an IV technique essentially because, the study aims to assess how foreign aid instruments affect investment through mechanisms of fiscal behavior. The following steps are adopted in the estimation procedure.

First-stage regression:

$$FB_{it} = \gamma_0 + \gamma_1 (Instruments)_{it} + \upsilon_{it} \quad (1)$$

Second-stage regression:

$$Investment_{it} = \beta_0 + \beta_1 (FB)_{it} + \beta_i X_{it} + \mu_{it} \quad (2)$$

In Eq. (2), *X* is a set of control variables which include: *Corruption and 'voice and accountability'*. *FB* entails *Fiscal behavior* which consists of *Government's final consumption*

expenditure and *Tax revenues*. *Investment* denotes *Private investment* and *Fixed capital formation*. Instrumental variables include: *Total NODA, NODA from DAC countries, NODA from MD* and *Grants.* In Eq. (1) and Eq (2), v and u, respectively represent the error terms.

In the estimation process, three main steps are adopted. First, we justify the choice of the IV procedure with a Hausman test for endogeneity. Then, we verify that the instruments are exogenous to the endogenous components of the independent variables (government expenditure and tax revenues). Last, we ensure that the instruments are valid and uncorrelated with error term in the equation of interest with an OIR test. Further robustness checks are ensured with: (i) restricted and unrestricted modeling; (ii) modeling with robust Heteroscedasticity and Autocorrelation Consistent (HAC) standard errors and (iii) use of two investment indicators.

As highlighted in Section 3.1, we employ only two control variables due to constraints in degrees of freedom required for the Sargan OIR test for instrument validity. The Sargan OIR test is only applicable in the presence of over-identification. In other words, the instruments must be higher than the endogenous explaining variables by at least one degree of freedom. In the cases of exact-identification (instruments equal to endogenous explaining variables) and under-identification (instruments less than endogenous explaining variables) the OIR test is by definition impossible. Accordingly, we have four foreign aid instruments and cannot model with more than three endogenous explaining variables.

4. Empirical Analysis

4.1 Presentation of results

In this section, we aim to assess two main issues: (i) the ability of the exogenous components of fiscal behavior to explain private investment and (ii) the ability of the instruments to explain private investment through the proposed fiscal policy channels. Whereas the first concern is addressed by the significances and signs of estimated coefficients, the second issue is tackled with the Sargan OIR test. The null hypothesis of this test is the stance that the aid instruments explain private investment only through the fiscal policy channels. Therefore, a rejection of the null hypothesis is a rejection of the perspective that the foreign aid instruments do not explain private investment beyond the proposed mechanisms. We also employ a Hausman test to account for endogeneity and justify the choice of the 2SLS-IV estimation strategy. The null hypothesis of this test is the position that estimated coefficients by OLS are consistent and

efficient. Thus, failure to reject this null hypothesis does not justify the choice of the estimation strategy since it undermines the concern of endogeneity. In light of the problem statement and theoretical background, the Hausman test is a necessary but not a sufficient condition for the employment of the 2SLS-IV strategy. Therefore, even in the absence of endogeneity (failure to reject the null of the Hausman test), we still employ the IV procedure.

In Table 3 below, we report a summary of findings from Tables 4-5. While Table 4 is the baseline assessment with private investment, Table 5 is a robustness check with fixed capital formation. Modeling is restricted (Panel A) and unrestricted (Panel B) in both tables. While Tables 4-5 examine both the first and second concerns highlighted above, Table 3 is based on only the second concern. Accordingly, given the problem statement, the second issue is more relevant than the first because it is premised on evidence from the first concern. In other words, while addressing the first issue does not guarantee the second can be tackled, examining the second is feasible when the first has been confirmed. Therefore, the summary in Table 3 is based on the following information criteria, the : (i) estimated coefficient should be significant; (ii) adjusted coefficient of determination (R^2) should not be negative; (iii) Fisher statistics should be significant; (iv) null hypothesis of the Sargan OIR test for the validity of the foreign aid instruments should not be rejected and (v) Hausman test has an informational role and is not indispensible for the validity of the 2SLS-IV model specification.

From Table 3, the following broad conclusions could be established. (1) Foreign aid overwhelmingly increases private investment and gross capital formation through tax effort, which is consistent with theoretical underpinnings of and propositions in the study. (2) While the effect of foreign aid on the dependent variables through government expenditure is a bit mixed, the weight of available evidence on the second issue broadly supports its positive impacts on private investment and gross fixed capital formation. (3) It could be further inferred that while the 'tax effort effect' is consistent across fundamental characteristics of investment, the 'government spending impact' may change as one move from one fundamental characteristic to another. Hence, whereas the homogeneity on the tax effort mechanism strongly confirms our theoretical hypothesis, the heterogeneity of the government spending channel indicates that generalization of the findings with respect of the government expenditure mechanism should be treated with caution. (4) Our findings are more relevant for restricted than for unrestricted modeling. This is an indication that autonomous investment is not a very valid channel through

which foreign aid is instrumental in private investment. (5) Given the overwhelming presence of 'not applicable' (na)[11] and degree (°)[12] signs, it is difficult to establish significant asymmetries in various dimensions of common fundamental characteristics. Therefore, evidence of wealth-effect, legal-origin-effect…. landlocked-effect cannot be feasibly drawn. (6) But for a thin exception (conflict-affected countries), most of the significant control variables have the expected signs: 'voice and accountability' and corruption-control are logical incentives for private investors because they improve the climate of doing business.

[11] insignificant estimate or variable not included in model.
[12] °: negative coefficient of determination, significant Sargan OIR test (invalid instruments) or insignificant Fisher statistics.

