THE LINK BETWEEN FOREIGN AID AND ECONOMIC GROWTH IN AFRICA: DOES THE SOURCE OF AID MATTER?

by

Mamo Girma Tefera

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SUPERVISOR: PROF. NICHOLAS M. ODHIAMBO

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DECLARATION

Name: Mamo Girma Tefera

Student Number: 61289884

Degree: DOCTOR OF PHILOSOPHY IN ECONOMICS

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ABSTRACT

This study empirically investigates the aid-growth nexus in 51 African countries composed of 25 low-income and 26 middle-income countries during the period 2000-2017. Within the context of the current changing global aid landscape since 2000, the study uses three proxies of aid, namely: total aid, traditional aid, and non-traditional aid to examine this nexus and the debate on aid effectiveness. The study investigates the impact of aid on growth, as well as the direction of causality between them based on a system generalised method of moments and a Granger causality analysis using the error correction model (ECM)-based multivariate panel causality approach, respectively. The main findings show that both the impact of aid on growth and their causal relationship depend on the different proxies of aid used to measure aid and country income groups in Africa. The study finds that traditional aid has been effective for growth in middle-income countries, while it was not effective in low-income countries. It also shows that total aid and non-traditional aid have been ineffective for growth regardless of country income groups. Furthermore, this study found that the direction of causality between aid and growth has been bidirectional for total aid and traditional aid in low-income countries, while it is unidirectional from total aid to growth, and from growth to traditional aid in middle-income countries in the short run. In the long run, there is evidence of unidirectional causality from growth to aid irrespective of the country's income groups for total aid and non-traditional aid proxies. For traditional aid proxy, there is evidence of long-run unidirectional causality from growth to aid in middle-income countries. The main policy implications of this study are that: (i) traditional aid should continue to rise in middle-income countries; (ii) donors and governments of low-income countries should focus on designing more effective strategies to re-direct traditional aid towards the growth-enhancing productive sectors to support growth in their countries; and (iii) donors and governments of middle-income countries should work together to harmonise aid flows and at least replicate the success of traditional aid to make non-traditional aid supportive for growth in their countries.

KEY WORDS

Foreign aid; economic growth; Low-Income Countries (LICs); Middle-Income Countries (MICs), Africa; Traditional Donors (TDs), Non-Traditional Donors (NTDs), bilateral aid sources; aid landscape; sectoral aid allocations, aid dependency; aid effectiveness; aid-growth nexus; multivariate panel Granger causality; dynamic system generalised method of moments (GMM); error correction model (ECM)-based Granger causality.

DEDICATION

To my mother, Almaz Beyene, who passed away on 08 May 2019; my beloved wife, Eden Terefe, and our children- Soliana Mamo, Heran Mamo, and Neamin Mamo.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

AAAA	Addis Ababa Action Agenda
AIC	Akaike Information Criteria
CAR	Central African Republic
CPI	Consumer Price Index
CRS	Common Reporting Standard
DRC	Democratic Republic of Congo
DAC	Development Assistance Committee
DHT	Difference-in-Hansen Test
DI	Development Initiatives
ECA	Economic Commission for Africa
ECM	Error Correction Mechanism
ECT	Error Correction Term
EU	European Union
FDI	Foreign Direct Investment
FE	Fixed Effects
FPE	Final Prediction Error
GDP	Gross Domestic Productive
GMM	Generalised Methods of Moments
GNP	Gross National Product
GNI	Gross National Income
HQIC	Hanna-Quinn Information Criterion
IDA	International Development Association
IFIs	International Financial Institutions
IMF	International Monetary Fund
IPS	Im, Pesaran and Shin
IV	Instrumental Variable

LDCs	Least Development Countries
LICs	Low-Income Countries
LMICs	Lower Middle-Income Countries
ICOR	Incremental Capital Out-put Ratio
MDGs	Millennium Development Goals
MICs	Middle-Income Countries
NGOs	Non-Government Organisations
NTDs	Non-Traditional Donors
ODA	Official Development Assistance
OECD	Organization for Economic Cooperation and Development
OIR	Over-Identification Restrictions
OLS	Ordinary Least Square
OOF	Other Official Flows
PDAE	Paris Declaration for Aid Effectiveness
PMGE	Pooled Mean Group Estimator
PPPs	Public- Private Partnerships
SSA	Sub-Saharan Africa
SGMM	System Generalised Methods of Moments
SDGs	Sustainable Development Goals
SIC	Schwarz Information Criteria
TDs	Traditional Donors
UAE	United Arab Emirates
UK	United Kingdom
UMICs	Upper Middle-Income Countries
UN	United Nations
UNAIDS	United Nations Program on HIV/AIDS
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Program

UNESC	United Nations Economic and Social Council
UNISA	University of South Africa
USA	United States of America
VAR	Vector Auto Regressive
VECM	Vector Error Correction Model
VR	Variance Ratio
WAMZ	West African Monetary Zone
WDI	World Development Indicator
WVA	World Vision Australia
WWII	Second World War

CHAPTER 1 INTRODUCTION TO THE STUDY

1.1 Introduction: Context and Background

The concepts of foreign aid or Official Development Assistance (ODA) took a concrete form in the post-WWII period when the USA provided aid through the Marshal Plan to build economic development in Europe in the late 1940s. The success of the marshal aid programme motivated donors to extend foreign aid to developing countries in the 1950s and 1960s (OECD, 2006). Since the 1960s, therefore, foreign aid has been acknowledged as a key means to foster economic growth and reduce absolute poverty in developing countries (Chenery & Strout, 1966). According to the Organization for Economic Cooperation and Development (OECD, 2017: 138), aid also continues to play a critical role in "filling key financing gaps where no alternatives exist" and enables developing countries to promote growth towards achieving the Sustainable Development Goals (SDGs) by 2030. As a result, an increasing global consensus has been emerging since 2000 (as reflected in the 2002 Monterrey Conference and the 2005 G-8 Gleneagles Summit) to double aid flows to the poorest African countries. The basic notion is that increasing aid flows will stimulate economic growth and consequently reduce the dependence of poor African countries on foreign aid (UNAIDS, 2005). In view of this, in real terms (2017 constant $), foreign aid flows to developing countries have increased five-fold – from $33.2 billion in 1960 to $163.1 billion in 2017 (OECD, 2017). As a result of such preposition for increasing aid flows, foreign aid has received a renewed interest in academic and policy circles. The increasing focus on aid has ignited polarising debates on whether or not aid works for growth in developing countries (Easterly, 2003; Moyo, 2009; Tang & Bundhoo, 2017). Moreover, in spite of the major focus on poverty reduction since 2000, economic growth has been the key benchmark used in the aid literature to evaluate aid effectiveness.

Africa is no exception. The continent faced critical resource gaps of 6.54[1] percent and low Foreign Direct Investment (FDI) of 2.28 percent in 2014 (Lopes *et al*., 2017). Interestingly, foreign aid constituted 7.93 percent in the same year. Africa has become the main focus among the global aid

[1]The resource gap was computed as a difference between national saving rate (17.59 percent) and investment rate (24.13 percent) as a percentage of GDP in 2014 (Lopes *et al*., 2017).

community (Moyo, 2009) and has been the largest aid recipient region, taking about 35 percent of total aid flows to developing countries in 2012 (Tang & Bundhoo, 2017). Perhaps this suggests that foreign aid continues to play a critical role in Africa and one might expect a positive contribution of aid for growth in the continent (Alemu & Lee, 2015; Tang & Bundhoo, 2017; Yahyaoui & Bouchoucha, 2019; Jene & Sethi, 2019). Indeed, this clearly goes in line with arguments by OECD (2017: 138) that foreign aid continues to play an important role in *"filling key financing gaps where no alternatives exist"* particularly in developing countries so as to support growth towards achieving SDGs by 2030. Moreover, the current global aid landscape, associated with emerging Non-Traditional Donors (NTDs) alongside the Traditional Donors (TDs), is rapidly changing (Woods, 2008; Greenhill *et al*., 2013[2]). The same story goes on in Africa where the role of NTDs has been increasing over time since 2000 (UNCTAD, 2014; ECA, 2015a). The growing influence of NTDs fuels a renewed debate on the link between aid and growth. In fact, aid category by donor types seems to have received much attention mostly since the beginning of the 21st century (Woods, 2008; Greenhill *et al.,* 2013). Therefore, extending the long-debated aid-growth nexus by considering aid from both TDs and NTDs is critical to capture the true effect of aid on growth in Africa in particular and developing countries in general.

The current international aid landscape is rapidly changing with TDs and NTDs being the dominant sources of aid. This represents a "silent revolution in development assistance" (Woods, 2008) and the new "age of choice" among different sources of foreign aid mostly between TDs and NTDs (Greenhill *et al*., 2013[3]). In this regard, Greenhill *et al*. (2013) reported an increasing trend in foreign aid since 2000 with huge changes in aid composition and greater parts coming from NTDs. This study reported that total aid from both sources increased from $64.8 billion in 2000 to $173.3 billion in 2009. Although TDs aid remains a dominant source of foreign aid, it has shown a slightly falling trend over recent decades. For instance, foreign aid from TDs (as % of

[2]Broadly speaking, as shown in Greenhill *et al*. (2013), Traditional Donors (TDs) refer to donors which are commonly known as Development Assistant Committee (DAC) members while Non-Traditional Donors (NTDs) stand for those donors outside the DAC system. The list of TDs and NTDs that have disbursed aid to Africa during 2000-2017 are shown in Chapter 2, Table 2.4 for LICs and Chapter 3, Table 3.4 for MICs.

[3]Although Greenhill *et al.* (2013) have identified different sources of foreign finance including traditional donors, non-traditional providers, philanthropy, social impact investment, global funds and climate finance, only traditional and non-traditional development finance mechanisms are identified as dominant sources of global aid for developing countries. Traditional and non-traditional donors are major sources of foreign aid while the role of other sources of aid appears to be insignificant. So, the current study adopts these two major aid categories in the analysis and excludes the others.

GNP) declined from 8.6 percent in 2000 to 7.9 percent in 2014 (Lopes *et al*., 2017). Given this, there is an increasing consensus that foreign aid from NTDs becomes another source of aid to finance the post-2015 development goals (Greenhill *et al*., 2013). Considering the total aid flow between 2000 and 2009 mentioned above, this study documented a ten-fold increase in aid flow from NTDs that rose from $5.3 billion (8.1% of the total) in 2000 to $53.3 billion (30.7% of the total) in 2009. According to UNCTAD (2014), foreign aid from NTDs such as China and India tripled between 2000 and 2012 where Africa and Haiti received 55 percent of it. ECA (2015a) also reported a rising trend of aid flows from NTDs (with China providing the lion's share) to Africa which amounted to 45.7 percent of China's total foreign aid by the end of 2009.

A critical look into this evidence suggests that foreign aid from NTDs is gaining popularity among recipient countries of which most are in Africa. First, unlike aid from TDs, NTDs aid has come up with flexible and innovative approaches (ECA, 2015b, 2015a; Greenhill *et al*., 2013; Lopes *et al*., 2017). Second, it can complement the unpredictable form of aid flow from TDs (UNCTAD, 2014; Lopes *et al*., 2017). Following the financial crisis of 2008, austerity measures adopted in TDs countries caused a 14 percent fall in aid flow from their donors during the years of 2000-2012 (UNCTAD, 2014). Third, foreign aid from NTDs mostly targets infrastructure and productive sectors *(*ECA, 2015a, 2015b; UNCTAD, 2014; Tierney *et al*., 2011). Since 2000, TDs have assigned only 10 percent of infrastructure aid a year while NTDs assigned 15 percent (Tierney *et al*., 2011). This suggests that NTDs are increasingly supplementing funding for infrastructure following a sharp decline in such funds from TDs. According to Tierney *et al*. (2011), this example serves as one reason for accounting foreign aid beyond the TDs in discussing aid flows. Foreign aid from TDs focuses on human development in the post-2015 era. Therefore, poor countries need to mobilise more aid from NTDs alongside the TDs if they want to finance their productive activities and promote growth (UNCTAD, 2014; OECD, 2017). It is, therefore, important to consider foreign aid from both TDs and NTDs to capture the aid-growth link in Africa.

Despite the fact that foreign aid has continued to play a key role in filling resource gaps in developing countries since the 1960s, whether or not it works for growth remains debatable. Many studies have been examining whether or not aid meets its primary objective of stimulating growth in developing countries. Nonetheless, the answer to this question of whether or not aid works for growth remains controversial and debatable in academic and policy circles. Broadly speaking, two

lines of debate exist about the aid-growth nexus – aid effectiveness (aid proponents) and aid ineffectiveness (aid opponents). Overall, proponents of aid argue that aid affects growth positively and advocates for an increasing flow of aid to developing countries (Chenery & Strout, 1966; Clemens *et al*., 2012; Juselius *et al*., 2013; Lof *et al*., 2015; Arndt *et al*., 2015; Magesan, 2016; Gillanders, 2016; Galiani *et al*., 2017). Among others, for instance, Chenery and Strout (1966) claim that aid augments domestic savings and substantially increases investment, which further boosts growth. More specific to Africa, a strand of recent literature has found an average positive impact of aid on growth in Africa which supports the aid effectiveness theses (Gillander, 2016; Jones, 2013; Juselius *et al.,* 2013; Reidy, 2016; Tait *et al.,* 2015; Tang & Bundhoo, 2017).

On the contrary, aid opponents argue that aid is ineffective as the impact of aid on growth appears to be either negative (Boone, 1996; Easterly, 1999, 2003; Moyo, 2009; Arawomo *et al*., 2015; Adedokun & Folawewo, 2017) or null (Rajan & Subramanian, 2008; Dreher & Langlotz, 2017; Phiri, 2017). For instance, Easterly (2003) argues that aid does not support growth, but rather has the opposite effect. Unlike arguments by aid proponents that aid finances investment, he maintains that aid finances consumption in poor countries. He found that aid does not increase investment when "the incentives to invest are poor". He further argues that *"aid could actually worsen incentives to invest if the recipient believes that future poverty will call forth future aid – the classic Samaritan's dilemma"* (Easterly, 2003: 32). More specific to Africa, Moyo (2009: 20) concluded that *"it is virtually impossible to draw on Africa's aid-led development experience and argue that aid has worked".* According to Moyo (2009), this is because much of the aid disbursed to Africa was spent on *"creating and sustaining client regimes"*, with minimal contribution for development outcomes in the continent. Moreover, the effectiveness of aid in Africa substantially varies across country income groups (Ekanayake & Chatrna, 2010; Alemu & Lee, 2015), as well as different aid components and donor types (Rajan & Subramanian, 2008; Woods, 2008; Greenhill *et al.,* 2013). Overall, although most empirical evidence seems to have come with average positive impact of aid on growth, there still are influential studies that find negative impact or null. Thus, whether aid works for growth in Africa remains debatable, and demands further empirical investigations, taking into account the different aid components and country income groups.

Furthermore, apart from this mixed empirical evidence, most of the past studies focused on foreign aid secured solely from TDs. They have paid less attention to the currently changing global aid

landscape associated with the increasing role of foreign aid from NTDs. Obviously, focusing only on TDs will fall short of giving comprehensive evidence on the link between aid and growth. Thus, it is essential to examine the link between aid and growth considering foreign aid from both TDs and NTDs based on the latest database and most recent estimation techniques. This comprehensive analysis is critical for broadening the scientific knowledge on the aid-growth nexus in the rapidly changing global aid landscape and its implication for development finance. Given Africa is one of the top aid-recipients, understanding the potential role of foreign aid from NTDs alongside TDs in Africa is highly imperative.

Therefore, the aim of this study is to examine, more concretely, the link between aid and growth across country income groups in Africa considering aid from both TDs and NTDs. Obviously, that this study focuses on Africa, is timely and relevant. First, the continent hosts most of the high aid-dependent countries, and aid will continue to be an important source of development finance for many of them even in the post-2015 SDG era. Second, the role of NTDs in the international aid landscape and Africa is increasing with the potential to complement a slightly falling aid from TDs. African countries have also shown much more interest in NTDs, suggesting that understanding how TDs and NTDs aids work in supporting growth in Africa is pressing. Third, despite the high poverty rate in most countries, only few of the states have managed to register rapid economic growth. Thus, the role that foreign aid had in the economic growth of these countries needs an examination. Moreover, this study further discussed the historical evolution of the concept of foreign aid and the theoretical propositions about the role of aid for promoting growth in developing countries. Within the context of the current dynamic global aid landscape since 2000, the study also elaborates on the dynamics of aid, as well as the trends in aid and growth across country income groups in Africa between 2000 and 2017.

1.2 Statement of the Problem

Foreign aid continues to play a critical role in "filling key financing gaps where no alternatives exist" and enabling developing countries to promote growth towards achieving the SDGs by 2030 (OECD, 2017:138). Indeed, this is quite in line with what development economic theories have long been promoting. For instance, the Two-Gap Model argues that foreign aid is a key input for filling the two resource gaps (i.e. saving and exchange rate gaps) and promoting growth in developing countries (Chenery & Strout, 1966). Africa is characterised by huge resource gaps because of its limited capacity to mobilise domestic savings and attract more FDI. As of 2014, the resource gaps reached 6.54 percent and FDI remained low at 2.23 percent (Lopes *et al*., 2017). On the other hand, foreign aid flow to Africa was 7.93 percent in the same year. As a result, Africa has become the main focus among the global aid community (Moyo, 2009) and has been the largest aid recipient region taking about 35 percent of total aid flows to developing countries in 2012 (Tang & Bundhoo, 2017). Perhaps, this suggests that foreign aid continues to play a critical role in Africa and one might expect a positive contribution of aid for growth in the continent (Alemu & Lee, 2015; Tang & Bundhoo, 2017; Yahyaoui & Bouchoucha, 2019; Jene & Sethi, 2019). This justifies why foreign aid continues to play an important role in filling critical resource gaps and supporting growth in the continent.

Despite Africa receiving the largest share of global aid over the past several decades, it remains the poorest region in the world (Moyo, 2009; Tang & Bundhoo, 2017; Yahyaoui & Bouchoucha, 2019; Jene & Sethi, 2019). As a result, this has raised a question, "does aid work for growth" in academic and policy circles? Many studies have been examining whether or not aid meets its primary objective of stimulating growth in Africa. Nonetheless, the answer to this question of whether or not aid works for growth remains controversial and debatable in academic and policy circles. Broadly speaking, two lines of debate having bipolar views exist about the aid-growth nexus – aid effectiveness (aid proponents) and aid ineffectiveness (aid opponents) theses. In the first line of the debate, a strand of recent literature tends to demonstrate an average positive impact of aid on growth in Africa which supports the aid effectiveness thesis (Gillander, 2016; Jones, 2013; Juselius *et al.*, 2013; Reidy, 2016; Tait *et al.*, 2015; Tang & Bundhoo, 2017). Perhaps, such positive views contributed for a drastic increase of aid flows to Africa mostly since 2000 as aid proponents advocate the critical role of aid for supporting growth and development in the

continent. On the contrary, the aid opponents have been challenging the aid effectiveness thesis against a strong evidence that aid has been ineffective in Africa because the impact of aid on growth is either negative (Moyo, 2009; Arawomo *et al.*, 2015; Adedokun & Folawewo, 2017), or null (Phiri, 2017). Among others, for instance, Moyo (2009: 20) concluded that *"it is virtually impossible to draw on Africa's aid-led development experience and argue that aid has worked".* According to Moyo (2009), this is because much of the aid disbursed to Africa was spent on *"creating and sustaining client regimes"*, with minimal contribution for development outcomes in the continent.

Furthermore, similar mixed evidence has been documented when the aid-growth nexus in Africa is evaluated across country income groups in Africa (Ekanayake & Chatrna, 2010; Alemu & Lee, 2015) and different aid types (Pan *et al.*, 2018). The impact of aid on growth was: (i) significantly positive in lower middle- and upper middle-income countries (Ekanayake & Chatrna, 2010), and low income groups (Alemu & Lee, 2015); (ii) significantly negative among middle-income countries (Alemu & Lee, 2015), and low-income countries (Ekanayake & Chatrna, 2010); and (iii) null among African least developed countries (LDCs) (Tekin, 2012). Besides, Pan *et al.* (2018) found that the aid-growth causal nexus differs across income groups in Africa – low, lower middle, and upper middle-income countries. This study also found that the causality between aid and growth across country income groups in Africa differs by aid types such as bilateral aid and multilateral aid.

Amid this ongoing debate, as discussed before, the international aid landscape has evolved over time and shown the most dynamic transformation since 2000 following the emergence of NTDs with diverse approaches for aid delivery and increasing partnership with existing TDs (OECD, 2006; World Bank, 2013; Greenhill et al, 2013; UNDP, 2016). Among others, the new aid landscape since 2000 has been characterised by at least three major features with substantial impact on the way foreign aid is managed and coordinated. First, the goals of foreign aid have been converged both for TDs and NTDs. Second, there is increasing recognition of the role of new donors (NTDs) as global aid providers and there is high interest to integrate them into the existing aid architecture. Third, there is substantial development cooperation among all donors for joint effort to mobilise aid resources. In view of this, there is a growing recognition that increasing aid flows from NTDs can complement aid flows from TDs (Woods, 2008; Greenhill *et al*., 2013; ECA,

2015a; Lopes *et al*., 2017). This may lead to the notion that the "way in which aid is implemented" substantially differs because the types of aid and the procedures vary among donors (Morrissey, 2015). Among others, this is because: (i) unlike aid from TDs, NTDs aid has come up with flexible and innovative partnership approaches (ECA, 2015b; Greenhill *et al*., 2013); (ii) unlike TDs' aid conditionality, aid from NTDs is unconditional and based on a non-interference principle in recipient countries (Dreher *et al.*, 2011); and (iii) donors' focus on sectoral aid allocation differs substantially with implication for economic growth; aid from NTDs mostly targets infrastructure and productive sectors compared to aid from TDs. In the light of this, the rising role of NTDs may challenge how the international aid architecture works and further complicates the debate on the effectiveness of aid for growth in recipient countries including Africa (Greenhill *et al.*, 2013; Isabela & Virtanen, 2015; Dreher *et al.*, 2011). Of course, understanding these changes in the context of aid effectiveness remains an empirical inquiry. Nonetheless, apart from the mixed empirical evidence on the aid-growth nexus discussed above, most of the studies focused on foreign aid secured solely from TDs. Given that Africa is one of the top aid-recipients from both donor groups, therefore, understanding the potential role of aid from NTDs alongside TDs in the continent is highly imperative.

The current study is motivated mainly by two research gaps in the literature on the aid-growth nexus in developing countries having Africa as the main focus. As noted above, the first gap refers to the inconsistencies among existing empirical evidence on this nexus. Such mixed results make the issue still debatable in academia, as well as in development circles. Among others, the divergent methodological and econometric techniques employed in different past studies are the underlying sources of these mixed results (Clemens *et al*., 2012; Juselius *et al*., 2013; Lof *et al*., 2015). Most studies have used an instrumental variable approach to account for aid endogeneity in the regression model but finding a strong instrument remains far from reality. Recognising that finding a strong instrumental variable is difficult, recent studies have proposed a system of equations technique (Lof *et al*., 2015) under the General Methods of Moments (GMM) estimation, which becomes a better approach for handling aid endogeneity and capturing the true effect of aid on growth (Lof *et al*., 2015).

The second gap is related to a lack of panel data evidence on the link between foreign aid, both from TDs and NTDs, and growth in developing countries such as those in Africa. As highlighted

before, the stylised fact shows that the global aid landscape has been rapidly changing since 2000 with NTDs and TDs becoming the main actors in the aid system. This suggests that using foreign aid from both TDs and NTDs is critical for a comprehensive assessment of the impact of aid on growth (OECD, 2017). In spite of this stylised fact, however, most past studies have focused only on TDs, implying that the evidence from these studies would fall short of giving a comprehensive evidence on the link between aid and growth. First, as noted earlier, the rising influence of NTDs further complicates how the international aid architecture works (Woods, 2008; Greenhill *et al*., 2013; Dreher *et al*., 2011; Isabela & Virtanen, 2015). Second, there is also a growing recognition that aid from NTDs might have affected growth in recipient countries differently from TDs' aid. This suggests that how foreign aid flows from both TDs and NTDs affects growth in recipient countries, remains an empirical inquiry. Thus, it is essential to examine the link between aid and growth considering aid from both TDs and NTDs based on the latest database and most recent estimation techniques. This comprehensive analysis is critical for broadening the scientific knowledge on the aid-growth nexus in the rapidly changing international aid landscape and its implication for development finance.

Therefore, the current study aims at conducting an empirical study and filling these gaps in the literature on the aid-growth link. This study hopes to contribute to the current state of scientific knowledge on the aid-growth nexus in the new "age of choice" as its central focus is to understand how aid from both TDs and NTDs affects growth in Africa. Altogether, this study has two key values to add to the scientific knowledge on the aid-growth nexus debate. First, unlike most of the previous studies that solely used TDs' aid, this one looks at foreign aid from both TDs and NTDs and explores the link between aid and growth in Africa. To do so, the study uses three aid proxies: total aid from TDs and NTDs (TA), TDs' aid (TDA), and NTDs' aid (NTDA). Based on these aid proxies, this study adds new empirical insights by examining whether aid sources do matter for explaining the aid-growth nexus and the direction of causality between them. Moreover, this empirical investigation is done across country income groups in Africa because evidence has shown that the focus of TDs and NTDs varies with country income groups. Second, understanding the difficulty of finding a strong instrumental variable for aid, the study adopts an advanced dynamic panel data estimation methods such as the GMM technique to control for aid endogeneity problem.

1.3 Objectives and Hypotheses of the Study

1.3.1 Objectives of the study

The overall objective of the study is to empirically investigate the link between foreign aid and economic growth and the direction of causality between them in Africa. The specific objectives of the study are to:

- empirically investigate the impact of the different aid proxies (TA, TDA and NTDA) on economic growth among Low-Income Countries (LICs) in Africa;
- empirically investigate the impact of the different aid proxies (TA, TDA and NTDA) on economic growth among Middle-Income Countries (MICs) in Africa;
- empirically examine the causal relationship between the different aid proxies (TA, TDA and NTDA) and economic growth among Low-Income Countries (LICs) in Africa;
- empirically examine the causal relationship between the different aid proxies (TA, TDA and NTDA) and economic growth among Middle-Income Countries (MICs) in Africa;
- compare the impact of aid sources/proxies on economic growth in Africa according to country income groups (LICs and MICs);
- compare the causal relationship between the aid sources/proxies and economic growth in Africa according to country income groups (LICs and MICs).

1.3.2 Hypotheses of the study

The following hypotheses are tested in this study:

- The different aid sources or proxies (TA, TDA and NTDA) lead to economic growth among LICs in Africa.
- The different aid sources or proxies (TA, TDA and NTDA) lead to economic growth among MICs in Africa.
- The different aid sources or proxies (TA, TDA and NTDA) Granger cause economic growth among LICs in Africa, and vice versa.

- The different aid sources or proxies (TA, TDA and NTDA) Granger cause economic growth among MICs in Africa, and vice versa.
- The effectiveness of the different aid sources/proxies for supporting economic growth depends on the country income groups (LICs and MICs) in Africa.
- The causal relationship between the different aid sources/proxies and economic growth depends on the country income groups (LICs and MICs) in Africa.

1.4 Significance of the Study

As a departure from most past studies, the most significant element of this study is its ability to systematically analyse the ongoing debate on the aid-growth nexus by taking into account the current rapidly changing global aid landscape since 2000. This issue seems to have been somehow overlooked in previous studies. First, it extends the ongoing academic and policy debate on the aid-growth nexus based on the latest panel data set from the most aid-dependent countries in Africa. Second, unlike most previous studies that focused mostly on TDs' aid, the current study attempts to use foreign aid from both TDs and NTDs. By doing this, the study provides important insights into the rapidly changing global aid landscape due to the increasing influence from NTDs alongside TDs and its potential impact on growth in Africa. Indeed, this is the supposed ***original contribution of this study*** because most previous studies have not made such an effort to bring foreign aid data from both TDs and NTDs to investigate the aid-growth nexus in Africa.

Third, this study attempts to minimise the problems of data mishandling, as well as misrepresentation of models and estimation techniques associated with the use of a single equation approach commonly employed in past studies. This study adopts the most advanced panel dynamic model under the GMM approach to account for the recognised problem of aid endogeneity. This approach avoids the use of external instrumental variables for aid which have been the main methodological deficiency in most past studies because finding a powerful instrument has been really challenging. Fourth, unlike most past studies that used only aid as the main explanatory variable, this study includes conventional control variables in the aid-growth nexus studies. Fifth, it conducts separate tests on the impact of aid on growth and the causality between them. Most previous studies appear to have focused mainly on explaining the impact of aid on growth and said

nothing about whether there exists a causality between them. Thus, this study contributes to the paucity of evidence on the aid-growth causal nexus. Sixth, this study investigates the impact of aid and growth, as well as their causal relationship across country income groups (LICs and MICs) in Africa. The main reasons for this analysis by income groups are that (i) the types and procedures vary by donors, which also affect how aid is implemented; (ii) donors' focus substantially vary across income groups in Africa, where TDs strongly favoured LICs while NTDs inclined towards MICs; (iii) aid continues to be a key resource for financing development needs in LICs; (iv) since 2000, there has been a call for doubling aid flows to the poorest countries or LICs mostly in Africa; and (v) the majority (27 of the 34) LICs in developing countries are found in Africa, and a specific focus on African country income groups could provide typical cases to understand the debate on the aid-growth nexus.

Finally, the empirical findings on the aid-growth nexus will benefit the academics, other researchers in different research institutions, and policy makers both in donor and recipient countries. Moreover, the study will offer timely and important policy implications for African countries on the relative importance of NTDs alongside TDs as an alternative source to support growth and realise the SDGs by 2030.

1.5 Organisation of the Study

This study has seven chapters including the introduction. The rest of the chapters are organised as follows: Chapter 2 discusses the dynamics of foreign aid and economic growth among Low-Income Countries (LICs) in Africa. Chapter 3 presents the dynamics between foreign aid and economic growth among Middle-Income Countries (MICs) in Africa. In Chapter 4, the theoretical and empirical literature on the aid-growth nexus is extensively discussed. Chapter 5 presents the model specification and estimation techniques used in this study with a focus on addressing the main methodological challenges related to the problem of aid endogeneity. It also covers discussion on data sources and choice of variables. Chapter 6 presents a detail discussion on the econometric analysis and discussion of the results based on the main empirical findings. Finally, Chapter 7 summarizes and concludes the study and provides some policy implications.

CHAPTER 2 : THE DYNAMICS BETWEEN FOREIGN AID AND ECONOMIC GROWTH AMONG LOW-INCOME COUNTRIES IN AFRICA

2.1 Introduction

This Chapter discussed the dynamics of foreign aid and economic growth among Low-Income Countries (LICs) in Africa during 2000-2017. The chapter has six sections. Section 2 focuses on constructing the conceptual framework and definition of concepts for the study by presenting a brief review of the historical evolution of foreign aid, aid architecture and associated aid doctrines with much focus since 2000. This section is further divided into different sub-sections. The focus is to discuss the definition of foreign aid and related concepts so as to formulate a common language for discussing foreign aid flows to recipient countries and groups of bilateral donors. It also discussed the main economic development theories in the aid doctrines since its inception, and the changing global aid architecture/landscape, with particular attention given to the period since 2000, which leads to the emergence of two main bilateral sources of aid. In Section 3, the dynamics of foreign aid among LICs in Africa is extensively discussed. Section 4 presents a brief discussion on the dynamics of economic growth among LICs in Africa. Section 5 explores the trends in the movements between foreign aid and economic growth in LICs. Finally, Section 6 concludes the chapter by highlighting the main issues related to the rapidly changing aid landscape mostly since 2000, as well as the dynamics of aid and growth in LICs within such aid landscape.

2.2 A Brief History of Foreign Aid and Evolution of Aid Sources

2.2.1 The origin and evolution of the concept of foreign aid and aid target

Most tend to conclude that the concepts of foreign aid or development assistance took a concrete form following the end of the WWII. The Marshal Plan through which USA provided aid for war-torn Europe is the commonly mentioned aid programme in the late 1940s. The success of marshal aid programme in supporting economic development in Europe had proved aid as a key

development tool and can be replicated elsewhere. This success story seemed to have convinced and further motivated the international community to extend aid for stimulating growth in most of the underdeveloped world outside Europe by the end of the 1950s. In 1958, the World Council of Churches proposed that donors should send 1 percent of their national income as foreign aid for developing countries (OECD, 2006). In 1961, all Development Assistant Committee (DAC[4]) members agreed to contribute this amount of resources for developing countries. Overall, the fundamental rationale behind foreign aid provisions for developing countries is three: humanitarian/moral, political and economic interests (World Bank, 2013). These reasons continue to serve as the underlying motivations of aid allocation for developing countries today. Most importantly, aid for poor countries has received strong public support from many donor countries primarily due to its altruistic reasons (i.e. humanitarian and developmental) (World Bank, 2013).

In the 1950s, foreign aid flows to developing countries included both official and private financing. However, it was soon discovered that mixing official and private flows had major flaws. Recent studies have identified at least three factors why combining private flows with official flows appeared to be a problem (OECD, 2006; Hynes & Scrott, 2013). *First*, the efforts demanded to mobilise private flows entail a different condition compared to official flows. *Second*, government lacks the means to control or predict private resource flows. *Third*, governments also found it difficult to make adjustments in official flows to recompense for fluctuations in private resource flows. In short, as Hynes and Scrott (2013: 4) correctly spelt it out, *"the starting point was a recognition that official support was the only part of the overall resource flows that was subject to direct government control".* This argument goes in line with the fact that boosting economic development in developing countries requires more predictable and long-term financial flows and only official flows are suited for this purpose.

This drawback opened intense negotiations in the international donor communities and the United Nations to separate official flows from private flows and redefine a separate aid target only for official flows. The initial thought was to include both concessional and non-concessional official flows. In due course, however, there was a surge of interest to focus on the concessional nature of

[4] The ten founding members of the DAC system in 1961 were USA, UK, France, Belgium, Germany, Italy, Canada, Netherlands, Portugal and Japan (World Bank, 2013). Among them, USA, UK and France remain as the largest three DAC donors.

flows instead of non-concessional flows. On the one hand, the net aid volume of non-concessional flows was found to be small as it involved repayments (OECD, 2006). On the other hand, non-concessional flows might lead to indebtedness and slow growth in developing countries as most of them were likely to have limited capacity to save and mobilise tax revenues (Hynes & Scrott, 2013). Over time, there was a surge of interest to promote concessional financing as a key means, not only to directly support growth but also to avoid the possibility of future debt problems in developing countries. Cognizant of this, developing countries were also pushing for increased concessional flows (OECD, 2006).

Out of such pressing need for concessional nature of official flows, the DAC adopts the concept of ODA separating ODA from "Other Official Flows" (OOF[5]) in 1969. The DAC identifies ODA as those official transactions with concessional nature of financial terms and the main objective of promoting economic and social developments in developing countries. Since then, ODA continues to be a "golden standard" of foreign aid (i.e. concessional) and main measurement of aid still today (OECD, 2018). Adoption of ODA separated from OOF has been acknowledged as a key step to clearly identifying official financial flows with concessional nature and specifically dedicated for promoting socio-economic development in poor countries (Hynes & Scrott, 2013).

Once the DAC adopted ODA as a standard measure of foreign aid in 1969, the next issue concerned how much each donor should contribute as ODA flows to developing countries. This issue was settled a year after in 1970 when the United Nations General Assembly passed a resolution suggesting that donors should contribute 0.7 percent of their Gross National Income (GNI) as ODA. This aid target served as a requirement from each donor to promote economic development and welfare in developing countries (OECD, 2006). The OECD DAC has been using this official aid target to measure donors' contribution for foreign aid flows to eligible DAC list of recipient countries. Moreover, this official target was reaffirmed in 2015 and continues to be a central part of the post-2015 era of Sustainable Development Goals (SDGs) (UN *et al.*, 2015).

[5] Although OOFs are disbursed by official government agencies, they are non-concessional in nature and are excluded from ODA flows. OOFs include export credit and investment loans.

