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Fighting terrorism in Africa: complementarity between inclusive development, military expenditure and political stability [1]

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Fighting terrorism in Africa: complementarity between inclusive development, military expenditure and political stability

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Abstract

This study examines complementarities between inclusive development, military expenditure and political stability in the fight against terrorism in 53 African countries for the period 1998-2012. Hence the policy variables employed in the study are inclusive development, military expenditure and political stability. The empirical evidence is based on Generalised Method of Moments (GMM) with forward orthogonal deviations. The paper reports three main findings. Firstly, military expenditure and inclusive development are substitutes and not complements. Secondly, it is more relevant to use political stability as a complement of inclusive development than to use inclusive development as a complement of political stability. Thirdly, it can be broadly established that military expenditure and political stability are complementary. In the light of the sequencing, complementarity and substitutability, when the three policy variables are viewed within the same framework, it is more feasible to first pursue political stability and then complement it with military expenditure and inclusive development.

JEL Classification: C52; D74; F42; O16; O38
Keywords: Terrorism; Inclusive development; Political stability; Military expenditure; Africa

1. Introduction

A number of reasons motivate this study on complementarities between inclusive development, military expenditure and political stability in the fight against terrorism in Africa, namely: growing levels of terrorism in Africa; the tragedy of poverty in the continent; debates revolving around the impact of military expenditure on terrorism; controversies on the relationship between terrorism and political governance; debates surrounding the effect of 'poverty and human development' on terrorism and shortcomings in the literature. The motivating factors are discussed in detail below.

Terrorism has been increasing in Africa due to ethnic and tribal tensions, state failures, endemic corruption and religious fundamentalism (Fazel, 2013; Alfa-Wali et al., 2015; Asongu et al., 2017). When compared to the Middle East, the continent is not receiving the scholarly attention it deserves (Clavarino, 2014). Some of the notable examples of terrorist organisations that have been affecting livelihoods on the continent include: al-Qaeda in the Islamic Maghreb, al-Shabab in Somalia and the Boko Haram in Nigeria. According to a recent publication by the Global Terrorism Index (GTI, 2015), in 2014 the Boko Haram of Nigeria was the deadliest terrorist movement causing 6,644 deaths compared to the Islamic State of Iraq and Levant (ISIL) which caused 6,073 deaths. Such conflicts have contributed substantially to slowing the path to meeting the Millennium Development Goals (MDGs) (Stewart, 2003).

According to a World Bank (2015) report on achievement of MDGs' extreme poverty reduction targets, extreme poverty has been decreasing in all regions of the world with the exception of Africa where about 45% of the countries in Sub-Saharan Africa are considerably off-track from the MDGs extreme poverty reduction target (Tchamyou, 2019, 2020). This poverty co-exists with more than twenty years of growth resurgence in the continent that commenced in the mid 1990s (see Fosu, 2015a, p. 44) and questions the overly optimistic narrative of 'Africa rising' (Leautier, 2012; Pinkivskiy & Sala-i-Martin, 2014).

This inquiry interrogates whether inclusive development mitigates terrorism by examining whether non-inclusive development experienced by the sampled countries over the past decade is a fundamental cause of terrorism[2]. This position complements a recent stream of

[2] In accordance with Asongu et al. (2015), inclusive development is measured with the inequality adjusted human development index (IHDI). The IHDI is the national average of achievements in three main domains, namely: (i) decent standards of living; (ii) health and long life and (iii) knowledge. Apart from accounting for average gains in health, education and wealth, the IHDI also accounts for the distribution of the achievements among the population by controlling for mean values of each domain with respect to inequality.

literature that is questioning World Bank claims about Africa's growth resurgence by focussing on the non-inclusive character of Africa's development experience, and arguing, therefore, that a paradigm shift to 'soft economics' (or human development) is necessary to understand and confront the continent's poverty tragedy (Kuada, 2015).

Conflicting views exist on the effect of military spending on terrorism, notably because some consensus has been established in the literature on the counter-effects of military expenditure on terrorism (Feridun & Shahbaz, 2010, p.195). This consensus argues that counterterrorism policies provide more fuel to terrorist attacks, instead of mitigating and preventing them (Sandler, 2005). Moreover, such counterterrorism policies are ineffective, in part, due to the absence of internationally recognised, comprehensive and long-run policies in the battle against terrorism (Omand, 2005). It is argued, for example, that the United States' policies in the fight against terrorism are not effective because they boost the chances of terrorism reoccurring (Lum et al., 2006). Feridum and Shahbaz (2010) have established a uni-directional causality from terrorism to military expenditure. We believe that the intuition underpinning the negative relationship between military expenditure and terrorism is still open to debate.

Moreover, there are very conflicting positions in the literature on the relationship between terrorism and governance (Lee, 2013). There is a branch of studies which argues that democratic institutions mitigate resentments towards the management of a country and, therefore, reduce the possibility of recruitment by terrorists' organisations (Windsor, 2003; Li, 2005). A second strand argues that democratic institutions are not useful in reducing terrorism because the interests of terrorist organisations are not properly enshrined in democratic political institutions (Gause, 2005). In addition, nations with solid political institutions may be associated with high levels of non-inclusive development (see Bass, 2014). A contemporary example that illustrates this perspective is the one relating to European-born and educated youths leaving Europe to join ISIL because of social exclusion (Foster, 2014). In essence, terrorism can be harboured in nations with strong democratic institutions because of a multitude of direct and indirect factors that promote grievances: civil liberties, freedom and access to media and freedom of speech in the expressions of dissatisfaction and disagreement (see Ross, 1993).

The empirical literature on the nexus between poverty, human development and terrorism is very conflicting. Some of the varying conclusions include: a negative relationship between terrorism and Gross Domestic Product (GDP) per capita (Li, 2005); no nexus

between terrorism and GDP per capita (Krueger & Maleckova, 2003); the absence of causality from human development to terrorism (Piazza, 2006); an increased likelihood of terrorism in poor nations (Abadie, 2006); a positive relationship between terrorism and GDP per capita when the views of victims are considered (Gassenbner & Luechinger, 2011); a positive relationship between GDP per capita and transnational terrorism (Blomberg et al., 2014) and economic discrimination of the minority communities influencing domestic terrorism (Piazza, 2011; Singh 2002). With a few exceptions (Piazza, 2011; Li & Schaub, 2004), there has been very little empirical support for the positive nexus between poverty and terrorism.

In particular, there is a need to focus on Africa which is not receiving the scholarly attention it deserves in spite of increasing terrorism levels on the continent and to contribute to the debate on the conflicting roles of military expenditure, inclusive development and political governance by assessing their complementarities in the fight against terrorism. African-oriented literature in the fight against terrorism has focused essentially on: assessing the role of freedoms and poverty on terrorism (Barros et al., 2008); the role of global warming (Price & Elu, 2016); investigating the influence of competition between military companies on the rate at which conflicts are resolved (Akcinaroglu & Radziszewski, 2013); examining the influence of externalities like geopolitical fluctuations (Straus, 2012) and exploring the mission of multilateral institutions by the African Union (Ewi & Aning, 2006).

This inquiry is particularly relevant for sustainable development in the post-2015 development agenda because terrorism threats may create an uncertain economic outlook owing to increasing ambiguity both from local and foreign actors who have been documented to prefer ambiguity-safe economic strategies (Kelsey & le Roux, 2017, 2018). Terrorism has far-reaching consequences such as infrastructural damages, reduction in savings and economic output, higher insurance premiums, trade losses and increasing investment costs (Singh, 2001, 2007; Efobi et al., 2015).

The paper is structured as follows: Section 2 engages with the theoretical and empirical underpinnings, while Section 3 discusses the data and methodology. The empirical analysis and discussion of results are covered in Section 4, while Section 5 concludes with future research directions.