Table 3: Summary of results

	Income Levels				Legal Origins		Religious Dom.		Regions		Resources		Stability		Landlocked(LL)		Africa
	UMI	LMI	MI	LI	English	French	Christ.	Islam	SSA	NA	Oil	Non-oil	Conflict	Non-co.	LL	Not LL	
Panel A: Specifications in Panel A of Table 3 (Restricted Private Investment Modeling)																	
Gov. Exp.	-	na	na	na	+	na	+	-°	+	-°	+°	+	-°	+	+	na	na
Tax Rev.	+	+°	+	+	+	+°	+	+°	+	+°	na	+	na	+	+	+	+
Panel B: Specifications in Panel B of Table 3 (Unrestricted Private Investment Modeling)																	
Gov. Exp.	na	na	na	na	na	na	na	na	na	na	+	na	na	na	na	na	na
Tax Rev.	na	na	na	na	+	na	na	na	na	+	+	na	+	na	+	na	na
Panel C: Specifications in Panel A of Table 4 (Restricted Fixed Capital Formation Modeling)																	
Gov. Exp.	-	na	na	na	+	-°	na	-	+	-°	+	+	-	+	+	na	na
Tax Rev.	+	+°	+	+	+	+°	+	+	+	+°	+	+	na	+	+	+°	+
Panel D: Specifications in Panel B of Table 4 (Unrestricted Fixed Capital Formation Modeling)																	
Gov. Exp.	na	na	na	na	na	na	na	na	na	na	+	na	na	na	na	na	na
Tax Rev.	na	+	na	na	+	na	na	+	na	+	+	na	+	na	na	na	na

Gov. Exp: Government Expenditure. Tax Rev: Tax Revenue. UMI: Upper Middle Income. LMI: Lower Middle Income. MI: Middle Income. LI: Low Income. English: English Common-law. French: French Civil-law. Christ: Christianity dominated countries. Islam: Islam dominated countries. SSA: Sub-Saharan Africa. NA: North Africa. Oil: Petroleum exporting countries. Non-oil: Countries with no significant exports in petroleum. Conflict: Countries with significant political instability. Non-co: Countries without significant political instability. Dom: Domination. na: insignificant estimate or variable not included in model. °: negative coefficient of determination, significant Sargan OIR test (invalid instruments) or insignificant Fisher statistics. +(-): positive (negative) effect.

Table 4: Baseline Assessment with Private Investment (HAC standard errors)