2.2.2 Definition and coverage of foreign aid

As noted in the previous section, the DAC adopted ODA as a "golden standard of foreign aid" in 1960 to measure concessional flows[6] of aid to developing countries (OECD, 2006; 2018). The original ODA definition in 1969 stated it as official flows composed of grants and soft loans from donor countries with the main purpose of promoting development in aid recipient countries (OECD, 2006). This definition implies that ODA has two main types – grants and soft loans or concessional loans. The original definition of ODA was further refined and made firmer in 1972 by adding some qualification to the concessional nature of soft loans that loans should include at least 25 percent of grant element at a 10 percent discount rate. In 972, the OECD DAC agreed on a more refined definition of ODA as official flows composed of grants and concessional loans from donor countries to developing countries and multilateral development institutions shown on the DAC List of ODA Recipients[7]having the main objective of promoting economic development and welfare among aid recipient countries.

Since the turn of the 21st century, new donors have been joining the global aid system and tending to challenge the existed DAC aid system of the 1960s. Although "what constitutes development assistance or the concessionality of loan finance has no internationally agreed definition" (UNESC, 2008: 9), the lack of clear definition from new donors (UNDP, 2016) makes the DAC ODA definition as the standard measure and sources of development aid (OECD, 2018). Thus, the DAC's more refined definition of ODA in 1972 remains the standard definition for foreign aid and still applies in the current aid landscape. A closer look into this definition would lead us to further identify five specific criteria that a type of flow must meet to be considered as foreign aid/ODA. These criteria are the following:

- *The type of flows.* ODA flows include grants, loans, equity or technical assistance.
- *Official source/origin*. Foreign aid must be provided by official bodies of donor countries.

[6] Literally speaking, there are two categories of external official financial resources from developed countries to developing countries: concessional flows and non-concessional flows. In 1969, the two financial forms were separated where concessional flows were termed as foreign aid of ODA, while the non-concessional flows were labelled as Other Official Flows (OOFs).

[7] Aid recipients are developing countries. In 2017, the DAC list of recipients included all countries in Africa (See Appendix A).

- *Recipients.* Aid recipients must be developing countries or multilateral institutions supporting these countries.
- *Developmental motivation/purpose*. The primary purpose of foreign aid is to foster economic development and welfare in aid-recipient countries.
- *Concessionality.* Loans must have concessional nature noted above. This means loans must be provided with below market interest rate and longer maturity period.

Apparently, OECD DAC uses these five criteria to allow for homogeneity in reporting and comparability of aid flows from different donors. More specifically, the promotion of development and welfare is the main basis which OECD DAC uses to classify the type of flows as ODA or not. Table 2.1 summarises what type of aid flows are counted as foreign aid/ODA or not.

Table 2.1: A summary on the type of flows that are considered as ODA and not.

Type of flows that qualifies as ODA	***Type of flows that doesn't qualify as ODA***
• Programme and project assistance • Humanitarian aid including use of military force for it and development activities • debt relief • Public expenditure in the donor country for citizens of partner countries: a) costs of education provided to developing country nationals b) refugee cost in the first year of their stay c) costs to raise development awareness • Administrative costs of ODA programmes • Subsidies to NGOs • UN approved peacekeeping operations for human rights, elections etc. • Expenditure for civil policy works • Social and cultural programme for enhancing sports training facilities, museums, libraries, arts, music schools. • Nuclear energy for peaceful uses • Research costs relevant for developing countries-tropical diseases & developing crops • Concessional loans which include a grants element of at least 25 percent (at 10% discount rate).	• Military aid and promotion of donor's security interests • Grants or loans primarily commercial activities such as export credits and investment loans (i.e. OOFs) • Loans with no concessional character • Grants or subsidies given to the private sector to soften its lending terms to developing countries • Loans with one year or less than one year maturity period. • Peacekeeping enforcements outside UN approved missions. • Social and cultural programme for funding travels for athletes and concerts. • Nuclear energy for military uses • Anti-terrorism activities as they are more to the benefit of donors than recipients

Source: Own representation using (OECD, 2006, 2018; UNESC, 2008; Schirl & Sieler, 2012).

As shown in Table 2.1, aid flows to the listed areas of activity are assumed to be key for defining the primary purpose of giving aid for supporting economic growth and poverty reduction in aid-recipient countries. On the other hand, the types of activities listed under the non-ODA category are considered to be least useful to promote economic development in developing countries. Among others, these include funding for military purposes, nuclear energy for military activities; anti-terrorism; peacekeeping enforcements outside UN approved operations; market-based loans, as well as loans with less concessional character carrying below 25 percent grant element. Overall, the standard DAC foreign aid definition continues to be used to measure aid flows from all official donors both within the OECD/DAC reporting system and outside (i.e. newly emerging donors mostly since 2000).

2.2.3 Foreign aid channels, instruments, and modalities

In line with the standard definition of aid discussed above, the DAC global aid system adopts additional key terms or terminologies to explain how aid flows are managed and administered, such as: aid delivery channels, aid instruments, and aid modalities. This implies that aid flows from official donors are transferred to recipient countries through different delivery channels (i.e. bilateral & multilateral), financial instruments (i.e. grants & loans), and modalities. These terminologies are briefly defined and discussed as follows:

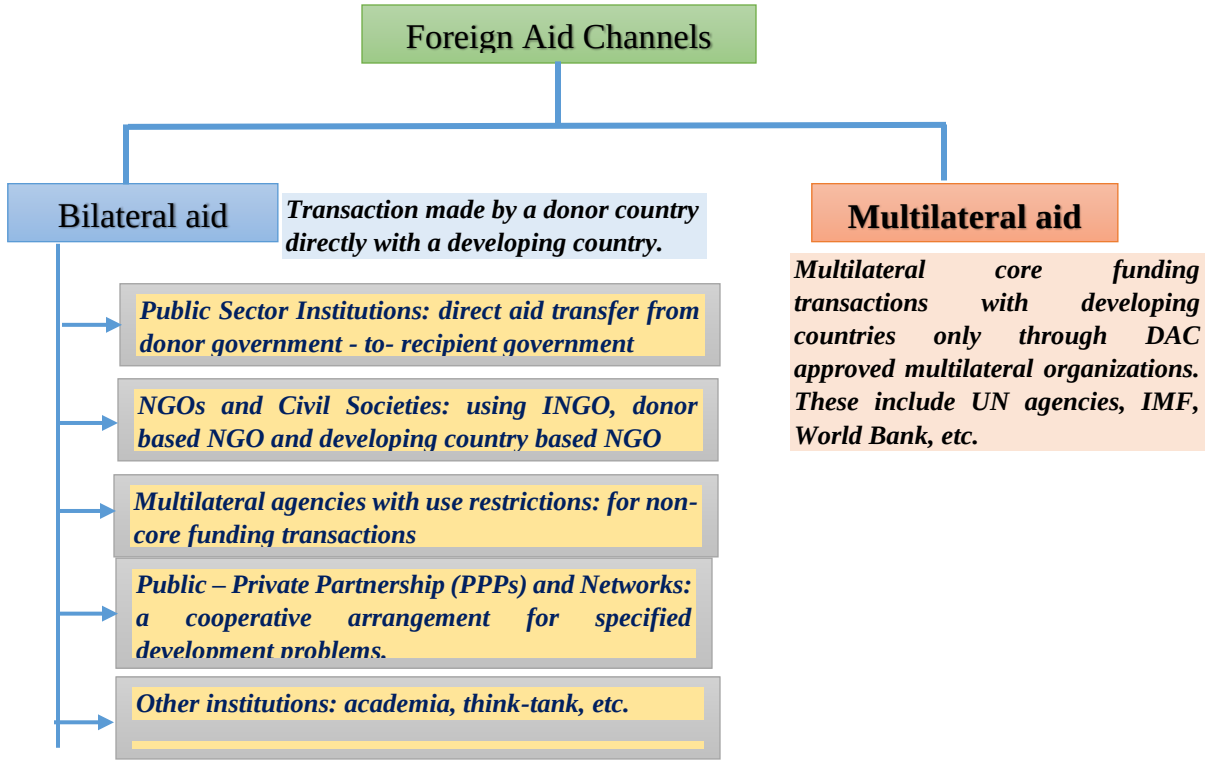
2.2.3.1 Aid delivery channels

Aid channel is another key concept used in the OECD DAC aid system. DAC uses it as a mechanism to identify recipients of aid allocations from multilateral aid, as well as the type of institutions that undertake bilateral transactions. DAC defines aid channels as the "first implementing partner" that is formally linked to the extending agency or the budget holder (OECD, 2009). This implementing partner holds both the responsibility and accountability over the finances. According to the DAC classification of aid transactions, there two main aid channels through which aid reaches recipient countries – bilateral aid and multilateral aid channels (OECD, 2009). Bilateral aid refers to aid disbursements from a donor country directly to a developing

country. It involves a state-to-state direct aid transfer to specific countries and programmes. Transactions for interest subsidies; costs of development awareness promotion; debt relief, and administrative costs are included in the bilateral transactions. In this bilateral transaction, a donor country knows exactly about the destination of aid allocation. Put differently, bilateral transaction is of earmarked nature with donor's control over the funds. On the other hand, a multilateral aid channel is aid delivered by bilateral donors to multilateral or regional organisations for core funding activities and with unrestricted uses. In essence, multilateral aid flow very often loses its identity and allows recipient countries to integrate it in their own financial assets. This means that donors tend to lack the opportunity to directly control and influence the use of multilateral contributions by aid-recipient countries. Compared to multilateral aid, bilateral aid transaction remains the dominant aid channel for aid allocation to developing countries.

While multilateral aid is channelled only through multilateral organisations indicated in the DAC OECD system, bilateral aid transaction can be done through a variety of channels. Figure 2.1 presents the main and sub-categories of aid channels. As shown in Figure 2.1, bilateral aid transactions can be undertaken through five types of channels such as public sector institutions; multilateral agencies for non-core funding; Non-Government Organisations (NGOs – both international and national) and civil societies; Public – Private Partnerships (PPPs) networks; and other institutions such as academia and think-tanks. Transaction through multilateral agencies is said to be bilateral when donors have control over the use of contributions for these organisations. In other words, these multilateral organisations are just serving as channels for bilateral aid. PPPs and networks entail cooperation between bilateral/multilateral agencies or governments and private sectors to solve specified developmental problems. Among bilateral channels, public-sector channels (i.e. direct aid transfer from donor government–to-recipient government) is the dominant one.

Figure 2.1: Foreign aid delivery channels



Source: Own elaboration using OECD, 2009.

2.2.3.2 Aid compositions or financial instruments

Regardless of the channels of aid delivery discussed above (i.e. bilateral and multilateral aid), donors use two main financial instruments to disburse aid to developing countries. They are grants and concessional loans. For instance, if we consider the dominant aid channel (i.e. bilateral aid), it is composed of pure grants and concessional loans. This means bilateral transactions are very often done using these two types of financial instruments. In essence, grant aid is a type of flows which is a free gift from rich countries to poor countries that don't require repayment. Grant aid transactions are made in two forms – direct cash transfers and/or in-kind transfers. Direct financial transfers are for internal development activities including payments for interest subsidies; debt forgiveness; development awareness promotion and administrative costs (OECD, 2009). In-kind

transfers mostly take the form of technical cooperation[8] (OECD, 2007). On the other hand, loan is a type of financial flows with a maturity period of more than one year and repayment is involved. While grant aid is fully concessional, loan has concessional character carrying at least a 25 percent grant element at a discount rate of 10 percent. Indeed, the concessionality of such loans increases with the longer maturity periods, the higher grant elements, and lower interest rates. Moreover, concessional loans are more beneficiary for recipients if it is more of soft loans (loan repayments require domestic currency) rather than hard loans (i.e., loan repayments require foreign currency).

The issue of "tying aid" has been closely linked to the use of these financial instruments. Tying aid entails a sort of conditionality in the provision of aid, which takes two forms – input conditionality and output conditionality (World Bank, 2013). Input conditionality is a situation where grant and loan receiving countries are required to procure commodity and consultancy service from donor countries. Output conditionality refers to the policy conditionality the TDs (i.e. DAC donors) have been pursuing when providing aid to developing countries. Accordingly, as widely observed in the 1980s and 1990s, aid recipient countries are required to implement the variety of donors' policy prescriptions in the areas of market reforms, macroeconomic stability, and structural adaptation programmes (World Bank, 2013).

In 1978, the OECD DAC decided that total aid should consist of grant aid of 90 percent for Least Developed Countries (LDC) and 86 percent for developing countries. This adoption of aid composition makes grant aid to be the dominant type of aid flows to recipient countries compared to loans. Be this as it may, there remains a debate whether foreign aid should be allocated in the forms of more grants or more loans. Indeed, much of the controversy between grants and loans is on their likely effect on tax effort and growth in aid-recipient countries (Morrissey *et al*., 2006). Grant aid appears to be more conducive for poor countries to minimise debt burden, as well as promote economic growth. This implies that poor countries are at risk of debt stress and would like to receive more grants instead of additional loans so as to avoid future indebtedness. For poor countries, therefore, the issue of debt sustainability is the key aspect of concessional loan

[8] Technical cooperation is a type of bilateral aid delivered to strengthen the implementation of capital projects in the recipient countries. According to OECD (2007: 228), it is composed of expenditures related to - (a) costs (grants) of education or training for nationals of recipient countries, (b) costs of foreign expertise (such as consultants, advisers, teachers and administrators) assigned to recipient countries, and (c) costs of equipment associated with such technical assistances.

provision. On the other hand, loans are more supportive in generating incentives for encouraging domestic resource mobilisation in aid-recipient countries (Morrissey *et al*., 2006). As a way of summary to such debates, Table 2.2 presents the main arguments in favour of and against for each type of aid instrument.

Table 2.2: Summary of the main debates on aid compositions/instruments

Arguments in favour of grants over loans

- More conducive for growth by avoiding indebtedness and supporting stable fiscal policy in poor countries.
- More preferable for funding public sector and the social sectors (e.g. health, education etc.) in poor countries.
- Key resource to support improvements of living standards in the poorest countries.
- Key resources for emergency situations, environmental and climate activities etc.

Arguments against grants

- Grants may have weak incentives for fiscal discipline and decrease domestic resource mobilisation in recipient countries.
- In countries with high corruption, increasing grants has negative impact on domestic revenue collection

Arguments in favour of loans over grants

- The prospect of repayment enables loan aid to finance large-scale projects with high returns in middle income countries.
- They strengthen incentives to generate domestic resources or revenues.
- Profits from loans are recycled, making the aid programmes more sustainable.
- Loans improve domestic resource mobilisation among recipient countries.

Arguments opposing loans

- Loans may increase debt burden.
- A low level of concessional loans is not optimal for poor countries.
- Loans may increase risk of default.
- Loan repayment not only weakens future resources but also stifles growth in recipient countries.

Source: Own compilation

By and large, a donor's optimal choice between these two aid types of instruments is guided by at least three criteria. According to Development Initiative (DI) (2013: 2), the three criteria include – recipient country income level; targeted sector – productive or social; and recipient country's debt distress and indebtedness level.

2.2.3.3 Aid modalities

Regardless of the channels of aid delivery (i.e. bilateral and multilateral aid) and financial instruments (i.e. grants and loans) discussed above, aid allocations to recipient countries are conducted through a variety of aid modalities. Aid modalities are defined as specific mechanisms through which aid resource/finances are disbursed for identified aid-supported activities in recipient countries. The modalities can take a hybrid form of financial transfers (budget support, project support, etc.) and in-kind transfers (technical assistance). In 2009, the DAC Working Group identified new typology of eight aid modalities to be implemented since 2011 (OECD, 2009; World Bank, 2013). Based on OECD (2009) and World Bank (2013), a brief summary of the definition and description of these eight aid modalities with their sub-categories is discussed as follows.

Budget support: It is a mechanism of direct transfer of aid to the national budget system in a recipient country and is managed according to the recipient's financial procedures. The focus is to finance a recipient's budget towards promoting development activities in a recipient country. Budget support has two sub-categories:

- *General budget support*: It is un-earmarked funding which aims to support macroeconomic reforms such as structural adjustment programmes and poverty reduction strategies in the recipient countries. This is not associated with any typical activity or project and allows recipient governments to use their own accounting procedures and spend it according to their priorities.
- *Sector-specific budget support*: it is earmarked aid focusing on sector-specific problems. This type of funding targets micro-level or sector-specific projects based on sector-specific conditionality. This aid modality is in contrast to the general budget support, which is un-earmarked aid targeting macro level priorities.

Core contributions and pooled programmes: This aid modality entails a donor to share responsibility with other relevant stakeholders in the aid system (i.e. other bilateral donors, NGOs, PPPs, etc.). Sharing responsibility implies that the donor renounces the excessive influence over its funds. This aid modality includes core contribution to the following sub-groups:

- *NGOs (local, national, & international), PPPs, and research institutes (private and public).* These institutions have the discretion to use the fund for their own priorities.
- *Multilateral institutions:* This support refers to multilateral aid where such institutions receive aid from bilateral donors and disburse it to recipient countries.
- *Bilateral* contributions for non-core or specific purpose funded operations by international organisations (multilateral, INGOs).
- *Basket or pooled funding:* This is a type of aid modality where a donor disburses aid to an autonomous account that is jointly administered along with that of other donors and the recipient government.

Project financing: This modality includes aid disbursement using NGOs and international organisations, as well as feasibility studies, appraisals, and evaluations.

Experts/know-how and other technical assistances: This modality is about sharing knowledge and skills with recipient countries by using donors' personnel, training, and research. It has two sub-types.

- *Donor country personnel:* This involves sending experts, consultants, professionals (teachers, academics and researchers), and volunteers to developing countries.
- *Other technical assistance:* This involves providing a variety of supports to developing countries (training, research, language training, collaborative research between universities and organisations in donor and recipient country, local scholarship, social and cultural programmes with development focus, conferences, seminars, workshops, etc.).

Scholarships and students costs in donor countries: In this aid modality, financial aid is provided for individual students and trainees, as well as indirect ("imputed") tuition costs in donor countries.

Debt relief: This modality involves an agreement between creditors on how to avoid borrower's debt problems using the different mechanisms available. These include cancelling all or part of the loan (debt forgiveness), lengthening/changing the duration and terms of debt repayment (debt rescheduling).

Administrative costs not included elsewhere: Such costs are not shown elsewhere as costs of aid programme implementation. This includes activities related to situation analysis and auditing.
Other in-donor expenditures: It is a type of aid modality for transactions made in donor countries. This aid modality consists of two components:

- *Development awareness:* Financing activities required for raising public support using special lectures, as well as disseminating information regarding the national aid programme. This is to create awareness in the aid-giving country about the aid programmes and related matters.
- *Refugees in aid-giving country*: Funding official sector costs to sustenance of refugees (from aid-recipient countries) during the first year of their stay in aid-giving or donor countries.

A closer look into these aid modalities reveals that most of them are used for a bilateral aid delivery channel (i.e. bilateral aid modalities). A multilateral aid delivery channel uses a few of them, mostly limited to the core contributions and pooled programmes (i.e. multilateral aid modalities)**.** Furthermore, it is worth noting that not all of the eight modalities are frequently used by donors. Aid modalities that are most frequently used are budget supports (both general and sector-specific support); project financing and non-core contributions to specific-purpose programme (i.e. multilateral funding for bilateral aid). Overall, according to OECD (2009: 63), the choice of this mix of aid modalities depends on factors related to: (i) the size of a development co-operation programme in recipient countries; (ii) the history and type of external finance providers to recipient countries; and (iii) the recipient country context in relation to managing aid flows.

2.2.4 The unique features of foreign aid for poor countries and Africa

In the current changing global aid landscape, the emergence of new actors/donors, as well as international and regional financial markets, seemed to have opened alternative sources of external funding for developing countries. Although global and regional financial markets increase the role of non-concessional flows (both official and private) for developing countries, foreign aid remains

to be key external funding for least developed countries (OECD, 2013; EU, 2014; UN *et al.*, 2015). Foreign aid is critical for low-income countries to support activities towards domestic resource mobilisation, private sector development and public infrastructure (EU, 2014). Indeed, this suggests that foreign aid continues to play a vital role in poor countries even in the post-2015 era. More specifically, foreign aid continues to play a critical role for financing SDGs in Africa as the continent hosts most of the low-income countries.

Over and above, foreign aid is believed to have a comparative advantage to be targeted for poor countries in a way that other non-concessional resources cannot (UN *et al*, 2015). Perhaps, this is worth pinpointing the main features of such comparative advantage that makes foreign aid a unique funding for most needy poor countries, unlike other non-concessional sources. Indeed, it can be argued that these unique natures have emanated from the very definition[9] of foreign aid as an official origin, developmental purpose and concessional character. Such unique features of foreign aid are summarised as follows.

- *Foreign aid has concessional character*. While non-concessional or market-related financing is driven by profit motives, aid has concessional character and is not guided by profit motives (UN *et al.*, 2015). Put differently, foreign aid *"is not investment banking"* and doesn't target countries with a potential of highest investment returns (OECD, 1994: 39). Thus, aid flows have been highly concentrated in poor countries where the possibility of earning adequate investment returns is limited. Evidences have shown that non-concessional financing could lead to indebtedness in the poorest countries as they have limited capacity to save and mobilise tax revenues required for loan repayment (Hynes & Scrott, 2013).
- *Foreign aid has public good nature.* As clearly noted in EU (2014), foreign aid is not a direct substitute for private finance. This is because foreign aid is a global public finance uniquely designed to finance public goods in the poorest countries. The report further underscores that private finances are more useful for higher income countries but face difficulty in financing public goods in low-income countries. Furthermore, domestic resource mobilisation for financing development is limited in low-income countries. Thus, the public nature of foreign aid makes it to be uniquely suited to finance public services in the social sector in poor

[9] Indeed, this fact implies that the OECD DAC standard definition of aid remains crucial for explaining the current official aid flows from all donors (both TDs & NTDs) since 2000 despite the debate on this definition as narrow and less inclusive to fully accommodate new official aid flows from the non-traditional donors.

countries that are not covered by other resources (EU, 2014; UN *et al.*, 2015). In short, foreign aid is more concentrated in countries encountering multifaceted development problems: emergency situations, refugee inflows (OECD, 1994); humanitarian crisis, most vulnerable and marginalised communities (WVA, 2017).

- *Foreign aid is more predictable and counter-cyclical external funding*. This unique feature makes foreign aid remain as a dominant and less volatile source of external funding for low-income countries (OECD, 2013; EU, 2014; WVA, 2017). As a matter of fact, poorest countries have fewer alternatives of external financial resources other than foreign aid (OECD, 2013). Overall, unlike non-concessional financing, foreign aid is unaffected by profit motives, more predictable with a long-term approach, and can be suited to manage complex development challenges in poor countries (WVA, 2017).
- *Foreign aid has a wide variety of instruments.* According to UN *et al.* (2015: 2), a wide variety of foreign aid instruments *"allow it to adapt to the context, whether leveraging new finance or delivering basic services"*.

2.2.5 The global aid landscape[10]: Evolution and main aid doctrines

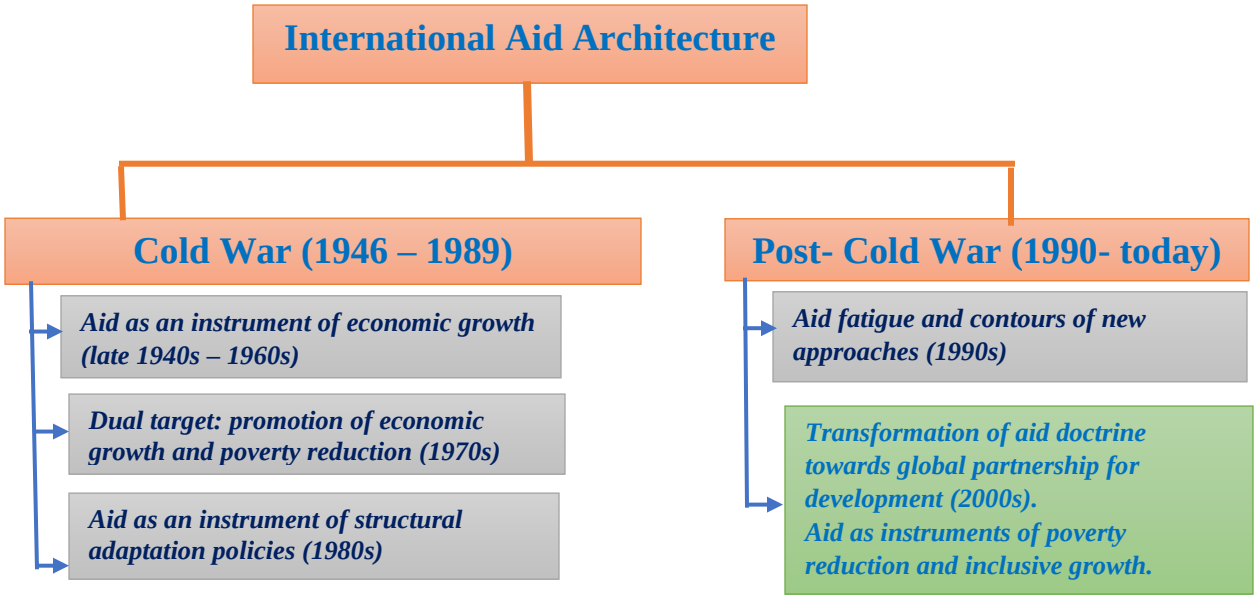
The history of the global aid architecture/landscape goes back to the origin of the concepts of ODA or foreign aid. It is established based on the aforementioned three pillars (i.e. humanitarian, political and economic) of aid rationale, widely promoted since the 1950s and still remains intact today (World Bank, 2013). Broadly speaking, aid architecture/landscape refers to rules, principles, and institutions put in place for managing and governing aid flows from donors to recipient countries (IDA, 2007). The rules and institutions that constitute the current aid architecture are, therefore, the results of debates and decisions over the last 60 years. As noted in the definition, aid architecture has two main pillars – aid institutions and aid rules or principles. Aid institutions refer to donors and donor agencies, as well as international organisations which actively participated in the global aid programme. On the other hand, aid rules and principles refer to the procedures and guidelines on how and in what conditions aid is programmed and delivered to developing

[10] The term architecture and landscape can be used interchangeably.

countries. They are concerned with five main areas including the definition of aid: aid target; the purpose of aid; aid modalities; and the management of aid (IDA, 2007).

According to the International Development Association (IDA, 2007), the global aid architecture has two major phases: "the Cold War Aid Architecture" and the "Post- Cold War Aid Architecture". Figure 2.2 presents the global aid architecture/landscape and stages of aid doctrines.

Figure 2.2: The evolution of aid architecture and stages of aid doctrines



Source: Own elaboration based on different studies (IDA, 2007; World Bank, 2013; OECD, 2006; UNCTAD, 2014; Veiderpass, 2015). *The division of aid landscape to Cold War and Post-Cold War is based on World Bank (2013) and IDA (2007).*

As shown in Figure 2.2, the first phase of aid architecture refers to the Cold War Aid Architecture covering the period between post-WWII (Second World War) and the end of the Cold War around 1989. The second phase of the global aid architecture has emerged since 1990 and still applies today. For better clarity, this aid landscape is further categorized into two phases of development. The first phase is defined as the Post-War Transition, which covers the period from 1990s to the turn of the 21st century. The second phase has emerged since 2000 and is described as the New Millennium Development (IDA, 2007). In a way to differentiate this phase from the first phase (i.e. the Post-Cold War Transition), a recent study defines it as the transformation of aid doctrine towards global partnership (World Bank, 2013).

Within such global aid landscape, as shown in Figure 2.2, the evolution of aid doctrines has passed through different stages or phases. While the division of aid architecture into two types is more political, the stages of aid doctrines are classified based on the dynamics of changes in economic as well as "socio-political" factors (World Bank, 2013). In this regard, the aid doctrine can be described as the general principles and practices of aid policies pursued by the international aid/donor community (World Bank, 2013). According to World Bank (2013: 39), a combination of three factors has shaped aid doctrines: goals, major theoretical views, and the set of indicators used to evaluate aid-effectiveness. This implies that the global aid landscape operates based on balancing the three fundamental rationales of giving aid (i.e. humanitarian, political and commercial). Overall, there emerges a growing consensus that the turn of the 21st century has undergone a dramatic transformation in the international aid landscape[11] and aid doctrine. Major development in the aid landscape and aid doctrine since 2000 is briefly discussed below.

2.2.6 Understanding the current transforming aid landscape since 2000

The international aid landscape has been undergoing drastic transformation since the turn of the 21st century. Broadly speaking, two main developments could briefly explain the underlying transformation of the global aid landscape since its inception in the 1950s. They are a major ideological shift from the Marshal Plan aid (1950s – 1990s) to a global partnership for development financing since the turn of the 21st century (2000 to date). A brief discussion on both developments is presented as follows:

2.2.6.1 Major ideological shift of the global aid landscape

As highlighted in the preceding sections, the international aid landscape could be traced back to the origin of the concept of ODA or foreign aid in the global development forum in Europe since

[11] Broadly speaking, the main developments that characterise shifts in the global aid architecture since 2000 are the emergence of different development partners such as private donors and new official donors or non-traditional donors (NTDs) outside the OECD DAC system or traditional donors (TDs). The aim of this study is, however, to consider only official aid from both TDs (DAC donors) and NTDs (outside DAC donors).

the 1950s. By then, provision of aid through the Marshal Plan was the dominant aid programme. This aid programme proved to be successful to stimulate and sustain growth in war-torn Europe. The OECD was established as the main regulatory framework to administer the aid landscape. The OECD put in place clear rules, principles and procedures to manage aid flows through the Marshal Plan aid programme. Since the 1960s, the OECD has continued to play the same role of administering the aid landscape in developing countries. The OECD established the DAC in 1961 to consistently manage and govern the aid system. Thus, the OECD DAC aid system dominated the global aid system over the last several decades until the end of the 20th century. However, the global aid landscape has been rapidly changing since 2000 following the rising influences of new donors outside the traditional aid programme which was dominated by the DAC member countries during the 1950s – 1990s. Since 2000, the new global aid landscape is characterised by a major ideological shift from the Marshal Plan aid within the traditional DAC aid system to a global partnership for development financing between all donors within and outside the DAC aid system (OECD, 2006).

In the 2000s, a universally accepted vision that guides global development partnership has stemmed from the MDGs and SDGs established in 2000 and 2015 respectively. The principle of global partnership for development was explicitly incorporated in the MDGs (i.e. MDG 8) and the more inclusive SDGs (i.e. SDG 17) (OECD, 2006; UNCTAD, 2014). The MDGs and SDGs have broader development objectives of poverty reduction, social development and inclusive growth in developing countries. In this context, the new global aid landscape since 2000 has been expected to broaden the global development financing sources for developing countries to help them achieve the broader development objectives indicated in the MDGs and SDGs. The main focus was to increase aid flows that are predictable and sustainable to enhance socio-economic and human development so as to reverse the rising marginalisation of the poor (OECD, 2006). Despite the broader approach on development in the 2000s, the SDG 8 has also identified economic growth as key focus area (UNCTAD, 2014). Promoting economic growth in aid recipient countries remains to be the underlying yardstick to evaluate aid effectiveness (Veiderpass, 2015). Indeed, this may suggest that the role of aid for economic growth cannot be ignored despite the main focus of aid has been shifted towards poverty reduction since 2000.

Therefore, the key implication of the underlying transformation of the global aid landscape since 2000 is the increasing recognition of global partnership for development finance among all donors, be it traditional donors (TDs) or non-traditional donors (NTDs). The international aid community and development partners acknowledge that aid can only work through shared commitments of all donors (within and outside the DAC system) and other development partners. This was clearly pronounced during the First and Third International Conference of Development Financing in Monterrey 2002 and Addis Ababa Action Agenda (AAAA) 2015. In both conferences, the international aid community agreed for increasing aid flows from all donors (TDs & NTDs) to help poor countries achieve the development goals outlined in the MDGs and SDGs. Furthermore, another major development in the new global aid landscape was the formulation of the agenda on aid effectiveness based on the Paris Declaration for Aid Effectiveness (PDAE) in 2005 to improve the effectiveness of aid for poverty reduction and inclusive growth in developing countries. The PDAE 2005 and subsequent action agendas in 2008 and 2011, have promoted the principles of ownership, alignment, aid management and coordination between donors and recipient countries to enhance aid management and improve aid effectiveness. Among others, the PDAE has underscored that a reliable and predictable aid flow is critical to enhance aid effectiveness in developing countries.

2.2.6.2 The current global aid landscape and age of choice between donors

The global aid landscape, established in the late 1950s in Europe and extended to developing countries in the 1960s, was dominated by the traditional aid programme administered by DAC donors or TDs. Such DAC donors-dominated aid landscape has been evolving over time with having the most dynamic transformation at the beginning of the 21st century. Scholars have stressed that this dynamic change was caused predominantly by the emergence of new donors or NTDs with diverse approaches for aid delivery and increasing partnership with existing TDs (OECD, 2006; World Bank, 2013; Greenhill *et al.*, 2013; UNDP, 2016). Among others, the new aid landscape since 2000 has been characterised by at least three major features with substantial impact on the way foreign aid is managed and coordinated. *First*, the goals of foreign aid have been converging both for TDs and NTDs. *Second,* there is increasing recognition of the role of

new donors (NTDs) as global aid providers, and there is high interest to integrate them into the existing aid architecture. *Third*, there is substantial development cooperation among all donors for joint effort to mobilize more aid resources. This implies that the new aid landscape appears to be inclusive of NTDs alongside the TDs - DAC members. In 2017, OECD reported (OECD, 2018) a total of 58 official donors composed of 28 TDs and 30 NTDs. Out of the 30 NTDs, 20 of them were reporting their annual aid flows to the OECD DAC system while 10 of them did not do so. *AidData* online database is emerging as a dominant and reliable platform to compile aid flows from the 10 NTDs that don't report aid flows to the OECD DAC aid system[12]. So far, out of the 10 NTDs, *AidData* 2017 has compiled a full aid dataset for China aid flows between 2000 and 2014.

Overall, among others, the key implication of the new aid landscape is the growing consensus that the emergence of NTDs alongside TDs would provide additional sources of aid financing for poor countries mostly in Africa. The global aid landscape since 2000 is represented as a "silent revolution in development assistance" (Woods, 2008) and the new "age of choice" among different sources of foreign aid mostly between TDs and NTDs (Greenhill *et al*., 2013[13]). As a result, such developments have led to growing aid flows from NTDs to developing countries since 2000 (Greenhill *et al.*, 2013; UNDP, 2016). As a major aid recipient, Africa is no exception. Although small volume compared to TDs, NTDs have emerged as important additional sources of aid for Africa since 2000. In this regard, a strand of recent literature has provided evidence of increasing aid flows from NTDs to Africa alongside TDs, albeit the volume of NTDs aid flow was marginal compared to that of TDs. For instance, Greenhill *et al*. (2013) reported that aid flows to poor countries have shown an increasing trends since 2000 with huge changes in aid composition and greater parts coming from NTDs. This study reported that total aid from both sources increased from $64.8 billion in 2000 to $173.3 billion in 2009.

[12] In this study, all donors (i.e. 28 TDs, 20 NTDs, China) reporting annual aid flows to the OECD DAC system and AidData are included. It excludes the 9 NTDs that don't report annual aid flows either to OECD DAC or AidData databases. The full list of TDs & NTDs used in this study is shown in Table 2.4 for LICs and 3.3 for MICs.

[13]Although Greenhill *et al.* (2013) have identified different sources of foreign finance including traditional donors, non-traditional providers, philanthropy, social impact investment, global funds and climate finance, only traditional and non-traditional development finance mechanisms are identified as dominant sources of global aid for developing countries, mostly Africa. Traditional and non-traditional donors are major sources of aid while the role of other sources of aid appears to be insignificant. The current study focuses on aid from both traditional and non-traditional donors.

Although TDs' aid remains a dominant source of aid, it has shown a slightly falling trend over the recent decades. For instance, aid from TDs (as % of GNP) declined from 8.6 percent in 2000 to 7.9 percent in 2014 (Lopes *et al*., 2017). Given this, there is an increasing consensus that foreign aid from NTDs could be seen as another source of aid to finance the post-2015 development goals (Greenhill *et al*., 2013). According to this study, between 2000 and 2009, there was a ten-fold increase in aid flow from NTDs that rose from $5.3 billion (8.1 percent of the total) in 2000 to $53.3 billion (30.7 percent of the total) in 2009. According to UNCTAD (2014), aid from NTDs such as China and India, tripled between 2000 and 2012 where Africa and Haiti received 55 percent of it. ECA (2015a) also reported a rising trend in aid flows from NTDs (with China providing the lion's share) to Africa which amounted to 45.7 percent of China's total aid by the end of 2009.