2. Theoretical underpinnings and intuition

2.1 Linkage between inclusive development and terrorism

We begin by discussing a few key theoretical formulations on the linkages between terrorism and inclusive development. The relative deprivation theory that is developed by Gurr (1970) provides interesting insights into the nexus between political stability and inclusive development. Given that 'relative deprivation' can be considered when "*individuals' expectations of economic or political goods exceed the actual distribution of those goods*" (Piazza, 2006, p.162), the theory "*is grounded in the assumption that people who engage in rebellious political behavior are motivated principally by anger resulting from* […] *relative deprivation*" (Muller & Weede, 1994, p. 40).

When resources are captured by a corrupt elite (a scenario that is more likely in autocracies than in democracies), citizens can use violent channels as means to voice their anger, frustration and discontent over the absence of inclusive development. Moreover, when confronted with substantial deprivation, the poor and marginalised can use violent mechanisms in order to make their voices loud and clear. In addition, there is some consensus in the microeconomics literature that the absence of inclusive development represents opportunities for terrorist organisations to recruit more skilled human resources (Bueno de Mesquita, 2005; Benmelech et al., 2012). Deprivation is linked to inclusive human development in the perspective that the former is fuelled by the absence of the latter if resources for and fruits of economic development are not equitably distributed across the population. Moreover, with deprivation, basic needs such as income, education and health services (which are constituents of inclusive human development used in this study) are less likely to be equitably distributed across the population.

While exclusive development may directly increase terrorism because of deprivation and frustration, it could also indirectly increase terrorism because of dilapidating social conditions (Asongu et al., 2018). The recent empirical literature highlights that dilapidating socio-economic circumstances can increase the use of violence by citizens as a channel of voicing their discontent (Freytag et al., 2011; Gries et al., 2011; Caruso & Schneider, 2011).

On the politico-economic front, there is a tacit assumption that political influence by some social groups in the building and framing of institutions can govern access to and distribution of resources among social groups within society (Krieger & Meierrieks, 2015). Where power has been confiscated by a selected few, they can mobilise considerable resources needed for the creation and/or consolidation of politico-economic institutions that

protect and promote their vested interests. Deprived citizens at the lower socio-economic echelon are likely to respond by employing violent means towards changing the existing institutional order or status quo. The use of violent channels in the demand for better politico-economic participation has been documented in an abundant supply of literature (Basuchoudhary & Shughart, 2010; Gassebner & Luechinger, 2011).

In spite of many shared theoretical underpinnings, very inconclusive empirical evidence still exists on the relationship between terrorism and inclusive development. There is still no consensus on the nexus between civil wars and inequality "*Over the past few years, prominent large-N studies of civil war seem to have reached a consensus that inequality does not increase the risk of civil war*" (Østby, 2008, p. 143). Yet, another stream of studies argues that violence and civil wars are more apparent in societies that are characterised by high levels of inequality (Cederman et al., 2011; Baten & Mumme, 2013; Krieger & Meierrieks, 2015).

The empirical literature on the relationship between inequality and terrorism is also very conflicting. One strand of literature maintains that there is no clear nexus between terrorism and inequality (Li, 2005; Piazza, 2006; Abadie, 2006), while another one highlights the importance of inequality implicitly by emphasising that terrorism results from non-inclusive development (see Piazza, 2011, 2013). As concerns the specific relationships between types of terrorism and inequality, while domestic terrorism is, for the most part, shown to be the result of economic grievances (Piazza, 2013, Singh 2001, 2007), transnational terrorism is greased essentially by grievances which are related to the foreign policy of wealthy democracies (Savun & Phillips, 2009).

It is also important to clarify that transnational terrorism can also be motivated by exclusive development when the feeling of exclusive development in one part of the world could motivate citizens to engage in terrorist activities in other parts of the world, where citizens identifying with them are experiencing similar frustrations. Moreover, the tendency is even more likely if aggrieved and poor citizens in various parts of the world subscribe to the position that growing inequality among the rich and poor in the world is the results of common global policies that governments of their countries have been constrained to adopt by the dictates of Western countries and powerful multinational companies (Asongu & Biekpe, 2018).

In the light of the above, this study assumes an underlying sense of solidarity among terrorists, such that terrorists in one part of the world may be directly sympathetic to the worries of elements of their social beliefs and religion in other parts of the world. The

assumption partly explains why individuals of Muslim decent across the world often take to the streets in their respective countries to voice their grievances when other Muslims are humiliated because of their religion and/or the prophet Mohammed is represented in cartoons. This also explains why educated terrorists from comfortable income backgrounds who feel excluded, may leave a country where they were born (say France) to travel and fight in another country (like Syria).

2. 2 Linkage between political governance/stability and terrorism

Theoretical linkages on the relationship between terrorism and political governance can be discussed in three main strands, notably: the nexus between political governance and domestic terrorism; the relationship between transnational terrorism and political governance and debates surrounding the linkages between political governance and terrorism (Asongu et al. 2018).

The theoretical background on the association between domestic terrorism and political governance builds on the view that citizens within a state are motivated for numerous reasons to employ radical mechanisms and political violence in order to question that status quo or existing political order (Choi, 2010). Such political violence may be directed at other nationals, political figures and/or prevailing institutions. The principal scenarios that motivate the use of such violent mechanisms are: (i) grievances on the part of citizens; (ii) growing hopelessness and desperation in the absence of peaceful mechanisms by which burning grievances can be quelled and (iii) the thought that using terrorism is a justifiable, legitimate and viable means of making grievances, anger and frustrations heard. Buttressing this foundation is the intuition that, so long as citizens have peaceful mechanisms through which conflicts can be settled, terror options are less likely to be exploited for the purpose of making their voices heard. Hence, we expect nations with good political governance to be linked with less domestic terrorism because these nations offer citizens peaceful channels with which to present their grievances.

The nexus between transnational terrorism and political governance is grounded on the view that political institutions solidify the legitimacy of political systems, which provide enabling conditions for the protection of both domestic and foreign citizens (Asongu & Nwachukwu, 2017). Furthermore, countries with comparatively better standards of political governance provide more nonviolent mechanisms with which to resolve conflicts (Choi, 2010). Therefore, as argued by Asongu et al. (2018), the likelihood for transnational terrorism

is reduced when political institutions are available and are seen as legitimate. Strong political governance should be linked to less transnational terrorism because through political governance (or via the fair and free democratic means of electing and replacing political leaders), more avenues are provided for the settlement of scores related to foreign citizens and foreign policy.

The connection between political governance and terrorism is still open to debate because conflicting perspectives have been documented in the literature. One school of thought articulates optimism about reducing terrorism through certain modes of political governance by reliance on the political access theory (Eyerman, 1998). This postulates that relative to countries with weak political governance, countries that enjoy strong political governance are less associated with terrorism. In essence, countries with better political governance are associated with some features that increase immunity to terrorism, notably: judicial independence (Findley & Young, 2011) and respect of the rule of law (Choi, 2010). In summary, institutions of democracy associated with political governance endow citizens with mechanisms by which grievances can be voiced and settled non-violently (Li, 2005).

Conversely, irrespective of the differences in the quality of governance between nations, the mere regime-based differences within and between countries can still be exploited for violent opportunities (Hoffman et al., 2013). While it is thought that autocracies are, in general, characterised by poorer quality of political governance; strong autocracies are, seemingly paradoxically, associated with comparatively more political stability. It is important to articulate the stable character of democracies because failed or failing states encounter more difficulties in controlling terrorism. This view is shared by a substantial bulk of literature on the relationship between institutions and terrorism (Schmid, 1992; Eubank & Weinberg, 1994; Drakos & Gofas, 2006; Lai, 2007; Piazza, 2007; Piazza, 2008a). Hence, in some scenarios, strong autocracies may fight terrorism better than democracies because democracies endow citizens with avenues of manifesting their grievances, which can be abused through violent protests and terrorism. It may be argued that autocratic crushing of terrorism may turn out to be a short-lived victory and, perhaps, sows the seeds for more discontentment in the long run.