	Income Levels				Legal Origins		Religious Dom.		Regions		Resources		Stability		Landlocked (LL)		Africa
	UMI	LMI	MI	LI	English	French	Christ.	Islam	SSA	NA	Oil	Non-oil	Conflict	Non-co.	LL	Not LL	
Panel A: Restricted Modeling																	
Constant	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Gov. Exp.	**-0.60****	1.064	1.951	0.301	**0.475****	0.004	**1.062***	**-0.43****	**1.003***	**-1.32****	**0.385***	**0.894***	**-0.128****	**0.977***	**0.673*****	0.506	-0.310
	(0.016)	(0.325)	(0.270)	(0.446)	**(0.046)**	(0.983)	**(0.097)**	**(0.011)**	**(0.050)**	**(0.049)**	**(0.053)**	**(0.070)**	**(0.031)**	**(0.070)**	**(0.000)**	(0.354)	(0.862)
Tax Rev.	**0.66*****	**0.568****	**0.512***	**0.822*****	**0.52*****	**1.16*****	**0.567*****	**0.84*****	**0.55*****	**2.10*****	0.154	**0.58*****	0.066	**0.643*****	**0.504*****	**0.919*****	**0.475****
	(0.000)	**(0.017)**	**(0.071)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	(0.212)	**(0.000)**	(0.751)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.014)**
C. Control	4.383	6.888	---	---	-0.164	9.567	---	---	---	---	---	---	**-5.07*****	---	---	---	-18.134
	(0.752)	(0.492)			(0.972)	(0.103)							**(0.000)**				(0.369)
Voice & A.	---	---	**17.69****	---	---	---	2.710	-1.469	---	**22.60****	---	---	---	2.966	---	**14.728****	---
			(0.029)				(0.828)	(0.733)		**(0.013)**				(0.793)		**(0.041)**	
Hausman	**67.6*****	**18.37*****	**51.87*****	**19.88*****	**45.5*****	**17.9*****	**56.78*****	**35.0*****	**38.0*****	**57.5*****	0.035	**34.7*****	**110*****	**46.60*****	**10.58*****	**32.40*****	**84.39*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	(0.982)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.005)**	**(0.000)**	**(0.000)**
Sargan OIR	**0.425**	14.29***	**1.210**	**1.538**	**1.391**	6.74**	**1.035**	**1.354**	**3.768**	**0.294**	7.594*	**4.484**	**0.381**	**3.007**	**2.598**	**3.138**	**2.074**
	(0.808)	(0.000)	**(0.545)**	**(0.673)**	**(0.498)**	(0.034)	**(0.595)**	**(0.508)**	**(0.287)**	**(0.862)**	(0.055)	**(0.213)**	**(0.826)**	**(0.222)**	**(0.457)**	**(0.208)**	**(0.354)**
Adjusted R^2	0.215	0.203	0.110	0.032	0.083	0.251	0.073	-0.061	0.054	-0.074	0.878	0.073	-0.101	0.088	0.123	0.147	0.115
Chi-Square	---	---	---	**147*****	---	---	---		**91.7*****	---	**14391*****	**120*****	---	---	**113*****	---	---
Fisher	**152*****	**45.07*****	**23.73*****	----	**107*****	**40.7*****	**20.13*****	**34.2*****	---	**46.6*****	---	---	**2e^4*****	**26.06*****	---	**22.40*****	**16.75*****
Observations	34	51	87	77	72	72	111	35	155	26	8	176	13	140	57	103	
Panel B: Unrestricted Modeling																	
Constant	63.22	**21.83*****	**16.06****	12.925	**5.582****	**15.7*****	20.405	**11.6*****	12.843	**43.4*****	**7.414*****	13.340	**-25.1*****	13.340	-9.278	**17.29*****	14.294
	(0.595)	**(0.000)**	**(0.039)**	(0.207)	**(0.031)**	**(0.003)**	(0.184)	**(0.000)**	(0.433)	**(0.003)**	**(0.000)**	(0.335)	**(0.000)**	(0.335)	(0.408)	**(0.004)**	(0.372)
Gov. Exp.	-0.108	0.135	0.039	-0.028	0.179	-0.038	0.325	0.061	-0.105	---	**0.180*****	-0.078	0.104	-0.078	-0.020	0.103	-0.501
	(0.917)	(0.840)	(0.975)	(0.890)	(0.305)	(0.874)	(0.570)	(0.783)	(0.912)		**(0.000)**	(0.917)	(0.186)	(0.917)	(0.933)	(0.771)	(0.766)
Tax Rev.	-1.614	0.056	0.219	0.092	**0.34*****	0.371	-0.212	0.140	-0.014	**0.61*****	**0.092*****	0.027	**0.75*****	0.027	**0.66*****	0.131	0.005
	(0.718)	(0.459)	(0.361)	(0.873)	**(0.000)**	(0.200)	(0.714)	(0.565)	(0.982)	**(0.000)**	**(0.000)**	(0.959)	**(0.000)**	(0.959)	**(0.000)**	(0.680)	(0.991)
C. Control	-7.935	**20.55*****	---	---	-1.549	**13.8*****	---	-2.309	-6.986	---	---	-4.247	**-18.1*****	-4.247	-17.347	---	-7.932
	(0.578)	**(0.000)**			(0.496)	**(0.005)**		(0.729)	(0.459)			(0.637)	**(0.000)**	(0.637)	(0.166)		(0.643)
Voice & A.	---	---	**15.51****	2.062	---	---	6.749	---	---	**44.6*****	---	---	---	---	---	**13.49*****	---
			(0.014)	(0.526)			(0.532)			**(0.009)**						**(0.000)**	
Hausman	**33.5*****	**6.758***	**27.76*****	0.988	4.854	2.948	**9.767****	2.007	**7.002***	**15.8*****	**4.719***	4.359	**90.40*****	4.359	**9.713****	**12.18*****	4.254
	(0.000)	**(0.080)**	**(0.000)**	(0.804)	(0.182)	(0.399)	**(0.020)**	(0.570)	**(0.071)**	**(0.000)**	**(0.094)**	(0.225)	**(0.000)**	(0.225)	**(0.021)**	**(0.000)**	(0.235)
Sargan OIR	**0.013**	**1.033**	**1.110**	**1.134**	**1.641**	**1.132**	**1.365**	**1.240**	2.725*	**1.076**	**1.514**	3.027*	**0.004**	3.027*	**0.773**	**0.160**	**1.326**
	(0.907)	**(0.309)**	**(0.292)**	**(0.286)**	**(0.200)**	**(0.287)**	**(0.242)**	**(0.265)**	(0.098)	**(0.583)**	**(0.468)**	(0.081)	**(0.945)**	(0.081)	**(0.379)**	**(0.688)**	**(0.249)**
Adjusted R^2	-0.065	0.494	0.109	-0.024	0.052	0.273	0.029	-0.006	0.181	0.150	0.818	0.150	0.395	0.150	0.009	0.127	0.138
Chi-Square	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fisher	**14.0*****	**42.97*****	**2.409***	0.525	**7.92*****	**4.25*****	0.450	0.768	0.421	**31.9*****	**155*****	0.176	**72.74*****	0.176	**20.12*****	**4.565*****	0.090
Observations	34	51	87	59	72	72	111	35	118	26	8	138	13	138	42	103	144
Instruments	Constant, Total NODA, NODADAC, NODAMD, Grants																

***, **,*: significance levels of 1%, 5% and 10% respectively. P-values in parentheses. OIR: Over-identifying Restrictions test. UMI: Upper Middle Income. LMI: Lower Middle Income. MI: Middle Income. LI: Low Income. English: English Common-law. French: French Civil-law. Christ: Christianity dominated countries. Islam: Islam dominated countries. SSA: Sub-Saharan Africa. NA: North Africa. Oil: Petroleum exporting countries. Non-oil: Countries with no

significant exports in petroleum. Conflict: Countries with significant political instability. Non-co: Countries without significant political instability. Gov. Exp: Government Expenditure. Voice & A: Voice & Accountability. Tax Rev: Tax Revenues. HAC: Heteroscedasticity and Autocorrelation Consistent. NODA: Net Official Development Assistance. DAC: Development Assistance Committee. MD: Multilateral Donors. NODADAC: NODA from DAC countries. NODAMD: NODA from Multilateral Donors. The relevance of bold values that depict the information criteria is threefold. 1) Rejection of the null hypothesis of the Hausman test for the presence of endogeneity. 2) The significance of estimated coefficients and the Fisher statistics. 3) The failure to reject the null hypothesis of the Sargan OIR test for instrument validity.