A critical look into this evidence suggests that aid from NTDs is gaining popularity among recipient countries mostly in Africa. First, unlike aid from TDs, NTDs aid has come up with flexible and innovative approaches (ECA, 2015b, 2015a; Greenhill *et al*., 2013; Lopes *et al*., 2017). Second, it can complement the unpredictable form of aid flow from TDs *(*UNCTAD, 2014; Lopes *et al*., 2017). Following the financial crisis of 2008, austerity measures adopted in TDs countries caused a 14 percent fall in aid flows from TDs during 2000-2012 (UNCTAD, 2014). Third, foreign aid from NTDs mostly targets infrastructure and productive sectors *(*ECA, 2015a, 2015b; UNCTAD, 2014; Tierney *et al*., 2011). Since 2000, TDs have assigned only 10 percent of infrastructure aid a year while NTDs assigned 15 percent (Tierney *et al*., 2011). This suggests that NTDs are increasingly supplementing funding for infrastructure following a sharp decline in such funds from TDs. According to Tierney *et al*. (2011), this example serves as one reason for accounting foreign aid beyond the TDs in discussing aid flows. Foreign aid from TDs focuses more on human development in the post-2015 era. So, poor countries need to mobilise more aid from NTDs alongside the TDs if they want to finance the productive sectors and promote growth (UNCTAD, 2014; OECD, 2017). Therefore, it is very important to consider foreign aid from both TDs and NTDs to capture the effectiveness of aid (both aggregate and disaggregate by sources) for supporting growth and development in Africa.

In the section below, the dynamics of foreign aid and economic growth among LICs in Africa in light of the current changing aid landscape since 2000[14] is discussed in details.

2.3 The Dynamics of Foreign Aid among Low-Income Countries in Africa[15]

As highlighted in the previous section, the global aid landscape has been rapidly changing since 2000, which is characterised by the "age of choice" between two main bilateral sources of aid: TDs and NTDs. Furthermore, the Monterrey Consensus in 2002 has come up with explicit commitments for all donors to ensure that aid allocation should target or prioritise: (i) the poorest countries or LICs mostly in Africa, and (ii) the public infrastructure and productive social sectors which are critical instruments to support growth and development. This section presents a descriptive analysis on the dynamics and patterns of aid disbursements and sectoral compositions in LICs from 2000 to 2017. This analysis focuses on bilateral aid and provides some trend analysis and stylised facts in terms of total net aid disbursements; main aid sources; donors' focus/target; aid dependency; and sectoral aid compositions by aid sources.

2.3.1 Trends of net bilateral aid disbursements and main aid sources

Over the last 18 years since the turn of the 21st century, bilateral aid flows have increased substantially in Africa in general and LICs in particular. Table 2.3 presents the volume and share of net bilateral aid disbursements to Africa and LICs by sources of aid from 2000 to 2017.

As shown in Table 2.3, Column 2, total net aid disbursements to Africa increased nearly two-fold (1.9 times): from $13.7 billion in 2000 to $25.6 billion in 2017. On average, the largest share (89

[14] Although most of the NTDs have been providing aid for so long, it is only after the turn of the 21st century that the number of such donors increases fast, their aid flows grow substantially, and their rising influence caused the global aid landscape to exhibit radical changes since 2000 (OECD, 2010; DI, 2013; Greenhill *et al.*, 2013). Moreover, for NTDs that don't report to OECD DAC such as China, aid data from *AidData* has been available only since 2000. This also serves as a main reason why the current study aim at using aid data starting from 2000 for both donor groups.

[15] A peer-reviewed research article is published from this sub-section of Chapter 2. ***Mamo G., Tefera and Odhiambo M., Nicholas (2020) The Dynamics of Foreign Aid Trends and Patterns among Low-Income Countries in Africa***. Folia Oeconomica Stetinesia- Sciendo, Vol. 20 (2020), Issue 2, pp. 403-422. https://doi.org/10.2478/foli-2020-0056

percent) of this aid came from TDs while NTDs also contributed about 11 percent, suggesting a modest rising influence of NTDs in Africa. Regarding LICs (see Column 4), total net aid disbursements increased by slightly two-fold (2.3 times): from $7.4 billion in 2000 to $16.7 billion in 2017, representing a 126 percent increase. In real terms, total net aid to LICs increased by $9.3 billion between 2000 and 2017. In absolute value, total net aid disbursement reached its peak in 2011 ($18.8 billion), and the falling trend after 2011 seems to have shown a slight recovery in 2017.

Table 2.3: Trends in net aid flows to Africa and LICs, in volume and share by aid sources during 2000-2017 (Constant 2017 $ billion; excluding unspecified aid flows)

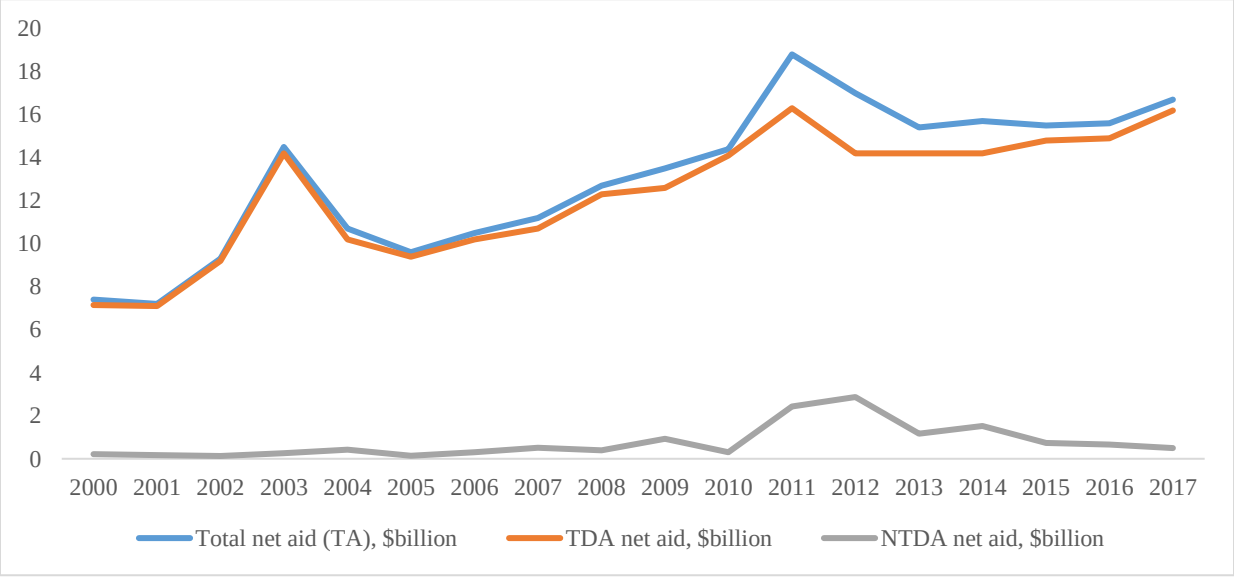
	Total net aid disbursements by sources						**Share of aid by sources (%)**					**Aid to GDP (%) by sources**		
	Africa			**LICs**			**LICs to Africa**			**Within LICs**		**Within LICs**		
	Total	***TDs***	***NTDs***	***Total***	***TDs***	***NTDs***	***Total***	***TDs***	***NTDs***	***TDs***	***NTDs***	***Total***	***TDs***	***NTDs***
2000	13.7	12.8	0.95	7.4	7.15	0.21	54.0	55.9	22.11	96.6	2.84	5.93	5.76	0.18
2001	13.1	12.6	0.48	7.2	7.1	0.17	55.0	56.4	35.42	98.6	2.36	5.95	5.74	0.21
2002	17	16.4	0.65	9.3	9.2	0.13	54.7	56.1	20.00	98.9	1.40	7.02	6.89	0.12
2003	21.3	20.6	0.72	14.5	14.2	0.26	68.1	68.9	36.11	97.9	1.79	7.62	7.23	0.39
2004	19.6	18.7	0.89	10.7	10.2	0.42	54.6	54.6	47.19	95.3	3.93	6.52	6.34	0.18
2005	24.8	23.5	1.29	9.6	9.4	0.14	38.7	40.0	10.85	97.9	1.46	5.89	5.80	0.09
2006	32	29.4	2.56	10.5	10.2	0.31	32.8	34.7	12.11	97.1	2.95	6.25	5.99	0.27
2007	22	20.4	1.64	11.2	10.7	0.51	50.9	52.5	31.10	95.5	4.55	6.55	5.99	0.56
2008	23.4	21.2	2.16	12.7	12.3	0.4	54.3	58.0	18.52	96.6	3.15	8.15	7.83	0.32
2009	25.1	22.9	2.27	13.5	12.6	0.93	53.8	55.0	40.97	93.3	6.89	7.34	7.05	0.29
2010	24.9	23.4	1.44	14.4	14.1	0.3	57.8	60.3	20.83	97.9	2.08	7.05	6.72	0.33
2011	29.4	25.6	3.78	18.8	16.3	2.43	64.0	63.7	64.29	86.7	12.9	8.45	7.38	1.07
2012	29.8	23.9	5.88	17	14.2	2.87	57.1	59.3	48.81	83.3	16.9	8.27	7.51	0.75
2013	30	23.6	6.45	15.4	14.2	1.16	51.3	60.3	17.98	92.4	7.53	7.91	7.30	0.62
2014	27.5	21.3	6.17	15.7	14.2	1.52	57.1	66.7	24.64	90.5	9.68	8.05	7.51	0.54
2015	25.4	21.8	3.62	15.5	14.8	0.73	61.0	67.9	20.17	95.5	4.71	8.59	7.60	0.99
2016	25.4	22.3	3.14	15.6	14.9	0.66	61.4	66.8	21.02	95.5	4.23	8.74	8.16	0.58
2017	25.6	24.4	1.27	16.7	16.2	0.5	65.2	66.4	39.37	97.0	2.99	9.27	8.88	0.38
Total, 2000-2017	***430***	***385***	***45.4***	***236***	***222***	***13.7***	***54.8***	***57.7***	***30.12***	***94.2***	***5.80***	-	-	-
Average, 2000-2017	***23.9***	***21.4***	***2.52***	***13.1***	***12.3***	***0.76***	***55.1***	***57.9***	***29.56***	***94.8***	***5.17***	***7.42***	***6.98***	***0.44***

Source: Own elaboration. *Aid data for South Sudan covers the period 2011-2017. Aid data for China covers the period 2000-2014 and expressed in Constant 2014 USD.*

The same increasing trend is observed when aid is evaluated by main sources with TDs contributing a lion's share (94 percent) of aid to LICs with NTDs contributing about 6 percent (see Columns 10 and 11). Although the contribution of NTDs is marginal compared to that of TDs, a relative importance of NTDs has shown a modest rising trend over time since 2000. As shown in Columns 5 and 6, aid from NTDs increased by slightly higher magnitude (2.4 times) than aid from TDs (2.3 times) from 2000 to 2017. Between 2000 and 2017, total net aid flows from NTDs have shown a 138 percent increase while aid flows from TDs increased by 125 percent. Similarly, as shown in Columns 10 and 11, the share of NTDs' aid to total aid flows to LICs increased by 5.5 percent while the share of TDs' aid increased only by 0.4 percent during the same period.

Overall, as shown in in Figure 2.3, the modest rising influence of NTDA has been revealed in LICs mostly since 2005 when the volume of total aid (TDs' aid + NTDs' aid) consistently exceeded the volume of aid from TDs. Moreover, total aid and TDs' aid showed more swings compared to NTDs' aid. Perhaps, such fluctuations in aid flows may have an implication on the predictability of aid flows to LICs. In principle, as the previous section 2.2.6.1 highlighted, the Paris Declaration for Aid Effectiveness (2005, 2008 and 2011) has stressed the importance of aid predictability to help poor countries achieve their development goals stipulated in MDGs and SDGs.

Figure 2.3: Trends in net aid disbursements to LICs by aid sources, 2000-2017 ($billions).



Source: Own elaboration. *TDA= Traditional Donors' aid; NTDA= Non-Traditional Donors' aid*

Furthermore, a gradual emergence of NTDs in the global aid system seems to have influenced the composition of top donors in LICs. This is shown in Table 2.4 which presents the breakdown and distribution of aid flows to LICs in volume and share by aid sources and individual donors along with their primary target aid recipient countries during 2000–2017.

Table 2.4: The distribution of individual donor's aid disbursements to LICs, in volume, share and top 3 aid recipients during 2000-2017 (Constant 2017 $ millions).

Traditional Donors (TDs) aid to LICs				**Non-Traditional Donors (NTDs) aid to LICs**			
Donors	Total aid, million $	LICs/Africa (%)	Top 3 aid recipients	**Donors**	Total aid million $	LICs/Africa (%)	Top 3 aid recipients
USA	69128	59.1	Ethiopia-DRC-Uganda	**China**	9003	44.3	ZBW-Ethiopia-TNZ
UK	26243	60.2	Ethiopia-TNZ-DRC	**Korea**	1825	64.0	TNZ-Ethiopia-MZQ
France	19729	38.7	Senegal-DRC-MDR	**Turkey**	929	76.1	Somalia-Niger-Ethiopia
Germany	15778	45.6	DRC-Ethiopia-MZQ	**UAE**	747	4.33	Somalia-Eritrea-TNZ
Japan	12616	56.6	TNZ-DRC-Ethiopia	**Kuwait**	478	18.3	Ethiopia-Senegal-Malawi
Netherland	10803	68.2	TNZ-DRC-MZQ	**Israel**	417	84.3	Ethiopia-Eritrea-Uganda
Sweden	9457	75.8	TNZ-MZQ-DRC	**Saudi Arabia**	248	14.5	Somalia-Guinea-Ethiopia
Canada	9173	67.4	Ethiopia-Mali-TNZ	**Russia**	143	64.5	MZQ-Guinea-MDR
Belgium	8606	79.1	DRC-Rwanda-Burundi	**Thailand**	9.17	62.8	MDR-Senegal-MZQ
Norway	8286	75.1	TNZ-MZQ-Uganda	**Cyprus**	3.12	43.3	Mali-Guinea-Liberia
Denmark	7252	66.3	TNZ-MZQ-Uganda	**Estonia**	2.23	67.4	South S-CAR-Somalia
Italy	5282	62.3	DRC-MZQ-Ethiopia	**Malta**	1.94	60.4	Somalia-Eritrea-Ethiopia
Switzerland	4892	75.7	MZQ-TNZ-Burkina Faso	**Romania**	1.46	10.8	Senegal-Benin-ZBW
Ireland	4167	79.4	MZQ-Ethiopia-Uganda	**Timor-Leste**	0.64	18.3	Guinea-Bissau only
Spain	3097	45.7	MZQ-DRC-Senegal	**Lithuania**	0.31	51.7	Somalia-Mali-Eritrea
Finland	2035	66.8	TNZ-MZQ-Ethiopia	**Kazakhstan**	0.05	100	CAR only
Luxembourg	1361	72.8	Burkina F-Mali-Senegal	**Bulgaria**	0.03	0.46	Somalia only
Austria	1265	40.7	Uganda-DRC-Ethiopia	**Latvia**	0.03	7.69	Mali only
Portugal	1203	32.0	MZQ-Guinea Bissau-DRC	**Azerbaijan**	0.01	2.33	Togo only
Australia	1169	65.3	ZBW-MZQ-Somalia	**Croatia**	0.01	2.27	Gambia only
Iceland	192	87.4	Malawi-Uganda-MZQ	**Overall: Average share of aggregated aid in LICs to Africa, in total & by sources (%)**			
Poland	158	43.6	Ethiopia-TNZ-Rwanda				
New Zealand	104	56.4	TNZ-ZBW-Somalia				
Czech Rep.	54	50.1	Ethiopia-Mali-DRC				
Greece	51	30.6	Ethiopia-DRC-ZBW	***Total aid (TDs + NTDs): LICs/Africa (%)***			***54.67***
Hungary	29	64.5	MZQ-TNZ-Ethiopia	***TDs aid to LICs/TDs aid to Africa (%)***			***57.71***
Slovak Rep.	27	26.6	Liberia-South S-MZQ	***NTDs aid to LICs/NTDs aid to Africa (%)***			***29.56***
Slovenia	3	48.4	Burundi-Uganda-Rwanda				

Source: Own elaboration. *Country Abbreviations: USA- United States of America; UK- United Kingdom; UAE- United Arab Emirates; DRC- Democratic Republic of Congo ; TNZ- Tanzania; MDR- Madagascar; MZQ- Mozambique ; ZBW- Zimbabwe; and CAR- Central African Republic*

As shown in Table 2.4, Columns 2 and 6, based on the volume of aid given to LICs, USA (Column 1) and China (Column 5) have been the first top donors to LICs from TDs and NTDs, respectively. When all donors are considered together, USA remains the first top donor while China becomes the 9th top donor after Canada (8th) and before Belgium (10th). This means that the emergence of China as one of the top 10 donors to LICs seems to have influenced the composition of the first 10 top donors to LICs (see Belgium & Norway). Besides, Korea, the second top NTD, became the 18th top donor after Finland. Moreover, five among the top 10 NTDs (i.e. 3rd to 7th) delivered a relatively higher volume of aid to LICs compared to the volume of aid delivered by the first eight bottom TDs. Perhaps, this may suggest that a relative growing presence of NTDs in LICs has been prevailing over time which could no longer be ignored. Indeed, a relatively growing role of NTDs in LICs along with China being the top donor, is consistent with relevant recent literature (Greenhill *et al*., 2013; UNCTAD, 2014; ECA, 2015a, 2015b). These studies have found evidence of an increasing importance of aid flows from NTDs in Africa with the lion's share coming from China.

2.3.2 The patterns of aid distributions: donor's focus in LICs

To understand the focus of donors or aid sources in terms of aid allocations to LICs, the patterns of aid distribution by the main donor groups (TDs vs NTDs) and individual donors is assessed. The patterns of aid distributions by main donor groups or aid sources (i.e. TDs & NTDs) are shown in Table 2.3, Columns 7-9, while the patterns of aid distributions by individual donors are presented in Table 2.4. As shown in Table 2.3, Column 7, LICs received a relatively higher average share (55 percent) of total aid disbursed to Africa from all donors (both TDs & NTDs) during 2000–2017. The share of total aid increased by 20 percent: from 54 percent in 2000 to 65.2 percent in 2017. It seems that the patterns of aid distributions in LICs reveal inconsistencies or variations when aid is evaluated by sources (TDs and NTDs). Column 8 shows that LICs received a relatively larger share (57.7 percent) of total TDs's aid disbursed to Africa during 2000–2017. On the contrary, as shown in Column 9, LICs received a relatively lower share (30 percent) of total NTDs' aid disbursed to Africa during the same period. Overall, the main results show that total aid and

TDs' aid allocations have targeted LICs consistent with the aid convention and the Monterrey Consensus in 2002 while aid allocations by NTDs did not do so.

The same story goes on when the analysis is done for individual donors which have shown substantial inconsistencies (see Table 2.4, Columns 3 and 7). As shown in Table 2.4 (Column 3), of the total net aid disbursed to Africa between 2000 and 2017, LICs received 50 and above percent of aid from the majority (19 out of 28) of TDs with six of them delivering over 75 percent. On the other hand, nine TDs disbursed lower than 50 percent of their total aid to LICs and two of them were among the top 10 TDs: France (3rd) and Germany (4th). On the contrary, Column 7 shows that only nine of the 20 NTDs disbursed more than 50% of their aid to LICs with three of them contributing over 75 percent. It is shown that LICs received lower than 50 percent of total net aid given to Africa by a relatively large number of NTDs (11 out of 20).

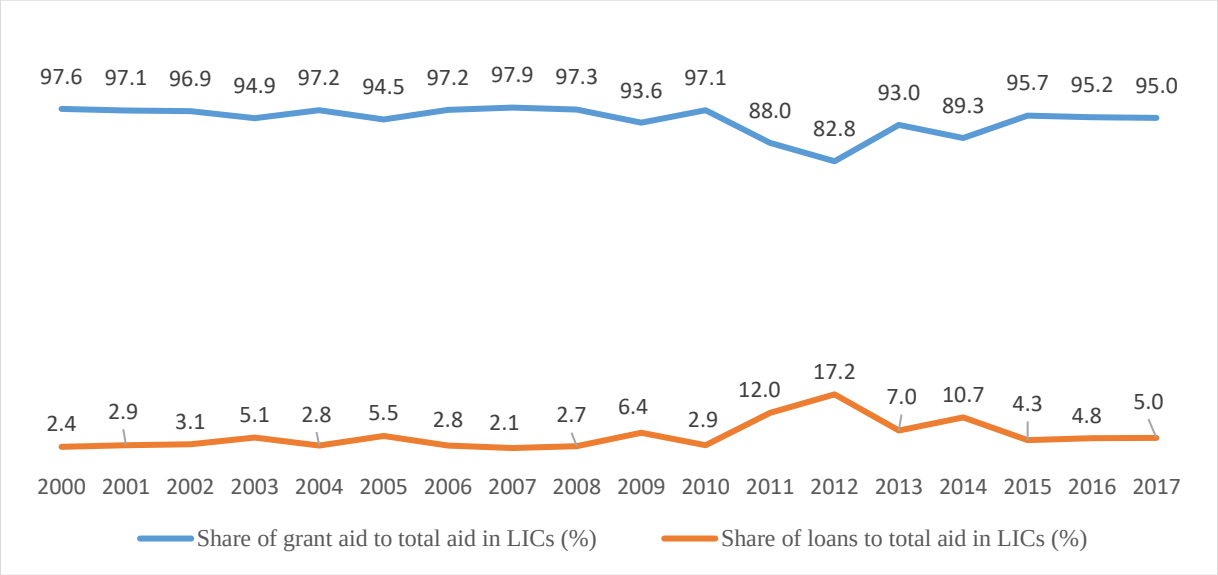
Furthermore, the characteristics of donors' primary target/focus in terms of aid allocation to a specific country shows some interesting insights (see Table 2.4). In one way or another, the overall result shows that Ethiopia and Tanzania have been among the top three aid recipients for most of the donors found in the first top 10 donors list in both groups – TDs (see Column 4) and NTDs (see Column 8). Apart from this, the study found some variations not only between aid sources (TDs & NTDs) but also between individual donors within aid sources. The main findings are that: (i) the top 10 TDs seem to have been following similar patterns where their share of aid given to the first top aid recipient countries did not exceed 20 percent while it shows substantial differences within NTDs' top 10 donors ranging from 19.8 percent to 80.7 percent; (ii) Democratic Republic of Congo was among the first three top aid recipients for most of the TDs while this was not the case for any of the NTDs; (iii) Somalia, Eritrea and Guinea were among the first three top aid recipients for at least two NTDs while that was not the case for any of the TDs; and (iv) Rwanda and Burundi were favoured at least by one TD top 10 donor, while none of the NTDs in the first top 10 donors list considered them.

2.3.3 Aid compositions in LICs

2.3.3.1 Trend in aid compositions: grant and loans

Foreign aid is disbursed in the form of grants and concessional loans. Figure 2.4 depicts the trends in the share of grants and loans aid compositions to total aid flows to LICs.

Figure 2.4: Trends in the share of grants and loans to total aid in LICs, 2000-2017 (%).

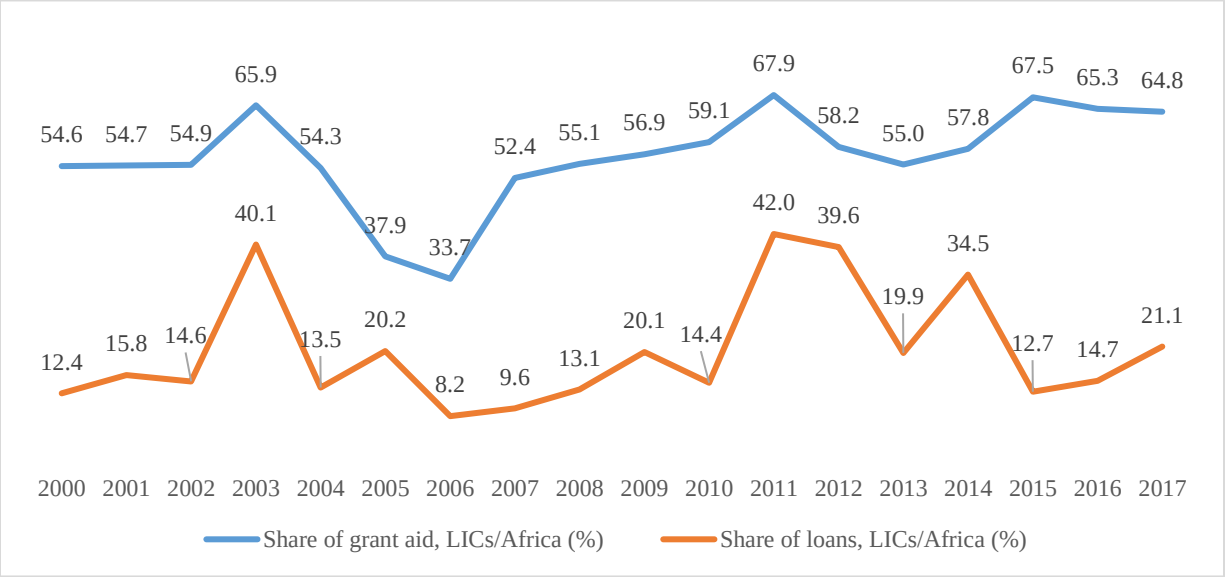


Source: Own elaboration.

As shown in Figure 2.4, consistent with the theories and empirical studies, average grant aid constituted the lion's share of total aid flows to LICs compared to loans. Between 2000 and 2017, in absolute terms, the share of grant constituted about 93.8 percent of total aid flows to LICs, while loans constituted only about 6.2 percent. During the same period, the overall average share of grant remains substantially higher (94.5%), although the average share showed a marginal fall from 97.6 percent in 2000 to 95 percent in 2017.

Furthermore, comparing the average share of grants and loans in LICs and Africa offers additional insights regarding the dominant share of grant aid in LICs. Figure 2.5 shows the average share of grants and loans in LICs to grants and loans in Africa during 2000-2017.

Figure 2.5: Trends in the share of grant aid and loans in LICs to Africa, 2000-2017 (%)



Source: Own elaboration.

The results from Figure 2.5 demonstrate similar evidence that grants constituted a larger share of total grants disbursed to Africa compared to loans. On average, LICs received about 56.4 percent of total grants which went to Africa. On the contrary, LICs received a smaller share (20.4%) of total loans disbursed to Africa during 2000-2017.

2.3.3.2 Trends in sectoral aid compositions in African LICs

This sub-section analysed how sectoral aid compositions in the major sectors (as defined by the OECD Common Reporting Standard (CRS)[16] database) have evolved in LICs over the course of the study. Table 2.5 presents the average share of sectoral aid allocations in the different sectors to the total aid committed to LICs for all sectors by aid sources (TDs & NTDs) during 2000–2017.

[16] As the common practice, this study follows the OECD CRS sectoral classification of aid commitments.

Table 2.5: Average share of sectoral aid commitments to total aid commitments to all sectors in LICs by aid sources- TDs & NTDs, 2000-2017 (%).

Main sectors	Total aid (TDs + NTDs)		TD's aid		NTD's aid	
	2009-2017	**2000-2017**	**2009-2017**	**2000-2017**	**2009-2017**	**2000-17**
Social sector	45.29	40.53	47.18	41.60	28.32	36.58
Economic sector	14.03	11.22	9.65	8.13	58.83	49.08
Productive sector	9.51	7.85	8.98	7.49	9.92	11.62
Multi-sectors	5.78	5.36	5.24	5.12	2.46	5.21
Humanitarian aid	13.52	12.31	14.52	13.00	3.11	2.06
Debt relief aid	4.51	12.00	5.21	12.70	NA	NA
Commodity aid	7.21	9.83	7.84	10.37	0.86	0.86

Source: Own elaboration.

Note: Data on sectoral aid allocations was available from OECD CRS database (2020) during 2000-17 for all TDs and NTDs reporting to OECD (i.e. Korea) while for other NTDs reporting to OECD, data was available only for 2009-17. For NTDs that doesn't report to OECD such as China, aid commitments is obtained from AidData online database for 2000-14 (constant 2014 USD). AidData (2017) compiles aid commitments from China based on OECD CRS sector code and classification. Data for debt relief aid was unbailable for all NTDs. Abbreviations for aid sources: TDs- Traditional Donors; and NTDs- Non-Traditional Donors. Total aid is the sum of aid from TDs & NTDs.

As shown in Table 2.5, Column 3, the social sector received a relatively higher average share (40.5 percent) of total sectoral aid commitments to LICs followed by humanitarian aid (12.3 percent) and debt relief (12 percent) during 2000–2017. Interestingly, a relatively lower share of aid was allocated to the two key productive sectors: economic sector (11.2 percent) and productive sector (7.9 percent). Furthermore, a disaggregated data analysis by main aid sources (TDs & NTDs) reveals inconsistencies or variations. Indeed, given that TDs' aid constitutes a dominant sources of aid to LICs, the sectoral aid commitments follow the same pattern for total aid (sum of aid from TDs & NTDs). For TDs' aid, as shown in Column 5, the social sector received a relatively larger average share (41.6 percent) of the total TDs' aid commitments to LICs followed by humanitarian assistance (13 percent), debt-relief (12 percent) and commodity aid (10.4 percent). The average share of TDs' aid went to the economic and productive sectors were 8.1 percent and 7.5 percent respectively. In both total aid and TDs' aid cases, the two direct growth-enhancing sectors received a lower share of aid than the unproductive sectors (i.e. humanitarian support & debt relief). On the contrary, Column 7 shows that about 60 percent of NTDs' aid commitment goes to the two key growth-enhancing sectors: the economic sector (49.1 percent) and productive sector (11.6 percent). The social sector received the second largest share (36.6 percent) of NTDs' aid while the share of aid commitments for humanitarian purpose was very low (2.1 percent).

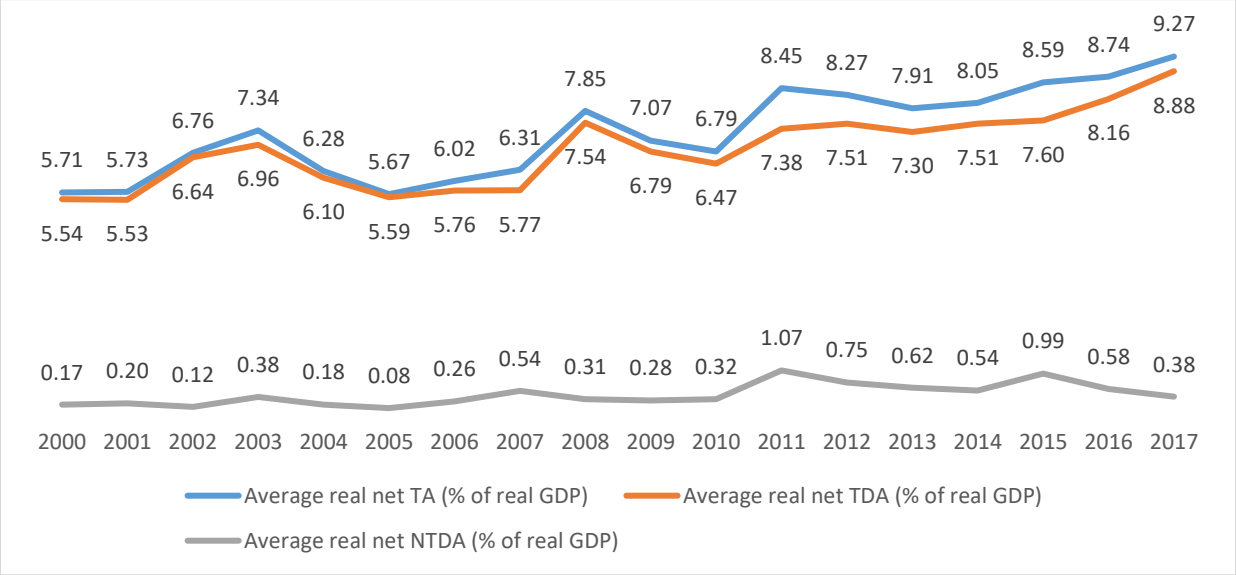
In theory, the Financing-Gap model (Bacha, 1990; Chenery & Strout, 1966) has argued that aid allocation should target the economic and productive public sectors to trigger capital accumulation and boost growth and development. In this regard, the findings for NTDs' sectoral aid allocations in favour of the economic sector is consistent with those of this aid convention. It can be said that the sectoral aid allocations for NTDs' aid tends to resemble the sectoral aid allocations' pattern in the 1960s when the economic and productive sectors received a larger share of aid as outlined in the Two-Gap model (Chenery & Strout, 1966). It is also consistent with a recent study by Broich and Szirmai (2014), which found that about 64 percent of total aid commitments to all sectors went to the economic infrastructure projects (27.8%) and productive sectors (36.6%) in 1967. On the contrary, the findings of this study for total aid and TDs' aid allocations towards the social sector, humanitarian and debt purpose seem to have been inconsistent with those of this aid convention. However, these findings may follow the main development agenda of MDGs in 2000 and SDGs in 2015, which have shifted the primary focus of aid from an economic objective towards poverty reduction and social sector objectives. It is also consistent with a recent study by Akramov (2012) which reported a shift of sectoral aid distribution from the economic and productive sectors to the social sector. Similarly, although it did not present the figures by sectors, Alemu and Lee (2015) reported that aid flows to LICs in Africa mostly targeted the humanitarian and emergency needs while a very small share went to the economic sector.

2.3.4 Trends in aid dependency in African LICs

Aid flows measured in terms of real net aid as a share of real GDP are very helpful to understand how aid is important in financing growth-enhancing activities in aid recipient countries. This variable explains how far aid is important in attaining its primary purpose of stimulating growth and development in LICs. In the previous section, Table 2.3, Columns 12-14, showed the relative growing importance of aid in LICs along with its evolving trends by aid sources over time between 2000 and 2017. Furthermore, in this section, a brief trend analysis of average aid is explored with the help of graph. Such analysis offers very useful insights on how average aid evolves/moves across aid sources over time between 2000 and 2017 in LICs. In this regard, Figure 2.6 presents

the dynamics of average real net aid as a share of real GDP in LICs during 2000-2017 by aid sources: total aid (TA), Traditional Donors' aid (TDA), and Non-Traditional Donors' aid (NTDA).

Figure 2.6: Trends in average aid to GDP ratio in LICs by aid sources, 2000-2017 (%).



Source: Own elaboration. *TA = total aid, TDA = traditional aid, NTDA = non-traditional aid*

Figure 2.6 shows that average real net aid flows to LICs reveal increasing trends over time since 2000. These rising trends happen across the three aid sources (TDA & NTDA), despite substantial difference in their shares to total aid (TA) disbursements to LICs. Indeed, as shown in Table 2.3, Columns 10-11, TDA constituted a dominant share (94.8%) of total aid (TA) disbursed to LICs during 2000-2017, while NTDA constituted to a small share of 5.2 percent. This is also shown in Figure 2.6 where the movement of TA was highly influenced by the movement of TDA. Thus, TA and TDA tend to follow more or less similar patterns over time with the exception of two points in 2003 and 2012. In 2003 and 2012, compared to TDA, the movement of NTDA influences the movement of TA. In 2003, a relatively increasing average NTDA caused TA to increase despite a fall in average TDA. In 2012, a relatively higher drop in average NTDA was followed by a similar fall in average TA despite average TDA increased.

In spite of the general increasing trends in average aid between 2000 and 2017 for the three aid sources, the trends were not consistent throughout. The trends in the movements of average aid showed both increasing and decreasing patterns at different points over the course of time. Average TA and TDA have shown increasing trends for 11 times or years at different points while they

both have manifested decreasing trends for six times at different points. On the other hand, average NTDA seems to have shown opposite trends with TA and TDA. The movements of average NTDA was on decreasing trends for 10 years while it showed increasing trends for seven years. Since 2014, TA and TDA have been increasing while NTDA was falling except in 2015. For nine years at different times, all the three aid sources were moving in the same directions with all increasing for five years and decreasing for four years. By and large, the overall movements of average aid was dominated by increasing trends for TA and TDA and decreasing trends for NTDA.