There are two views on the impact of political institutions on terrorism (Li, 2005). The first view maintains that terrorism can be favoured by constraints in government procedures and structures as well as deadlocks in checks and balances. According to the second view, participative democracy reduces the likelihood for transnational terrorism

(Asongu et al., 2018). From an empirical perspective, there is a bulk of literature also maintaining a positive relationship between terrorism and political governance (Eubank & Weinberg, 1994; Weinberg & Eubank, 1998; Eubank & Weinberg, 2001; Lee, 2013; Piazza, 2007, 2008b). Therefore, even in competitive environments with strong democratic institutions and political governance, terrorism is likely to flourish (Chenoweth, 2010).

2.3 Linkage between military expenditure and terrorism

From intuition, terrorism is likely to increase military expenditure because more spending for defensive purposes can be a response to increasing levels of terrorism. Hence, in a case where military expenditure is the explained variable, a positive relationship is expected between terrorism and military expenditure. Moreover, it is expected that, increasing military spending should mitigate terrorism. This is essentially because the need to fight terrorism is often used to justify the importance of increasing military expenditure. Hence, the relationship between spending in defence and terrorism should be negative when terrorism is the variable to be explained.

2.4 Intuition and theoretical insights for complementary effects

While Sections 2.1, 2.2 and 2.3 have focused on theoretical underpinnings, this section builds on the established theoretical insights to substantiate the intuition for complementary effects in the suggested policy variables. Accordingly, the intuition for combining the established policy variables builds on the fact that the policy variables have been individually documented as policy instruments by which terrorism can be mitigated. It is also important to note that only individual measures are discussed in the first-three sections because combined effects have not been explored in the literature. Our contribution of combining the underlying measures is therefore not based on evidence from the extant literature. This is essentially because the paper is an applied econometrics study which is motivated by both theory and intuition. While the theoretical underpinnings are used to justify the individual effects, the combined effects are motivated by intuition for the "applied econometrics".

The intuition for combining the policy channels through interactive regressions is that, in the real world, governments do not apply different policies aimed at fighting terrorism in isolation or independently. Hence, the analysis is simply based on the intuition that in order to fight terrorism, a government is very likely to combine policy measures. For instance: take measures to improve inclusive development while simultaneously also adopting measures

that favour political stability; devise policies that are aimed at ensuring political stability with a combination of military measures and combine military policies with measures designed to improve inclusive human development.

In the light of the above, we argue in the study that "applied econometrics", which can be a combination of theory and intuition, is not exclusively based on the acceptance and rejection of existing theories. Accordingly, an empirical exercise based on sound intuition is a useful scientific activity and could also lead to theory-building. The arguments on the usefulness of applied econometrics are motivated by both intuition and extant theories and are consistent with recent economic development (Narayan *et al*., 2011) and terrorism (Asongu & Nwachukwu, 2018) studies.

The complementarity between military expenditure, political stability and inclusive development can also be seen in the light of theories of economic opportunities, social cleavages and hard targets recently employed by Choi (2015). First, from the theory of economic opportunities, the presence of inclusive development can boost political stability and reduce the need to engage in terrorist violence (Freytag et al., 2011). Political stability is also closely related to military expenditure because political instability that is associated with terrorism naturally increases military expenditure needed to prevent and fight the corresponding terrorism. Second, the theory of social cleavages puts emphasis on the fact that historically, societies are partitioned in ethnic groups, religion, class, vocation, economic wealth, inter alia (Berelson et al., 1954). These cleavages can be associated with non-inclusive development which is associated with political instability, military expenditure and terrorism, as explained within the framework of the theory of economic opportunities above. Third, according to theory of hard targets: "*as states become richer and better able to defend targets, suicide attacks are used more often*" (Berman & Laitin, 2008, p.1944). The underlying ability to defend targets is logically associated with increasing military expenditure and political stability, as well as inclusive development in terms of a higher capacity of governments to formulate and implement appropriate policies for the delivery of public commodities.

The above theoretical perspectives are consistent with Choi and Luo (2013) who have maintained that low living standards and exclusive development are associated with more political instability and terrorism, which necessitates government action, including a military

intervention[3]. In the light of these theoretical underpinnings, inclusive development, military expenditure and political stability can independently and complementarily affect terrorism.

Buildings on the above intuition and theoretical insights, three hypotheses are tested in this study.

Hypothesis 1: Inclusive development and military expenditure are complementary in reducing terrorism.

Hypothesis 2: Inclusive development and political stability are complementary in fighting terrorism.

Hypothesis 3: Military expenditure and political stability are complementary in the battle against terrorism.

3. Data and Methodology

3.1 Data

The study assesses a panel of 53 African countries with data for the period 1998-2012 from three main sources: African Development Indicators and World Governance Indicators of the World Bank; the Global Terrorism Database (GTD) and updated terrorism indicators from Enders et al. (2011) and Gailbulloev et al. (2012). It is important to note that the transformed indicators by Enders et al. (2011) and Gailbulloev et al. (2012) use the GTD as a primary source of data.

The choice of the periodicity is motivated by data availability constraints as follows. The transformation of terrorism data from the GTD into domestic, transnational, unclear and total terrorism dynamics is only available until 2012. Macroeconomic indicators from the World Bank are not available before the year 2012. We use World Governance Indicators with 1998 as the starting year because of the need to have a balanced dataset of non-overlapping intervals or data averages.

In essence, we have five three- year non-overlapping intervals (NOI): 1998-2000; 2001-2003; 2004-2006; 2007-2009 and 2010-2012. We employ NOI for two main reasons: i) it restricts over-identification or limits the proliferation of instruments that could substantially bias estimated coefficients, and ii) it mitigates business cycle or short-term disturbances that may loom substantially (Islam, 1995, p. 323). A preliminary analysis shows that using annual data points instead of data averages substantially bias the estimated coefficients.

[3] The term "associated" should be understood as a linkage. This is essentially because, low living standards and exclusive development used in the context represent policy syndromes and not policy variables. When policy variables are employed simultaneously, they can reflect complementary or substitution effects.

Terrorism is defined in this study as both the actual and threatened use of force by subnational actors with the purpose of employing intimidation to meet political objectives (Enders & Sandler, 2006). Terrorism is measured in terms of the number of terrorist incidents registered by a given country yearly. We study distinct but related terrorism variables to capture: domestic, transnational, unclear and total terrorism. In order to reduce problems associated with log transformation of zeros and positive skewness, the data is transformed by adding one to the base and then taking the natural logarithms of the number of terrorist incidents. This transformation procedure is consistent with other studies such as Choi and Salehyan (2013) and Bandyopadhyay et al. (2014).

Terrorism-specific definitions are from Efobi et al. (2015, p. 6). Domestic terrorism "*includes all incidences of terrorist activities that involve the nationals of the venue country: implying that the perpetrators, the victims, the targets and supporters are all from the venue country*" (p.6). Transnational terrorism is "*terrorism including those acts of terrorism that concern at least two countries. This implies that the perpetrator, supporters and incidence may be from/in one country, but the victim and target is from another*". Unclear terrorism is that, "*which constitutes incidences of terrorism that can neither be defined as domestic nor transnational terrorism*" (p.6). Total terrorism is the sum of domestic, transnational and unclear terrorisms.