Table 5: Robust Assessment with Fixed Capital Formation (HAC standard errors)

	Income Levels				Legal Origins		Religious Dom.		Regions		Resources		Stability		Landlocked (LL)		Africa
	UMI	LMI	MI	LI	English	French	Christ.	Islam	SSA	NA	Oil	Non-oil	Conflict	Non-co.	LL	Not LL	
Panel A: Restricted Modeling																	
Constant	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Gov. Exp.	**-0.59***	1.366	2.328	0.957	**0.541****	**-0.267***	1.301	**-0.4*****	**1.833****	**-1.1*****	**0.330***	**1.589***	**-0.112****	**1.574****	**1.388*****	0.460	0.0349
	(0.099)	(0.229)	(0.293)	(0.265)	**(0.022)**	**(0.086)**	(0.239)	**(0.000)**	**(0.031)**	**(0.009)**	**(0.090)**	**(0.036)**	**(0.016)**	**(0.025)**	**(0.000)**	(0.504)	(0.987)
Tax Rev.	**0.87*****	**0.819*****	**0.775****	**1.10*****	**0.75*****	**1.29*****	**0.69*****	**1.42*****	**0.72*****	**1.75*****	**0.47*****	**0.808*****	0.255	**0.784***	**0.69*****	**1.291*****	**0.662*****
	(0.000)	**(0.005)**	**(0.026)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	(0.166)	**(0.050)**	**(0.000)**	**(0.000)**	**(0.000)**
C. Control	4.956	8.550	---	---	-2.740	-2.196	---	---	---	---	---	---	**-5.03*****	---	---	---	-23.717
	(0.000)	(0.555)			(0.601)	(0.885)							**(0.000)**				(0.351)
Voice & A.	---	---	**18.691****	---	---	---	-8.026	3.475	---	7.467	---	---	---	-1.407	---	**16.26****	---
			(0.045)				(0.719)	(0.641)		(0.103)				(0.941)		**(0.047)**	
Hausman	**58.4*****	**31.97*****	**59.21*****	**48.28*****	**71.9*****	**25.8*****	**84.99*****	**70.5*****	**83.8*****	**127*****	1.153	**89.88*****	**115*****	**79.14*****	**32.77*****	**40.55*****	**186*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	(0.561)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Sargan OIR	**0.627**	15.98***	**1.504**	**1.123**	**0.506**	25.0***	**3.389**	**3.542**	**3.740**	**0.162**	**3.321**	**4.755**	**0.243**	**4.413**	**3.909**	5.038*	**2.831**
	(0.730)	(0.000)	**(0.471)**	**(0.771)**	**(0.776)**	(0.000)	**(0.183)**	**(0.170)**	**(0.290)**	**(0.921)**	**(0.344)**	**(0.190)**	**(0.885)**	**(0.110)**	**(0.271)**	(0.080)	**(0.242)**
Adjusted R^2	0.075	0.272	0.068	0.105	0.165	0.100	0.014	0.305	0.050	-0.052	0.872	0.081	-0.135	0.064	0.070	0.182	0.087
Chi-Square	---	---	---	**104*****	---	---	---	---	---	---	**6e^4*****	150***	---	---	**162*****	**28.77*****	---
Fisher	**485*****	**29.92*****	**25.83*****	---	**133*****	**56.5*****	**36.95*****	**273*****	**91.3*****	**276*****	---	---	**5e^4*****	**51.07*****	---	**40.55*****	**25.05*****
Observations	34	57	93	80	72	81	111	44	158	32	8	186	13	149	60	109	153
Panel B: Unrestricted Modeling																	
Constant	62.370	**26.3*****	**21.89****	3.831	**6.996****	**28.2*****	42.601	**13.7*****	23.449	**38.4*****	**7.11*****	21.828	**-19.4*****	21.828	11.966	**24.76*****	23.127
	(0.405)	**(0.000)**	**(0.017)**	(0.915)	**(0.026)**	**(0.000)**	(0.453)	**(0.000)**	(0.185)	**(0.002)**	**(0.000)**	(0.145)	**(0.000)**	(0.145)	(0.244)	**(0.000)**	(0.157)
Gov. Exp.	-0.106	-0.099	-0.358	0.555	0.170	-0.332	-0.237	-0.111	0.318	---	**0.13*****	0.146	0.067	0.146	0.033	-0.141	-0.217
	(0.870)	(0.870)	(0.785)	(0.191)	(0.396)	(0.279)	(0.909)	(0.175)	(0.795)		**(0.000)**	(0.889)	(0.314)	(0.889)	(0.818)	(0.717)	(0.902)
Tax Rev.	-1.375	**0.235***	0.381	0.747	**0.52*****	0.088	-0.936	**0.48*****	-0.235	**0.54*****	**0.41*****	-0.092	**0.79*****	-0.092	0.363	0.153	-0.125
	(0.631)	**(0.074)**	(0.166)	(0.723)	**(0.000)**	(0.794)	(0.667)	**(0.000)**	(0.744)	**(0.000)**	**(0.000)**	(0.878)	**(0.000)**	(0.878)	(0.196)	(0.628)	(0.820)
C. Control	-7.194	**27.1*****	---	---	-4.476	**15.187***	---	-0.764	-2.976	----	---	-3.778	**-15.1*****	-3.778	-5.617	---	-6.447
	(0.676)	**(0.000)**			(0.107)	**(0.067)**		(0.828)	(0.744)			(0.687)	**(0.000)**	(0.687)	(0.536)		(0.645)
Voice & A.	---	---	**16.05****	-6.247	---	---	0.406	---	---	**27.9****	---	---	---	---	---	**13.857****	---
			(0.015)	(0.624)			(0.987)			**(0.036)**						**(0.017)**	
Hausman	**27.0*****	**18.34*****	**36.09*****	5.545	**8.400****	**12.6*****	**24.59*****	4.334	**24.9*****	**23.1*****	0.043	**17.1*****	**64.8*****	**17.16*****	2.364	**22.79*****	**18.03*****
	(0.000)	**(0.000)**	**(0.000)**	(0.135)	**(0.038)**	**(0.000)**	**(0.000)**	(0.227)	**(0.000)**	**(0.000)**	(0.978)	**(0.000)**	**(0.000)**	**(0.000)**	(0.500)	**(0.000)**	**(0.000)**
Sargan OIR	**0.265**	**0.170**	**1.209**	**1.451**	**0.025**	**2.604**	**1.679**	**0.054**	**2.692**	**0.328**	**3.532**	3.005*	**0.017**	**3.005**	**0.012**	**0.183**	**1.796**
	(0.606)	**(0.680)**	**(0.271)**	**(0.228)**	**(0.874)**	**(0.106)**	**(0.194)**	**(0.815)**	**(0.100)**	**(0.848)**	**(0.171)**	(0.082)	**(0.896)**	**(0.082)**	**(0.909)**	**(0.668)**	**(0.180)**
Adjusted R^2	-0.099	0.573	0.074	0.002	0.132	0.289	0.146	0.319	0.045	0.370	0.937	0.127	0.310	0.127	0.132	0.108	0.248
Chi-Square	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fisher	1.096	**28.41*****	**2.535***	0.843	**98.6*****	2.082	0.495	**6.80*****	0.792	**57.6*****	**463*****	0.373	**112*****	0.373	1.600	**2.754****	0.266
Observations	34	57	93	62	72	81	111	44	121	32	8	147	13	147	45	109	153
Instruments	Constant, Total NODA, NODADAC, NODAMD, Grants																