Apart from measuring the importance of aid, aid as a share of GDP is also used as a measure of aid dependency in recipient countries. In this regard, the striking observation is that aid dependency (as measured in real aid-to-real GDP, in constant 2017$) has shown increasing trends in the main aid sources, as well as in the majority of LICs over the study period. The trends of aid dependency by aid sources (i.e. TA, TDA & NTDA) are shown in Table 2.3, Columns 12–14, and Figure 2.6. Column 12 in Table 2.3 shows that TA contributed about 7.4 percent of GDP, which is 2.5 higher than the average for Africa (5 percent) during 2000–2017. The share of TA to GDP in LICs increased from 5.98 percent in 2000 to 9.27 percent in 2017. Similarly, further analysis by aid sources (TDA and NTDA) has shown rising trends of aid dependency but with some variations between TDA (see Table 2.3, Column 13) and NTDA (see Table 2.3, Column 14). Despite the lower average share of aid to GDP for NTDA (0.44 percent) compared to TDA share (7 percent), the share of NTDA to GDP increased by a higher magnitude (2.2 times) than the share of TDA (1.5 times) during 2000–2017. Perhaps, this may suggest that a modest evolving importance of NTDA aid has been prevailing in LICs.

Furthermore, country level analysis provides very useful insights in support of a growing trend of aid dependency in the majority of LICs. Table 2.6 presents the list of 27 LICs in the order of their average aid dependency by aid sources during 2000–2017.

Table 2.6: Average share of aid to GDP in LICs by aid sources, 2000-2017 (%, constant, $2017).

Average share of total aid (TDs + NTDs) to GDP (%)		Average share of TDs' aid to GDP (%)		Average share of NTDs' aid to GDP (%)	
Somalia	36.92	Somalia	32.95	Somalia	3.97
Mozambique	17.31	South Sudan	25.07	Mozambique	0.91
South Sudan	13.99	Mozambique	16.40	Guinea-Bissau	0.90
Liberia	13.01	Liberia	12.55	Eritrea	0.56
Malawi	10.60	Malawi	10.28	Chad	0.55
Sierra Leone	9.91	Sierra Leone	9.63	Zimbabwe	0.54
Burundi	8.11	Burundi	7.97	Liberia	0.46
Rwanda	7.53	Rwanda	7.35	Comoros	0.39
Congo, Dem. Rep.	6.82	Congo, Dem. Rep.	6.78	Ethiopia	0.345
Central African Republic	6.05	Central African Republic	5.82	Gambia	0.344
Eritrea	5.88	Eritrea	5.32	Malawi	0.32
Guinea-Bissau	5.48	Mali	4.95	Tanzania	0.30
Mali	5.08	Uganda	4.76	Sierra Leone	0.28
Uganda	4.94	Burkina Faso	4.61	Niger	0.27
Burkina Faso	4.68	Guinea-Bissau	4.58	Central Africa Republic	0.23
Tanzania	4.64	Tanzania	4.34	Uganda	0.19
Ethiopia	4.21	Niger	3.93	Rwanda	0.18
Niger	4.20	Ethiopia	3.87	Guinea	0.17
Senegal	3.71	Senegal	3.60	Burundi	0.14
Togo	3.43	Togo	3.35	Mali	0.13
Chad	3.34	Benin	2.94	Senegal	0.11
Benin	3.00	Madagascar	2.80	South Sudan	0.11
Zimbabwe	2.88	Chad	2.79	Togo	0.08
Madagascar	2.85	Comoros	2.44	Burkina Faso	0.07
Comoros	2.82	Guinea	2.37	Benin	0.06
Guinea	2.55	Zimbabwe	2.34	Madagascar	0.04
Gambia	2.27	Gambia	1.93	Congo, Dem. Rep.	0.04

Source: Own elaboration.

In general, as shown in Table 2.6, Column 2, on average, total aid constituted over 2 percent of GDP in all 27 LICs during 2000–2017. The average share of aid to GDP shows substantial variations ranging from 36.9 percent in Somalia to 2.3 percent in Gambia. Following Somalia, Mozambique (17.3 percent), South Sudan (14 percent), Liberia (13 percent) and Malawi (10.6 percent), are the top five aid-dependent countries with aid contributed over 10 percent of their real GDP. On average, the share of total aid to real GDP was more than 5 percent for the majority (16 out of 27 or 59 percent) of LICs. The same story is observed when aid dependency is assessed by aid sources: TDs and NTDs. As Column 4 shows, the average share of aid to GDP for TDs varies from 33 percent in Somalia to 1.9 percent in Gambia. For NTDs, as shown in Column 6, the average share of aid to GDP varies from 3.9 percent in Somalia to 0.04 percent in Democratic

Republic of Congo (DRC). A striking result is that the compositions of top 10 aid dependent countries among aid sources vary substantially. It is shown that only three countries (Somalia, Mozambique and Liberia) are among the top 10 aid-dependent countries in both aid sources with Somalia standing in the first top list. Equally interesting is that DRC is the least aid dependent country for NTDs while it appears to be the 9th top aid dependent for TDs.

Moreover, another interesting finding is that receiving a larger share of aid does not necessarily lead to a situation of higher aid dependency. This is clearly seen when we evaluate countries which are the top and bottom 10 aid recipient countries among the LICs over the period 2000–2017. Table 2.7 presents the top and bottom 10 aid recipient countries along with their level of aid dependency by aid sources during 2000–2017.

Table 2.7: Top and bottom ten aid recipient LICs during 2000-2017 (both aid and GDP are in real values based on constant $2017).

Total aid (TDs + NTDs), million $			TDs aid, million $			NTDs aid, million $		
Top 10 aid recipient LICs								
Country	**Total aid**	**Share of aid to GDP (%)**	**Country**	**Total aid**	**Share of aid to GDP (%)**	**Country**	**Total aid**	**Share of aid to GDP (%)**
Ethiopia	**28701**	**3.89**	**DRC**	**27166**	**6.18**	**Ethiopia**	**2455**	**0.333**
DRC	**27335**	**6.22**	**Ethiopia**	**26246**	**3.56**	**Tanzania**	**1969**	**0.332**
Tanzania	**25949**	**4.37**	**Tanzania**	**23981**	**4.04**	**Zimbabwe**	**1798**	**0.572**
Mozambique	**23096**	**15.55**	**Mozambique**	**21498**	**14.48**	**Mozambique**	**1598**	**1.076**
Uganda	**16886**	**4.68**	**Uganda**	**16098**	**4.46**	**Somalia**	**1023**	**4.501**
Mali	**9875**	**5.09**	**Mali**	**9603**	**4.95**	**Chad**	**841**	**0.626**
Senegal	**9408**	**3.64**	**Senegal**	**9076**	**3.51**	**Uganda**	**788**	**0.218**
Somalia	**9042**	**39.80**	**South Sudan**	**8234**	**22.32**	**Niger**	**366**	**0.276**
Zimbabwe	**8795**	**2.80**	**Malawi**	**8159**	**10.28**	**Senegal**	**332**	**0.128**
Malawi	**8402**	**10.59**	**Somalia**	**8019**	**35.30**	**Mali**	**272**	**0.140**
Bottom 10 aid recipient LICs								
Sierra Leone	**4594**	**9.45**	**Sierra Leone**	**4411**	**9.07**	**Guinea-B.**	**144**	**0.802**
Chad	**4415**	**3.28**	**Burundi**	**3837**	**8.10**	**Benin**	**102**	**0.062**
Burundi	**3899**	**8.23**	**Chad**	**3574**	**2.66**	**Burkina Faso**	**97**	**0.058**
Guinea	**3055**	**2.48**	**Guinea**	**2838**	**2.31**	**Madagascar**	**93**	**0.050**
CAR	**2243**	**5.79**	**CAR**	**2161**	**5.58**	**CAR**	**82**	**0.212**
Togo	**2007**	**3.33**	**Togo**	**1961**	**3.25**	**Gambia**	**77**	**0.345**
Eritrea	**1745**	**5.45**	**Eritrea**	**1562**	**4.88**	**Burundi**	**61**	**0.130**
Guinea-B.	**952**	**5.31**	**Guinea-B.**	**808**	**4.51**	**Comoros**	**61**	**0.399**
Gambia	**506**	**2.28**	**Gambia**	**429**	**1.93**	**Togo**	**46**	**0.077**
Comoros	**436**	**2.86**	**Comoros**	**375**	**2.46**	**South Sudan**	**39**	**0.105**

Source: Own elaboration. *TDs = traditional donors, NTDs = non-traditional donors, LICs = low-income countries.*

Based on the results shown in Table 2.6 (the first top 10 aid dependent countries) and Table 2.7 (top & bottom 10 aid recipients), the main findings are that (i) only half of the countries are both top 10 aid recipients and aid dependents in both aid sources (TDs & NTDs); (ii) three countries among the bottom 10 aid recipients in TDs (Sierra Leone, Burundi and CAR) and NTDs (Guinea-Bissau, Gambia and Comoros) are among the top 10 aid-dependent countries; (iii) two countries among the top 10 aid-dependent countries in TDs (Liberia and Rwanda) and NTDs (Liberia and Eritrea) are neither among the top nor the bottom 10 aid-recipient lists; and (iv) although Ethiopia is the first and second top aid recipient of aid from NTDs and TDs respectively, it is among the top 10 (ninth) aid dependent countries in the NTDs group but not the case for TDs. Thus, this result reveals that aid dependency was manifested across countries regardless of the volume of net aid received.

Overall, there is evidence of an increasing trend in aid flows both in volumes (in absolute terms) and also aid as a percentage of GDP (i.e. aid dependency) among LICs in Africa during 2000–2017. These stylised facts may partly explain the reason why aid continues to be a key resource for most poor countries in Africa even in the SDGs' period. Indeed, this clearly goes in line with arguments by the OECD (2017: 138) that aid continues to play an important role in *"filling key financing gaps where no alternatives exist"* particularly in developing countries so as to support growth towards achieving SDGs by 2030. Moreover, recent studies have shown similar evidence of not only an increasing importance of foreign aid but also a rising trend of aid dependency among poor countries in Africa or LICs (Alemu & Lee, 2015; Mallik, 2008).

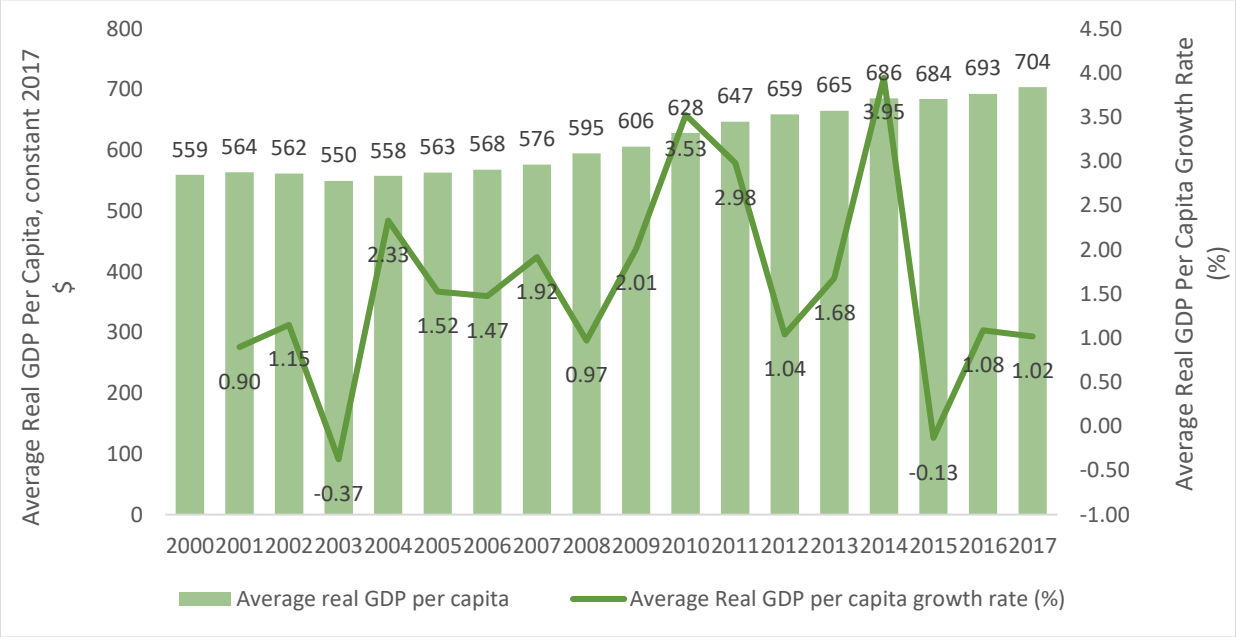
2.4 Economic Growth Dynamics among LICs in Africa

Economic growth is measured in terms of real GDP per capita growth rate at constant 2017 US$. Figure 2.7 presents LICs' overall yearly average economic growth performances measured in real GDP per capita over the last two decades both in absolute terms and percentage changes. On average, average real GDP per capita has shown a modest increase of 145 USD during 2000-2017, from 550 USD in 2000 to 704 USD in 2017. Although the average real GDP per capita increased by 25.9 percent over the study period, LICs' average (615 USD) remained 3.5 times lower than the average for Africa (2162 USD). During 2000-2017, the average real GDP per capita shows

substantial variations among LICs from their lowest value of 109 USD in Somalia to their largest value of 1370 USD in Zimbabwe. Twelve countries had average real GDP per capita over the LIC's average (615 USD). Four of them had average per capita income over 1000 with Zimbabwe had the highest value of 1370 USD followed by Comoros (1259 USD), Senegal (1153 USD), and Benin (1018 USD). Interestingly, although LICs constitute half (27 of 54) of the countries in Africa, no single country among LICs have an average per capita income close to the average for Africa (2162 USD).

In terms of percentage change, the average real GDP per capita increased by 0.12 percentage points from 0.90 percent in 2001 to 1.02 percent in 2017. This means that real GDP per capita growth rate in 2017 (1.02 percent) was 1.13 times of its 2001 level (0.9 percent). During the study period, the average growth in LICs (1.6 percent) was 1.3 times behind the average for Africa (2.08 percent). Perhaps, this may suggest that the average growth performance in LICs remained poor compared to Africa (all income countries) over the study period.

Figure 2.7: Economic growth dynamics in LICs in Africa, in volume and growth rate, 2000-17[17](constant 2017 US$).



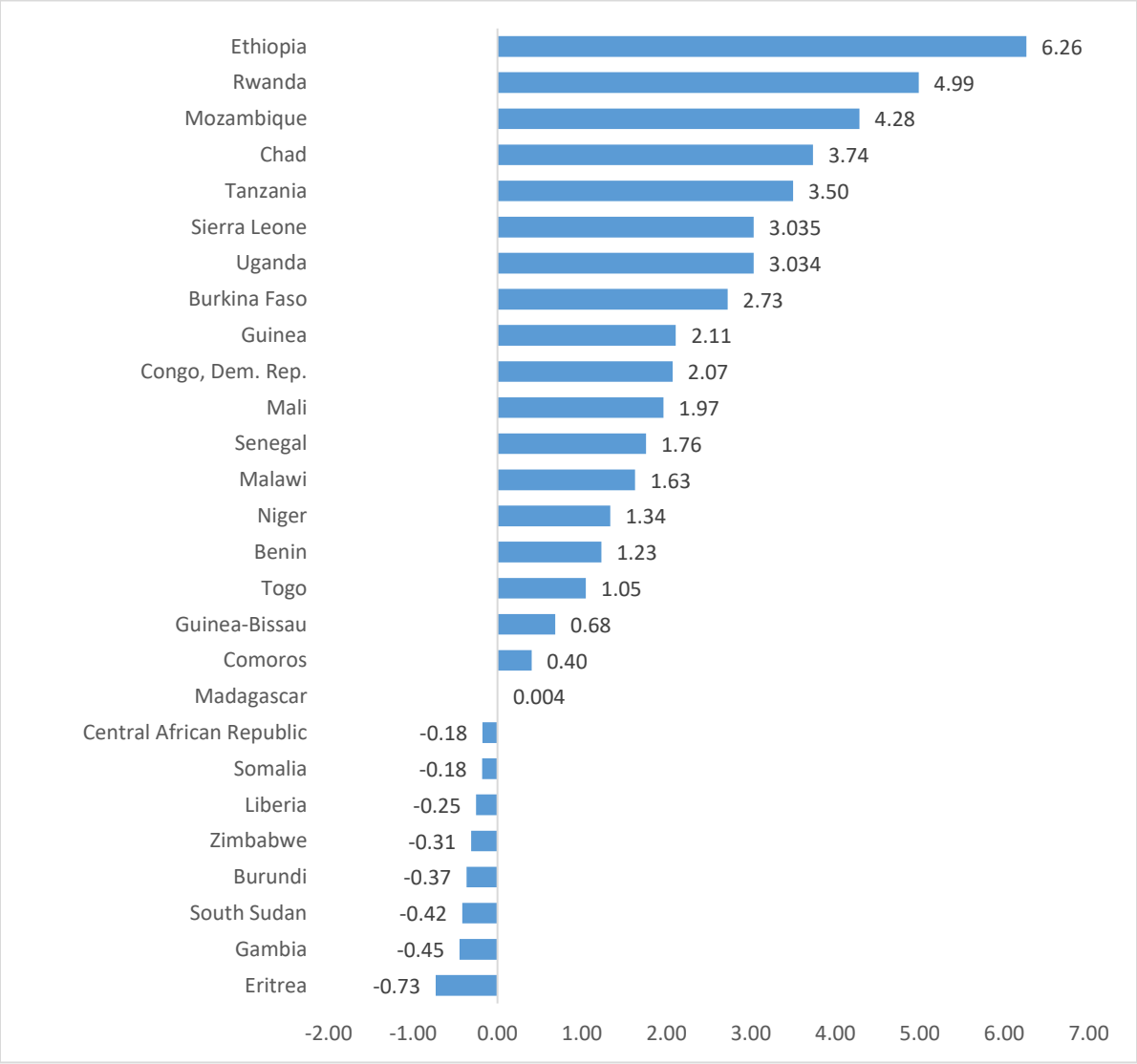
Source: Own elaboration

[17] Missing data from WDI for Eritrea (2012-17), Liberia (2000), Somalia (2000-17) and South Sudan (2011-2017) was obtained from UN database https://unstats.un.org/unsd/snaama/Basic#

A bit dive into the trends in the dynamics of economic growth in LICs demonstrates substantial variations over times and across countries. As shown in Figure 2.7, the average growth rates don't show a smooth trending; rather the trends were highly fluctuating. The highest average growth rate (3.95 percent) was registered in 2014 and it remained over the LICs' average growth rate of 2 percent (rounded in a single digit) in 2004 (2.33 percent), 2009 (2.01 percent), 2010 (3.53 percent), 2011 (2.98 percent), and 2013 (2 percent, in single digit). A higher growth rate in Eritrea (29.7 percent) and South Sudan (27.9 percent) contributed to the highest growth rate in LICs in 2014. Similarly, nearly a double-digit growth rate in Chad (10 percent, in single digit), Ethiopia (10 percent, in single digit) and Zimbabwe (18.1 percent) contributed to the second highest growth rate in LICs in 2010. On the contrary, the average growth rate dropped to its lowest value of -0.37 percent in 2003 followed by another poor performance of -0.13 percent in 2015. A higher negative average growth rate in Liberia (-13.3 percent) and Zimbabwe (-17.2 percent) substantially contributed to the lowest growth rate in 2003. Similarly, a higher negative average growth rate in Eritrea (21.4 percent) and Sierra Leone (-22.3 percent) contributed to the second lowest average growth rate in 2015. The average growth rates have shown rising trends since 2016.

Furthermore, the average growth rate performances have shown substantial differences at country level when the top and bottom/poor performing countries are evaluated. Figure 2.8 presents the overall average economic growth performances (measured by average real GDP per capita growth rate) of all 27 LICs during 2001-2017.

Figure 2.8: Overall average real GDP per capita growth rates in LICs, 2001-2017 (%).



Source: Own elaboration.

As Figure 2.8 shows, the average growth rate varies across 27 LICs ranging from 6.3 percent in Ethiopia to -0.73 percent in Eritrea. When compared to LICs' average growth rate of 1.6 percent (2 percent, rounded in single digit), 14 of them have an average growth rate higher than the average while 13 of them have an average growth rate less than this average. Following Ethiopia, Rwanda scored the second highest average growth rate around 5 percent followed by Mozambique (4.3 percent), Chad (3.7 percent), Tanzania (5.3 percent), Sierra Leone (3.035 percent), and Uganda (3.034 percent). Overall, it can be seen that 11 countries registered poor economic growth performance where their average growth rates were below 1 percent. At this bottom line, three

countries had an average growth rate of below 1 percent and positive while eight of them had a negative average growth rate.

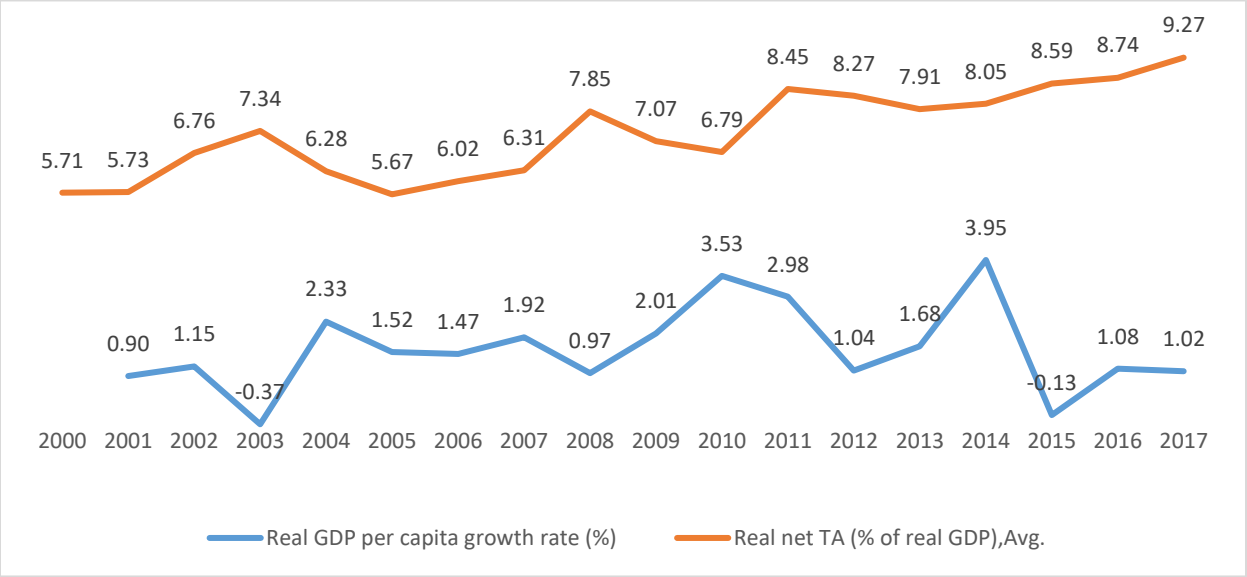
2.5 Trends in the movements between foreign aid and economic growth in African LICs

It is apparent that the primary purpose of foreign aid is to augment resource deficiencies and promote economic growth and development in developing countries. In principle, more aid flows are expected to increase economic growth in recipient countries. This implies that aid is expected to improve growth in aid recipient countries, LICs of Africa in this case. It is natural, therefore, to look into how aid and growth are related. In the previous sections, the dynamics of aid to GDP ratio by aid sources (See Sub-Section 2.3.4) and real GDP per capita growth rate (See Section 2.4) were discussed separately. The two variables are measured in real terms (i.e. at constant 2017 US$) so as to be evident of the actual dynamics between them over the course of the study, 2000-2017. Economic growth is measured by real GDP per capita growth while aid is expressed as real net aid disbursement in percentage of real GDP. This section explores the dynamics of the movement between the two variables based on quantitative analysis in a descriptive setting. However, how significant relationship exists between aid and growth in LICs is an empirical issue and will be tested in the other chapter (i.e. Chapter 6, Section 6.2). In the context of the rapidly changing global aid landscape since 2000, this section explores the dynamics and trends in the movement between aid and growth in LICs separately by aid sources: total aid (TA), traditional aid (TDA), and non-traditional aid (NTDA). When the trends between aid and growth follow similar paths, both variables are said to be moving in the same directions, either both increasing or both decreasing. Otherwise, the two variables are said to be moving in the opposite directions when the trend in one variable is increasing while the other variable is decreasing and vice versa.

2.5.1 Trends in the movements between total aid and economic growth

In this sub-section, the trends in the movement between total aid (TA) and growth are discussed in detail in terms of magnitudes and patterns. Figure 2.9 presents the magnitudes and patterns of the movements between TA and growth during 2000-2017.

Figure 2.9: The movements between average TA and growth in LICs (%), 2000-2017.



Source: Own elaboration.

In terms of magnitude, a simple exploration of the raw data showed that the large volume of aid flows in percentage of GDP was not necessarily associated with higher economic growth. As shown in Figure 2.9, average real GDP per capita growth performed poorly compared to the average volume of real net aid to real GDP disbursed to LICs. Between 2000 and 2017, on average, LICs received about 7.3 percent of aid as a ratio of GDP while real GDP per capita growth was only 1.6 percent. Indeed, the role of aid for economic growth is expected to manifest when aid finances the direct growth-enhancing sectors such as economic and productive sectors. However, as the discussion on sectoral aid distributions in Table 2.5 showed, the economic and productive sectors were less funded compared to the non-sector aid for humanitarian support and debt relief. Perhaps, in light of this, the low performance of growth against more aid flows to LICs may not be surprising.

Apart from this magnitude, a close look into the trends in the movement between aid and growth reveals inconsistent patterns or trends. As shown in Figure 2.9, based on average aggregated data, there is a lack of definite patterns of the movements between the two variables. On average, the two variables moved in opposite directions for relatively most of the years (10 years) at different times over the course of the study period. For the other six years at different points or years, they appeared to have moved in the same directions with both increasing for four years (2002, 2007,

2014, and 2016) and both decreasing for two years (2005 and 2012). Moreover, average growth rate experienced relatively more swings than average aid to GDP ratio over the study period. Furthermore, a sensible explanation on the inconsistent patterns of the movements between TA and growth can be observed when the top and bottom 10 TA recipients and growth performers are evaluated. Based on Table 2.6 (i.e. top & bottom 10 aid recipients-aid-to-GDP ratio) and Figure 2.8 (i.e. top & bottom 10 growth performers), Table 2.8 provides a simple summary matrix to clarify how the movements between the two variables have manifested inconsistent patterns during 2000-2017.

Table 2.8: A simple matrix summarizing the dynamics between TA and economic growth in LICs, 2000- 2017 (average TA and average growth rate).

	Top 10 growth performers	**Bottom 10 growth performers**	**Neither group, growth performers**
Top 10 aid ratio-TA	Congo, DR; Mozambique; Rwanda; Sierra Leone	Burundi; CAR; Liberia; Somalia; South Sudan	Malawi
Bottom 10 aid ratio-TA	Chad; Guinea	Comoros; Gambia; Madagascar; Zimbabwe	Benin; Niger; Senegal; Togo
Neither group, TA	Burkina Faso; Ethiopia; Tanzania; Uganda	Eritrea	Guinea-Bissau; Mali

Source: Own elaboration. *TA= Total Aid, CAR = Central African Republic*

On the basis of the summary matrix presented in Table 2.8, it can be concluded that the movements between TA and economic growth have shown inconsistent patterns or trends. A brief discussion of these findings is presented below.

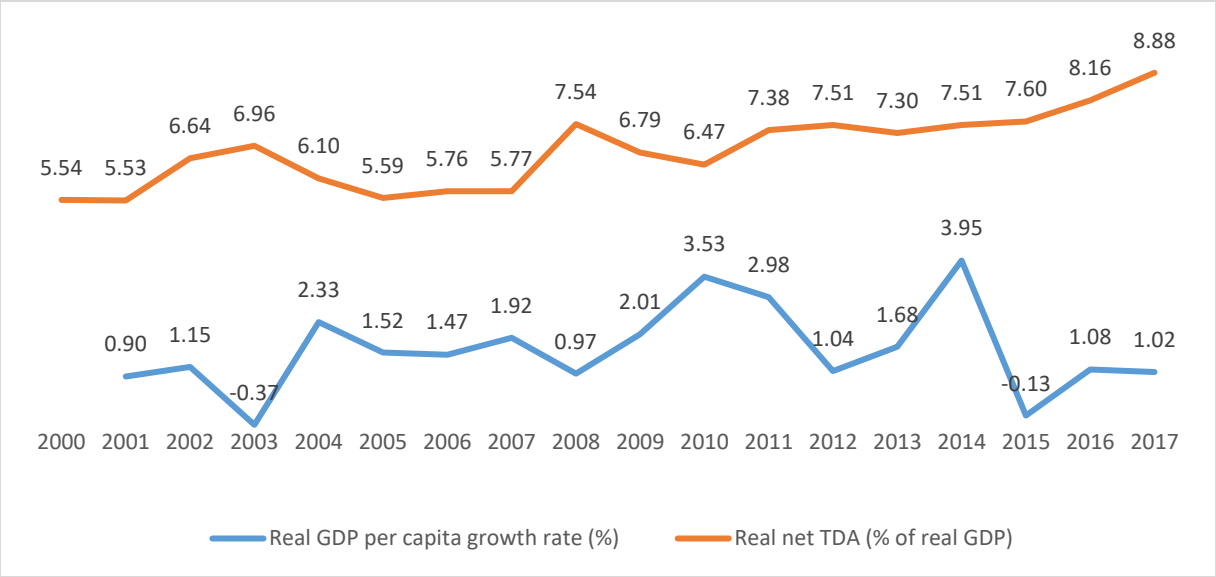
- ***Co-movement between TA and growth:*** TA and growth have shown similar movements only in eight countries representing about 30 percent of LICs (i.e. 27 countries). Four countries (Congo DR., Mozambique, Rwanda and Sierra Leone) were in the same top 10 list of aid recipients and growth performers. Keeping other things constant, these countries were receiving higher average TA and shown higher growth performances; thus, the two variables were moving in the same directions (i.e. increasing trends). On the other hand, another four countries (Comoros, Gambia, Madagascar, and Zimbabwe) were found in the same bottom 10 list of aid recipients and growth performers. This may suggest that low average aid and poor growth performances seem to have moved in the same directions. However, whether higher/lower average aid and higher/low growth rates were correlated is an empirical issue and will be examined in Section 6.2 of Chapter 6.

- ***Inconsistent patterns or trends in the movement between the two variables***: It was shown that the majority of the countries (19 LICs) have shown inconclusive patterns of the movement between the two variables. These mixed or inconsistent trends have been manifested among countries which were not found in the same top and bottom list discussed above. These inconsistent patterns between the two variables can be explained in two main conditions/contexts. *First*, there are countries in the top 10 list in one variable and bottom 10 list in the other variable and vice versa. More specifically, these include: (i) five countries (Burundi, Central African Republic, Liberia, Somalia, and South Sudan) in the list of top 10 aid–to-GDP ratio/recipients were also among the bottom 10 growth performers' list; and (ii) two countries (Chad and Guinea) in the bottom 10 aid recipients' list were also among the top 10 growth performers list. *Second*, there are countries outside the aforementioned cases, and found in the neither groups. These include: (i) countries in the top 10 aid recipients' list were neither in the top or bottom 10 growth performers list (i.e. Malawi); (ii) four countries in the bottom 10 aid recipients' list were neither the top or bottom 10 list of growth performers (i.e. Benin, Niger, Senegal, and Togo); (iii) four countries in the top 10 growth performers' list were neither in the top or bottom 10 aid recipients list (i.e. Burkina Faso, Ethiopia, Tanzania and Uganda); (iv) countries in the bottom 10 growth performers list were neither in the top or bottom 10 aid recipients list (i.e. Eritrea); and (v) two countries were neither the top nor bottom 10 lists in both variables (i.e. Guinea-Bissau and Mali).

2.5.2 Trends in the movements between traditional aid and economic growth

In this sub-section, the trends in the movement between aid from Traditional Donors (TDA) and growth are discussed in details in terms of magnitudes and patterns. Figure 2.10 presents the magnitudes and patterns of the movements between average TDA and growth during 2000-2017.

Figure 2.10: The movements between average TDA and growth in LICs (%), 2000-2017.



Source: Own elaboration.

As shown in Figure 2.10, the magnitudes and patterns between TDA and growth follow similar trends to the TA cases discussed above. This is because, as Table 2.3, Column 10, shows, TDA constitutes a dominant share (94.8%) of total real net aid (TA) disbursed to LICs during 2000-2017; thus, the overall movements of TA (i.e. TDA plus NTDA) were highly influenced by movements of TDA. In terms of magnitude, as shown in Figure 2.10, a simple exploration of the raw data showed that the large volume of aid flows in percentage of GDP was not necessarily associated with higher rate of economic growth in LICs. Between 2000 and 2017, on average, LICs received about 6.8 percent of real net TDA as a ration of real GDP while real GDP per capita growth rate was only 1.6 percent. This result may suggest that average real GDP per capita growth performed poorly compared to the average volume of real net TDA disbursed to LICs. By and large, despite a relatively larger volume of TDA disbursed to LICs, LICs were not in a position to improve their economic growth performances.

Apart from this magnitude, a close look into the trends in the movement between TDA and growth reveals inconsistent patterns or trends over the course of the study. Based on average aggregated data, Figure 2.10 shows a lack of definite patterns of the movement between the two variables. On average, the two variables moved in opposite directions for relatively most of the years (9 years)

at different times over the course of the study period. For the other seven years at different points or years, they appeared to have moved in the same directions. There were increasing trends in both variables for five years (2002, 2007, 2009, 2014 and 2016) and both decreasing trends for two years (2005 and 2008). Moreover, average growth rate experienced relatively more swings than average aid to GDP ratio over the study period.

Furthermore, disaggregated country annual data portrays a more sensible explanation on such inconsistent patterns of the movement between the two variables over the study period. This is done by combining country-level data on the top and bottom 10 TDA recipients (i.e. aid-to-GDP ratio) presented in Table 2.6, Column 4, and the top and bottom 10 growth performers presented in Figure 2.8. On the basis of these combinations, Table 2.9 provides a simple summary matrix to clarify how the two variables have manifested inconsistent patterns during 2000-2017.

Table 2.9: A simple matrix summarising the dynamics between TDA and growth in LICs, 2000-2017 (average TDA and average growth rate).

	Top 10 growth performers	**Bottom 10 growth performers**	**Neither group, growth performers**
Top 10 TDA ratio	Cong DR.; Mozambique; Rwanda; Sierra Leone	CAR; Burundi; Liberia; Somalia; South Sudan	Malawi
Bottom 10 TDA ratio	Chad; Ethiopia; Guinea	Comoros; Gambia; Madagascar; Zimbabwe	Benin; Senegal; Togo
Neither group, TDA ratio	Burkina Faso; Tanzania; Uganda	Eritrea	Guinea-Bissau; Mali; Niger

Source: Own elaboration. *TDA= Traditional Donors Aid; DR= Democratic Republic; CAR= Central African Republic.*

On the basis of the summary matrix presented in Table 2.9, it can be concluded that the movements between TDA and growth have shown inconsistent patterns or trends. A brief discussion of these findings is presented below.

- ***TDA and growth move together and manifest similar patterns:*** TDA and growth have shown similar movements in only eight countries representing about one-third or 30 percent of LICs (i.e. 27 countries). Four countries (Congo, DR; Mozambique; Rwanda and Sierra Leone) were in the same top list of aid recipients and growth performers. Keeping other things constant, this implies that higher aid recipients have also enjoyed good economic growth performances. Thus, on average, both aid and growth have manifested the same increasing trend. On the other hand, another four countries (Comoros; Gambia; Madagascar & Zimbabwe) were found in the same bottom list of aid recipients and growth

performers. This may suggest that low average aid recipients were also performed poorly in average economic growth rate.