The main independent variables used are: political stability; military expenditure and inclusive development. In the light of our testable hypotheses, these indicators should negatively affect terrorism. Political stability is obtained from the World Bank Governance indicators. Political stability/no violence (estimate): measured as the perceptions of the likelihood that the government will be destabilised or overthrown by unconstitutional and violent means, including domestic violence and terrorism. The use of military expenditure to proxy for defence spending is consistent with Feridum and Shahbaz (2010). In accordance with Asongu et al. (2015), inclusive development is measured with the inequality adjusted human development index (IHDI). The IHDI is the national average of achievements in three main domains, namely: (i) decent standards of living (measured with Gross National Income per capita, USD Purchasing Power Parity); (ii) health and long life (measured with life expectancy at birth) and (iii) education (measured with the mean years of schooling and expected years of schooling). Apart from accounting for average gains in health, education and wealth, the IHDI also accounts for the distribution of the achievements among the population by controlling for mean values of each domain with respect to inequality. The

indicator is related to the deprivation theory in the perspective that inequality in the distribution of education, income and health, can fuel grievances among the neglected faction of the population which might push elements of this aggrieved faction to resort to terrorism as a means of making their voices heard. This narrative is in accordance with the position that economic hardship experienced by the poor increases their frustrations and makes them more vulnerable to resort to terrorism (Choi & Luo, 2013).

The control variables adopted control for omitted variables' bias are: the lagged dependent variables, internet penetration, inflation, economic growth and one policy variable. We use at least one policy variable as a control variable, when testing each of the hypotheses. This is because it enables the study to verify if the expected negative signs underpinning the testable hypotheses are statistically fragile. Moreover, given that the study is assessing complementarities with three policy variables, only two policy variables can be employed when testing each hypothesis. Therefore, the third policy variable is used as a control variable to further account for omitted variable bias. Preliminary assessment showed that controlling for more than five factors leads to instrument proliferation and invalidity of estimated coefficients.

We now discuss the expected signs of the variables, including the policy indicators which also double as control variables[4]. First, on inclusive development, there is an evolving body of literature maintaining that sympathy for and adherence to terrorists' organisations is due to non-inclusive development (Bass, 2014). The thesis has been substantiated by Foster (2014) who has documented the feeling of socio-economic exclusion as a main driver behind the sympathy for ISIL by Western-born and educated youths. In Nigeria, a reason for the burgeoning Boko Haram is because compared to the Southern region; the North has been lagging behind in terms of development. This is consistent with the literature on the role of inequality in political instability in the country (Langer et al., 2009). Second, there is an abundant supply of literature on the relevance of military expenditure in fighting terrorism (Sandler, 2005; Lum et al., 2006; Feridum & Shahbaz, 2010). Third, the interest of political stability is twofold: intuitive and theoretical. From intuition, political stability provides a non-violent environment that is less conducive for terrorists' activities. Political access theory posits that politically stable countries are less associated with terrorism (Eyerman, 1998). Fourth, according to Holbrook (2015) and Argomaniz (2015), internet is an important

[4] The purpose of using a third policy instrument as a control variable each time a combination (of policy variables) is employed is to make the estimated models comparable. Hence, the fact that each of a policy variables is also a control variable motivates a brief discussion on their expected signs in the data section.

recruitment and coordinating instrument for terrorists' organisation. Fifth, chaotic inflation is very likely to fuel political strife and socio-economic unrest (Asongu & Nwachukwu, 2016) which, in turn, could provide a fertile ground for the development of terrorism. Sixth, there is some consensus in the empirical literature that economic prosperity reduces possibilities for terrorism because economic prosperity is consistent with more opportunities for social mobility and employment and more government financial resources needed to prevent and fight terrorism. These positions are in accordance with Gaibulloev and Sandler (2009) who have established that compared to high-income countries, low-income nations have limited financial resources with which to attenuate the negative externalities associated with terrorism. It is relevant to balance this narrative with recent evidence that: "*economic growth is not a cure-all solution for terrorism because it may be associated in some instances with more terrorist incidents*" (Choi, 2015, p. 157).

The definitions of variables with corresponding sources, summary statistics and correlation matrix are disclosed in Appendix 1, Appendix 2 and Appendix 3 respectively. Appendix 2 shows that the mean values of variables are comparable and based on the corresponding standard deviations, we can be confident that reasonable estimated linkages would emerge. High standard deviations among variables of interest imply that it is very likely that there are significant associations between them. The correlation matrix enables the study to avoid issues of multicollinearity that could produce unexpected estimated signs.

3.2 Methodology

3.2.1 Estimation specification

The consideration of whether policy variables are complements or substitutes is based on interactive regressions. While this interactive approach is reasonable, it is also supported by the extant literature (Osabuohien & Efobi, 2013; Asongu et al., 2017). It is relevant to substantiate the terms of complementarity and substitutability which are not common in the terrorism literature. Within the context of this study, two policies are complementary when, if implemented simultaneously, they enhance the qualities or expected signs of each other. Conversely, two policies are substitutes when, if implemented simultaneously, they reduce the qualities or expected signs of each other. Hence, an estimated interactive term is expected to display a positive sign when two variables are complementary and a negative sign when the same variables are substitutes. As clarified by Brambor *et al.* (2016) and recent empirical literature (Tchamyou, 2019), in interactive regressions, the overall influence of the

modulating variable should be based on net effects (i.e. a combination of implied marginal effects and unconditional effects). Hence, in this study the conclusions on complementary and substitution effects are based on net effects.

Previous studies that have looked at terrorism have employed Ordinary Least Squares (Tavares, 2004; Bravo & Dias, 2006); Zero-inflated Negative and Negative Binomial regressions (Drakos & Gofas, 2006; Savun & Phillips, 2009); the multilevel Poisson model (Lee, 2013); logistic regressions (Bhavani, 2011; Kavanagh, 2011) and Generalised Method of Moments (GMM) (Bandyopadhyay et al., 2014).

In this study, we adopt the GMM approach for four main reasons. First, the N (53)>T(5) basic criterion for the employment of GMM is met because the number of countries (N) is higher than the number of years per country (T). Second, the estimation approach controls for endogeneity in all regressors. Third, cross-country differences are not eliminated in the estimation strategy. Fourth, small-sample oriented biases that are characteristic of the difference estimator are accounted-for in the system GMM strategy.

Hence, forward orthogonal deviations are employed instead of first differences because the former approach restricts over-identification, limits the proliferation of instruments and accounts for cross-sectional dependence (see Love & Zicchino, 2006; Baltagi, 2008; Tchamyou, 2019, 2020). Instead of a *one-step* approach, a *two-step* strategy is adopted. Accordingly, the *two-step* (resp. *one-step*) approach is consistent with heteroscedasticity (resp. homoscedasticity).

The following equations in levels (1) and first difference (2) summarise the standard system GMM estimation procedure.

$$T_{i,t} = \sigma_0 + \sigma_1 T_{i,t-\tau} + \sigma_2 F_{i,t} + \sigma_3 S_{i,t} + \sigma_4 FS_{i,t} + \sum_{h=1}^{4} \delta_h W_{h,i,t-\tau} + \eta_i + \xi_t + \varepsilon_{i,t} \quad (1)$$

$$\begin{aligned} T_{i,t} - T_{i,t-\tau} = {} & \sigma_1 (T_{i,t-\tau} - T_{i,t-2\tau}) + \sigma_2 (F_{i,t} - F_{i,t-\tau}) + \sigma_3 (S_{i,t} - S_{i,t-\tau}) \\ & + \sigma_4 (FS_{i,t} - FS_{i,t-\tau}) + \sum_{h=1}^{4} \delta_h (W_{h,i,t-\tau} - W_{h,i,t-2\tau}) + (\xi_t - \xi_{t-\tau}) + (\varepsilon_{i,t} - \varepsilon_{i,t-\tau}), \end{aligned} \quad (2)$$

where, $T_{i,t}$ is a terrorism indicator (domestic, transnational, unclear or total terrorism) of country i at period t; $F_{i,t}$, is the first policy variable (which could be inclusive development, military expenditure or political stability); $S_{i,t}$, is a second policy variable (which could also be inclusive development, military expenditure or political stability); $FS_{i,t}$, is one of the three possible combinations of the interaction between the first and second policy variables (which

could be either between inclusive development and military expenditure, political stability and military expenditure or political stability and inclusive development); σ_0 is a constant; τ represents the order to auto-regression; W is the vector of control variables (*internet penetration, GDP growth, inflation* and *policy variable)* ; η_i is the country-specific effect; ξ_t is the time-specific constant and $\varepsilon_{i,t}$ is the error term.