***, **,*: significance levels of 1%, 5% and 10% respectively. P-values in parentheses. OIR: Over-identifying Restrictions test. UMI: Upper Middle Income. LMI: Lower Middle Income. MI: Middle Income. LI: Low Income. English: English Common-law. French: French Civil-law. Christ: Christianity dominated countries. Islam: Islam dominated countries. SSA: Sub-Saharan Africa. NA: North Africa. Oil: Petroleum exporting countries. Non-oil: Countries with no significant exports in petroleum. Conflict: Countries with significant political instability. Non-co: Countries without significant political instability. Gov. Exp: Government Expenditure. Voice & A: Voice & Accountability. Tax Rev: Tax Revenues. HAC: Heteroscedasticity and Autocorrelation Consistent. NODA: Net Official Development Assistance. DAC: Development Assistance Committee. MD: Multilateral Donors. NODADAC: NODA from DAC countries. NODAMD: NODA from Multilateral Donors. The relevance of bold values that depict the information criteria is threefold. 1) Rejection of the null hypothesis of the Hausman test for the presence of endogeneity. 2) The significance of estimated coefficients and the Fisher statistics. 3) The failure to reject the null hypothesis of the Sargan OIR test for instrument validity.

4.2 Discussion of results, policy implications and caveats

4.2.1 Discussion of results

From the weight of available empirical evidence (summarized in Table 3), we have found an overwhelming homogenous effect of tax effort on investment. Since the results are consistent with the proposed theory; the explanation for the positive nexus conditional on foreign aid has already been substantially covered in Section 2. Hence, the instrumentality or relevance of foreign aid in the positive nexus could be explained by the fact that development assistance reduces the tax effort of the government which provides additional incentives for private investment (either in terms of reinvested profits or improvements in the investment climate). The explanation extends to the formation of fixed capital (Table 5). Another explanation to the positive relationship is that Western donor agencies could require tax institutions to be: (i) more accountable and (ii) not corrupt. Hence, the previously siphoned funds by corrupt officials are transferred to the private sector. A third elucidation to the positive nexus could be traceable to a lower composition of loans in the development assistance portfolio. This is especially the case with countries under the Highly Indebted Poor Countries (HIPC) initiative.

We have also found that the findings for the government expenditure channel are heterogeneous or not consistently positive across fundamental characteristics of private investment. The key idea to understanding this heterogeneity is that the degree by which corrupt officials chose to spend money on goods whose true value is hard to identify, may differ across fundamental characteristics. Hence, the negative nexus could be traceable to funds that are used for those expenditures that provide more lucrative opportunities for bribery (Shleifer & Vishny, 1993). Accordingly, expenditure on military and high technology goods are some examples by which corrupt officials are provided with lucrative mismanagement opportunities. Corruption and military spending have been found to be closely linked, especially in military aircraft (Hines, 1995)[13]. On the other hand, the positive nexus could be attributed to expenditures that do not seem to provide any opportunities at all for corrupt officials and ultimately create favorable conditions for private investments. Expenditure in education is a case in point. For example, it may be difficult for a government official to collect bribes for the appointment of unqualified persons to teaching positions. This explanation could be extended to health, although it is also

[13] It is therefore not surprising that the worst post-apartheid corruption scandal that has embroiled the current president (Jacob Zuma) has been linked to the purchase of military equipment. In the same line of thinking (from a high technology standpoint), the 'Albatross' jet affair that has rocked the Cameroonian institutional landscape has seen the arrest of many high profile politicians over the spectacular disappearances of $ 25 million destined for the purchase of a presidential plane.

disputable that sophisticated hospital equipment could give rise to opportunities of corruption[14]. This explanation confirms findings that corruption is linked to low spending on education and health in developing countries (Mauro, 1998; De la Croix & Delavallade, 2007).

Since, the negative nexus of government expenditure is contrary to the proposed theoretical background, it is relevant to devote space to explaining the discussion in the preceding paragraph to elaborate detail, with hard stylized facts. It is worthwhile noting that the 'project approach' to foreign aid has underestimated the incentive problems with aid delivery. Hence, education and health ministries in recipient countries must be motivated to get school inputs and medicines respectively to citizens. Moreover, donor bureaucracies themselves must have the incentives to make sophisticated infrastructural projects successful.

Firstly, with respect to education, whereas enrollments have expanded rapidly, the quality of education has been hampered by missing inputs like textbooks and other school materials, corruption in 'education bureaucracies' and weak incentives for teachers (Filmer & Pritchett, 1997).

Secondly, from a health standpoint, some of the initial progress in Africa has slowed possibly due to the siphoning of funds (Easterly, 2005, p. 8). Studies in Cameroon, Guinea, Tanzania and Uganda estimate that 30 to 70% of government drugs disappear before they get to patients and complicated health issues cannot be solved in the absence of routine methods (Filmer et al., 2000; Prichett & Woolcock, 2004).