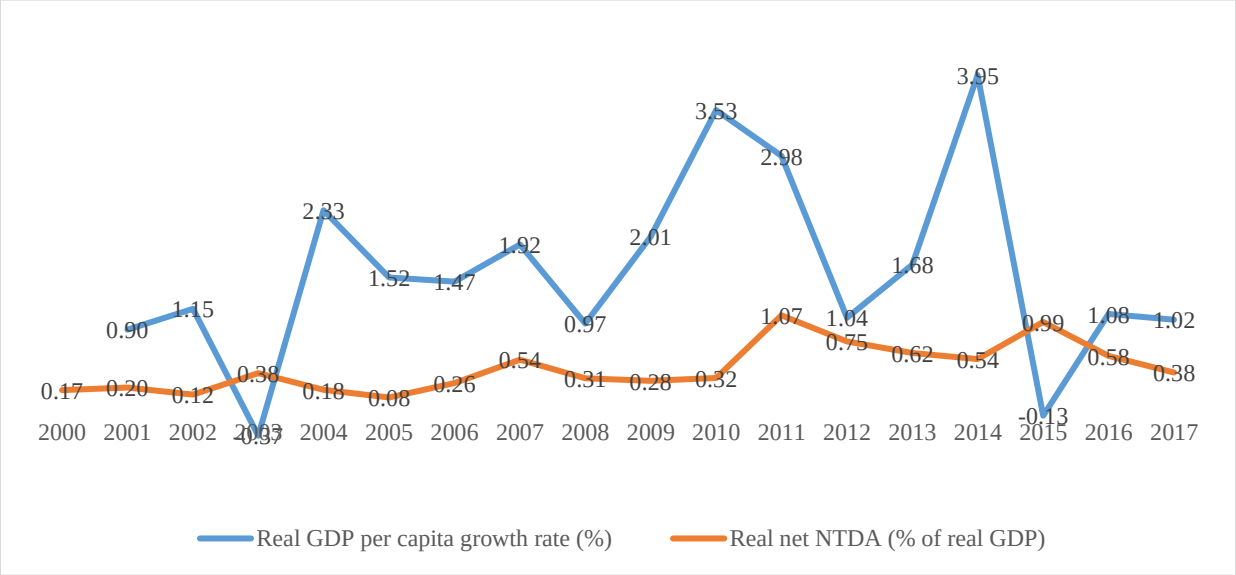
- ***Inconsistent patterns or trends in the movement between the two variables***: It was shown that the majority of the countries (19 LICs) have shown inconclusive patterns of the movements between the two variables. These mixed or inconsistent trends have been manifested among countries which were not found in the same top and bottom list discussed above. These inconsistent patterns between the two variables can be explained in two main conditions/contexts. *First*, there are countries in the top 10 list in one variable and bottom 10 list in the other variable and vice versa. More specifically, these include: (i) five countries (CAR; Burundi; Liberia; Somalia; South Sudan) in the list of top 10 aid recipients were also among the bottom 10 growth performers list; and (ii) three countries (Ethiopia, Chad and Guinea) in the bottom 10 aid recipients list were also among the top 10 growth performers list. *Second*, there are countries outside the aforementioned cases, and found in the neither groups. This includes: (i) countries in the top 10 aid recipients list were neither in the top or bottom 10 growth performers list (i.e. Malawi); (ii) countries in the bottom 10 aid recipients list were neither the top or bottom 10 list of growth performers (i.e. Benin, Senegal and Togo); (iii) countries in the top 10 growth performers list were neither in the top or bottom 10 aid recipients list (i.e. Burkina Faso, Tanzania and Uganda); (iv) countries in the bottom 10 growth performers list were neither in the top or bottom 10 aid recipients list (i.e. Eritrea); and (v) countries were neither the top nor bottom 10 lists in both variables (i.e. Guinea-Bissau, Niger and Mali).

Overall, although country level data analysis revealed highly inconclusive trends in the movement between TDA and growth, the dominant average trends for aggregated data seem to be in opposite directions. This implies that TDA and growth were moving in the opposite direction for most of the times during 2000-2017. However, how significant such opposite movement between the two variables is an empirical issue and will be dealt with in Chapter 6 Section 6.2.

2.5.3 Trends in the movements between non-traditional aid and economic growth

Similar to the discussions for TA and TDA above, this sub-section elaborates on the dynamics of aid from Non-Traditional Donors (NTDA) and economic growth in details. Figure 2.11 presents the magnitudes and patterns of the movements between average TA and growth during 2000-2017.

Figure 2.11: Trends in the movements between NTDA and growth in LICs (%), 2000-2017.



Source: Own elaboration.

Contrary to the findings for TA and TDA, as shown in Figure 2.11, the magnitudes of average real net NTDA (as % of real GDP) were much lower compared to the average real GDP per capita growth rates in LICs during 2000-2017. Between 2000 and 2017, on average, LICs registered a growth rate of 1.6 percent while it received about 0.48 percent of real net NTDA. Perhaps, as the previous section highlighted (see Table 2.3, Column 11), a relatively smaller share (5.2%) of NTDA disbursed to LICs contributed for a lower average NTDA. Besides, as shown in Table 2.3, Column 9, the result reveals that NTDs (i.e. NTDA) disbursed to LICs only 30 percent of their total aid going to Africa, which was inconsistent with the aid convention. This may suggest that LICs may need to make efforts to leverage for an increasing share of aid from NTDs as per the aid convention agreed in the Monterey Conference 2002 and AAAA 2015.

Regarding the dynamics between NTDA and growth, Figure 2.11 shows that an average real GDP per capita growth rate remained higher than an average real net NTDA (as % of real GDP) except for two points in 2003 and 2015. When average growth performed poorly in 2003 and 2015, it fell below average NTDA. The overall trends in the movement between TDA and growth reveal inconsistent patterns or trends over the course of the study. Based on average aggregated data, Figure 2.11 shows lack of definite patterns of the movement between the two variables. On average, the two variables moved in opposite directions for relatively most of the years (10 years) at different times over the course of the study period. For the other six years at different points or years, they appeared to have moved in the same directions. There were increasing trends in both variables for two years (2007 and 2010) and both decreasing trends for four years (2005, 2008, 2012 and 2017). Moreover, average growth rate experienced relatively more swings than average aid-to-GDP ratio over the study period.

Furthermore, disaggregated country annual data portrays similar evidence of inconsistent patterns of the movement between the two variables over the study period. This is clearly seen through combining country-level data on the top and bottom 10 NTDA recipients (ratio of net aid to real GDP) in Table 2.6, Columns 6, and the top and bottom 10 growth performers presented in Figure 2.8. On the basis of this combination, Table 2.10 provides a simple summary matrix to clarify how the two variables have manifested inconsistent patterns.

Table 2.10: A simple matrix summarising the dynamics between NTDA and growth in LICs, 2000- 2017 (average NTDA and average growth rate).

	Top 10 growth performers	**Bottom 10 growth performers**	**Neither group, growth performers**
Top 10 aid ratio-NTDA	Chad; Ethiopia; Mozambique	Comoros; Eritrea; Gambia; Liberia; Zimbabwe	Guinea-Bissau
Bottom 10 aid ratio-NTDA	Burkina Faso; Congo, DR; Guinea	Burundi; Madagascar; South Sudan	Benin; Mali; Senegal; Togo
Neither group, aid ratio-NTDA	Rwanda; Sierra Leone; Tanzania; Uganda	Central African Republic	Malawi; Niger

Source: Own elaboration. *NTDA= Non-Traditional Donors Aid*

On the basis of the summary matrix presented in Table 2.10, it can be concluded that the movements between NTDA and growth have shown inconsistent patterns or trends. A brief discussion of these findings is presented below.

- ***NTDA and growth move together and manifest similar pattern:*** NTDA and growth have shown similar movements only in six countries representing about 22 percent of LICs (i.e. 27 countries). Three countries (Chad, Ethiopia, and Mozambique) were in the same top 10 list of aid recipients and growth performers. Keeping other things constant, these countries were receiving a higher average NTDA and showed higher growth performances; thus, the two variables were moving in the same directions (i.e. increasing trends). On the other hand, another three countries (Burundi, Madagascar, and South Sudan) were found in the same bottom 10 list of aid to GDP ratio and growth performers. This may suggest that low average aid and poor growth performances seem to have moved in the same directions. However, whether higher/lower average aid and higher/low growth rates were correlated is an empirical issue and will be examined in Section 6.2 of Chapter 6.
- ***Inconsistent patterns or trends in the movement between the two variables***: It was shown that the majority of the countries (21 countries) have shown inconclusive patterns of the movement between the two variables. These mixed or inconsistent trends have been manifested among countries which were not found in the same top and bottom list discussed above. These inconsistent patterns between the two variables can be explained in two main conditions/contexts. *First*, there are countries in the top 10 list in one variable and bottom 10 list in the other variable and vice versa. More specifically, these include: (i) five countries (Comoros, Eritrea, Gambia, Liberia, and Zimbabwe) in the list of top 10 aid to GDP ratio were also among the bottom 10 growth performers list; and (ii) three countries (Burkina Faso, Congo DR, and Guinea) in the bottom 10 aid ratio list were also among the top 10 growth performers' list. *Second*, there are countries outside the aforementioned cases, and found in the neither groups. This includes: (i) countries in the top 10 aid ratio list were neither in the top or bottom 10 growth performers' list (i.e. Guinea-Bissau); (ii) four countries in the bottom 10 aid ratio list were neither the top or bottom 10 list of growth performers (i.e. Benin, Mali, Senegal, and Togo); (iii) countries in the top 10 growth performers' list were neither in the top or bottom 10 aid ratio list (i.e. Rwanda, Sierra Leone, Tanzania and Uganda); (iv) countries in the bottom 10 growth performers' list were neither in the top or bottom 10 aid ratio list (i.e. Central African Republic); and (v) countries were neither the top nor bottom 10 lists in both variables (i.e. Malawi, and Niger).

Overall, regardless of the aid sources – TA, TDA and NTDA – the main finding from this descriptive analysis shows that the movements between average aid ratio and growth manifested inconclusive trends or patterns both at the country level data and LICs' average. The overall average LICs' data reveals that the two variables seem to have moved in the opposite directions for a relatively higher number of times/years at different points during 2000-2017. However, how significant such opposite movement between the two variables is, is an empirical issue and will be dealt in Section 6.2 of Chapter 6.

2.6 Conclusion

This Chapter extensively discussed the dynamics of foreign aid and economic growth among LICs in Africa during 2000-2017. The Chapter has two main parts. In the first part, a brief review of the historical evolution of the concept of foreign aid, aid landscape, and associated aid doctrines with much focus since 2000 was presented so as to provide a conceptual framework for the study. The main issues which emerged from the first part are that the global landscape which was dominated by the DAC donors or TDs has been evolving over time with having the most dynamic transformation at the beginning of the 21st century. This dynamic change was caused predominantly by the emergence of new donors or NTDs with diverse approaches for aid delivery and increasing partnership with existing TDs. Thus, the current aid landscape since 2000 has been influenced by TDs and NTDs. The MDGs (2000-2015) and SDGs (2015-2030) have been the main development agenda for guiding the implementation of aid programmes in the 2000s.

The second part of the chapter provided a descriptive analysis of the dynamics of foreign aid and economic growth among LICs in Africa during 2000-2017. Based on the descriptive analysis of the trends in aid and growth, the following conclusions are made. First, total net aid disbursements to LICs increased significantly by two-fold (2.3 times): from $7.4 billion in 2000 to $16.7 billion in 2017, representing a 126 percent increase. In real terms, total net aid to LICs increased by $9.3 billion between 2000 and 2017. The same increasing trend is observed when aid is evaluated by main sources with TDs contributing a lion's share (94 percent) of aid to LICs while NTDs contributed about 6 percent. Although the contribution of NTDs is marginal compared to that of TDs, a relative importance of NTDs has shown a modest rising trend over time since 2000. During

2000 and 2017, the share of NTDs' aid to total aid flows to LICs increased by 5.5 percent while the share of TDs' aid increased only by 0.4 percent during the same period. *Second*, LICs consumed the lion's share (55 percent) of total aid disbursed to Africa from all donors (both TDs & NTDs) during 2000–2017, with variations by aid sources. Out of the total aid disbursed to Africa during 2000-2017, LICs received a relatively larger share (57.7 percent) of TDA, consistent with the aid convention, while it received a relatively lower share (30 percent) of NTDA which is inconsistent with the aid convention. *Third*, the average aid dependency (measured as real net aid as a share of real GDP) in LICs increased from 5.98 percent in 2000 to 9.27 percent in 2017. On average, total aid contributed to about 7.4 percent of GDP, which is 2.5 higher than the average for Africa (5 percent) during 2000–2017. Out of 27 LICs, total aid contributed over 5 percent of GDP in 16 countries with the ratio exceeded 10 percent in five countries (Somalia, Mozambique, South Sudan, Liberia and Malawi). Besides, average aid flows to LICs exhibited instability or fluctuation. Indeed, this may pose concerns on the predictability of aid disbursements stipulated in the aid convention.

Fourth, consistent with the theory, grants constituted a lion's share (94.5 percent) of the total aid disbursed to LICs during 2000-2017, while loans had a smaller share of 5.5 percent. *Fifth*, regarding sectoral aid allocations, a larger share of TDA went to the social sector (41.6 percent), while the two direct growth-enhancing sectors, such as the economic sector (8.1 percent) and the productive sector (7.5 percent), received a lower share of aid than the unproductive sectors such as humanitarian support (13 percent) and debt relief (12 percent). On the other hand, about 49.1 percent of NTDA commitment goes to the economic sector followed by the social sector (36.6 percent) and the productive sector (11.6 percent). Sectoral aid allocations for total aid and TDs' aid seem to have been inconsistent with the aid convention stipulated in the 'financing-gap' models (Chenery & Strout, 1966; Bacha, 1990) while NTDAs' sectoral aid allocations tend to be consistent with this aid convention.

Sixth, economic growth dynamics in LICs revealed that average real GDP per capita has shown a modest increase of 145 USD during 2000-2017, from 550 USD in 2000 to 704 USD in 2017. However, LICs' average (615 USD) remained 3.5 times lower than the average for Africa (2162 USD). During the same period, LICs had an average growth rate (measured as real GDP per capita growth rate) of 1.6 percent which indicates a poor growth performance. Almost half of the LICs

(13 countries) registered an average growth rate lower than 1.6 percent with eight of them having a negative average growth rate. Besides, the average growth rates manifested swings or fluctuations at several times during 2000-2017. Finally, the trends in aid and growth revealed inconclusive movements with the growth rate showing more swings than the three aid ratios (TA, TDA and NTDA). Overall, the average for LICs showed that the two variables were moving in opposite directions for a relatively higher number of times/years at different points during 2000-2017. Moreover, average aid for TA and TDA was consistently higher than average growth during 2000-2017, while average NTDA was lower than the average growth rate for the majority of times during 2000-2017. Despite a relatively higher average TA and TDA flows to LICs, the lower average growth performances in LICs remain challenging. Indeed, how the two variables are related is an empirical exercise which is going to be examined in Chapter 6 Section 6.2.

CHAPTER 3 : THE DYNAMICS OF FOREIGN AID AND ECONOMIC GROWTH AMONG MIDDLE-INCOME COUNTRIES IN AFRICA[18]

3.1 Introduction

In Chapter 2, the concept of foreign aid, main transformation on the global aid landscape since 2000, and the dynamics of aid and growth among LICs in Africa were extensively discussed. In this chapter (i.e. Chapter 3), the discussion on the dynamics of aid and growth was extended to Middle-Income Countries (MICs) in Africa. Consistent with Chapter 2 Section 2.2, this chapter follows the same definition and concept of aid, and the discussion is framed within the context of current global aid landscape since 2000 with two main sources of aid are considered – NTDs and TDs. Thus, in this chapter, the discussion of aid dynamics in MICs considers total aid (TA) flows from both TDs (i.e. TDA) and NTDs (i.e. NTDA). This chapter is organised into six sections. As a general background for the analysis in this chapter, Section two provides a brief recap on related literature on the role of foreign aid with a focus on MICs and the transitions to MIC status in Africa during 2000-2017. Section three discusses the dynamics of aid in MICs in terms of net aid disbursements, aid compositions and dependency on aid. Section four briefly assesses the dynamics of economic growth in MICs. Section five explores the trends in the movement between aid and growth in MICs. Finally, Section six concludes the chapter by highlighting the main results from the chapter.

[18] A peer-reviewed research article is published from this Chapter. **Mamo G., Tefera and Odhiambo M., Nicholas, 2021. Foreign Aid Dynamics, Compositions and Trends in Africa: the case of Middle-Income Countries**. *Interdisciplinary Journal of Economics and Business Law (IJEBL), Vol 10, Issue 4: 80-97.* Volume 10 Issue 4 Tefera Odhiambo (1).pdf http://www.ijebl.co.uk/ijebl_abstracts.html

3.2 Foreign Aid and Transitions to Middle-Income Country Status

3.2.1 The role of foreign aid in Middle-Income Countries

This section provides a brief recap on related literature on the concepts of foreign aid and its compositions in Middle-Income Countries (MICs). The main focus of this section is to present a background to the discussion in the chapter by briefly discussing the arguments on the importance and justification of aid for MICs using the same definition, purpose and related concepts of aid discussed in Chapter 2 Section 2.2. As was highlighted in Section 2.2 of Chapter 2, in 1972, the DAC provided a more refined definition of foreign aid as official flows composed of grants and concessional loans with a grant element of at least 25 percent, with the primary aim being to promote economic development in developing countries. In terms of aid compositions, the OECD DAC decided in 1978 that total aid should consist of grant aid of 90 percent for Least Developed Countries (LDCs) and 86 percent for developing countries (OECD, 2006). The global aid landscape, which was dominated by the DAC donors or TDs since its inception, has shown the most dynamic transformation since 2000 following the emergence of new donors or NTDs. In the 2000s, the MDGs and SDGs, which were launched in 2000 and 2015 respectively, have been the main development agenda to: (i) promote a strong partnership among all donors, (ii) govern the aid landscape; and (iii) manage and guide aid allocations to developing countries from all donors (TDs & NTDs).

In principle, foreign aid is considered as a scarce resource and donors may tend to prioritise more aid flows to LICs than MICs. As a country moves to MIC status, the role of aid as a share of GDP is expected to fall. According to Glennie (2011: 1), foreign aid has two main roles in MICs: *"as a non-essential catalyst for change and, in some cases, as parts of an orderly graduation process from aid dependence".* As DI (2013) also noted, aid recipients' income level influences the decision to allocate aid either as grants or loans. For MICs, loans are more conducive to encourage incentives for raising domestic resource mobilisation (Colin, 2014; Engen & Prizzon, 2019). This suggests that grant aid tends to be a low priority for MICs as they are in a better position not only to seek loans from the capital markets but also to pay back the loans (Engen & Prizzon, 2019). Indeed, Engen and Prizzon (2019) found a rinsing trend in the share of loans in Lower Middle-Income Countries (LMICs).

Regarding sectoral aid allocations, the theory argues that foreign aid should target the physical infrastructure in the economic and productive sectors to increase investment and growth in developing countries (Chenery & Strout, 1966). Indeed, such rationale seemed to have guided aid allocations in the 1960s when a wider volume of aid was disbursed to direct growth-enhancing sectors. In 1967, for instance, around 64 percent of total aid went to the economic infrastructure projects (27.8 percent) and productive sectors (36.6 percent) (Broich & Szirmai, 2014). However, recent evidence reported a shift of sectoral aid distribution from the economic and productive sectors to the social sector (Akramov, 2012). This study found that the share of aid to the social sector has doubled since the 1980s and has claimed over 40 percent in the early 2000s while the share in the economic and productive sectors dropped three-fold between the early 1980s (28-29 percent) to early in the 2000s (7-8 percent). Apart from this general trend, however, more specific evidence on LMICs showed an increasingly greater share of aid to GDP went to the economic sector than the social sector (Engen & Prizzon, 2019). This is associated with the better position of LMICs to use more loans to finance the economic infrastructure projects, which has the potential to generate cash flows compared to the social sector.

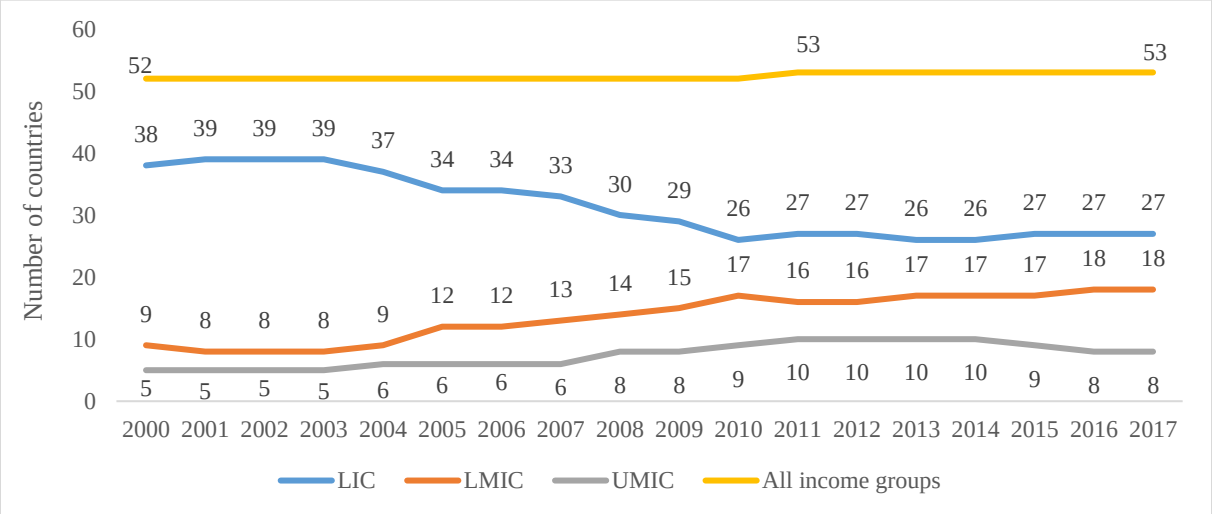
Africa is no exception to such developments. Over the last 18 years, 13 African countries have climbed the ladder of middle-income status from low-income status. The number of countries transitioned to MICs increased two-fold in LMICs (from 9 in 2000 to 18 in 2017) and about 1.8 times in Upper Middle-Income Countries (UMICs) (from 5 in 2000 to 9 in 2017). Overall, MICs constituted half (27 out of 54 countries) of African countries in 2017. Moreover, as discussed in the previous chapter (See Section 2.3), aid flows to Africa increased drastically in the 2000s with new donors or NTDs joining the existing aid business coined by TDs in the 1960s (Greenhill *et al*., 2013). Besides, the findings from the previous chapter (see Section 2.3) revealed that donors' focus substantially differs across income groups in Africa. Therefore, understanding the dynamics of aid flows to MICs in Africa considering aid flows from both TDs and NTDs is imperative. This discussion is presented in the subsequent sections.

3.2.2 Transitions to middle-income countries status in Africa

This section presents a brief remark on the trends in the transition of aid-recipient countries along the income ladder since 2000. Using World Bank 2013 GNI per capita, the OECD reported the DAC lists of aid-recipient countries in developing countries until 2017 (OECD 2018: 467, See Appendix A). According to this list, all countries in Africa have been classified as aid recipients at the different income level in 2017. Although the World Bank has identified Equatorial Guinea and Seychelles as high income countries in some of the years, both countries were among the DAC lists of aid recipients in 2017 as Upper Middle-Income Countries (UMICs). Given that both countries received aid until 2017, this study tends to include both countries in the samples as UMICs to be consistent with the DAC lists. Over the course of the study (2000-2017), therefore, all countries in this study are aid recipients.

Figure 3.1 presents the trends in how changes in income status evolved among aid-recipient countries in Africa between 2000 and 2017. Since the turn of the 21st century, there has been a modest progress in improving the income status of aid-recipient countries in Africa. Presumably, this has been attributed for the fall of LICs by one-third (29 percent), the rise of LMIC by double (100 percent) and UMIC by 60 percent between 2000 and 2017. In absolute terms, the number of LICs declined by 11 while the number increased by nine and three in the LMIC and UMIC groups respectively over the last 18 years.

Figure 3.1: Trends in income status change in Africa, in numbers and by income groups, 2000-17



Source: Own elaboration. *Note: South Africa is excluded and South Sudan is included since 2011.*

More specifically, 11 countries that were in the LIC group in 2000 graduated to LMIC group in 2017 while only three countries graduated from LMIC in 2000 to UMIC status in 2017 (See Table 3.1). Surprisingly, there seemed to be no transition from LIC status to UMIC status over the last 18 years. It was only Angola that stayed at the UMIC for five years (2011-15). Angola was at LIC group (2000-2003), then moved to LMIC group (2004-2010), to UMIC group (2011-2015) and finally back to LMIC level during 2016-2017. However, as presented in Appendix B, it is worth noting here that some countries made on and off moves across the different income levels over the study period.

Table 3.1: A summary of major changes in income status by a country during 2000-17.

Country	2000	2017
Algeria	LMIC	UMIC
Equatorial Guinea	LMIC	UMIC
Namibia	LMIC	UMIC
Angola	LIC	LMIC
Congo, Republic	LIC	LMIC
Cote d'Ivoire	LIC	LMIC
Ghana	LIC	LMIC
Kenya	LIC	LMIC
Lesotho	LIC	LMIC
Mauritania	LIC	LMIC
Nigeria	LIC	LMIC
Sao Tome and Principe	LIC	LMIC
Sudan	LIC	LMIC
Zambia	LIC	LMIC

Source: Own elaboration. *See Appendix B for the detail transitions*.

Overall, although the number of LMICs doubled and the number of LICs declined by one-third, half of the total countries in Africa are still in the LIC groups. In 2017, out of 54 African countries, equally 27 countries were in the low income countries and middle income countries strata (See Appendix B for the details). Perhaps, this justifies why foreign aid remains to be critical funding source for most countries in Africa even in the post-2015 era. It is not, therefore, surprising to see

that Africa received a large share of total net aid flows to all developing countries. The dynamics of aid trends and compositions among the 27 LICs were extensively discussed in the previous chapter (See Section 2.3). In the subsequent sections of this chapter (Chapter 3), the dynamics of aid trends in 26 MICs (excluding South Africa as it is an NTD) is presented based on the 2017 income classification.

3.3 Foreign Aid Dynamics among MICs in Africa, 2000-2017

This section provides a descriptive discussion to assess how the transition to MICs causes changes in aid trends in terms of its volume, compositions and aid dependency. Within the context of the current changing aid landscape since 2000, it also attempts to present a genuine picture of aid dynamics among the MICs in Africa by considering total aid flows from both TDs and NTDs. This means that the dynamics of aid in MICs is discussed using three aid sources or categories: total aid (TA), aid from TDs (TDA), and aid from NTDs (NTDA).

3.3.1 Trends in net aid disbursements and main aid sources

Since the turn of the 21st century, total net bilateral aid disbursements to Africa in general and MICs, in particular, have increased drastically. Table 3.2 presents the volume and share of net bilateral aid disbursements to Africa and MICs by sources of aid from 2000 to 2017.

As shown in Table 3.2, total net aid disbursements to Africa increased almost two-fold: from $13.7 billion in 2000 to $25.7 billion in 2017. The largest share (89.5 percent) of this aid came from TDs while NTDs also contributed about 10.5 percent; suggesting a modest rising influence of NTDs in Africa. In MICs (see Table 3.2 Column 4), total net aid (TA) disbursements increased by 1.4 times: from $6.4 billion in 2000 to $9 billion in 2017, representing a 40.6 percent increase. In real terms, total net aid to MICs increased by $2.6 billion between 2000 and 2017. Total net aid jumped over $10 billion since 2005 and reached its peak in 2006 ($21.5 billion). On average, out of the total net aid disbursed to Africa during 2000-2017, 45.2 percent of it went to MICs. In principle, the volume of aid disbursement is expected to fall as the recipient country climbed into the MIC status.

In connection to this, the aid convention demands that LICs should be the priority target for more aid allocations from all bilateral donors. However, the results from this analysis revealed that net aid disbursements to MICs have shown increasing trends and MICs consumed 45.2 percent of aid that went to Africa during 2000-2017. Among other things, this may imply that transitions to MIC status were not necessarily accompanied by a fall in the volume of aid flows to MICs in Africa.

Table 3.2. Trends in net bilateral aid flows to Africa and MICs[19], in volume and share by aid sources during 2000–2017 (Constant 2017 $ billion; excluding unspecified aid flows).

	Total net aid disbursements by sources						Share of aid by sources (%)					Aid to GDP (%) by sources, avg		
	Africa			MICs			MICs to Africa			Within MICs		Within MICs		
	Total	TDs	NTDs	Total	TDs	NTDs	Total	TDs	NTDs	TDs	NTDs	Total	TDs	NTDs
2000	13.7	12.8	0.95	6.4	5.6	0.7	46.7	43.8	73.7	87.5	10.9	2.73	2.51	0.22
2001	13.1	12.6	0.5	5.9	5.59	0.3	45.0	44.4	60.0	94.7	5.1	2.45	2.37	0.08
2002	17	16.4	0.6	7.7	7.2	0.5	45.3	43.9	83.3	93.5	6.5	2.78	2.46	0.33
2003	21.3	20.6	0.7	6.9	6.4	0.45	32.4	31.1	64.3	92.8	6.5	2.59	2.47	0.12
2004	19.6	18.7	0.9	8.9	8.5	0.47	45.4	45.5	52.2	95.5	5.3	2.41	2.32	0.10
2005	24.8	23.5	1.29	15.2	14.1	1.2	61.3	60.0	93.0	92.8	7.9	3.44	2.90	0.55
2006	32	29.4	2.6	21.5	19.2	2.3	67.2	65.3	88.5	89.3	10.7	3.07	2.63	0.44
2007	22	20.4	1.6	10.8	9.6	1.13	49.1	47.1	70.6	88.9	10.5	2.62	2.34	0.28
2008	23.4	21.2	2.2	10.7	8.9	1.8	45.7	42.0	81.8	83.2	16.8	2.81	2.26	0.55
2009	25.1	22.9	2.3	11.6	10.3	1.3	46.2	45.0	56.5	88.8	11.2	2.68	2.34	0.34
2010	24.9	23.4	1.4	10.4	9.3	1.14	41.8	39.7	81.4	89.4	11.0	3.05	2.78	0.27
2011	29.4	25.6	3.8	10.6	9.3	1.34	36.1	36.3	35.3	87.7	12.6	2.73	2.46	0.27
2012	29.8	23.9	5.9	12.7	9.7	3	42.6	40.6	50.8	76.4	23.6	2.70	2.30	0.40
2013	30	23.9	6.5	14.6	9.3	5.3	48.7	39.1	81.5	64.0	36.3	2.34	2.05	0.29
2014	27.5	21.3	6.2	11.8	7.1	4.6	42.9	33.3	74.2	60.2	39.0	1.75	1.47	0.28
2015	25.38	21.8	3.6	9.9	7.0	2.9	39.0	32.1	80.6	70.7	29.3	1.56	1.38	0.17
2016	25.4	22.3	3.1	9.8	7.4	2.5	38.6	33.2	80.6	75.5	25.5	1.36	1.15	0.21
2017	25.7	24.4	1.27	9.0	8.2	0.8	35.0	33.6	63.0	91.1	8.9	1.36	1.26	0.10
Total, 2000-2017	***430.1***	***385.1***	***45.4***	***194.4***	***162.7***	***31.7***	***45.2***	***42.3***	***69.9***	***83.7***	***16.3***	**-**	**-**	**-**
Average, 2000-2017	***23.9***	***21.4***	***2.5***	***10.8***	***9.0***	***1.8***	***44.9***	***42.0***	***70.6***	***84.6***	***15.4***	***2.47***	***2.19***	***0.28***

Source: Own elaboration.

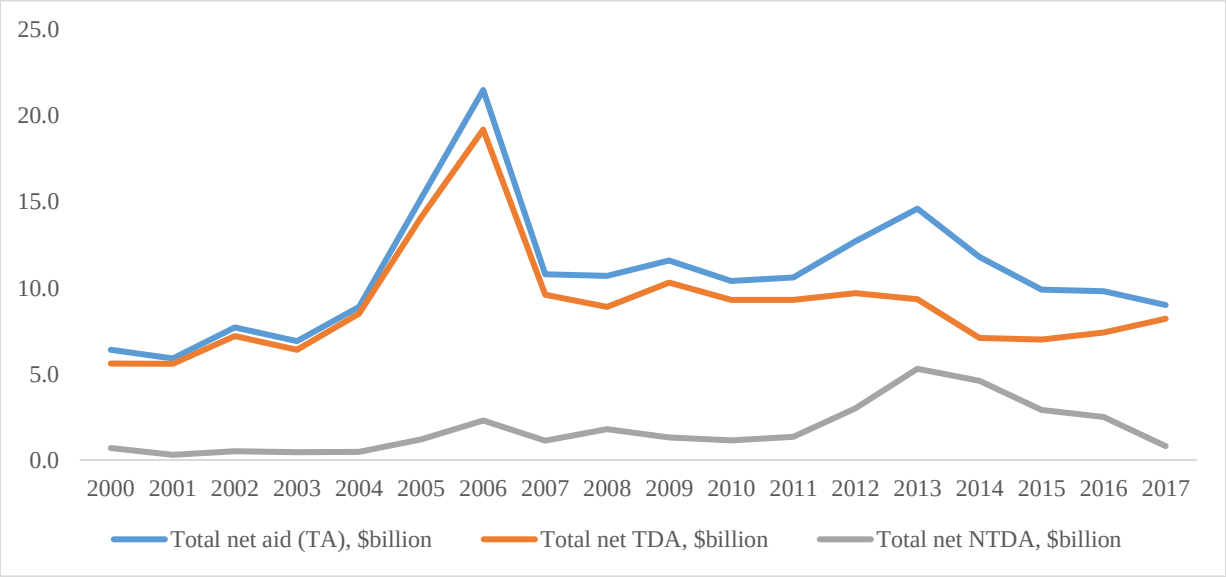
[19] South Africa is excluded as an aid recipient because it belongs to NTDs. Besides, it was not included as NTDs due to lack of sufficient data as it didn't report its annual aid flows either to OECD DAC system or AidData database (like China).

Since 2000, TDs and NTDs have been the main sources of bilateral aid flows to MICs. As shown in Table 3.2, Columns 10-11, the same increasing trend is observed when aid is evaluated by main sources with TDs contributing a lion's share (83.7 percent) of total aid to MICs with NTDs contributing about 16.3 percent. Perhaps, although the contribution of NTDs is marginal compared to that of TDs, this may suggest that a relative importance of NTDs has shown a modest rising trend over time since 2000. For instance, as shown in Column 11, the contribution of NTDs to total aid in MICs reached around one-third or 30 percent between 2013 and 2015 with its share being close to 40 percent in 2014[20] (39 percent). Relatively speaking, average NTDs' aid ($2.92 billion) was higher during the second decade (2011-2017) compared to its average aid ($1.03 billion) in the first decade (2000-2010). On the contrary, average TDs' aid ($8.3 billion) was lower during the second decade (2011-2017) compared to its average aid ($9.5 billion) in the first decade (2000-2010). Moreover, average NTDs' aid ($2.35 billion) was higher after the financial crises period (2007-2017) compared to its average ($0.85 billion) before the crises (2000-2006). For TDs' aid, however, average aid ($8.7 billion) was lower after the financial crises period (2007-2017) compared to its average ($9.5 billion) before the crises (2000-2006). Perhaps, this may imply that the relative growing importance of NTDs in MICs of Africa cannot be ignored.

Overall, the relative rising emergence of NTDs in the aid landscape in MICs can be easily observed from the trends in net aid disbursements by aid sources during 2000-2017. Figure 3.2 depicts the overall trend in the evolution and the relative modest growing influence of NTDs in MICs alongside the TDs. Indeed, Figure 3.2 uses the same data presented in Table 3.2, Columns 4-6, just to provide graphical illustration of the rising presence of NTDs in MICs since 2000.

[20] Perhaps, lack of data from China, the second top NTD in MICs, after 2014 may be one factor for a fall of NTDs' share to total aid flows to MICs since 2015.

Figure 3.2: Trends in net aid disbursements to MICs by aid sources, 2000-2017 ($billions).



Source: Own elaboration. *TDA= Traditional Donors' Aid; NTDA= Non-Traditional Donors' Aid*

As shown in in Figure 3.2, the modest rising influence of NTDA in MICs has been revealed since the turn of the 21st century, mostly since 2004. It was shown that the volume of total aid or TA (TDA + NTDA) net disbursements has consistently exceeded the volume of total net aid disbursements from TDs. Moreover, total aid (TA) and TDA) showed more swings compared to those of NTDA. Perhaps, such fluctuations in aid flows may have an implication on the predictability of aid flows to MICs. In principle, as the previous section 2.2.6.1 highlighted, the Paris Declaration for Aid Effectiveness (2005, 2008 and 2011) has stressed the importance of aid predictability to support poor countries to achieve their development goals stipulated in the MDGs and SDGs.

Furthermore, a gradual emergence of NTDs in the global aid system seems to have influenced the composition of top donors in MICs. This is shown in Table 3.3 which presents the breakdown and distribution of aid flows to MICs in volume and share by aid sources and individual donors along with their primary target aid recipient countries during 2000–2017.