3.2.2 Identification in exclusion restrictions

Following Dewan and Ramaprasad (2014), Asongu and De Moor (2017) and Tchamyou et al. (2019a, 2019b), all independent variables are predetermined variables or suspected endogenous. Therefore the *gmmstyle* is used for these indicators and only years are considered and treated as exogenous. The strategy for treating the *ivstyle* (years) is 'iv(years, eq(diff))' because it is not likely for years to become endogenous in first-difference (see Roodman, 2009b; Tchamyou & Asongu, 2017; Boateng *et al*., 2018)[5].

In order to tackle issues of simultaneity, lagged regressors are used as instruments for forward-differenced variables. In essence, Helmet transformations are performed in order to eliminate fixed effects that are likely to influence the investigated relationships. This technique which is in accordance with Love and Zicchino (2006) consists of deriving forward mean-differences of variables. Hence, the mean of all future observations are subtracted from the variables instead of deducting the previous observation from the contemporaneous one (see Roodman, 2009b, p. 104). The transformations enable parallel or orthogonal conditions between forward-differenced values and lagged observations. Regardless of the number of lags, in order to mitigate the loss of data, with the exception of the last observation for each cross-section, the transformations are computed for all observed values. Since lagged observations do not enter the formula, they can be interpreted as instruments (Roodman, 2009b).

In the light of the above clarifications, among instrumental variables, only years are considered strictly exogenous. Hence, they (years) affect terrorism exclusively via the endogenous explaining or predetermined or suspected endogenous variables. The statistical relevance of the exclusion restriction is examined with the Difference in Hansen Test (DHT) for instrument exogeneity. Accordingly, the alternative hypothesis of the test should be

[5] *Gmmstyle* is the Stata command used to define endogenous explaining variables whereas *ivstyle* is a Stata command for defining strictly exogenous variables.

rejected for the instruments to elicit terrorism exclusively through the predetermined variables. While in a standard instrumental variable (IV) technique failure to reject the null hypothesis of the Sargan Overidentifying Restrictions (OIR) test implies that the instruments do not elicit the outcome variable beyond the predetermined variables (see Beck et al., 2003), in the GMM strategy with forward orthogonal deviations, the information criterion for exclusion restriction is the DHT. Therefore, the exclusion restriction is confirmed if the null hypothesis of the DHT corresponding to IV (year, eq(diff)) is not rejected.

It is important to articulate two concerns that could potentially bias the estimated findings. First, terrorist acts are usually part of a sustained campaign that may involve many years. Such linkage is acknowledged because years are considered in the specifications since the unobserved heterogeneity in terms of time effects is taken into account. Moreover, it is important to note that, country-specific effects are theoretically not consistent with the GMM approach because they are eliminated by first-differencing, in order to avoid endogeneity from the correlation between the lagged dependent variable and country-specific effects. Second, it reasonable to acknowledge that terrorism also causes the independent variables of interest (i.e. military expenditure, political stability and inclusive development). This is essentially because it can, *inter alia*, weaken the ability of governments to carry out wide reforms. The concern about simultaneity or reverse causality is addressed by the instrumentation process or through Helmet transformation as discussed above.

4. Empirical results

4.1 Presentation of results

Tables 1, 2 and 3 display the results corresponding to complementarities between 'inclusive development and military expenditure', 'inclusive development and political stability' and 'military expenditure and political stability' respectively. Four principal information criteria were used to examine the validity of the GMM model with forward orthogonal deviations[6].

[6] "*First, the null hypothesis of the second-order Arellano and Bond autocorrelation test (AR(2)) in difference for the absence of autocorrelation in the residuals should not be rejected. Second, the Sargan and Hansen overidentification restrictions (OIR) tests should not be significant because their null hypotheses are the positions that instruments are valid or not correlated with the error terms. In essence, while the Sargan OIR test is not robust but not weakened by instruments, the Hansen OIR is robust but weakened by instruments. In order to restrict identification or limit the proliferation of instruments, we have ensured that instruments are lower than the number of cross-sections in most specifications. Third, the Difference in Hansen Test (DHT) for exogeneity of instruments is also employed to assess the validity of results from the Hansen OIR test. Fourth, a Fischer test for the joint validity of estimated coefficients is also provided*" (Asongu & De Moor, 2017, p.200)

The findings are engaged in terms of marginal effects and net impacts. Net effects are computed with: (i) the unconditional effect from a policy variable and (ii) the conditional effect that is based on the interaction between two policy variables. For example in the last column of Table 1, the net impact of inclusive development with military expenditure is 0.265 ([0.809×0.872] + [-0.440])[7], while the net effect of military expenditure with inclusive human development is 0.580 ([0.809×2.245] + -1.236)[8]. Military expenditure complements inclusive development in the former, whereas inclusive development complements military expenditure in the latter.

We begin by assessing if the intuition underpinning the testable hypotheses is sound. In other words, we want to examine whether the underlying logic for a negative relationship between the policy variables and terrorism is statistically fragile or not. This assessment is possible by examining the signs of the policy variables used as control variables in each table. The signs of estimated coefficients corresponding to political stability, military expenditure and inclusive development are consistently negative in Table 1, Table 2 and Table 3 respectively. The implication of these negative effects is that the basis for anticipating a negative nexus between each policy variable and terrorism is sound.

Table 1 displays the results on the complementarities between inclusive development and military expenditure. Analysing the data, we find that while the unconditional effects from inclusive development and military expenditure are consistently negative, the conditional effects from interactions are consistently positive. In addition, the corresponding net effects from complementarities are consistently positive. Given that the unconditional impacts are negative, it follows from the net effects that military expenditure and inclusive development are substitutes, not complements in the fight against terrorism. We note that the significant control variables have expected signs for the most part. The unexpected negative effect of inflation can be traceable to a low median inflation. Accordingly, whereas the mean value of inflation is 10.012, the corresponding median value of 5.108 can be qualified as low.

"Please insert Table 1 here"

Table 2 displays the results on the complementarities between 'inclusive development and political stability'. We find that net effects for inclusive development with political stability are negative whereas the net impacts for political stability with inclusive development are positive. It follows that in the fight against terrorism, it is more relevant to

[7] 0.872 is the mean value of inclusive development in Appendix 2.
[8] 2.245 is the mean value of military expenditure in Appendix 2.

use political stability as a complement of inclusive development than to use inclusive development as a complement of political stability. This is logical because the unconditional effect of inclusive development (political stability) is more negative (positive). Most of the control variables are significant with the expected signs.

"Please insert Table 2 here"

Table 3 provides the results on the complementarities between 'military expenditure and political stability'. It is interesting to note that with the exception of transnational terrorism for which net effects are not apparent and the net effect of political stability with military expenditure which is positive, it can be broadly established that military expenditure and political stability are complementary in the fight against terrorism. We find the significant control variables display expected signs.

"Please insert Table 3 here"

4.2 Further discussion of results and policy implications

In the light of the findings, we restrospect to the tested hypotheses.