Thirdly, with regard to the bureaucracy of sophisticated projects, there have been some alarming dysfunctional signs. For example, donors have spent over $2 billion over the past 20 years on roads in Tanzania, but the roads have not improved. The principal output has been aid bureaucracy because about 2400 reports have been provided by 1000 donor missions and government experts each year (Asongu & Jellal, 2014). The situation in Tanzania should not be generalized because 'aid conditionality' is also a relevant issue. Accordingly, aid institutions could request complex road-building specifications based on models in developed countries. Hence, the underlying issue is also traceable to standards and procedural requirements.

The three points above could be summarized with another example from Swaziland. It is a good aid candidate that substantially relies on foreign aid, allocates about 55% of its public

[14] To further illustrate this point, a recent budget scandal in South Africa has resulted from the government's spending of R4 billion on entertainments, travel allowance and catering in 2011 while under-spending in health initiatives, which has left about 47% of metropolitan South Africans dissatisfied.

spending to the wage bill, loses nearly double the annual social service budget to corruption, sells food aid and deposits the money in foreign bank accounts…etc. The above points have one common denominator: foreign aid channeled through dubious government expenditure mechanisms (that serve only the interests of corrupt officials) may not provide the right incentives for the growth of private investment and fixed capital formation needed for economic prosperity in recipient countries.

4.2.2 Stimulating private investment with foreign aid through constraints on fiscal behavior

The main policy implication arising from this study is that donor agencies can condition aid to improve the fiscal system and management of aid-related government expenditure in order to facilitate the inflow of private investment and accrual of fixed capital needed for economic growth (Asongu & Jellal, 2014). Hence, we shall briefly discuss 'revenue side' and 'expenditure side' constraints on which development assistance can be conditioned in order to improve the fiscal behavior of recipient countries.

On the revenue dimension of fiscal management, the following constraints are worth noting. Firstly, a tax administration reform should embody the implementation of important anti-corruption measures within the tax administrations, which include: (i) updating and modernizing tax agency procedures; (ii) restructuring of internal organization based on function (identification, assessment, billing…etc) instead of by 'type of tax'; (iii) reducing the number of clearances that are needed from taxpayers to complete compliance processes (i.e., the number of certifications, signatures, forms…etc); (iv) limiting the discretionary power of tax officials; (v) tax liability self-assessment and (vi) exploring the use of electronic filling. Secondly, semi-autonomous revenue authorities are also vital. In essence, when properly implemented, this enclave dimension to tax administration reform will augment the possibility of de-politicizing tax officials, increase wage levels for tax officials and strengthen internal monitoring mechanisms. Consistent with the literature (Talercia, 2003; Bird, 2004; Martinez-Vazquez et al., 2006), these semi-autonomous authorities have already been introduced in countries as diverse as Bolivia, Malaysia, New Zealand, Singapore, Guatemala, Ghana, Guyana, Kenya, Malawi, Mexico, Peru, Rwanda, South Africa, Tanzania, Uganda, Venezuela and Zambia. Thirdly, reforms of the tax system can reduce lucrative opportunities for tax officials. Simplification of the tax system by reducing the number of discretionary tax incentives, deductions and exemptions, is also worthwhile.

From the supply perspective of fiscal management, the following constraints are advisable. Firstly, a modern treasury system should be installed in a bid to augment transparency in cash management and disbursement of resources for items authorized in the budget, needed for consistency between formulation and execution. It is also relevant for the treasury to operate separately from spending agencies and the discretionary power of treasury officials can be reduced by separating departments responsible for each budget execution stage. Secondly, financial management reforms should be requested by aid agencies in order to solidify basic procedures on budget accounting, auditing and reporting. In essence, the public expenditure management should make use of the integrated financial management systems and information technologies. Thirdly, a procurement system reform should be required to facilitate the establishment of standardized procurement processes, ensure maximum exposure and competition of foreign and national bidders as well as satisfy international procurement standards. On account of the fact that procurement systems can be particularly useful if combined with the necessary administrative capacity, independent audition of the procurement procedures should be conducted regularly and reviewed by parliament. Fourthly, a public expenditure tracking system should be developed to identify leaks in the budget implementation stage. Fifthly, civil service reform should be oriented towards key measures that mitigate the probabilities of patronage and corruption such as: reduction of turnover rates, merit-based recruitment, professionalization and de-politicization of public servants. Sixthly, a comprehensive coverage of the budget should minimize extra-budgetary and off-budget accounts in order to maximize transparency in the use of public resources. Seventhly, strategies that emphasize political accountability and political representation are necessary since broad political contestability decreases the opportunities of state capture. It is also worthwhile for ordinary citizens to have access to relevant information concerning public spending, including parliamentary debates on the budget formulation.

In addition to imposing constraints to improve the fiscal behavior of aid-recipient countries, from the revenue and expenditure sides, donors should also require an intergovernmental fiscal structure that favors the decentralization of spending responsibilities and revenue sources. This will provide increased accountability to citizens and provide local governments with greater autonomy, which can be instrumental in mitigating corruption in aid-funded projects.

It is interesting to note that for the most part, tax reforms have been weak and belated in most African countries (in spite of aid conditionalities), essentially because citizens are less

willing to comply with their tax obligations in the absence of political accountability. This is the case with countries on the continent because the Somaliland hypothesis provided by Eubank (2012) has been empirically verified by Asongu (2015b) in 53 African countries with data of the same periodicity as in the present line of inquiry. It follows that in the absence of foreign aid; the dependence of recipients' governments on local tax income provides the leverage for enhanced political governance. The implication for our results is that foreign aid decreases tax burden and the forgone tax income can be reinvested into the economy by the private sector. This is essentially because in the absence of foreign aid, governments are more willing to improve political accountability in exchange for more tax income, since citizens are more willing to pay taxes only in exchange for greater political accountability.