Table 3.3. The distribution of individual donor's net aid disbursements to MICs, in volume, share and top 3 recipients during 2000 – 2017 (Constant 2017 $ millions).

Traditional Donors (TDs) net aid to MICs				Non-Traditional Donors (NTDs) net aid to MICs			
Donors	**Total aid, millions$**	**MICs/Africa (%)**	**Top 3 aid recipients**	**Donors**	**Total aid, millions$**	**MICs/Africa (%)**	**Top 3 aid recipients**
USA	47816	40.89	Sudan-Kenya-Nigeria	UAE	16522	95.77	Egypt-Morocco-Sudan
France	31306	61.34	Morocco-Côte d'Ivoire-Nigeria	China	11303	55.66	Cameroon-Nigeria-Sudan
Germany	18829	54.41	Nigeria-Cameroon-Morocco	Kuwait	2132	81.70	Morocco-Egypt- Sudan
UK	17325	39.76	Nigeria-Ghana-Kenya	Saudi Arabia	1465	85.53	Morocco-Egypt- Sudan
Japan	9658	43.36	Nigeria-Kenya-Morocco	Korea	1025	35.96	Ghana-Angola-Cameroon
Netherlands	5050	31.85	Ghana-Sudan-Nigeria	Turkey	292	23.91	Sudan-Tunisia-Libya
Canada	4430	32.56	Ghana-Sudan-Cameroon	Russia	78.83	35.53	Zambia-Tunisia-Kenya
Spain	3683	54.32	Morocco-Tunisia-Côte d'Ivoire	Israel	77.48	15.66	Sudan-Kenya-Ghana
Denmark	3680	33.66	Ghana-Kenya-Zambia	Romania	12.03	89.18	Tunisia-Morocco-Nigeria
Italy	3198	37.71	Nigeria-Sudan-Congo R	Bulgaria	5.77	99.48	Zambia
Sweden	3019	24.20	Kenya-Zambia-Sudan	Thailand	5.43	37.19	Kenya-Lesotho-Egypt
Norway	2747	24.90	Sudan-Zambia-Angola	Cyprus	4.09	56.73	Lesotho-Egypt-Sudan
Portugal	2554	67.97	Cabo Verde-Angola-Sao Tome & P	Estonia	1.42	42.90	Sudan-Libya-Tunisia
Belgium	2272	20.88	Côte d'Ivoire-Cameroon-Nigeria	Malta	1.27	39.56	Libya-Kenya-Morocco
Austria	1845	59.34	Cameroon-Nigeria-Egypt	Timor-Leste	0.97	60.25	Cabo Verde
Switzerland	1574	24.34	Ghana-Sudan-Nigeria	Lithuania	0.29	48.33	Cameroon-Nigeria-Sudan
Ireland	1082	20.61	Zambia-Lesotho-Sudan	Azerbaijan	0.14	93.33	Djibouti-Gabon
Finland	1011	33.20	Kenya-Zambia-Sudan	Croatia	0.02	66.67	Mauritius-Namibia
Australia	621	34.69	Sudan-Egypt-Kenya	Latvia	0.02	40.00	Egypt
Luxembourg	507	27.16	Cabo Verde-Namibia-Sudan				
Poland	204	56.39	Angola-Kenya-Libya				
Greece	116	69.37	Egypt-Sudan-Nigeria	Overall average share of aggregated net aid in MICs to Africa, in total and by sources (%)			
New Zealand	81	43.62	Sudan-Kenya-Zambia				
Slovak Republic	75	73.38	Sudan-Kenya-Tunisia	Total aid (TDs + NTDs): MICs/Africa (%)			***45.34***
Czech Republic	54	49.89	Zambia-Angola-Namibia	TDs aid in MICs/TDs aid in Africa (%)			***42.29***
Iceland	28	12.61	Namibia-Sudan-Kenya	NTDs aid in MICs/NTDs aid in Africa (%)			***70.48***
Hungary	16	35.47	Nigeria-Algeria-Tunisia				
Slovenia	3	51.63	Cabo Verde-Egypt-Kenya				

Source: Own elaboration. *Note: USA= United States of America; UK= United Kingdom; UAE= United Arab Emirates*

As shown in Table 3.3, Columns 2 and 6, based on the volume of aid given to MICs, top 10 TDs were USA, France, Germany, UK, Japan, Netherlands, Canada, Spain, Denmark and Italy, while top 10 NTDs were UAE, China, Kuwait, Saudi Arabia, Korea, Turkey, Russia, Israel, Romania and Bulgaria. When all donors are considered together (i.e. total aid from both TDs and NTDs), USA, France, Germany and UK remain the first top four donors, while UAE and China become the 5th and 6th top donors replacing Japan and Netherlands respectively. For total net aid flows, the emergence of UAE and China displaced Denmark and Italy from the list of top 10 donors in MICs. This means that the emergence of UAE and China among the top 10 donors to MICs seems to have influenced the composition of the first 10 top donors to MICs. Besides, Kuwait, the 3rd top NTD became the 15th top donor after Belgium. Moreover, the volume of aid from Saudi Arabia (4th top donor in NTDs' list), was larger than 12 TDs in the bottom list. Similarly, the volume of aid from Korea (5th top donor in NTDs' list) was higher than eight TDs in the bottom list.

By and large, this may suggest that a relative growing presence of NTDs in MICs has been prevailing over time which could no longer be ignored. Indeed, a relatively growing role of NTDs in Africa is consistent with relevant recent literature (Greenhill *et al*., 2013; UNCTAD, 2014; ECA, 2015a). These studies have found evidence of an increasing importance of aid flows from NTDs in Africa with the lion's share coming from China.

3.3.2 The patterns of aid distributions: Donors' focus in African MICs

To understand the focus of donors or aid sources in terms of aid allocations to MICs, the patterns of aid distribution by the main donor groups (TDs vs NTDs) and individual donors are assessed. The patterns of aid distributions by main aid sources (i.e. TDs & NTDs) are shown in Table 3.2, Columns 7-9, while the patterns of aid distributions by individual donors are presented in Table 3.3. As shown in Table 3.2, Column 7, MICs received about 45.2 percent of total aid (TA) disbursed to Africa from all donors (TDs & NTDs) during 2000–2017. It seems that the patterns of aid distributions in MICs reveal inconsistencies or variations when aid is evaluated by sources (TDs and NTDs). Column 9 shows that MICs received a lion's share (70%) of total NTDs' aid disbursed to Africa during 2000-2017. On the contrary, as shown in Column 8, MICs received a relatively lower share (42.3%) of total TDs' aid disbursed to Africa during the same period. On

the basis of this result, it can be concluded that NTDs' focus towards MICs has been very strong compared to that of TDs. This implies that unlike TDs' aid allocations, NTDs' aid allocations to MICs seemed to have been inconsistent with the aid convention and the Monterrey Consensus 2002. The general aid convention demands that donors should allocate a larger share of aid to LICs compared to MICs.

The same story goes on when the analysis is done for individual donors which have shown substantial inconsistencies (see Table 3.3, Columns 2 and 6). As shown in Table 3.3, Column 2, of the total net aid disbursed to Africa between 2000 and 2017, MICs received 50 and above percent of aid from eight TDs with only three of them being among the top 10 donors' list. The majority (20 out of 28) of TDs delivered below 50 percent with seven of them being among the top 10 TDs' list. Iceland disbursed the lowest volume of aid (12.6 percent) while the highest aid was delivered by Portugal (68 percent). On the contrary, Column 6 shows that 10 of the 19 NTDs disbursed more than 50 percent of their aid to MICs with three of them contributing over 80 percent. It is shown that MICs received lower than 50 percent of total net aid given to Africa by a relatively small number of NTDs (nine out of 19). Among NTDs, Israel disbursed the smallest share of 15.7 percent to MICs which was in fact higher than the lowest share of aid disbursed by Iceland (12.6 percent) from the TDs' group.

Furthermore, the characteristics of donors' primary target/focus in terms of aid allocation to a specific country (top three aid recipients) show some interesting insights (see Table 3.3, Columns 3 & 7). In one way or another, the overall result shows that Sudan, Nigeria and Morocco have been among the top three aid recipients for the first top three donors in both groups – TDs (see Column 3) and NTDs (see Column 7). Besides, Sudan and Nigeria were among the three aid recipients for most of the top 10 donors in both TDs and NTDs. Apart from this, the results from this section found variations not only between aid sources (TDs & NTDs) but also between individual donors within each aid source. The main findings are that: (i) all TDs delivered aid to more than three aid recipients while three NTDs (Bulgaria, Timor-Leste, & Latvia) delivered aid to only one aid recipient; (ii) Egypt was among the top three aid recipients for the first four top NTDs while it was not the case for any of the top 10 donors list for TDs; (iii) Côte d'Ivoire and Congo Republic were among the top three aid recipients in the top 10 donors' list for two TDs, while this was not the

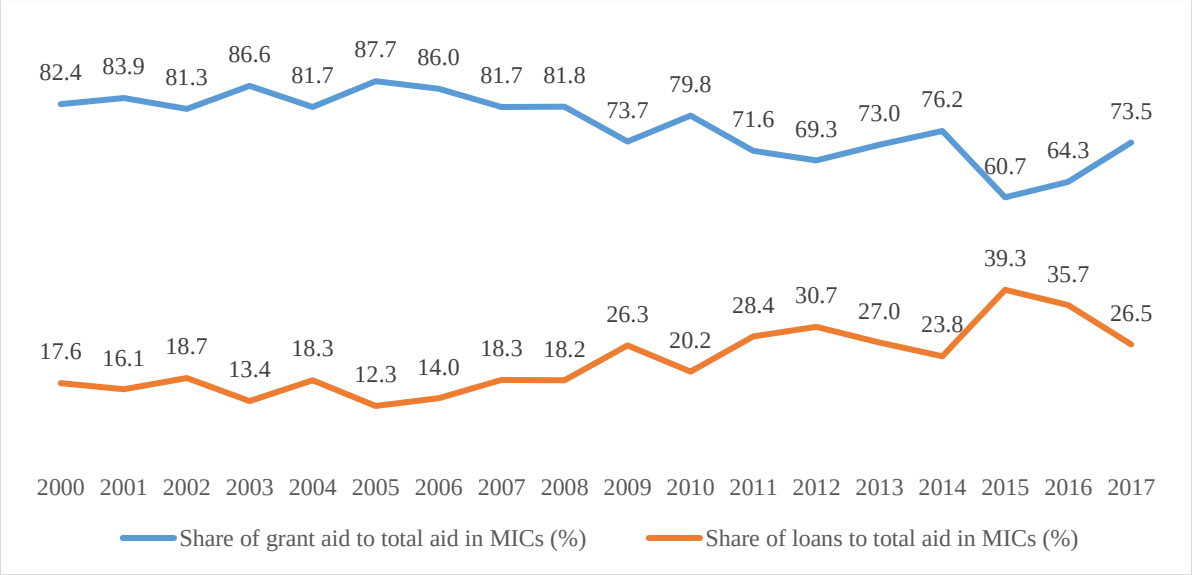
case for none of NTDs; and (iv) Angola was among the top three aid recipients in the top 10 donors' list of NTDs, while it was not found in the list of top 10 TDs.

3.3.3 Trends in aid compositions in African MICs

3.3.3.1 Aid compositions: grant and loans

Given the bulk of aid flows to Africa is dominated by grant, more aid flows in the form of a grant in MICs is expected. Figure 3.3 portrays the evolution of aid compositions or instruments (i.e. grants & loans) in MIC during 2000-2017.

Figure 3.3: Trends in the share of grants and loans to total aid in MICs, 2000-2017 (%).



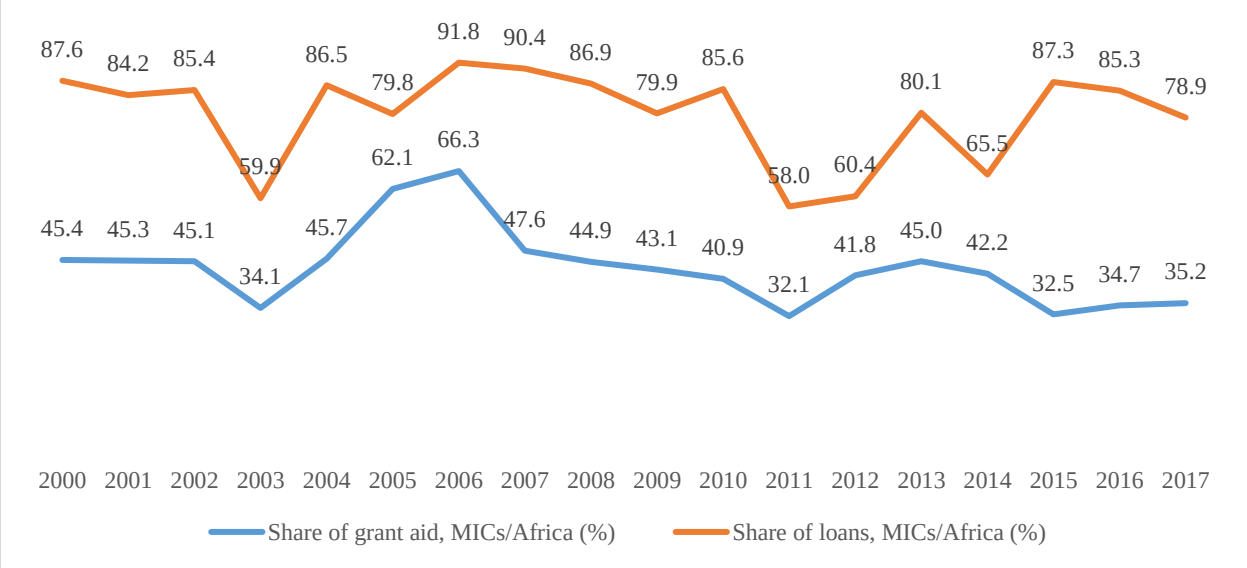
Source: Own elaboration.

As shown in Figure 3.3, the average share of grants constituted the bulk of aid flows to MICs over the course of the study. Between 2000 and 2017, out of the total aid disbursed to MICs, the share of grants constituted 77.5 percent while the share of loans was 22.5 percent. However, the share of grants showed a falling trend with a negative 10.9 percent from 82.4 percent in 2000 to 73.5 percent in 2017. It increased initially and reached its peak in 2005 (87.7 percent), while it showed consistently falling trends afterwards. On the contrary, the share of loans in MICs has been rising

by about 1.5 times: from 17.6 percent in 2000 to 26.5 percent in 2017, representing a 50.9 percent rise. The share of loans increased steadily since 2008 (18.2 percent) and almost doubled in 2015 (39.3%) before it showed a marginal falling trend afterwards. Among others, the rising trends in the share of loans in MICs reveal the relative importance of loans compared to that of grants in these economies.

The relative importance of loans in MICs is clearly observed when the share of grants and loans in MICs is compared with the total grants and loans in Africa. Figure 3.4 presents the trends in the share of grants and loans in MICs to the total grants and loans in Africa during 2000-2017.

Figure 3.4: Trends in the share of grant aid and loans in MICs to Africa, 2000-2017 (%)



Source: Own elaboration.

As Figure 3.4 shows, despite the share of grants dominating total aid disbursed to MICs, its importance becomes lower when compared to the total grant aid disbursed to Africa. It was shown that, compared to grant aid, the lion's share of loans committed to Africa went to MICs. Between 2000 and 2017, on average, MICs received over three-fourth (79.6 percent) of total gross loans committed to Africa compared to less than half of the grant share (43.6 percent). Since 2015, the share of grants showed a marginal rising trend while the share of loans was falling in the same period. However, during 2000-2017, the overall trend revealed that the share of grants dropped by a higher magnitude of negative 22.4 percent (from 45.4 percent in 2000 to 35.2 percent in 2017),

compared to the share of loans by a negative 9.9 percent (from 87.6 percent in 2000 to 78.9 percent). On the basis of this result, it can be concluded that aid disbursements in the form of loans strongly favoured MICs in Africa. This is consistent with the theories and empirical studies discussed in Section 3.2.1 above. Perhaps, this may imply that the transition from LICs to LMICs seemed to have expanded a wider share of loans to these countries. Indeed, this would increase their potential to use loans towards financing infrastructure projects.

3.3.3.2 Sectoral aid distributions in African MICs

This sub-section analysed how sectoral aid compositions in major sectors (as defined by the OECD CRS[21] database) have evolved over the course of the study. Table 3.4 presents the average share of sectoral aid allocations in the different sectors to the total aid committed to MICs for all sectors by aid sources (TDs & NTDs) during 2000–2017.

Table 3.4: Average share of sectoral aid commitments to total aid commitments to all sectors in MICs by aid sources- TA, TDs & NTDs, 2000–2017 (%).

Main sectors	Total aid, TA (TDs + NTDs)		TD's aid		NTD's aid	
	2009-2017	2000-2017	2009-2017	2000-2017	2009-2017	2000-2017
Social sector	40.60	36.80	46.50	40.20	24.30	21.60
Economic sector	21.90	17.90	18.90	14.90	38.70	50.30
Productive sector	7.30	6.90	7.00	6.80	7.20	7.30
Multi-sectors	6.90	6.20	5.20	5.50	9.80	5.30
Humanitarian aid	8.80	8.00	10.60	9.10	1.40	1.00
Debt relief	4.60	15.30	5.70	16.60	NA	NA
Commodity aid	6.00	5.90	3.30	4.80	11.20	6.70

Source: Own elaboration.

Note: Data on sectoral aid allocations was available from OECD CRS database (2020) during 2000-17 for all TDs and NTDs reporting to OECD (i.e. Korea) while for other NTDs reporting to OECD, data was available only for 2009-17. For NTDs that don't report to OECD such as China, aid commitments is obtained from AidData online database for 2000-14 (constant 2014 USD). AidData (2017) compiles aid commitments from China based on OECD CRS sector code and classification. Data for debt relief aid was unavailable for all NTDs. Abbreviations for aid sources: TDs- Traditional Donors; and NTDs- Non-Traditional Donors. Total aid is the sum of aid from TDs & NTDs

When total aid (TA) commitment (sum of aid from TDs & NTDs) is considered (See Table 3.4 Column 2), the social sector received a relatively higher average share (36.8 percent) of total sectoral aid commitments to MICs followed by the economic sector (17.9 percent) and debt relief

[21] As the common practice, this study follows the OECD CRS sectoral classification of aid commitments.

(15.3 percent) during 2000–2017. Interestingly, a relatively lower share of aid was allocated to the productive sector (6.9 percent), which was even lower than the share of aid committed to the non-productive sectors such as humanitarian aid (8 percent) and debt relief (15.3 percent).

Furthermore, a disaggregated data analysis by main aid sources (TDs & NTDs) reveals inconsistencies or variations. For TDs' aid, as shown in Column 4, the social sector received a relatively larger average share (40.2 percent) of the total TDs' aid commitments to MICs followed by debt relief (16.6 percent) and economic sector (14.9 percent). It was found that the share of aid committed as debt relief was higher than the share of aid committed to the two key growth-enhancing sectors: economic sector (14.9 percent) and productive sector (6.8 percent). It seems a bit startling that the share of aid going to the productive sector was even lower than that of humanitarian aid (9.1 percent). Indeed, given that TDs' aid constitutes a dominant source of aid to MICs, the average sectoral aid commitments for TDs follow more or less the same pattern for total aid (TA). In both total aid (TA) and TDs' aid cases, the social sector received the largest average share of aid while the productive sector received a lower share of aid than the unproductive sectors (i.e. humanitarian support & debt relief).

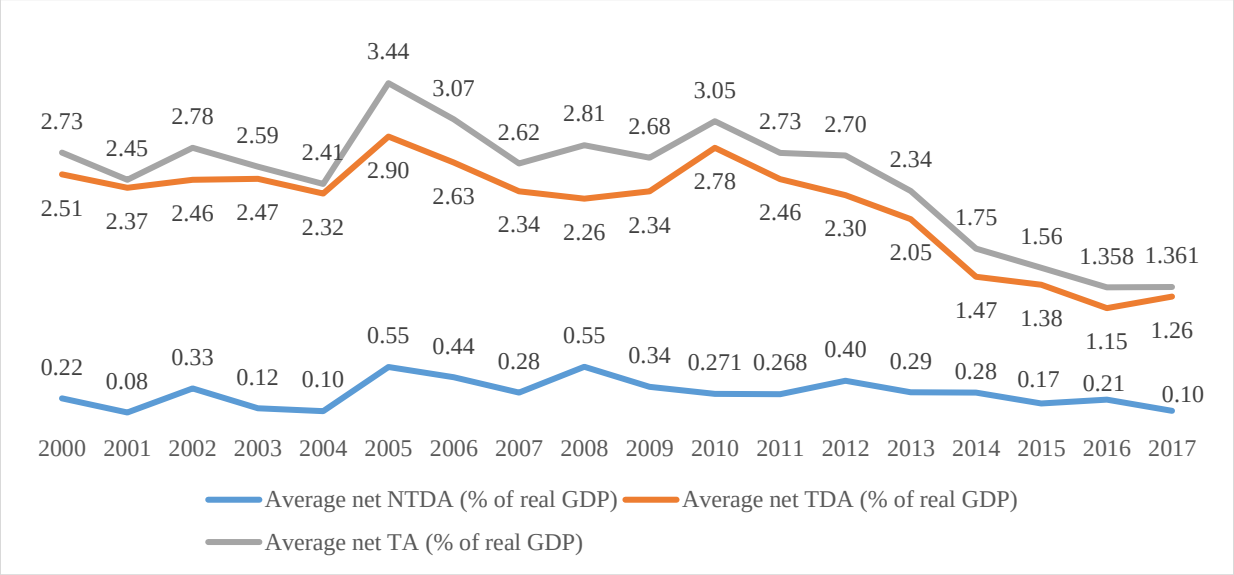
On the contrary, Column 6 shows that nearly half (50.3 percent) of average aid commitments for NTDs in MICs seemed to have targeted the economic sector. The social sector received the second largest average share (21.6 percent) of aid followed by the productive sector (7.3 percent) and commodity aid (6.7 percent). Average sectoral NTDs' aid committed to humanitarian assistance (1 percent) was the lowest.

In theory, the Financing-Gap model (Chenery & Strout, 1966; Bacha, 1990) has argued that aid allocation should target the economic and productive sectors to trigger capital accumulation and boost growth and development in developing countries. In this regard, the findings for NTDs' sectoral aid allocations in favour of the economic sector is consistent with this aid convention. On the other hand, the results for total aid and TDs is also consistent with a recent study by Akramov (2012) which reported a shift of sectoral aid distribution from the economic and productive sectors to the social sector. Indeed, according to Bacha (1990), aid flows that target the productive social sectors such as education and health can support economic growth.

3.3.4 Trends in aid dependency in African MICs

The most common way to measure the role of aid or aid dependency in the recipient economy is to express aid as a share of GDP. In this analysis, the relative importance of aid or aid dependency is measured as a ratio of real net aid disbursements to real GDP (constant $2017). This variable explains how far aid is important in attaining its primary purpose of stimulating growth and development in aid recipient MICs. In the previous section, Table 3.2, Columns 12-14, showed the relative growing importance of aid in MICs along with its evolving trends by aid sources over time between 2000 and 2017. Furthermore, in this section, a brief trend analysis of average aid is explored with the help of graph. Such analysis offers very useful insights on how average aid evolves/moves across aid sources over time between 2000 and 2017 in MICs. In this regard, Figure 3.5 presents the dynamics of average aid-to- GDP ratio in MICs during 2000-2017 by aid sources: total aid (TA), Traditional Donors' aid (TDA), and Non-Traditional Donors' aid (NTDA).

Figure 3.5: Trends in average aid to GDP ratio in African MICs by aid sources, 2000-2017 (%).



Source: Own elaboration.

Figure 3.5 depicts that average real net aid to GDP ratio shows falling trends in MICs over time since 2000. These rising trends happen across the three aid sources – TA, TDA and NTDA. Besides, it was found that the movement of TA was highly influenced by the movement of TDA; thus, TA and TDA tend to follow more or less similar patterns. This is because, as was shown in

Table 3.2, Columns 10-11, TDA constituted a dominant share (83.7 percent) of total aid (TA) disbursed to MICs during 2000-2017 compared to NTDA (16.3 percent). However, compared to TDA, the relative influence of NTDA on the movements in TA was observed in 2008 and 2009. In 2008, both TA and NTDA were increasing despite that TDA was falling. In 2009, both TA and NTDA were falling despite that TDA was rising.

Although the three average aid ratios showed a general declining trend during 2000 - 2017, the trends were not consistent throughout. The trends in the movements of average aid ratio showed both increasing and decreasing patterns at different points over the course of the time. Based on the results from Figure 3.5, it can be found that (i) average TA manifested decreasing trends for 12 times or years while it was on increasing trends for five years; (ii) average TDA showed falling trends for 11 years while it was on rising trends for six years; and (iii) average NTDA depicted decreasing trends for 11 years while it showed rising trends for six years. It seems that the three aid sources have shown a falling trend for the majority of the times or years during 2000-2017.

Apart from measuring the importance of aid, aid–to-GDP ratio is also used as a measure of aid dependency in recipient countries. In principle, the relative importance of aid is expected to decline following the transition of aid-recipients' income status from LIC status to MIC status. Put differently, the importance of aid in MICs is expected to show a falling trend over time. Since 2000, the international aid community has been convinced that increasing aid disbursements would boost growth that would further release other resources so as to enable African countries to reduce their aid dependency (UNAIDS, 2005). In view of this, the trends in aid dependency (as measured in real aid–to-real GDP, in constant 2017$) in MICs is explored by aid sources and aid-recipient countries. The trends in aid dependency by aid sources were shown in Table 3.2, Columns 12-14, and Figure 3.5. Column 12, in Table 3.2, shows that TA contributed to about 2.5 percent of GDP, which is twice less than the average for Africa (5 percent) during 2000–2017. The share of TA to GDP in MICs decreased by two-fold: from 2.73 percent in 2000 to 1.36 percent in 2017 representing about a 50 percent fall. Similarly, further analysis by aid sources (TDA and NTDA) has shown falling trends of aid dependency but with some variations between TDA (see Column 13) and NTDA (see column 14). Between 2000 and 2017, average NTDA decreased by 2.27 times from 0.22 percent in 2000 to 0.1 percent in 2017, while average TDA fell by 1.99 times from 2.51

percent in 2000 to 1.26 percent in 2017. On the basis of this result, it can be concluded that the overall aid dependency in MICs has declined during 2000-2017 for all aid sources.

Furthermore, country level data analysis provides very useful insights in support of a falling trend of aid dependency in the majority of MICs. Table 3.5 presents the list of 26 MICs in the order of their average aid dependency by aid sources during 2000–2017.

Table 3.5: Average share of aid to GDP in African MICs by aid sources, 2000–2017 (%)

TA, Average share of total aid (TDs + NTDs) to GDP (%)		TDA, Average share of TDs to GDP (%)		NTDA, Average share of NTDs to GDP (%)	
Sao Tome & Principe	10.45	Sao Tome & Principe	10.44	Mauritania	1.23
Cabo Verde	9.94	Cabo Verde	9.72	Seychelles	0.92
Djibouti	5.80	Djibouti	5.03	Djibouti	0.78
Zambia	4.71	Zambia	4.57	Congo, Rep.	0.58
Lesotho	4.02	Lesotho	3.71	Cameroon	0.42
Mauritania	3.64	Sudan	2.90	Sudan	0.38
Sudan	3.28	Mauritania	2.40	Egypt, Arab Rep.	0.38
Congo, Rep.	2.81	Cameroon	2.39	Mauritius	0.35
Cameroon	2.81	Congo, Rep.	2.23	Lesotho	0.30
Ghana	2.12	Ghana	1.95	Gabon	0.23
Kenya	1.94	Kenya	1.85	Cabo Verde	0.22
Namibia	1.91	Namibia	1.71	Namibia	0.20
Cote d'Ivoire	1.67	Cote d'Ivoire	1.54	Morocco	0.19
Seychelles	1.53	Botswana	0.82	Ghana	0.18
Morocco	0.94	Tunisia	0.81	Equatorial Guinea	0.15
Botswana	0.93	Eswatini	0.80	Zambia	0.15
Egypt, Arab Rep.	0.86	Morocco	0.75	Cote d'Ivoire	0.13
Eswatini	0.85	Nigeria	0.68	Botswana	0.11
Tunisia	0.84	Seychelles	0.61	Kenya	0.09
Nigeria	0.71	Egypt, Arab Rep.	0.48	Libya	0.06
Mauritius	0.66	Angola	0.36	Eswatini	0.06
Gabon	0.55	Gabon	0.32	Angola	0.04
Angola	0.40	Mauritius	0.31	Nigeria	0.04
Equatorial Guinea	0.38	Libya	0.24	Tunisia	0.03
Libya	0.30	Equatorial Guinea	0.23	Algeria	0.02
Algeria	0.14	Algeria	0.12	Sao Tome & Principe	0.01

Source: Own elaboration.

In general, as shown in Table 3.5, Column 2, on average, total net aid (TA) constituted less than 2 percent of GDP for the majority (16 out of 26) of MICs, and less than 1 percent for 12 of them. The average share of TA to GDP shows substantial variations ranging from 10.45 percent in Sao Tome and Principe to 0.14 percent in Algeria. A relatively higher aid dependency (above 5 percent) was observed only in three countries with Sao Tome and Principe (10.45 percent) being the top aid

dependant followed by Cabo Verde (9.94 percent) and Djibouti (5.8 percent). Seven countries had average aid dependency between 2 percent and 5 percent.

Regarding aid sources, as shown in Column 4, aid dependency for TDA was more or less similar to TA cases. Given that the volume of net aid disbursed from NTDA was smaller, compared to that of TDA, a lower average aid dependency shown for NTDA is not surprising. Column 6 shows that NTDA contributed less than 1 percent for all countries except Mauritania with aid to GDP ratio of 1.23 percent. However, aid dependency among MICs shows variations by aid sources. For instance, Sao Tome and Principe (10.45 percent) was the first top aid dependant for TDA while it was the least aid dependant for NTDA (0.01 percent). Besides, Mauritania (1.23 percent) was found the first top list for NTDA while it was the 5th and 6th top aid dependant for TA (3.64 percent) and TDA (2.4 percent) respectively.

Moreover, a close look into the volume of aid disbursements and aid dependency may provide additional interesting results. Table 3.6 presents the top and bottom 10 aid recipient MICs in Africa along with their level of aid dependency by aid sources during 2000–2017.

Table 3.6: Top and bottom 10 aid recipient MICs in volume and share during 2000-2017 017).

Total net aid (TDs + NTDs), millions$			**TDs net aid, millions$**			**NTDs net aid, millions$**		
Top aid recipients, MICs								
Country	Total aid	Share of aid to GDP (%)		Total aid	Share of aid to GDP (%)		Total aid	Share of aid to GDP (%)
Nigeria	30747	0.71	**Nigeria**	29113	0.68	**Egypt**	13611	0.38
Egypt	25780	0.86	**Kenya**	18580	1.85	**Morocco**	3054	0.19
Sudan	19736	3.28	**Sudan**	17416	2.90	**Sudan**	2320	0.38
Kenya	19347	1.94	**Zambia**	12383	4.57	**Cameroon**	1939	0.42
Morocco	14209	0.94	**Egypt**	12169	0.48	**Nigeria**	1634	0.04
Ghana	12906	2.12	**Ghana**	11767	1.95	**Mauritania**	1139	1.23
Zambia	12769	4.71	**Morocco**	11156	0.75	**Ghana**	1139	0.18
Cameroon	11809	2.81	**Cameroon**	9871	2.39	**Congo**	965	0.58
Côte d'Ivoire	9936	1.67	**Côte d'Ivoire**	9121	1.54	**Côte d'Ivoire**	815	0.13
Congo Republic	4874	2.81	**Tunisia**	4639	0.81	**Kenya**	766	0.09
Bottom 10 recipients, MICs								
Botswana	2088	0.93	**Botswana**	1885	0.82	**Algeria**	324	0.02
Libya	1688	0.30	**Libya**	1379	0.24	**Libya**	308	0.06
Djibouti	1445	5.80	**Lesotho**	1275	3.71	**Djibouti**	233	0.78
Lesotho	1376	4.02	**Djibouti**	1212	5.03	**Botswana**	203	0.11
Gabon	1210	0.55	**Gabon**	721	0.32	**Tunisia**	197	0.03
Mauritius	1149	0.66	**Mauritius**	574	0.31	**Seychelles**	165	0.92
Equatorial Guinea	731	0.38	**Eswatini**	550	0.80	**Lesotho**	101	0.30
Eswatini	587	0.85	**Sao Tome & Principe**	443	10.44	**Cabo Verde**	47	0.22
Sao Tome & Principe	444	10.45	**Equatorial Guinea**	353	0.23	**Eswatini**	36	0.06
Seychelles	278	1.53	**Seychelles**	112	0.61	**Sao Tome & Principe**	1	0.01

Source: Own elaboration

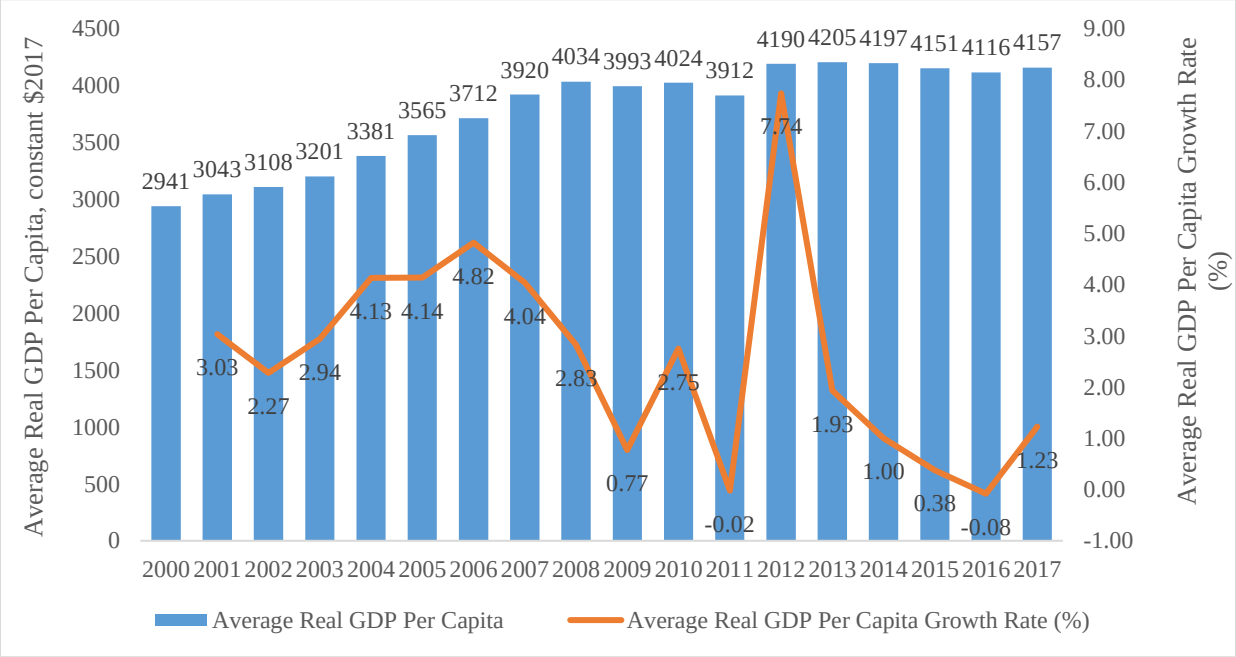
As shown in Table 3.6, the results show that (i) Sao Tome and Principe and Djibouti in the top 10 aid dependency list for TA and TDA were found in the bottom 10 aid-recipients' list; (ii) Seychelles, Djibouti and Lesotho in the top 10 aid dependency list for NTDA were among the bottom 10 aid-recipients' list; (iii) most of the countries in the top 10 aid-recipients' list for NTDA were not among the top 10 aid dependency list; and (iv) most of the countries in the top 10 aid-recipients' list for TA and TDA were not among the top 10 aid dependency list. By and large, this result shows that increasing aid flows seemed to have contributed for reducing aid dependency in the majority of MICs in Africa over the course of this study.

3.4 Economic Growth Dynamics in African MICs

This section briefly discussed the dynamics of economic growth among MICs in Africa during 2000-2017. Economic growth is expressed using real GDP per capita growth rate at constant 2017 US$. Figure 3.6 presents MIC's overall yearly average economic growth performances measured in real GDP per capita over the last two decades both in absolute terms and percentage changes.