Hypothesis 1: Inclusive development and military expenditure are complementary in reducing terrorism (False).

Hypothesis 2: Inclusive development and political stability are complementary in fighting terrorism (This could either be true or false depending on sequencing).

Hypothesis 3: Military expenditure and political stability are complementary in the battle against terrorism (Broadly True).

The role of policy has either been to use military expenditure, inclusive development or political stability as instruments in the fight against terrorism. Policy-makers who have been viewing their objective as simply increasing instruments in order to combat terrorism need to have a complete picture of how these policy instruments interact with one another to influence the outcome variable. This requires some understanding of sequencing, complementarity and substitutionality of the policy tools.

In terms of sequencing, we have established that in the fight against terrorism, it is more relevant to use political stability as a complement of inclusive development, than to use inclusive development as a complement of political stability. As a policy implication, in

complementary policy efforts, political stability should be prioritised over inclusive development in the battle against terrorism. This finding is broadly consistent with Krueger and Laitin (2008) who have concluded that, compared to economic development; political repression fuels terrorism. It is also worthwhile to clarify that political repression is not necessarily the opposite of stability. This is essentially because preemptive repression may deter instability, while reactive repression is normally a response to instability.

With regards to complementarity, we have broadly established that military expenditure and political stability are complementary in the fight against terrorism. As a policy implication, pursuing policies of military intervention and political stability simultaneously is very likely to negatively affect terrorism.

On the substitutability front, we have shown that military expenditure and inclusive development are substitutes, not complements in the fight against terrorism. As a policy implication, pursuing the two policies simultaneously would not be effective in battling terrorism. In the light of the evidence on sequencing, complementarity and substitutability, when the three policy variables are viewed within the same framework, it is most feasible to first pursue the objective of political stability and then complement it with military expenditure and inclusive development.

Previous studies have considered policy variables independently. Unfortunately, in the real world, instruments for fighting terrorism interact with another to influence the outcome variables. Our findings are fundamentally inconsistent with the studies that have assessed the policy tools from unilateral perspectives. Military expenditure has been documented to be insufficent in fighting terrorism because it further fuels terrorism for the most part (see Sandler, 2005; Lum et al., 2006; Feridun & Shahbaz, 2010). Our findings improve the insights into the strand of the literature on the need to complement military expenditure with other policy variables in order to achieve the desired outcome.

The complementary role of inclusive human development in decreasing terrorism, challenges existing studies which have established: (i) no relationship between economic development and terrorism (and/or civil wars) (Krueger & Maleckova, 2003; Piazza, 2006; Østby, 2008, p. 143); (ii) a positive nexus between economic development and terrorism (Gassenbner & Luechinger, 2011; Blomberg et al., 2014) and (iii) the absence of a relationship between inclusive development and terrorism (Li, 2005; Li & Schaub, 2004; Abadie, 2006; Piazza, 2006).

With regard to political stability, the findings of the study align with the strand of literature which documents the instrumental role of good political governance in the mitigation of negative sentiments that terrorist organisations exploit in their recruitments and activities (Windsor, 2003; Li, 2005).

5. Conclusion, caveats and further research directions

This study has examined complementarities between inclusive development, military expenditure and political stability in the fight against terrorism in 53 African countries for the period 1998-2012. The empirical evidence is based on Generalised Method of Moments (GMM) with forward orthogonal deviations.

The following main findings are established. Firstly, military expenditure and inclusive development are substitutes, not complements. Secondly, it is more relevant to use political stability as a complement of inclusive development than to use inclusive development as a complement of political stability. Finally, it can be broadly established that military expenditure and political stability are complementary.

In the light of the sequencing, complementarity and substitutability, when the three policy variables are viewed within the same framework, it is more feasible to first pursue political stability and then complement it with military expenditure and inclusive development.

The main caveat of the study is that it does not theoretically and empirically take into account the fact that violence, as a reaction to grievances associated with development, could be expressed through terrorism, but could also be expressed through rebel activity which would not be coded as terrorism. Hence, terrorism and civil war are closely associated. Civil war is not involved in the conditioning information set partly because of data availability constraints and partly because the policy channel of political stability is also employed as a control variable.

Another caveat is the comparatively less actionable nature of political stability. Accordingly, among the policy variables used in the study, some measures may be easier to influence than others. For instance, while components of the inclusive human development index (i.e. health, income and education) and military expenditure are under the control of a government, political stability is more difficult to influence. However, through pro-active mechanisms, governments can ensure political stability by distinct policies, *inter alia*: repression and consensus-building.

Future studies can assess if the established relationships in this paper withstand further empirical scrutiny by employing alternative methodologies that articulate country fixed-effects which are eliminated in the system GMM technique by design.

Table 1: Complementarity between inclusive development and military expenditure

	Dependent variable: terrorism							
	Domestic Terror		**Transnational Terror**		**Unclear Terror**		**Total Terror**	
Constant	0.460	**0.467***	**0.412****	**0.813*****	0.122	**0.343*****	0.358	**0.759****
	(0.160)	**(0.080)**	**(0.012)**	**(0.000)**	(0.268)	**(0.000)**	(0.287)	**(0.036)**
Domestic Terror(-1)	**0.681*****	**0.798*****	---	---	---	---	---	---
	(0.000)	**(0.000)**						
Trans. Terror(-1)	---	---	0.122	**0.103***	---	---	---	---
			(0.468)	**(0.069)**				
Unclear Terror (-1)	---	---	---	---	0.217	**0.700*****	---	---
					(0.396)	**(0.000)**		
Total Terror(-1)	---	---	---	---	---	---	**0.379****	**0.651*****
							(0.014)	**(0.000)**
Inclusive development (ID)	-0.598	-0.682	**-1.138*****	**-1.388*****	-0.294	**-0.511*****	-0.571	**-1.236****
	(0.378)	(0.159)	**(0.002)**	**(0.000)**	(0.175)	**(0.000)**	(0.413)	**(0.046)**
Military Expenditure (ME)	-0.243	**-0.291***	**-0.249****	**-0.455*****	-0.063	**-0.172*****	-0.122	**-0.440****
	(0.267)	**(0.050)**	**(0.019)**	**(0.000)**	(0.364)	**(0.000)**	(0.576)	**(0.029)**
ID×ME	0.385	0.437	**0.760*****	**0.925*****	0.196	**0.341*****	0.373	**0.809***
	(0.396)	(0.176)	**(0.002)**	**(0.000)**	(0.176)	**(0.000)**	(0.424)	**(0.053)**
Internet	---	**0.012*****	---	**0.005****	---	0.001	---	**0.015*****
		(0.000)		**(0.048)**		(0.172)		**(0.000)**
GDP growth	---	**-0.020****	---	**-0.028*****	---	**-0.010*****	---	**-0.034****
		(0.018)		**(0.001)**		**(0.000)**		**(0.022)**
Inflation	---	**-0.004*****	---	**-0.002*****	---	**-0.002*****	---	**-0.004*****
		(0.002)		**(0.000)**		**(0.000)**		**(0.000)**
Political Stability	---	**-0.004*****	---	**-0.392*****	---	**-0.046*****	---	**-0.498*****
		(0.002)		**(0.000)**		**(0.000)**		**(0.000)**
Net effect of ID with ME	Na	na	0.413	0.351	na	0.125	Na	0.265
Net effect of ME with ID	Na	na	0.568	0.688	na	0.254	Na	0.580
AR(1)	(0.050)	(0.015)	(0.041)	(0.022)	**(0.499)**	(0.046)	(0.063)	(0.006)
AR(2)	**(0.875)**	**(0.654)**	**(0.644)**	**(0.933)**	**(0.350)**	**(0.288)**	**(0.525)**	**(0.357)**
Sargan OIR	(0.099)	(0.057)	(0.002)	(0.005)	**(0.022)**	(0.176)	(0.003)	(0.012)
Hansen OIR	**(0.326)**	**(0.295)**	**(0.498)**	**(0.538)**	**(0.909)**	**(0.396)**	**(0.544)**	**(0.316)**
DHT for instruments								
(a)Instruments in levels								
H excluding group	**(0.127)**	**(0.223)**	**(0.214)**	**(0.317)**	**(0.333)**	**(0.375)**	**(0.207)**	(0.094)
Dif(null, H=exogenous)	**(0.574)**	**(0.408)**	**(0.675)**	**(0.637)**	**(0.988)**	**(0.412)**	**(0.743)**	**(0.648)**
(b) IV (years, eq(diff))								
H excluding group	**(0.253)**	**(0.175)**	**(0.417)**	**(0.395)**	**(0.744)**	**(0.347)**	**(0.316)**	**(0.217)**
Dif(null, H=exogenous)	**(0.491)**	**(0.924)**	**(0.523)**	**(0.867)**	**(0.937)**	**(0.516)**	**(0.878)**	**(0.766)**
Fisher	**95.32*****	**1221.03*****	**6.26*****	**280.84*****	**6.82*****	**90.54*****	**41.45*****	**1333.08*****
Instruments	18	34	18	34	18	34	18	34
Countries	49	49	49	49	49	49	49	49
Observations	170	167	170	167	170	167	170	167