In light of the above, expenditure reforms in Africa may have been working exclusively at headquarters, but not downwards in the value chain because of, inter alia: corruption in the allocation of projects and mismanagement in the implementation of corresponding projects. This has led to suggestions for more fiscal decentralization in policy circles (e.g. the cases of Ethiopia, South Sudan and Sudan). Unfortunately, foreign aid conditional on fiscal decentralization is expectedly not a 'welcomed policy' by the political elites that are benefiting from corrupt and mismanagement practices linked to government centralization, in spite of the documented benefits of such policy reforms. For instance, Teko and Nkote (2014) have recently shown with the Ugandan experience that with effective fiscal decentralization, aid flows are better managed because capacity building is enhanced.

It is relevant to briefly engage Rwanda as an example of good recipient countries where foreign aid has been spent productively. This country has particularly done well because of its specific development model that is based on substantial decentralization. Accordingly, Rwanda is widely recognized as a success story in aid effectiveness and economic development partly because of its good leadership and division of labour in the implementation of aid programs. These are consistent with: (i) decentralization and enhanced harmonization and (ii) alignment of national priorities with donor conditionalities. As documented by Abbott and Rwirahira (2012), the country's development strategy has resulted in: (i) enhanced transformation and economic growth, (ii) reduced aid dependency and (iii) boosted pro-poor growth.

Before we conclude, it is important to emphasize that the findings are particularly relevant to African countries in the post-2015 development agenda because the April 2015 World Bank report on MDGs extreme poverty targets has revealed that poverty has been decreasing in all regions of the world with the exception of sub-Saharan Africa, where 45% of

countries in the sub-region are substantially off-track from the target (World Bank, 2015). In essence private investment is a good source of employment and growth for poverty mitigation.

5. Conclusion

The paper has provided theoretical and empirical justifications for the instrumentality of foreign aid in stimulating private investment and fixed capital formation through fiscal policy mechanisms. We have proposed an endogenous growth theory based on an extension of Barro (1990) by postulating that the positive effect of aid mitigates the burden of the taxation system on the private sector of recipient countries. The empirical validity is based on data from 53 African countries for the period 1996-2010. While the findings on the tax effort channel are overwhelmingly consistent with theory across specifications and fundamental characteristics, those of the government expenditure channel are a little heterogeneous but broadly in line with the theoretical postulations. Justifications for the slight heterogeneity and policy implications have been discussed.

We devote some space to caveats and future research directions. In light of theoretical underpinnings of the paper, the study has not taken two major elements into account. Firstly, it would be interesting to decompose government expenditure into its constituent elements in order to understand which components favor private investment activities more. This is essentially because corrupt officials would always device mechanisms by which to channel 'aid funds' to those expenditures that provide more lucrative opportunities for bribery and mismanagement. Secondly, the distinction between concessional loans and grants in the measurement of development assistance will enable a better understanding of the instrumentality of foreign aid in the investment-'fiscal policy' nexuses. For instance, the type of foreign aid that augments/reduces the tax effort related to private investments. Hence, interesting future research directions could include the incorporation of above caveats in order to provide policy makers with more specific findings. Moreover, future inquiries devoted to assessing investment volumes and policies within the frameworks of subsidies and tax privileges, would also enrich the extant literature.

Moreover, in cases of bad recipient countries, it would be interesting to document what donors have done or are doing in terms of 'aid conditionality'. Elucidating the political economy of these countries may be an important direction towards understanding how: (i) to deal with kleptokracies in Africa and (ii) such bad cases fit into the 'aid conditionality approach' based on fiscal behavior.

Appendices

Appendix 1: Summary Statistics

	Variables	Mean	S.D	Min.	Max.	Observations
Investment	Private Investment	12.979	9.400	-2.437	112.35	658
	Fixed Capital Formation	19.708	10.715	-23.76	113.58	706
Fiscal Behaviour	Government Expenditure	4.392	12.908	-57.815	90.544	468
	Tax Revenues	17.693	10.096	0.116	61.583	262
Control variables	Corruption Control Index	-0.607	0.623	-2.495	1.086	622
	Voice & Accountability	-0.674	0.734	-2.174	1.047	636
Instrumental variables	Total NODA	10.811	12.774	-0.251	148.30	704
	NODA from DAC countries	6.244	8.072	-0.679	97.236	704
	NODA from Multilateral Donors	4.481	5.512	-1.985	64.097	704
	Grants	0.069	0.115	0.000	1.477	773
Categorization	Upper Middle Income	0.188	0.391	0.000	1.000	795
	Lower Middle Income	0.226	0.418	0.000	1.000	795
	Middle Income	0.415	0.493	0.000	1.000	795
	Low Income	0.584	0.493	0.000	1.000	795
	English	0.377	0.485	0.000	1.000	795
	French	0.622	0.485	0.000	1.000	795
	Christianity	0.622	0.485	0.000	1.000	795
	Islam	0.377	0.485	0.000	1.000	795
	Sub-Saharan Africa	0.886	0.317	0.000	1.000	795
	North Africa	0.113	0.317	0.000	1.000	795
	Oil	0.188	0.391	0.000	1.000	795
	Non-oil	0.811	0.391	0.000	1.000	795
	Conflict	0.226	0.418	0.000	1.000	795
	Non-conflict	0.773	0.418	0.000	1.000	795
	Landlocked	0.283	0.450	0.000	1.000	795
	Not Landlocked	0.716	0.450	0.000	1.000	795

S.D: Standard Deviation. Min: Minimum. Max: Maximum.