As shown in Figure 3.6, on average, real GDP per capita increased by 1216 USD during 2000-2017, from 2941 USD in 2000 to 4157 USD in 2017 representing a 41.35 percent increase. This implies that average per capita income in 2017 was 1.4 times higher than its value in 2000. The overall average real per capita income in MICs was around 3769 USD, which was 1.7 times higher than the average for Africa (2162 USD). However, average per capita income shows substantial differences among MICs ranging from 915 USD in Lesotho to 12668 USD in Equatorial Guinea. Equatorial Guinea had the highest average per capita income of 12668 USD which was 3.4 and 5.86 times higher than the averages for MICs and Africa respectively. Seychelles had the second highest average per capita income of 12544 USD, which was 3.3 and 5.58 times higher than the averages for MICs and Africa respectively. The majority of MICs (18 out of 26) had average per capita income below the overall average for MICs (3769 USD).

Figure 3.6: Economic growth dynamics in African MICs, in volume and growth rate, 2000-17[22](constant 2017 US$).



Source: Own elaboration

In terms of percentage change, average real GDP per capita decreased by 1.8 percentage points during 2001-2017, from 3.03 percent in 2001 to 1.23 percent in 2017. This means that real GDP per capita growth rate in 2017 (1.23 percent) was 2.5 times lower than its 2001 level (3.03 percent). During the study period, the overall average growth in MICs was 2.5 percent, which is 1.2 times higher than the average for Africa (2.08 percent). Perhaps, this may suggest that the average growth performance in MICs could be seen as modest compared to Africa (all income countries) over the study period.

The growth dynamics revealed high fluctuations between 2001 and 2017. Economic growth performed well in the early 2000s. During the first decade (2001-2010), the average growth rate was 3.17 percent which is higher than the average MIC's growth rate (2.5 percent). However, economic growth performed relatively poorly during the second decade (2011-2017) with average growth rate of 1.74 percent, which is 1.4 times behind the MIC's average. Indeed, the extremely

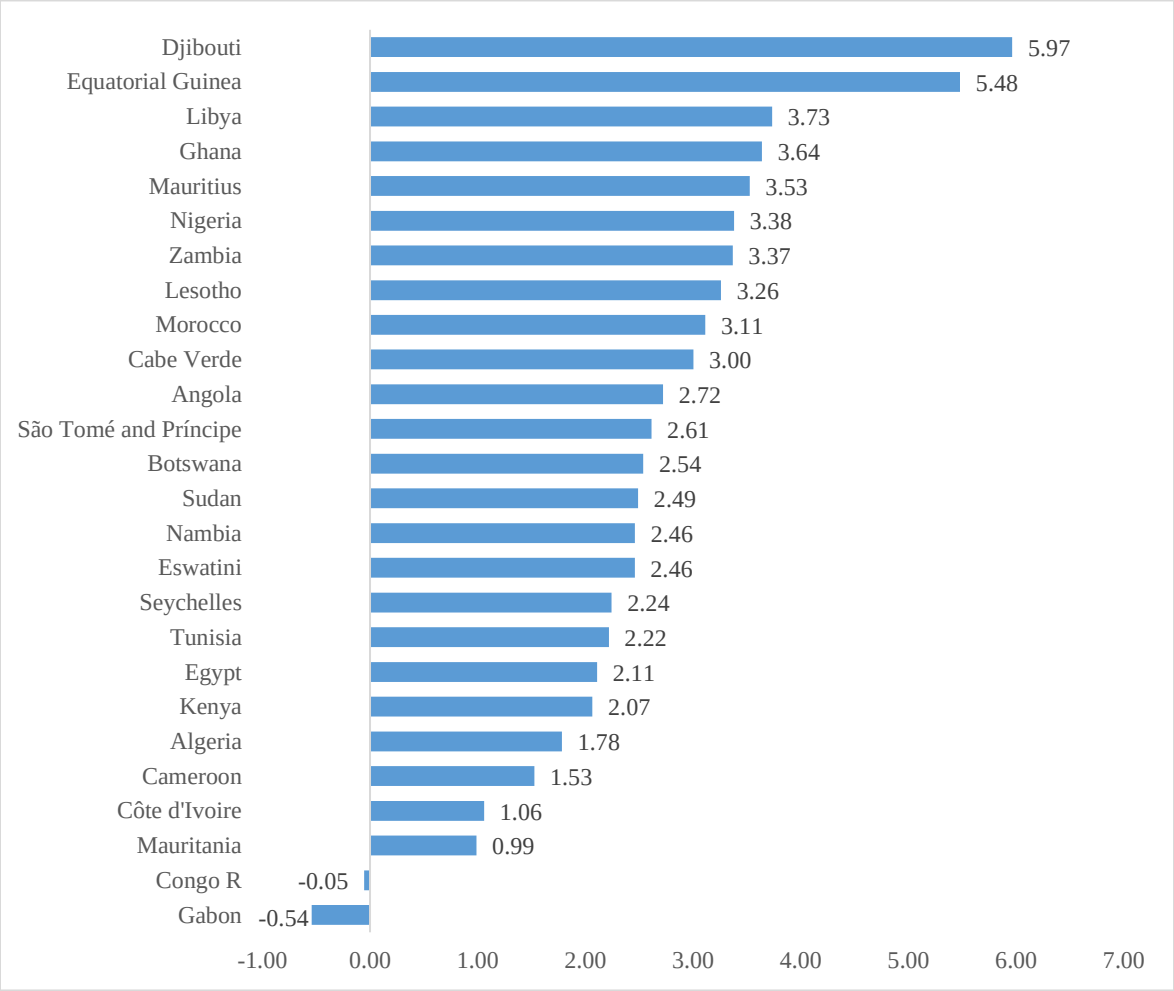
[22] Missing data from WDI for Djibouti (2000-17) was obtained from UN database https://unstats.un.org/unsd/snaama/Basic#

lowest negative growth rate of 0.02 percent in 2011 and highest growth rate of 7.4 percent in 2012 were strongly associated with a sharp fall of per capita income in Libya[23]: from 9802 USD in 2010 to 2688 USD in 2011 (i.e. growth rate of -62.4 percent), and again a substantial rise to 8187 USD in 2012 (i.e. growth rate of 121.8 percent). Besides, a negative growth rate of 0.08 percent in 2016 was associated with a double digit negative growth rate in Congo Republic (12.4 percent) and Equatorial Guinea (12.3 percent). By and large, the growth rate has shown a sharp fall since 2013.

Furthermore, the average growth rate performances have shown substantial differences at country level when the top and bottom/poor performing countries are evaluated. Figure 3.7 presents the overall average economic growth performances (measured by average real GDP per capita growth rate) of all 26 MICs during 2001-2017.

[23] When Libya is excluded from the analysis, the growth rate becomes 2.47 percent in 2011 and 3.17 percent in 2012.

Figure 3.7: Overall average real GDP per capita growth rates in African MICs, 2001-2017 (%).



Source: Own elaboration.

As Figure 3.7 shows, the average growth rate varies across 26 MICs ranging from 5.97 percent in Djibouti to -0.54 percent in Gabon. Next to Djibouti, Equatorial Guinea scored the second largest growth rate of 5.48 percent followed by Libya (3.73 percent), Ghana (3.64percent), and Mauritius (3.53 percent). On the other hand, Congo scored the second lowest growth rate of negative 0.05 percent followed by Mauritania (0.99 percent). Except for these three countries (Gabon, Congo, & Mauritania), average growth rate for the other countries was higher than 1 percent. It was shown that the majority (18 out of 26) of the countries had an average growth rate nearly equal and above the MICs' average (2.5 percent). Eight countries had average growth rate lower than the MICs' average (2.5 percent) with three of them (Gabon, Congo, & Mauritania) had below 1 percent.

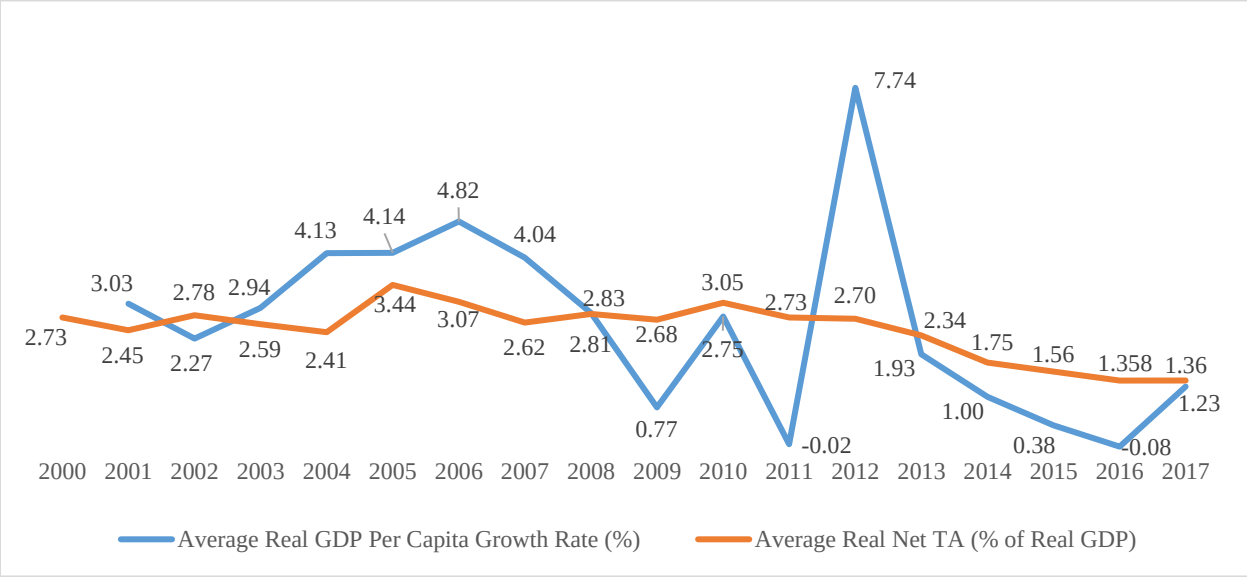
3.5 Trends in the Movement between Foreign Aid and Economic Growth

In the previous sections, the dynamics of aid to GDP ratio by aid sources (See Sub-Section 3.3.4) and real GDP per capita growth rate (See Section 3.4) were discussed separately. The two variables were measured in real terms (i.e. at constant 2017 US$) so as to evident the actual dynamics between them over the course of the study, 2000-2017. Economic growth is measured by real GDP per capita growth while aid is expressed as real net aid disbursement in percentage of real GDP. This section explores the dynamics of the movements between the two variables based on quantitative analysis in a descriptive setting. The focus is to evaluate how the patterns or movements between them look like over the course of the study period. However, how significant relationship exists between aid and growth in MICs is an empirical issue and will be tested in another chapter (i.e. Chapter 6 Section 6.3). Within the context of the rapidly changing global aid landscape since 2000, this section explores the trends in the movement between aid and growth in MICs by aid sources (TA, TDA, and NTDA). When the trends between aid and growth follow similar paths, both variables are said to be moving in the same directions, either both increasing or both decreasing. Otherwise, the two variables are said to be moving in the opposite directions when the trend in one variable is increasing while the other variable is decreasing and vice versa.

3.5.1 Trends in the movement between total aid and economic growth

In this sub-section, the trends in the movement between total aid (TA) and growth are discussed in detail in terms of magnitudes and patterns. Figure 3.8 presents the magnitudes and patterns of the movements between TA and growth in African MICs during 2000-2017.

Figure 3.8: Trends in the movements between TA and growth in African MICs (%), 2000-2017.



Source: Own elaboration.

As shown in Figure 3.8, in terms of magnitudes, the overall result showed that total net aid (TA) as a share of GDP doesn't seem to be that much different from economic growth rate among MICs in Africa. Between 2000 and 2017, on average, MICs received about 2.47 percent of total aid as a ratio of GDP which is very close to its average per capita growth rate (2.5 percent). However, when the magnitudes of the two variables are evaluated at different times, some visible difference could be observed. It was shown that the magnitudes of average growth rate were higher than the average aid to GDP ratios before 2009 while its magnitudes consistently (except in 2012) fell below the aid ratios since 2009. The average growth rate (3.53 percent) exceeded the average aid ratio (2.77 percent) before 2009, while average growth rate (1.74 percent) fell below average aid ratio (2.17 percent) since 2009 onwards. By and large, economic growth showed good performance in the early 2000s while it tends to perform poorly mostly since 2009. On the other hand, on average, the relative importance (i.e. aid dependency) appears to have been falling substantially since 2010.

Apart from this magnitude, a close look into Figure 3.8 further revealed that the trends in the movements between aid and growth appeared to have lacked a definite pattern or path throughout the study period. However, on average, the two variables showed co-movements for relatively most of the years (10 years) at different times over the course of the study period. During such co-

movements, both variables showed decreasing trends for most years (seven years) and increasing trends for three years (2005, 2010 and 2017). Just as illustration to this co-movement, it can be seen that both variables were moving together in the same directions since 2013 when both were decreasing during (2013-2016) while increasing in 2017. For the other six years at different points or years, the two variables appeared to have moved in the opposite directions with one variables increased while the other variable decreased and vice versa. Moreover, average aid to GDP ratio experienced relatively more swings or fluctuations than the average growth rate over the study period. Perhaps, this fluctuation may challenge the aid convention regarding the predictability of aid flows to MICs.

Similarly, a bit dive into country-level data may further elaborate the dynamics in the movements between aid and growth during the same period. On the basis of combining country-level data on the top and bottom 10 lists for aid to GDP ratio (See Table 3.5) and growth rate (See Figure 3.7), Table 3.7 provides a simple summary matrix to clarify the movements between the two variables during 2000-2017.

Table 3.7: A simple matrix summarising the movements between aid ratio and growth in African MICs, 2000- 2017 (average aid ratio and growth rate).

	Top 10 growth performers	**Bottom 10 growth performers**	**Neither groups, growth**
Top 10 aid ratio-TA	Cabo Verde; Djibouti; Ghana; Lesotho; Zambia	Cameroon; Congo; Mauritania	Sao Tome and Principe; Sudan
Bottom 10 aid ratio-TA	Equatorial Guinea; Libya; Mauritania; Nigeria	Algeria; Egypt; Gabon; Tunisia	Angola; Eswatini
Neither groups, aid ratio-TA	Morocco	Cote d'Ivoire; Kenya	Botswana; Namibia; Seychelles

Source: Own elaboration. *TA= Total aid*

The summary matrix shown in Table 3.7 reveals interesting findings. Broadly speaking, the trends in the movements between average total aid (TA) and growth are evaluated by exploring whether there is co-movement or not. Co-movement implies similar pattern that countries are in the same top or bottom 10 lists for both variables. On the other hand, lack of co-movement is manifested when there are inconsistent patterns among countries outside the co-movement category described above. Against this background, the main results from the summary matrix are the following.

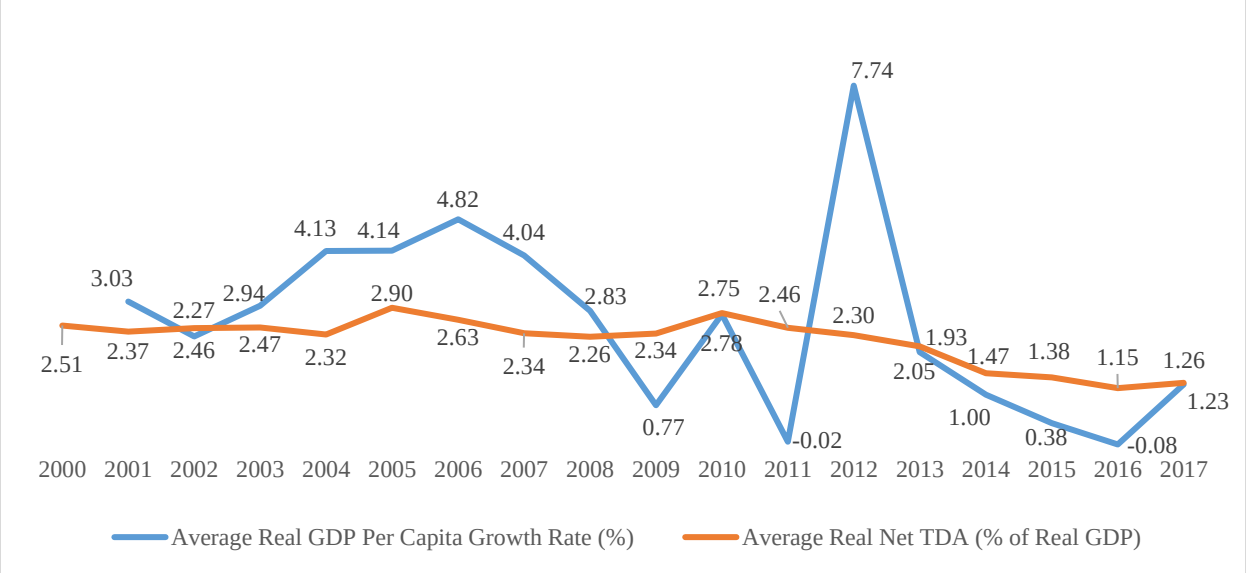
- ***Co-movements between aid (TA) and growth***: In this case, countries are grouped in two categories: top 10 aid ratio vs top 10 growth performers and bottom 10 aid ratio vs bottom 10 growth performers. There are nine countries falling in both groups. First, regarding the top aid ratio vs top growth performers, only five countries (Cabo Verde, Djibouti, Ghana, Lesotho and Zambia) in the top 10 lists of aid to GDP ratio were also among the top 10 lists of growth performers. This implies that almost half of the countries in the top 10 aid ratio were not among the top 10 growth performers' list. Put differently, half of the countries that performed top in growth are not in the top 10 lists of aid to GDP ratio. Relatively speaking, this may suggest that a higher aid to GDP ratio and good economic performances were manifested in five countries. This implies that these five countries experienced somehow a consistent pattern or co-movement between aid and growth between 2000 and 2017. *Second*, regarding the bottom 10 aid ratio vs bottom 10 growth performers, four countries (Algeria, Egypt, Gabon and Tunisia) were at the bottom 10 list in both variables. Countries with the lowest aid to GDP ratio were also the poorest growth performers. At this point, however, it is hardly possible to say whether higher aid ratio leads to higher growth rate or the other way round. This is an empirical issue and will be dealt with great detail in Chapter 6 Section 6.3.
- ***Inconsistent pattern or movements between aid (TA) and growth:*** The results show that most of the countries (17 out of 26) have shown inconclusive patterns or movements between the two variables. This can be further broken down into two cases. *First*, there are countries that are found in the top 10 list in one variable but bottom in the other and vice versa. Seven countries were found in this category. For instance, three countries (Cameroon, Congo, & Mauritania) in the top 10 aid ratio were among the bottom 10 growth performers. Similarly, four countries in the top 10 growth performers' list (Equatorial Guinea, Libya, Mauritania, & Nigeria) were among the bottom lists of aid ratio. *Second*, there are countries that belonged in neither the top nor bottom 10 lists in both variables. Ten countries were found in this category. These include that (i) Sao Tome and Principe and Sudan were among top 10 aid ratio list but they were neither in the top nor bottom 10 growth performers' list; (ii) Morocco was among the top 10 growth performers, while it was neither in the top nor bottom 10 aid ratio list; (iii) Cote d'Ivoire and Kenya were among the bottom 10 growth performers, while they were neither in the top nor bottom 10 aid ratio list; (iv)

Angola and Eswatini were among the bottom 10 aid ratio list, while they were neither in the top nor bottom 10 growth performers list; and (v) three countries (Botswana, Namibia, & Seychelles) were found in neither categories for both variables. Overall, these cases reveal that the dynamics between aid and growth experienced inconsistent patterns.

3.5.2 Trends in the movement between traditional aid and economic growth

In this sub-section, the trends in the movement between Traditional Donors' aid (TDA) and growth are discussed in detail in terms of magnitudes and patterns. Figure 3.9 presents the magnitudes and patterns of the movements between average TDA and growth in African MICs during 2000-2017.

Figure 3.9: Trends in the movements between TDA and growth in MICs (%), 2000-2017.



Source: Own elaboration.

In terms of magnitudes, as shown in Figure 3.9, the overall result showed that average TDA as a share of GDP was lower than average economic growth rate in MICs. Between 2000 and 2017, on average, TDA as a share of GDP was about 2.19 percent while the growth rate was 2.5 percent. During 2002-2008, the average growth rate was consistently higher than average TDA. The average growth rate fell below average aid ratio since 2009 except in 2012. By and large, economic growth showed good performance in the early 2000s while it has tended to perform poorly mostly since 2009 onwards. On the other hand, on average, the relative importance (i.e. aid dependency) appears to have been falling substantially after 2010.

Apart from this magnitude, a close look into Figure 3.9 further revealed that the trends in the movements between aid and growth experienced some inconsistent patterns. On average, the two variables showed co-movements for relatively most of the years (12 years) at different times over the course of the study period. During such co-movements, both variables showed decreasing trends for eight years (2007-2009, 2011 and 2013-2016) while they were on increasing trends for four years (2003, 2005, 2010 and 2017). For the other four years at different points or years, the two variables appeared to have moved in the opposite directions with one variable increased at a time while the other decreased and vice versa. Moreover, both variables were experiencing more or fewer similar swings or fluctuations for about eight different points. Perhaps, the fluctuations associated with aid may challenge the aid convention regarding the predictability of aid flows to African MICs.

Similarly, a bit dive into country-level data may further offer useful insights to elaborate the dynamics in the movements between aid and growth over the study period. This can be done by comparing the country-level data on the top and bottom 10 countries for aid ratio and growth rate presented in Table 3.5 and Figure 3.7, respectively. On the basis of this information, Table 3.8 provides a simple summary matrix to clarify the movements between the two variables during 2000-2017.

Table 3.8: A simple matrix summarising the dynamics between TDA and growth in African MICs, 2000- 2017 (average TDA and average growth rate).

	Top 10 growth performers	**Bottom 10 growth performers**	**Neither groups, growth**
Top 10 aid ratio-TDA	Cabo Verde; Djibouti; Ghana; Lesotho; Zambia	Cameroon; Congo; Mauritania	São Tomé and Príncipe; Sudan
Bottom 10 aid ratio-TDA	Equatorial Guinea; Libya; Mauritius; Morocco; Nigeria	Algeria; Egypt; Gabon; Seychelles	Angola
Neither groups, aid ratio-TDA	None	Cote d'Ivoire; Kenya; Tunisia	Botswana; Eswatini; Namibia

Source: Own elaboration.

As shown in Table 3.8, the main result from this summary matrix revealed that the dynamics between aid and growth are characterised by a mixed pattern with co-movements and inconsistent movements between them. The results are summarised below:

- ***Co-movements between TDA and growth***: In this case, countries are grouped in two categories: top 10 aid ratio vs top 10 growth performers and bottom 10 aid ratio vs bottom

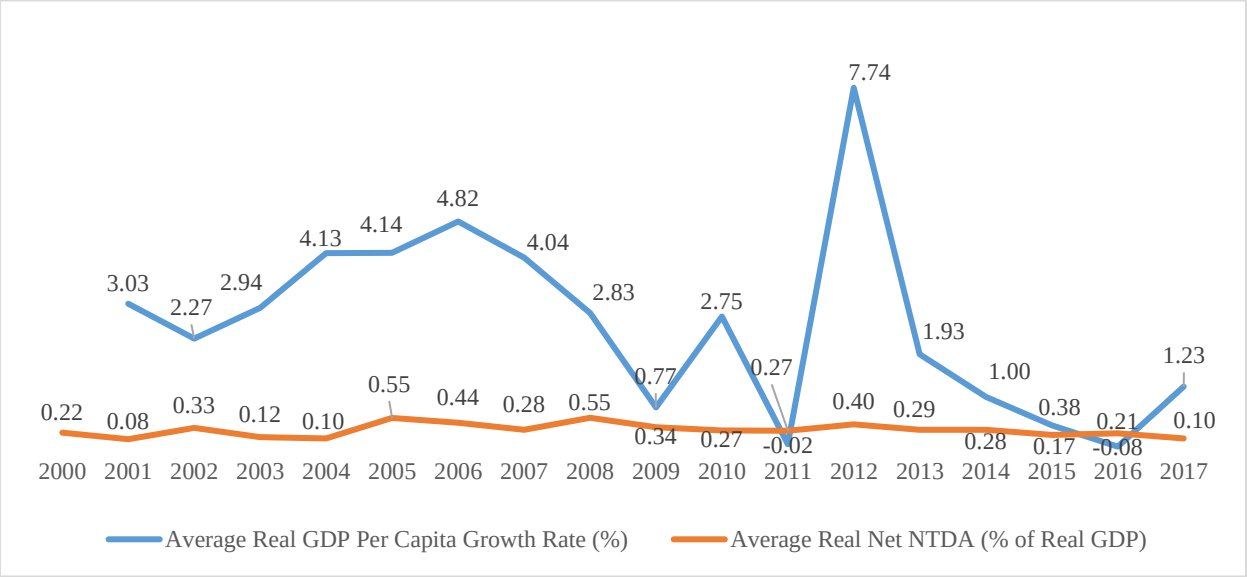
10 growth performers. Nine countries are found in both groups. *First*, regarding the top aid ratio vs top growth performers, only five countries (Cabo Verde-Djibouti-Ghana-Lesotho-Zambia) in the top 10 aid ratio list were also among the top 10 growth performers group. For these countries, a relatively higher aid ratio and good growth performance seemed to have been moving in similar paths. *Second*, four countries (Algeria-Egypt-Gabon-Seychelles) in the bottom 10 aid ratio were also in the bottom 10 growth performers' list. This suggests that a relatively lower aid ratio tends to be moving in similar path with lower or poor growth performances in these countries.

- ***Inconsistent pattern or movements between TDA and growth:*** The results show that most of the countries (17 out of 26) have shown inconclusive patterns of the movement between the two variables. It was found that (i) three countries (Cameroon, Congo, & Mauritania) in the top 10 aid ratio were among the bottom 10 growth performers; (ii) two countries (São Tomé and Príncipe and Sudan) in the top 10 aid ratio list were neither in the top nor bottom growth performers' group; (iii) five countries (Equatorial Guinea, Libya, Mauritius, Morocco and Nigeria) in the top 10 growth performers' list were among the bottom 10 aid ratio groups; (iv) three countries (Cote d'Ivoire-Kenya-Tunisia) in the bottom 10 growth performers' list were neither in the top nor bottom 10 aid ratio groups; (v) Angola found in the bottom 10 aid ratio was neither in the top nor bottom 10 growth performers; and (vi) three countries (Botswana, Eswatini and Namibia) were found in neither of the groups discussed above. By and large, the main findings for TDA are more or less similar to the main findings of TA discussed in the previous section.

3.5.3 Trends in the movement between non-traditional aid and economic growth

In this sub-section, the trends in the movement between Non-Traditional Donors' aid (NTDA) and growth are discussed in detail in terms of magnitudes and patterns. NTDA is net aid as a share of real GDP, and growth is real GDP per capita growth rate. Figure 3.10 presents the magnitudes and patterns of the movements between average NTDA and growth during 2000-2017.

Figure 3.10: Trends in the movements between NTDA and growth in MICs (%), 2000-2017.



.**Source: Own elaboration.**

Apart from this magnitude, a close look into Figure 3.10 further revealed that the trends in the movements between NTDA and growth experienced inconsistent patterns. On average, the two variables showed both co-movements and opposite paths for equally eight years at different times over the course of the study period. During their co-movements, both variables showed decreasing trends for six years (2007, 2009, 2011 and 2013-2015) while they were on increasing trends for two years (2005 and 2012). Outside these times or years, the two variables were moving in the opposite directions with one variables increased at a time while the other decreased and vice versa. Moreover, average NTDA ratio tends to have manifested relatively more swings or fluctuations[24] (11 times) than average growth rate (eight times). The fluctuations in NTDA may pose concern regarding the predictability of such aid flows to MICs.

Similarly, a bit dive into country-level data may further provide useful insights to explore the dynamics between NTDA and growth over the study period. This can be done by comparing the country-level data on the top and bottom 10 countries for aid as a share of GDP (i.e. NTDA) and per capita growth rate presented in Table 3.5 and Figure 3.7 respectively. On the basis of this

[24] The number of swings is counted based on the number of years in each variable showed increasing or decreasing trend. For instance, if a variable is increasing continuously for three years, then, this is counted as 1 time swing or fluctuation.

information, Table 3.9 provides a simple summary matrix to clarify the movements between the two variables during 2000-2017.

Table 3.9: A simple matrix summarizing the dynamics between NTDA and growth in African MICs, 2000- 2017 (average NTDA and average growth rate).

	Top 10 growth performers	**Bottom 10 growth performers**	**Neither groups, growth**
Top 10 aid ratio-NTDA	Djibouti; Lesotho; Mauritius	Cameroon; Congo; Egypt; Gabon; Mauritania; Seychelles	Sudan
Bottom 10 aid ratio-NTDA	Libya; Nigeria	Algeria; Cote d'Ivoire; Kenya; Tunisia	Angola; Botswana; Eswatini; São Tomé and Príncipe
Neither groups, aid ratio-NTDA	Cabo Verde; equatorial Guinea; Ghana; Morocco; Zambia	***None***	Namibia

Source: Own elaboration.

As shown in Table 3.9, the main result from this summary matrix revealed that the dynamics between NTDA and growth are characterised by a mixed pattern with co-movements and inconsistent movements between them. The results are summarised below:

- ***Co-movements between NTDA and growth***: In this case, countries are grouped in two categories: top 10 aid ratio vs top 10 growth performers and bottom 10 aid ratio vs bottom 10 growth performers. Seven countries are found in both groups. *First*, regarding the top aid ratio vs top growth performers groups, only three countries (Djibouti, Lesotho, and Mauritius) in the top 10 aid ratio list were also among the top 10 growth performers' group. For these countries, a relatively higher NTDA and good growth performance seemed to have been moving in similar paths. *Second*, four countries (Algeria, Cote d'Ivoire, Kenya, and Tunisia) in the bottom 10 aid ratio were also in the list of the bottom 10 growth performers. This suggests that a relatively lower NTDA tends to be moving in similar path with lower or poor growth performances in these countries.
- ***Inconsistent pattern or movements between NTDA and growth:*** The results show that the majority of the countries (19 out of 26) have shown inconclusive patterns in the movement between the two variables. It was found that (i) six countries (Cameroon-Congo-Egypt-Gabon-Mauritania-Seychelles) in the top 10 aid ratio list were among the bottom 10 growth performers' group; (ii) Sudan found in the top 10 aid ratio list was neither in the top nor

bottom 10 growth performers' group; (iii) two countries (Libya and Nigeria) in the top 10 growth performers list were among the bottom 10 aid ratio group; (iv) five countries (Cabo Verde-equatorial Guinea-Ghana-Morocco-Zambia) in the top 10 growth performers list were neither in the top nor bottom aid ratio groups; (v) four countries (Angola- Botswana-Eswatini-São Tomé and Príncipe) in the bottom 10 aid ratio were neither in the top nor bottom 10 growth performers' list; and (vi) Namibia was found in neither of the groups mentioned above.

Overall, the main finding from this section shows that the dynamics between aid and growth revealed lack of definite or consistent patterns in African MICs over the study period. Besides, it was shown that the dynamics between the two variables exhibited some variations between aid sources – TA, TDA and NTDA. On the basis of comparing the dynamics between aid and growth for 16 years (2002-2017), the result showed that the two variables seemed to have experienced co-movements for relatively most of the times for TA (10 years) and TDA (12 years). In the case of NTDA, the two variables showed both co-movements and inconsistent/opposite paths for equally eight years. Nonetheless, which pattern strongly influences the dynamics between aid and growth remains an empirical exercise which is examined in Section 6.3 of Chapter 6.

3.6 Conclusion

This Chapter extensively discussed the dynamics of foreign aid and economic growth among MICs in Africa during 2000-2017. As a background to the study, this chapter started by briefly discussing the underlying argument about the role of aid in African MICs, as well as the transition of aid recipient countries to MIC status in Africa during 2000-2017. From this discussion, the main result showed that 14 countries have transitioned into MIC status in Africa over the last 18 years (2000-2017): 11 countries from LICs to LMICs and 3 countries from LMIC to UMIC level. As of 2017, there were 26 (excluding South Africa) MICs in Africa. Then, this chapter discussed the dynamics between aid and growth among these 26 MICs in Africa during 2000-2017 within the contexts of the current changing global aid landscape since 2000 which has been influenced by TDs and NTDs. This chapter focused on bilateral aid and provided some trend analysis and stylised facts in terms of net aid disbursements; main sources of aid; donors' focus/target; aid compositions and aid

dependency. Moreover, the chapter discussed the dynamics of economic growth in MICs. It also assessed the trends in the movement between aid and growth in MICs during 2000-2017.

Based on the descriptive analysis of the trends in aid and growth in this chapter, the following conclusions are made. *First*, total net aid (TA) disbursements increased by 1.4 times: from $6.4 billion in 2000 to $9 billion in 2017, representing a 40.6 percent increase. In real terms, total net aid to MICs increased by $2.6 billion between 2000 and 2017. On average, out of the total net aid disbursed to Africa during 2000-2017, 45.2 percent of it went to MICs. Among other things, this may imply that transitions to MIC status were not necessarily accompanied by a fall in the volume of aid flows to MICs in Africa. Besides, the same increasing trend is observed when aid is evaluated by main sources with TDs contributing a lion's share (83.7 percent) of total aid to MICs while NTDs contributing about 16.3 percent. Although the contribution of NTDs is marginal compared to that of TDs, a relative importance of NTDs has shown a modest rising trend over time since 2000. For instance, the contribution of NTDs to total aid in MICs reached around 30 percent between 2013 and 2015 with its share being close to 40 percent in 2014. *Second*, the patterns of aid distributions in MICs reveal inconsistencies when aid is evaluated by sources (TDs and NTDs). Between 2000 and 2017, out of the total net aid disbursed to Africa, MICs received a lion's share (70 percent) of aid from NTDs, while it received a relatively lower share (42 percent) of aid from TDs. *Third*, despite the share of grant dominating total aid disbursed to MICs, MICs received over three-fourths (79.6 percent) of total gross loans committed to Africa compared to less than half of the grant share (43.6 percent). This suggests that transition to MIC status seemed to have expanded more shares of loans in MICs. *Fourth*, sectoral aid distributions in MICs revealed some variations by aid sources during 2000-2017. Out of total sectoral aid (TA) commitments to MICs, the social sector received a relatively higher average share (43.8 percent) followed by the economic sector (17.9 percent), debt relief (15.3 percent), humanitarian aid (8 percent) and the productive sector (6.9 percent). For TDs' aid (TDA), out of the total TDA committed to MICs, the social sector received a relatively larger average share (40.2 percent) followed by debt relief (16.6 percent), economic sector (14.9 percent), humanitarian support (9.1 percent) and productive sector (6.8 percent). On the contrary, for NTDs' aid (NTDA) commitments to MICs, nearly half (50.3 percent) of it targeted the economic sector followed by the social sector (21.6 percent), the productive sector (7.3 percent), commodity aid (6.7 percent) and humanitarian assistance (1 percent) was the lowest.

Fifth, in spite of rising trends of net aid disbursements in absolute terms, the transition to MIC seemed to have contributed to a falling dependency on aid over the course of the study. Aid dependency (measured by the ratio of real net aid to real GDP) in MICs decreased by two-fold: from 2.73 percent in 2000 to 1.36 percent in 2017, representing about 50 percent fall. On average, total aid (TA) contributed to about 2.5 percent of GDP, which is twice less than the average for Africa (5 percent) during 2000–2017. The results also revealed that aid dependency has shown similar falling trends by aid sources (TDA and NTDA) but with some variations between them.

Sixth, economic growth showed good performance in the early 2000s or during the first decade (2000-2010) with average growth rate of 3.12 percent while it tends to perform poorly during the second decade (2011-2017) with average growth rate of 1.74 percent. The recent sharp fall in growth rate since 2012 remains a challenge in MICs. Finally, the overall result shows that the movements between the two variables lacked a definite or consistent pattern. On the basis of comparing the dynamics between aid and growth for 16 years (2002-2017), the result showed that the two variables seemed to have experienced co-movements for relatively most of the times for TA (10 years) and TDA (12 years). In the case of NTDA, the two variables showed both co-movements and inconsistent/opposite paths for equally eight years. Nonetheless, which pattern strongly influences the dynamics between aid and growth remains an empirical exercise which was examined in Chapter 6 Section 6.3.