*,**,***: significance levels of 10%, 5% and 1% respectively. DHT: Difference in Hansen Test for Exogeneity of Instruments' Subsets. Dif: Difference. OIR: Over-identifying Restrictions Test. The significance of bold values is twofold. 1) The significance of estimated coefficients and the Fisher statistics. 2) The failure to reject the null hypotheses of: a) no autocorrelation in the AR(1) and AR(2) tests and; b) the validity of the instruments in the Sargan OIR test. na: not applicable because at least of the constituents in the computation of net effects is not significant.

Source: Authors' computation.

Table 2: Complementarity between inclusive development and political stability

	Dependent variable: terrorism							
	Domestic Terror		**Transnational Terror**		**Unclear Terror**		**Total Terror**	
Constant	**0.395***	**0.403*****	**0.361*****	**0.244*****	0.051	**0.114*****	**0.578*****	**0.491*****
	(0.054)	**(0.000)**	**(0.001)**	**(0.001)**	(0.241)	**(0.001)**	**(0.007)**	**(0.000)**
Domestic Terror(-1)	**0.791*****	**0.760*****	---	---	---	---	---	---
	(0.000)	**(0.000)**						
Trans. Terror(-1)	---	---	0.079	**0.162****	---	---	---	---
			(0.643)	**(0.020)**				
Unclear Terror (-1)	---	---	---	---	**0.400***	**0.593*****	---	---
					(0.089)	**(0.000)**		
Total Terror(-1)	---	---	---	---	---	---	**0.438*****	**0.515*****
							(0.001)	**(0.000)**
Inclusive development (ID)	**-0.625****	**-0.277*****	**-0.653*****	-0.008	-0.084	**-0.086*****	**-0.897*****	**-0.309*****
	(0.041)	**(0.000)**	**(0.000)**	(0.918)	(0.300)	**(0.000)**	**(0.001)**	**(0.001)**
Political Stability (PS)	0.674	-0.092	**0.585*****	**-0.321*****	0.087	**0.076*****	**0.872****	-0.129
	(0.147)	(0.342)	**(0.005)**	**(0.002)**	(0.432)	**(0.001)**	**(0.034)**	(0.232)
ID×PS	**-1.803***	**-0.751*****	**-1.955*****	-0.007	-0.253	**-0.257*****	**-2.651*****	**-0.862*****
	(0.050)	**(0.001)**	**(0.000)**	(0.975)	(0.303)	**(0.000)**	**(0.002)**	**(0.002)**
Internet	---	**0.015*****	---	**0.008*****	---	**-0.002****	---	**0.019*****
		(0.000)		**(0.001)**		**(0.034)**		**(0.000)**
GDPg growth	---	**-0.017***	---	**-0.022*****	---	**-0.004****	---	**-0.024*****
		(0.052)		**(0.003)**		**(0.020)**		**(0.004)**
Inflation	---	**-0.002***	---	-0.0007	---	**-0.001*****	---	-0.001
		(0.050)		(0.232)		**(0.000)**		(0.278)
Military Expenditure	---	**-0.138*****	---	**-0.078*****	---	-0.016	---	**-0.138*****
		(0.001)		**(0.009)**		(0.119)		**(0.003)**
Net effect of ID with PS	Na	na	-1.119	na	na	-0.148	-1.439	na
Net effect of PS with ID	0.368	0.136	0.424	na	na	0.055	0.563	0.165
AR(1)	(0.005)	(0.015)	(0.015)	(0.024)	(0.032)	(0.073)	(0.005)	(0.009)
AR(2)	**(0.854)**	**(0.832)**	**(0.823)**	**(0.908)**	**(0.463)**	**(0.248)**	**(0.728)**	**(0.476)**
Sargan OIR	**(0.206)**	(0.064)	(0.037)	(0.001)	(0.003)	**(0.134)**	**(0.137)**	(0.028)
Hansen OIR	(0.017)	**(0.362)**	**(0.217)**	**(0.554)**	**(0.129)**	**(0.751)**	(0.070)	**(0.375)**
DHT for instruments								
(a)Instruments in levels								
H excluding group	**(0.907)**	(0.039)	(0.051)	**(0.430)**	**(0.524)**	**(0.287)**	**(0.939)**	(0.041)
Dif(null, H=exogenous)	(0.004)	**(0.880)**	**(0.619)**	**(0.566)**	(0.076)	**(0.894)**	(0.019)	**(0.887)**
(b) IV (years, eq(diff))								
H excluding group	**(0.143)**	**(0.317)**	(0.080)	**(0.633)**	**(0.108)**	**(0.818)**	**(0.118)**	**(0.345)**
Dif(null, H=exogenous)	(0.014)	**(0.505)**	**(0.932)**	**(0.251)**	**(0.347)**	**(0.280)**	**(0.128)**	**(0.453)**
Fisher	**50.21*****	**633.27*****	**19.10*****	**240.15*****	**3.80*****	**95.16*****	**40.64*****	**309.49*****
Instruments	18	34	18	34	18	34	18	34
Countries	52	49	52	49	52	49	52	49
Observations	183	167	183	167	183	167	183	167

*,**,***: significance levels of 10%, 5% and 1% respectively. DHT: Difference in Hansen Test for Exogeneity of Instruments' Subsets. Dif: Difference. OIR: Over-identifying Restrictions Test. The significance of bold values is twofold. 1) The significance of estimated coefficients and the Fisher statistics. 2) The failure to reject the null hypotheses of: a) no autocorrelation in the AR(1) and AR(2) tests and; b) the validity of the instruments in the Sargan OIR test. na: not applicable because at least of the constituents in the computation of net effects is not significant.

Source: Authors' computation.