Appendix 2: Correlation Analysis

Fiscal Behavior		Control variables		Foreign Aid and Grants				Investment		
Gov. Ex	Tax rev	CC	V&A	T.NODA	NODADAC	NODAMD	Grants	Priv Ivt	GFCF	
1.000	0.098	0.082	0.012	0.039	0.038	0.021	0.036	0.054	0.111	Gov. Ex
	1.000	0.508	0.317	-0.309	-0.304	-0.277	-0.290	0.448	0.551	Tax rev
		1.000	0.665	-0.146	-0.148	-0.123	-0.117	0.151	0.330	CC
			1.000	-0.0009	0.002	-0.002	0.018	0.153	0.212	V& A
				1.000	0.995	0.900	0.808	-0.222	-0.084	T. NODA
					1.000	0.733	0.780	-0.181	-0.070	NODADAC
						1.000	0.716	-0.240	-0.097	NODAMD
							1.000	-0.174	-0.091	Grants
								1.000	0.895	Priv Ivt
									1.000	GFCF

Gov. Ex: Government Expenditure. Tax rev: Tax revenues. CC: Corruption Control. V& A: Voice & Accountability. NODA: Net Official Development Assistance. DAC: Development Assistance Committee. MD: Multilateral Donors. T.NODA: Total NODA. NODADAC: NODA from DAC countries. NODAMD: NODA from Multilateral Donors. Piv Invt: Private Investment. GFCF: Gross Fixed Capital Formation.

Appendix 3: Categorization of Countries

Category	Panels	Countries	Num
Income Levels	Upper Middle Income	Algeria, Botswana, Equatorial Guinea, Gabon, Libya, Mauritius, Namibia, Sao Tome & Principe, Seychelles, South Africa.	10
	Lower Middle Income	Angola, Cameroon, Cape Verde, Côte d'Ivoire, Egypt, Lesotho, Morocco, Nigeria, Senegal, Sudan, Swaziland, Tunisia.	12
	Middle Income	Algeria, Angola, Botswana, Cameroon, Cape Verde, Côte d'Ivoire, Egypt, Equatorial Guinea, Gabon, Lesotho, Libya, Mauritius, Morocco, Namibia, Nigeria, Sao Tome & Principe, Senegal, Seychelles, South Africa, Sudan, Swaziland, Tunisia.	22
	Low Income	Benin, Burkina Faso, Burundi, Central African Republic, Chad, Comoros, Congo Democratic Republic, Congo Republic, Djibouti, Eritrea, Ethiopia, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Sierra Leone, Somalia, Tanzania, Togo, Uganda, Zambia, Zimbabwe.	31
Legal Origins	English Common-law	Botswana, The Gambia, Ghana, Kenya, Lesotho, Liberia, Malawi, Mauritius, Namibia, Nigeria, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe.	20
	French Civil-law	Algeria, Angola, Benin, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo Democratic Republic, Congo Republic, Côte d'Ivoire, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Guinea, Guinea-Bissau, Libya, Madagascar, Mali, Mauritania, Morocco, Mozambique, Niger, Rwanda, Sao Tomé & Principe, Senegal, Togo, Tunisia.	33
Religious Domination	Christianity	Angola, Benin, Botswana, Burundi, Cameroon, Cape Verde, Central African Republic, Congo Democratic Republic, Congo Republic, Côte d'Ivoire, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Ghana, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Rwanda, Sao Tomé & Principe, Seychelles, South Africa, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe.	33
	Islam	Algeria, Burkina Faso, Chad, Comoros, Djibouti, Egypt, The Gambia, Guinea, Guinea-Bissau, Libya, Mali, Mauritania, Morocco, Niger, Nigeria, Senegal, Sierra Leone, Somalia, Sudan, Tunisia.	20
Regions	Sub-Saharan Africa	Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Chad, Central African Republic, Comoros, Congo Democratic Republic, Congo Republic, Côte d'Ivoire, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritius, Mozambique, Namibia, Niger, Nigeria, Senegal, Sierra Leone, Somalia, Sudan, Rwanda, Sao Tomé & Principe, Seychelles, South Africa, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe.	47
	North Africa	Algeria, Egypt, Libya, Mauritania, Morocco, Tunisia.	6
Resources	Petroleum Exporting	Algeria, Angola, Cameroon, Chad, Congo Republic, Equatorial Guinea, Gabon, Libya, Nigeria, Sudan.	10
	Non-Petroleum Exporting	Benin, Botswana, Burkina Faso, Burundi, Cape Verde, Central African Republic, Comoros, Congo Democratic Republic, Côte d'Ivoire, Djibouti, Eritrea, Ethiopia, Egypt, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Senegal, Sierra Leone, Somalia, Rwanda, Sao Tomé & Principe, Seychelles, South Africa, Swaziland, Tanzania, Togo, Tunisia, Uganda, Zambia, Zimbabwe.	43

Stability	Conflict	Angola, Burundi, Chad, Central African Republic, Congo Democratic Republic, Côte d'Ivoire, Liberia, Nigeria, Sierra Leone, Somalia, Sudan, Zimbabwe.	12
	Non-Conflict	Algeria, Benin, Botswana, Burkina Faso, Cameroon, Cape Verde, Comoros, Congo Republic, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Senegal, Rwanda, Sao Tomé & Principe, Seychelles, South Africa, Swaziland, Tanzania, Togo, Tunisia, Uganda, Zambia.	41
Openness to Sea	Landlocked	Botswana, Burkina Faso, Burundi, Chad, Central African Republic, Ethiopia, Lesotho, Malawi, Mali, Niger, Rwanda, Swaziland, Uganda, Zambia, Zimbabwe	15
	Not landlocked	Algeria, Angola, Benin, Cameroon, Cape Verde, Comoros, Congo Democratic Republic, Congo Republic, Côte d'Ivoire, Djibouti, Egypt, Equatorial Guinea, Eritrea, Gabon, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Libya, Madagascar, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Nigeria, Senegal, Sierra Leone, Somalia, Sudan, Sao Tomé & Principe, Seychelles, South Africa, Tanzania, Togo, Tunisia.	38

Num: Number of cross sections (countries)

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