Table 3: Complementarity between military expenditure and political stability

	Dependent variable: terrorism							
	Domestic Terror		**Transnational Terror**		**Unclear Terror**		**Total Terror**	
Constant	**0.278*** **	**0.359*** **	**0.127***	**0.222*** **	0.036	0.019	**0.472*** **	**0.522*** **
	(0.003)	**(0.000)**	**(0.077)**	**(0.004)**	(0.167)	(0.559)	**(0.000)**	**(0.001)**
Domestic Terror(-1)	**0.576*** **	**0.743*** **	---	---	---	---	---	---
	(0.000)	**(0.000)**						
Trans. Terror(-1)	---	---	-0.089	**0.162***	---	---	---	---
			(0.312)	**(0.066)**				
Unclear Terror (-1)	---	---	---	---	0.282	**0.648*** **	---	---
					(0.141)	**(0.000)**		
Total Terror(-1)	---	---	---	---	---	---	**0.331*** **	**0.617*** **
							(0.008)	**(0.000)**
Military Expenditure (ME)	**-0.084*** **	**-0.179** **	-0.029	-0.074	-0.003	**0.035** **	**-0.143*** **	**-0.185***
	(0.009)	**(0.018)**	(0.122)	(0.118)	(0.724)	**(0.013)**	**(0.000)**	**(0.082)**
Political Stability (PS)	**0.207**	**-0.367*** **	-0.199	**-0.379*** **	0.009	**-0.123*** **	0.166	**-0.413*** **
	(0.281)	**(0.000)**	(0.126)	**(0.000)**	(0.841)	**(0.000)**	(0.531)	**(0.000)**
ME×PS	**-0.136** **	-0.043	-0.030	-0.008	-0.001	**0.044*** **	**-0.235*** **	-0.081
	(0.014)	(0.246)	(0.222)	(0.696)	(0.926)	**(0.000)**	**(0.001)**	(0.124)
Internet	---	**0.012*** **	---	**0.010*** **	---	0.0009	---	**0.014*** **
		(0.000)		**(0.000)**		(0.520)		**(0.000)**
GDP growth	---	-0.015	---	**-0.026*** **	---	**-0.009*** **	---	**-0.039*** **
		(0.210)		**(0.000)**		**(0.000)**		**(0.000)**
Inflation	---	**-0.005*** **	---	**-0.001** **	---	**-0.002*** **	---	**-0.004*** **
		(0.002)		**(0.023)**		**(0.000)**		**(0.000)**
Inclusive development	---	**-0.027*** **	---	**-0.006*** **	---	-0.0003	---	**-0.026*** **
		(0.000)		**(0.002)**		(0.249)		**(0.000)**
Net effect of ME with PS	-0.099	na	Na	na	na	-0.024	na	Na
Net effect of PS with ME	-0.009	na	Na	na	na	0.010	-0.013	Na
AR(1)	(0.070)	(0.017)	(0.021)	(0.026)	**(0.262)**	(0.048)	(0.094)	(0.010)
AR(2)	**(0.467)**	**(0.478)**	**(0.682)**	**(0.932)**	**(0.308)**	**(0.315)**	**(0.102)**	**(0.154)**
Sargan OIR	(0.001)	(0.016)	(0.000)	(0.002)	(0.002)	(0.324)	(0.000)	(0.007)
Hansen OIR	(0.090)	**(0.182)**	**(0.281)**	**(0.609)**	**(0.703)**	**(0.783)**	(0.097)	**(0.192)**
DHT for instruments								
(a)Instruments in levels								
H excluding group	**(0.140)**	(0.085)	**(0.135)**	**(0.240)**	**(0.525)**	**(0.386)**	(0.047)	(0.040)
Dif(null, H=exogenous)	**(0.144)**	**(0.428)**	**(0.483)**	**(0.743)**	**(0.660)**	**(0.867)**	**(0.321)**	**(0.615)**
(b) IV (years, eq(diff))								
H excluding group	(0.077)	**(0.122)**	**(0.242)**	**(0.427)**	**(0.512)**	**(0.763)**	(0.042)	**(0.147)**
Dif(null, H=exogenous)	**(0.315)**	**(0.681)**	**(0.406)**	**(0.990)**	**(0.801)**	**(0.515)**	**(0.675)**	**(0.549)**
Fisher	**3.87*** **	**863.23*** **	**1.88***	**264.16**** **	**2.35*** **	**190.34**** **	**3.96*** **	**1031.57*** **
Instruments	18	34	18	34	18	34	18	34
Countries	50	49	50	49	50	49	50	49
Observations	187	167	187	167	187	167	187	167

*,**,***: significance levels of 10%, 5% and 1% respectively. DHT: Difference in Hansen Test for Exogeneity of Instruments' Subsets. Dif: Difference. OIR: Over-identifying Restrictions Test. The significance of bold values is twofold. 1) The significance of estimated coefficients and the Fisher statistics. 2) The failure to reject the null hypotheses of: a) no autocorrelation in the AR(1) and AR(2) tests and; b) the validity of the instruments in the Sargan OIR test. na: not applicable because at least of the constituents in the computation of net effects is not significant.

Source: Authors' computation.

Appendices

Appendix 1: Definitions of variables

Variables	Signs	Definitions of variables (Measurements)	Sources
Domestic terrorism	Domter	Number of Domestic terrorism incidents (in Ln)	Enders et al. (2011) and Gailbulloev et al. (2012)
Transnational terrorism	Tranter	Number of Transnational terrorism incidents (in Ln)	
Uuclear terrorism	Unclter	Number of terrorism incidents whose category in unclear (in Ln)	
Total terrorism	Totter	Total number of terrorism incidents (in Ln)	
Political Stability	PS	"Political stability/no violence (estimate): measured as the perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional and violent means, including domestic violence and terrorism"	World Bank (WDI)
Inclusive development	IHDI	Inequality Adjusted Human Development Index	UNDP
Military Expense	Milit	Military Expenditure (% of GDP)	World Bank (WDI)
Internet	Internet	Internet penetration (per 100 people)	World Bank (WDI)
Growth	GDPg	Gross Domestic Product (GDP) growth rates (annual %)	World Bank (WDI)
Inflation	Inflation	Consumer Price Index (annual %)	World Bank (WDI)

WDI: World Bank Development Indicators. UNDP: United Nations Development Program. Ln: Natural logarithm.

Appendix 2: Summary statistics

	Mean	SD	Minimum	Maximum	Observations
Domestic terrorism	0.401	0.805	0.000	4.781	265
Transnational terrorism	0.203	0.451	0.000	2.802	265
Unclear terrorism	0.060	0.193	0.000	1.566	265
Total terrorism	0.500	0.885	0.000	4.895	265
Political Stability	-0.551	0.929	-3.297	1.087	265
Inclusive development	0.872	4.210	0.161	45.231	220
Military Expenditure	2.245	2.899	0.151	35.846	231
Internet penetration	4.766	8.022	0.002	51.174	264
GDP growth	4.706	4.230	-8.149	32.265	259
Inflation	10.012	25.435	-6.934	275.983	242

S.D: Standard Deviation.
Source: Authors' computation.

Appendix 3: Correlation matrix

PS	Internet	IHDI	GDPg	Inflation	Milit	Domter	Tranter	Unclter	Totter	
1.000	0.236	0.029	-0.033	-0.238	-0.260	-0.535	-0.530	-0.365	-0.596	PS
	1.000	0.018	-0.023	-0.062	-0.087	0.079	0.052	0.129	0.063	Internet
		1.000	-0.078	-0.016	-0.040	0.090	0.052	-0.031	0.080	IHDI
			1.000	-0.197	-0.052	0.076	0.157	0.060	0.089	GDPg
				1.000	-0.128	0.0002	0.030	0.061	0.027	Inflation
					1.000	0.185	0.107	0.040	0.194	Milit
						1.000	0.661	0.760	0.973	Domter
							1.000	0.641	0.785	Tranter
								1.000	0.776	Unclter
									1.000	Totter

PS: Political Stability/Non violence.. Internet: Internet Penetration. IHDI: Inequality Adjusted Human Development Index. GDPg: Gross Domestic Product Growth. Milit: Military Expenditure. Domter: Domestic Terrorism. Tranter: Transnational Terrorism. Unclter: Unclear Terrorism. Totter: Total Terrorism.
Source: Authors' computation.

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