CHAPTER 4 : THE RELATIONSHIP BETWEEN FOREIGN AID AND ECONOMIC GROWTH: THEORETICAL AND EMPIRICAL LITERATURE REVIEW[25]

4.1 Introduction

In the preceding two chapters, the dynamics of foreign aid and economic growth in Africa by country income groups were discussed in detail: Chapter 2 (LICs) and Chapter 3 (MICs). This chapter extensively reviews and discusses the theoretical and empirical literature on the relationship between foreign aid and economic growth.

The paper is organized under five sections including the introduction. Section 2 presents the main theoretical literature that offers the underlying theses of promoting aid for growth. Section 3 explores the empirical literature on the main debates on aid-effectiveness, whether or not aid works for growth. Given that the empirical literature on the aid-growth nexus is immense, this section presents a critical review of the most influential scholarly studies and most commonly cited papers in the aid-growth empirical literature having economic growth as a primary outcome variable. Section 4 explores the main reasons behind the inconclusive empirical evidence on the aid-growth nexus, and identifies the alternative methodological approaches to minimise these contradictions. Section 5 concludes the paper by summarising the main insights from reviewed literature.

4.2 The Relationship between Foreign Aid and Economic Growth: A Review of Theoretical Literature

The theoretical relationship between foreign aid and economic growth is linked to the modern economic theory of development in the post-WWII era. It was believed and advocated by the economic theory of development that the appropriate quantity and mix of saving, investment, and foreign aid would enable developing countries to follow a similar growth path to the one that had

[25] A peer-reviewed research article is published from this chapter. **Mamo G., Tefera and Odhiambo M., Nicholas, 2020. On the Link between Foreign Aid and Growth in Developing Countries**. *ACTA UNIVERSITATIS DANUBIUS (AUDOE)*, Vol. 16, No. 6: 315 – 333. https://dj.univdanubius.ro/index.php/AUDOE/article/view/582

been followed by western economies to transform their agrarian economies to modern economies (Todaro & Smith, 2015). Along with the historical experiences of advanced economies, the success story of the Marshal Aid programme in Europe was considered a key lesson for the "backward continents" such as Africa, Asia and Latin America. By then, development was conceived to be similar to rapid economic growth and foreign aid was considered a key factor in boosting growth in developing countries. The linear growth models and their extension of the Two-Gap Model have been the main models that strongly advocate the crucial role of foreign aid in stimulating growth in developing countries (Todaro & Smith, 2015). A brief review of the main economic argument or theoretical models in support of foreign aid for developing countries is discussed as follows:

4.2.1 Linear growth models

4.2.1.1 The Rostow's stages of growth

Walt R. Rostow developed the stages of growth model of development to describe the paths through which a country could transform from an underdeveloped economy to a modern economy. Put simply, Rostow argued that every country must pass through five stages of paths to achieve economic development. These five distinct stages through which every country must proceed are the traditional society, pre-condition for take-off, take off, the drive to maturity and high mass consumption (Todaro & Smith, 2015). All developed countries have passed the take-off stages to sustained growth, while developing countries are stuck either at the traditional society stage or the pre-condition for take-off stage. It was argued that developing countries had to follow a certain set of rules in order to be able to move to the take-off stages and achieve self-sustainable growth.

The importance of foreign aid in Rostow's growth model is noticed when these sets of rules are considered to be necessary for development to 'take-off'. According to Rostow, one of the critical strategies to enable take-off was the mobilisation of domestic and foreign savings to trigger investment and accelerate economic growth (Todaro & Smith, 2015). However, developing countries encountered a critical "saving gap" to generate the investment required to launch the "take-off" and sustainable growth. Rostow advocated foreign aid flows to developing countries to fill this "saving gap" or "financing gap" between the required investments (using an ICOR of 3 to

3.5 based on the Harrod-Domar model) for "take-off" and the actual domestic saving (Easterly, 2003). This implies that foreign aid was considered a key resource in generating investment and increasing growth in developing countries. Indeed, this is strongly linked to the Harrod-Domar growth model, which explains the economic mechanisms through which increasing investment causes an increase in growth (Todaro & Smith, 2015).

4.2.1.2 The Harrod-Domar model of economic growth

The Harrod-Domar growth model and its extension as the Two-Gap Model have been used frequently to understand foreign aid and growth, as well as other policy issues that developing countries encounter (Todaro & Smith, 2015; Easterly, 2003). This model explains the economic mechanisms through which more investment gives rise to more growth. Economic growth is determined by the level of saving and capital stock. As presented in Todaro and Smith (2015: 121), a simple model of economic growth can be constructed as follows:

$$S = sY \qquad (4.1)$$

Equation 4.1 implies that net saving (S) is some proportion (s) of national income (Y); s is saving ratio. New investment is then given as:

$$I = \Delta K \qquad (4.2)$$

Given, capital stock (K) is directly proportional to GDP (Y), the required unit of capital to produce a unit of output is represented by the ***capital-output ratio, k:***

$$\frac{K}{Y} = k \qquad or \qquad \frac{\Delta K}{\Delta Y} = k \quad or \quad \Delta K = k\Delta Y \qquad (4.3)$$

In principle, net saving (S) must equal net investment (I), which can be written as:

$$S = I \qquad (4.4)$$

However, from Equations 4.1-4.3, it is known that

$$I = \Delta K = k\Delta Y$$

This implies that Equation 4.4 that equalises saving and investment, can be rewritten

as:

$$S = sY = k\Delta Y = \Delta K = I \quad (4.5)$$

Or simply as

$$sY = k\Delta Y \quad (4.6)$$

Now, dividing both sides of Equation 4.6 first by Y and then by k gives the following:

$$\frac{\Delta Y}{Y} = \frac{s}{k} \quad (4.7)$$

Where $\frac{\Delta Y}{Y}$ refers to the rate of change or rate of growth of GDP.

Equation 4.7 represents a simplified version of the Harrod-Domar theory of economic growth. It states that the rate of growth of GDP $\Delta Y/Y$ is determined jointly by the national saving ratio (***s***) and the national capital-output ratio (***k***). According to the model, the rate of growth of GDP is positively related to the saving ratio (i.e., the ability to save and invest) and negatively related to the capital-output ratio.

4.2.2 The financing-gap models

4.2.2.1 The Harod-Domar financing-gap approach

The "financing gap" approach capitalised on the Harrod-Domar model presented in Equation 4.7 was popularly used for open economy policy analysis in developing countries in the 1950s and 1960s. In an open economy, investment is the sum of domestic saving and foreign saving. For most poor developing countries such as Africa, foreign saving mostly emanates from foreign aid flows. Similar to Rostow, the Harrod-Domar model stated that the main constraint for economic development in developing countries is the low level of capital formation (investment) due to low rates of domestic saving. This creates a critical "financing gap', which is the difference between the level of investment required to produce a certain rate of growth and the amount of actual domestic saving. Therefore, the Harrod-Domar model advocated foreign aid to overcome this "financing gap" and increase investment and growth in developing countries. With this note, the

Harrod-Domar model, which is specified in Equation 4.7, can be extended to include foreign aid as follows (See Easterly, 2003, p. 31):

$$g = (I/Y)/\mu \quad (4.8)$$

$$I/Y = A/Y + S/Y \quad (4.9)$$

where I is investment, Y is output, g is target GDP rate of growth, A is foreign aid, S is domestic saving and μ is the Incremental Capital Out-put Ratio (ICOR).

Equation 4.8 reveals that economic growth is determined by capital formation or investment as a share of GDP adjusted by the ICOR. This ratio is assumed to be between 2 and 5, where a higher ratio is a measure of poor "quality investment" (Easterly, 2003). Equation 4.9 states that the level of investment is the sum of domestic saving and foreign aid. This model explicitly states the crucial role of foreign aid to augment the "savings gap" or "financing gap" developing countries are facing to increase investment and spur growth.

4.2.2.2 The Two-Gap Model

The Two-Gap Model is an extension of the Harrod-Domar model. The underlying proposition behind the "Two-Gap" Model is that economic growth in developing countries is not only "*investment limited growth"*, but also *"trade limited growth"*, which represents the savings gap and foreign exchange gap, respectively (Chenery & Strout, 1966: 683). The first resource gap (savings gap) is developed by extending the Harrod-Domar model of aid-financed investment theory or "investment limited growth". The savings gap refers to a shortage of domestic savings, as well as the skills required in developing countries to ignite investment opportunities. As a matter of convenience, a linear relationship between investment and output is assumed. It is also assumed that recipient countries primarily use aid for investment, rather than consumption towards achieving the target growth rate.

The "exchange rate gap" emanates from the "trade limited growth" argument. It means that developing countries have limited export capacity to generate the required amount of foreign exchange to import machineries and manufacturing goods required to foster the investment process

for rapid and sustained growth. It concerns an adjustment in the balance of payment (import and export) to ensure equality of the trade gap with the required gap between investment and savings. The Two-Gap Model, therefore, states that foreign aid complements both resource gaps to meet investment and import requirements of rapid and sustained growth in developing countries.

4.2.2.3 The Three-Gap Model

Later on, the Two-Gap Model has been extended to the Three-Gap Model adding a fiscal-gap or fiscal limitation as a third financing gap hindering growth in poor countries (Bacha, 1990; Taylor, 1994). The Three-Gap Model argues that growth prospects in developing countries is challenged by fiscal constraints on public spending in the productive sectors, rather than the saving-foreign exchange gaps outlined in the Two-Gap Model (Bacha, 1990; Taylor, 1994). Given that aid goes to the recipient governments, aid finances not only public physical investment (as claimed by the Two-Gap Model) but also public consumption expenditure in the productive social sectors such as education and health (Chatterjee *et al*., 2007; Herzer & Morrissey, 2013). In the context of the Three-Gap Model, public budget constraint is the main factor that hinders growth in poor countries and aid aims at augmenting this fiscal deficit. In this regard, aid enables a recipient government to relax its budget constraint and generate additional resources to support growth through financing the productive social sectors (i.e. human capital-education and health). Thus, aid can play a critical role for narrowing the fiscal-gaps and increases government expenditure (consumption), which in turn increases growth.

4.2.3 Transmission channels through which foreign aid affect economic growth

The economic growth theories and financing-gap models (Chenery & Strout, 1966; Bacha, 1990) discussed above have presupposed a positive relationship between aid and growth in aid- recipient countries. This theoretical argument has greatly convinced the international aid community and donors (i.e. aid proponents) to maintain a common belief that the effect of aid on growth is positive; thus, aid is effective for growth in recipient countries (Doucouliagos & Paldam, 2010). As a result, aid proponents have been advocated this aid-effectiveness thesis, and have been calling for

increasing aid flows to developing countries since the 1960s. Theoretically, as highlighted in the financing gap models, aid increases capital accumulations and fosters growth in developing countries (Hanssen & Tarp, 2001). In this regard, therefore, the "financing-gap" models offer the underlying theoretical framework to identify the most important transmission channels through which aid positively affects growth in developing countries. Among others, such positive impact of aid on growth is manifested through three main transmission channels: investment, imports and public consumption.

4.2.3.1 Aid and 'investment-limited' growth: Aid increases investment

The Two-Gap Model (Chenery & Strout, 1966) provides a standard theoretical framework to understand the causal link between aid and growth. The underlying argument behind the Two-Gap Model is that economic growth in developing countries is not only "investment-limited growth" but also "trade-limited growth" which represents the savings gap and foreign exchange gap respectively (Chenery & Strout, 1966: 683). The Two-Gap Model states that aid complements the two resource gaps (saving-gap & trade-gap) to meet investment and import requirements of rapid and sustained growth in developing countries. This implies that aid positively affects growth through two main transmission channels: investment (due to saving gap) and imports (due to exchange rate gap, see Section 4.2.3.2 below). In the Two-Gap Model, the first key transmission channel by which aid affects growth is investment (which is the primary determinant of growth).

This channel is built on the Harrod-Domar growth model which states that economic growth is primarily determined by investment, but developing countries are facing "investment limited growth" due to the "saving gap". The saving gap refers to a shortage of domestic savings, as well as skills in developing countries required to ignite investment opportunities. Thus, aid is critical to augment the saving-gap to increase investment and spur growth. Aid positively affects growth in two steps. First, aid increases investment through augmenting domestic savings, and second, the rise in investment increases growth. Apart from presupposing a positive correlation between aid, investment and growth, the model specifies a clear causal chain from aid to investment and growth. According to the Two-Gap Model, the positive impact of aid on growth requires two assumptions to be met: a linear relationship between investment and output, with aid being used primarily for

investment rather than consumption towards achieving the target growth rate. A large volume of literature has found evidence that investment is the most important transmission channel through which aid positively affects growth in recipient countries (Gomanee *et al*., 2005; Clemens *et al*., 2012; Galiani *et al*., 2017; Lof *et al*., 2015; Alemu & Lee, 2015; Herzer & Morrissey, 2013; Juselius *et al.,* 2013).

4.2.3.2 Aid and "trade-limited" growth: Aid increases imports of capital inputs

The underlying argument behind the Two-Gap Model is that economic growth in developing countries is not only "investment limited growth" (i.e. saving gap) but also "trade limited growth" due to "foreign exchange gap" (Chenery & Strout, 1966: 683). The "trade limited growth" argument refers to the "exchange rate gap" (i.e. second resource gap). It states that developing countries have limited export capacity to generate the required amount of foreign exchange to import machineries and manufacturing goods to foster the investment process for rapid and sustained growth. It is about adjustment in the balance of payment (import and export) so as to ensure equality of the trade gap with the required gap between investment and savings. In this regard, aid offers a supply of foreign exchange and increases imports of capital goods required for public investment. Thus, aid positively affects growth in recipient countries through generating foreign exchange which can be used to increase imports[26] of capital goods and technology to trigger public investment and capital accumulation for sustaining growth. Empirical evidence has also shown that aid increases net imports through absorption by public consumption expenditure (Temple & Van de Sijpe, 2017). This study has further noted that aid increases net imports by increasing imports without reducing exports. Chatterjee *et al.* (2007) noted that aid increases growth by increasing the different categories of government expenditure, which are key determinants of growth. They found that trade dependence (import plus export/GDP) increases government expenditure. This suggests that when aid increases net imports through public spending, it also increases growth.

[26] There is debate that aid flows to recipient countries may lead to Dutch Disease effects (see section 4.2.4.4 on main controversies on aid effectiveness below).

4.2.3.3 Aid and "budget-constrained" growth: Aid increases public budget spending

The Three-Gap Model (Bacha, 1990; Taylor, 1994) argues that growth prospects in developing countries are challenged by fiscal constraints on public spending decisions, rather than the saving-foreign exchange gaps outlined in the Two-Gap Model. Thus, aid can play a critical role for narrowing the fiscal-gaps, releasing additional revenue and increasing government expenditure (consumption), which in turn increases growth. The rise in consumption may increase growth when aid is used to augment government consumption expenditure/spending on the productive social sectors such as education and health (Juselius *et al*., 2013; Arndt *et al*., 2015; Temple & Van de Sijpe, 2017). In other words, aid positively contributes to growth when it increases government consumption expenditure in the productive social sectors for building human capital through education and health. A large body of empirical literature has found strong evidence in favour of this transmission channel through which aid positively affects (i.e. increases) growth in recipient countries (Temple & Van de Sijpe, 2017; Samuel & Francis, 2014).

Therefore, the current state of understanding on aid allocation is that aid aims at financing not only investment (i.e. the Two-Gap Model) but also government consumption expenditure in the productive social sectors in recipient countries (Chatterjee *et al*., 2007; Herzer & Morrissey, 2013; Samuel & Francis, 2014; Arndt *et al*., 2015; Temple & Van de Sijpe, 2017). This may imply that the three channels (investment, imports and consumption) are the most relevant factors for evaluating whether or not aid is effective in supporting growth in recipient countries. Overall, the "financing-gap" models have underscored that the positive impact of aid on growth is achieved when aid flows target the direct growth-enhancing sectors in the economic and production infrastructures services, as well as productive social infrastructure services. However, it is worth mentioning that aid effectiveness through the aforementioned main channels may depend on different circumstances in recipient countries such as level of income, types of aid, resource endowments, etc.

4.2.3.4 Other channels: "Good policy"

Apart from the above channels, recent studies have argued that the effectiveness of aid for growth could be achieved under certain policy conditions (i.e. aid conditionality) proposed by Burnside and Dollar (2000). Using interaction terms between aid and policy index (inflation, budget balance and trade), Burnside and Dollar (2000) have found evidence that aid positively affects growth in recipient countries. Based on this finding, they have argued that the effectiveness of aid on growth is significantly improved in the presence of "good" policies in recipient countries. As a result, they have been advocating that poor countries with good policies should be targeted for increasing aid allocations. However, empirical evidence from the aid-growth regressions using these policies and aid interactive variables are mixed and highly controversial (Easterly *et al*., 2004; Askarov & Doucouliasgos, 2015). Thus, there is no conclusive evidence on how the interaction of aid and policy could mediate or stimulate sustained growth in recipient countries.

4.2.4 Main controversies on the theoretical aid-growth nexus: Aid effectiveness

The preceding sections have extensively discussed the underlying theoretical propositions in favour of the positive role of aid to boost growth in developing countries. These theories have been providing a theoretical basis that aid is effective for growth (i.e. aid-effectiveness theses), and have rationalised aid proponents' call for increasing aid flows to developing countries since the 1960s. On the contrary, however, another strand of literature critiques this theoretical proposition, and states that aid has not been effective for growth (i.e. aid-ineffectiveness theses). As a result, the theoretical aid-growth nexus has evolved into two main lines of debate or argument regarding the effectiveness of aid for growth in developing countries: aid-effectiveness (aid proponents) and aid-ineffectiveness (aid opponents). In this sub-section, the main theoretical literature on aid-ineffectiveness argument or theses is briefly reviewed. This strand of literature has argued that aid doesn't support growth; rather it adversely affects growth through different factors or channels.

4.2.4.1 Aid dependency[27]

Based on the "financing-gap" theoretical model, the international aid community and donors seem to have maintained the common belief that aid has been positively contributed for supporting growth in developing countries (Doucouliagos & Paldam, 2010). This line of thinking dominates the aid-effectiveness debate that aid has been effective for supporting and sustaining economic growth in poor countries. Since 2000, as reflected in the 2002 Monterrey Conference and 2005 G-8 Gleneagles Summit, the aid-effectiveness theses have induced donors to call for doubling aid flows to the poorest countries mostly in Africa (UN, 2003; UNAIDS, 2005). The main trust was that increasing aid flows would stimulate economic growth, which helps to release additional domestic resources over time and support the further reduction of aid dependency in Africa and other poor countries (UNAIDS, 2005). Contrary to this assumption and trust, the issue of aid dependency has triggered much of the theoretical debate on aid-ineffectiveness, and aid opponents have been calling for cutting or avoiding aid. Along this line, aid opponents have been chanting that increasing aid flows lead to aid dependency which ultimately hinders growth and undermines the effectiveness of aid in recipient countries.

A strand of literature has found that aid dependency adversely affects growth through hindering the economic, political and institutional capacities required for enhancing efficient economic performance in recipient countries (Bräutigam & Knack, 2004; Khan & Ahmed, 2007; Thomas *et al*., 2011; Sindzingre, 2012; Engen & Prizzon, 2019). According to this literature, aid dependency negatively affects growth in recipient countries through different channels, such as that aid dependency: (i) reduces domestic resources/revenue mobilisation efforts (i.e. taxation), as aid provides an alternative source of revenue and replaces domestic saving; (ii) weakens public fiscal budget management system by decreasing the predictability of public spending; (iii) creates incentives for rent-seeking and corrupt activities by the political elites, because they viewed aid as a side source of income and used it to foster their own interest rather than used aid to finance growth-enhancing activities; (iv) discourages the opportunities for knowledge and skills

[27] Broadly speaking, aid dependency is defined as a situation when an aid-recipient country cannot operate most of the main functions of government including delivery of basic services to provide education and healthcare services in the absence of aid. Simply put, aid dependency is said to be manifested when a recipient country relies on aid to finance a higher percentage of its public budget expenditure (measured in aid/GDP or aid/GNI) (Thomas *et al*., 2011; Engen & Prizzon, 2019).

development in recipient countries; (v) highly induces political elites in recipient countries to be dependent and accountable to donors than as citizens, which undermines political autonomy and leads to emergence of corrupt and ineffective governments with adverse effect on growth; and (vi) weakens the donor-recipient relationships due to lack of credibility and moral hazards, which finally undermine the effectiveness of aid.

4.2.4.2 Volatility and unpredictability of aid flows

The issue of the volatility and unpredictability of aid flows and their adverse impact on aid effectiveness has received intensive debate in the 2000s (Kharas, 2008; Sindzingre, 2012; Wood *et al*., 2011). Kharas (2008) has noted that aid flows to developing countries is highly volatile, and it is more highly volatile than GDP (5 times) and exports (3 times) for a typical recipient. In principle, aid goes to the government budget in recipient countries; thus, aid volatility strongly influences government fiscal behaviour. The volatility and unpredictability of aid flows lead to macroeconomic instability, and make fiscal management very challenging and problematic in aid-recipient countries. Overall, there seems to be consensus among researchers that volatility and unpredictability of aid flows have an adverse impact on the effectiveness of aid for growth in recipient countries (Kharas, 2008; Wood *et al*., 2011; Sindzingre, 2012; Herzer & Morrissey, 2013).

It has been noted that the negative effect of aid volatility and uncertainty tends to be higher among high aid dependent countries and governments with higher spending. Kharas (2008) argues that the negative impact of aid volatility on growth is manifested through different cases/conditions such as: (i) it constrains fiscal planning, as well as the level and composition of spending for investment, (ii) it brings external shocks to the economy in recipient countries, (iii) it amplifies real business cycle in aid-recipient countries, and (iv) it generates a deadweight loss of 1.9 percent of GDP in a typical recipient country. Furthermore, Kharas (2008) found that aid volatility differs across donors and donor policies are main sources of such volatility; thus, donors' priority should be reducing aid volatility. Indeed, the international aid community through the Paris Declaration

for Aid Effectiveness in 2005[28] has been calling for reliable and predictable aid flows to improve aid effectiveness for development in developing countries (Kharas, 2008; Wood *et al*., 2011). This suggests that reliable and stable aid flows are detrimental for efficient government spending and fostering growth in aid-recipient countries.

4.2.4.3 Aid fungibility

The financing gap model mostly the Two-Gap model strongly assumes that aid is intended to use only for public investment, with no share of it goes to consumption. Thus, the direct impact of aid on growth depends on how much government is using aid to finance investment, which determines growth. On the contrary, however, another strand of literature has also found evidence in support of "aid fungibility" argument where aid is diverted away from financing public investment towards funding government consumption. According to Chatterjee *et al* (2007), the presence of fungibility could hide the significant impact of aid on growth and explain the "missing link" in aid effectiveness.

Recent evidence has shown support of aid fungibility where aid increasingly finances consumption rather than investment (Boone, 1966; Chatterjee *et al*., 2007; Temple & Van de Sijpe, 2017). The aid fungibility argument states that the direct impact of aid on growth decreases if aid is diverted to finance government consumption (Burnside & Dollar, 2000). Burnside and Dollar (2000) found evidence that consumption is a strong positive function of aid where aid increased consumption with a weakly negative impact on growth mostly in LICs. However, Herzer and Morrissey (2013) argue that the concept of aid fungibility is misguided and misleading. This is because: (i) government consumption includes recurrent costs, mostly construction costs, which are essential for productive investment, and (ii) donors are giving more aid to finance government consumption expenditure in the productive social sectors or human capital investment in education and health. Empirical evidence on aid fungiblity is largely mixed. Aid increases consumption, and the rise in consumption may increase growth if aid is channelled into productive consumptions (Juselius *et al*., 2013; Arndt *et al*., 2015; Temple & Van de Sijpe, 2017) or decreases growth if it is used for

[28] The core principles of Aid Effectiveness identified in the Paris Declaration in 2005 can be found here. https://www.oecd.org/development/effectiveness/34428351.pdf

non-productive consumptions (Boone, 1996; Burnside & Dollar, 2000; Herzer & Morrissey, 2013). Given that aid is delivered to recipient governments, aid tends to finance both investment and consumption. This suggests that the issue of aid fungibility and aid impact for growth depends on the types of aid and government spending behaviour.

4.2.4.4 Dutch Disease effect

The Dutch Disease effect has been considered as one of the ineffective transmission channels through which aid adversely affects growth in aid recipient countries. In theory, aid flows cause real exchange rate to appreciate in recipient countries. The rising real exchange rate adversely impacts growth in the recipient countries through constraining the progress in the tradeable goods sector, decreasing in exports, and reduction of competitiveness in the manufacturing sector (Rajan & Subramanian, 2011; Herzer & Morrissey, 2013; Temple & Van de Sijpe, 2017). The empirical evidence on aid-driven Dutch Disease remains mixed. Among others, for instance, Rajan and Subramanian (2011) found evidence that aid reduces growth in the tradable goods sector, while Temple and Van de Sjjipe (2017) found no evidence of Dutch Disease effects. Temple and Van de Sjjipe (2017) have noted that aid flows have been absorbed by government consumption, and aid flow increases net imports by rising imports without decreasing exports.

4.2.4.5 Donor coordination problem, aid fragmentation, and proliferation

Since the turn of the 21st century, the global aid landscape has been rapidly changing following the emergence of new donors or NTDs, mostly China in the global aid system alongside the TDs, which have dominated the system since the 1960s (Greenhill *et al*., 2013; Annen & Moers, 2017). The fact that an increasing number of donors are joining the global aid system appears to bring the problem of aid fragmentation and proliferation into the global aid system (Easterly & Pfutze, 2008; Temple & Van de Sijipe, 2017; Annen & Moers, 2017). In simple terms, aid proliferation refers to the increasing number of donors (multiplicity of donors) in the aid system, while aid fragmentation exists when a typical donor gives aid to too many sectors and too many recipient

countries (Temple & Van de Sijipe, 2017; Annen & Moers, 2017). Aid fragmentation and proliferation of donors have shown a substantially increasing trend since the 1960s. According to Annen and Moers (2017), the number of recipient countries receiving aid from the average bilateral donor increased from 20 in the 1960 to 87 in 2011 (i.e. aid fragmentation), and the number of donors in a typical or average recipient country increased from three in 1960 to 23 in 2011 (i.e. proliferation of donors). Among others, the emergence of new donors or NTDs, such as China, as well as excessive competition among donors for aid impact are the main drivers of increasing aid fragmentations and proliferations (Sindzingre, 2012; Annen & Moers, 2017).

Overall, recent literature has argued that excessive aid fragmentation and proliferation lead to coordination failure among donors, which ultimately adversely affects the effectiveness of aid in recipient countries (Easterly & Pfutze, 2008; Temple & Van de Sijipe, 2017; Annen & Moers, 2017). The main adverse effects on aid effectiveness include that: (i) recipient countries have encountered high transaction costs and administrative burdens to manage aid flows from many donors with different requirements, procedures and priorities; (ii) both donors and recipient countries face coordination problems to harmonize and align aid flows to recipient countries as per their national development priorities; (iii) it induces donors' competition for scarce qualified staffs in recipient countries, which in turn decreases the bureaucratic quality in the recipient countries; and (iv) it creates inherent disorganisation and incomplete information about aid allocations from each donor, which further affects the predictability of aid.

4.3 The Relationship between Foreign Aid and Economic Growth: A Review of Empirical Literature

There is no doubt that the aid-growth nexus in developing countries is one of the most empirically researched areas in economics, employing different panel econometric techniques. Despite the availability of such extensive empirical studies on this nexus, the evidence has turned out to be mixed and highly controversial. This section provides an extensive review of the empirical literature and highlights the main debate on the aid-growth nexus. The review covers the empirical literature that discusses the impact of aid on growth, as well as their causal relationship. The

empirical literature on the impact of aid or aid-effectiveness is discussed first. Then, the empirical literature that explores the aid-growth causal relationship is presented.

4.3.1 Empirical literature on aid effectiveness for growth

Given that the empirical literature on the aid-growth nexus is immense, a comprehensive review of all these previous studies is hardly possible. Hence, this section presents a critical review of the most cited empirical studies on the aid-growth nexus that has economic growth as a primary outcome variable. For brevity, the review is organised along the two lines of debate on aid-effectiveness: whether aid works for growth or not. The first group consists of empirical literature on aid-effectiveness involving studies that have reported a positive impact of aid on growth, both unconditionally and conditionally. The second group includes empirical studies on aid-ineffectiveness where the effect of aid on growth appears to be either negative or zero/null.

4.3.1.1 Aid is effective for growth: Aid works for growth in recipient countries

The strand of empirical literature on aid effectiveness that reports a positive impact of aid on growth, both unconditionally and conditionally is extensively discussed here. It is preferred that the aid conditionality argument be included here, because it serves as another "less optimistic thesis" to justify aid proponents' efforts to push for more flow of aid to developing countries (Easterly, 2003). These groups of literature are believed to be very influential in convincing aid proponents and international organisations to advocate for more aid flows to developing countries.

Aid positively affects growth: Unconditionally

The common belief among donors is that the effect of aid on growth is positive, which supported aid proponents' argument and resulted in more aid flows to developing countries over the past several decades (Doucouliagos & Paldam, 2010; Arndt *et al*., 2015; Addison *et al*., 2017). For instance, Arndt *et al.* (2015) have demonstrated that foreign aid has been very instrumental in stimulating economic growth in recipient countries over the past four decades. Addison *et al*.

(2017) have also underscored that aid has contributed for significant progress in many of the MDGs. By and large, such positive impact of aid on growth has been evident across aid recipients in developing countries in general (Clemens *et al.*, 2012; Magesan, 2016; Galiani *et al*., 2017; Lof *et al*., 2015; Addison *et al*., 2017), Africa (Jones, 2013; Reidy, 2016; Juselius *et al*., 2013; Gillander, 2016; Tait *et al*., 2015), and transition economies in particular (Askarov & Doucouliasgos, 2015).

Surprisingly, these empirical studies have adopted different estimation approaches to capture the aid-growth nexus such as: (i) instrumental variable approach (Reidy, 2016; Arndt *et al*., 2015; Magesan, 2016; Galiani *et al*., 2017), (ii) dynamic panel estimators, such as General Methods of Moments (GMM) (Lof *et al.*, 2015; Gillanders, 2016), (iii) a panel co-integration estimation technique (Juselius *et al.*, 2013; Jones, 2013), and (iv) lagged values (Clemens *et al.*, 2012). Employing the panel co-integration estimation procedure, recent studies have found a positive impact of aid on growth among West African countries (Jones, 2013) and 36 SSA countries from the mid-1960s to 2007 (Juselius *et al*., 2013). Clemens *et al.* (2012) found an average positive impact of aid on growth mostly for "early impact aid" using lagged and first-difference values in the regression model. Using instrumental variable approaches, such as income threshold (Galiani *et al*., 2017), participation in the UN Human Rights Treaties (Magesan, 2016) and aid per capita interaction with population size and colonial ties with donors (Arndt *et al*., 2015), a positive impact of aid on growth in developing countries was established. Indeed, the magnitude of the impact varies across studies where a one percentage increase in aid ratio to GNP/GDP causes growth to rise by a 1.5 percentage point (Arndt *et al*., 2015), a 0.6 percentage point (Magesan, 2016), a 0.35 percentage point (Galiani *et al*., 2017), and a 0.21 percentage point (Reidy, 2016).

Regarding the transmission mechanism, most studies have shown that aid positively affects growth by increasing domestic investment in recipient countries (Clemens *et al*., 2012; Galiani *et al*., 2017; Lof *et al*., 2015; Alemu & Lee, 2015). Other studies have also found that aid positively affects growth by increasing consumption on the productive social sectors (Juselius *et al*., 2013; Arndt *et al*., 2015; Temple & Van de Sijipe, 2017; Samuel & Francis, 2014). In addition to investment and consumption, empirical evidence has also shown that aid positively affects growth by increasing net imports, which further increases public consumption expenditure (Temple & Van de Sijipe, 2017; Chatterjee *et al.*, 2007).

Apart from identifying a positive relationship between aid and growth, some studies went further and evaluated the nature of such a relationship. Some studies found evidence of a non-linear relationship (Clemens *et al*., 2012; Lof *et al*., 2015), while others found little evidence on this non-linearity (Askarov & Doucouliasgos, 2015). Others also reported that the positive impact of aid on growth exists in the short run (Galiani *et al*., 2017; Martinez, 2015), and in the long run (Arndt et al., 2015; Lof *et al*., 2015; Juselius *et al.*, 2013; Jones, 2013; Tait *et al*., 2015). Based on panel data from 104 countries, Martinez (2015) found that it takes approximately six months for recipients to realise 50 percent of the total aid impact. Furthermore, a positive effect of aid on growth differs across countries with aid exhibiting diminishing returns at a higher level (Clemens *et al.,* 2012; Dutta *et al.,* 2015). These variations have mainly emanated due to the "timing aid effect" and types of aid (Clemens *et al*., 2012; Doucouliagos & Paldam, 2010). Based on the timing effect of aid on growth, Clemens *et al*. (2012) have grouped foreign aid into three categories, namely "early impact", "late impact" and "humanitarian aid". The study concludes that it is only the "early impact aid" which is channelled into infrastructure and productive sectors, as well as government budget support, which is more effective in boosting domestic investment and supporting growth within a shorter time in recipient countries. Doucouliagos and Paldam (2010) also argue that "some aid components" positively affect growth.

On the other hand, a strand of empirical literature has also investigated whether aid works in the same way across all aid-recipient countries. Indeed, evidence has shown that aid works differently across countries when aid heterogeneity is addressed by disaggregating the sample into different regions/sub-regions, income groups, and resource endowment (Ekanayake & Chatrna, 2010; Alemu & Lee, 2015; Eregha & Oziegbe, 2016; Rahnama *et al*., 2017). Ekanayake and Chatrna (2010) studied the effect of foreign aid on growth for a panel of 83 developing countries over the 1980-2007 period by regions (Africa, Asia, Latin America and the Caribbean) and income levels (low, low-middle, upper-middle and high income levels). It was found that aid positively affected growth only in Africa, and low-middle and upper-middle income countries, while in the remaining groups, it exhibited negative impact. Eregha and Oziegbe (2016) adopted a panel co-integration estimation strategy to explore the link between ODA and growth in 33 SSA over the period 1970-2013. Although positive association was found in all cases, the impact of ODA on growth was significant for South Africa, Central Africa and oil-exporting countries, while it was not significant for West Africa, East Africa and non-oil exporting countries. The study also reported a non-linear

association between ODA and growth in non-oil exporting countries. Using a dynamic panel model with the GMM approach, Rahnama *et al*. (2017) and Alemu and Lee (2015) have investigated the impact of aid on growth by income groups in developing countries over the period 1970-2010, and in Africa over the period 1995-2010, respectively. It is interesting, however, to see that Rahnama *et al*. (2017) reported a positive impact among high income developing countries, while Alemu and Lee (2015) reported a similar impact for low-income groups in Africa.

Aid positively affects growth only under certain conditions: Aid conditionality

While the average positive impact of aid on growth is fairly recognised, the contrasting view that the positive impact of aid on growth depends on certain conditions or good policies in recipient countries should not be ignored. The aid conditionality argument is believed to be fairly propagated by Burnside and Dollar (2000) and other subsequent studies including Alvi *et al. (*2008). Burnside and Dollar (2000) tested the aid conditionality hypothesis using panel data for 56 major aid-recipient countries over the period 1970-1993. They found that aid works for growth in developing countries only under good policies such as fiscal, monetary and trade policies. They argued that aid-recipient countries needed to pursue certain packages of good policies if they wanted to boost and sustain growth through foreign aid. In light of this, they concluded that it is important to condition aid on these good policies to ensure that aid works better for growth. Later on, Alvi *et al*. (2008) also partially confirmed that aid positively affects growth in good policy conditions, but with some degree of diminishing returns to aid. They further pointed out that accounting for non-linearity is key to correctly examine the dynamic interactions in the aid, policy and growth nexus.

Another recent support to this aid-conditional thesis has emanated from Dutta *et al.* (2015). They extended aid conditionality on good economic policies pursued by Burnside and Dollar (2000), and added political stability as a critical condition for aid effectiveness. Employing a dynamic panel GMM estimator on panel data for 120 countries over the period 1979-2008, the study found that a stable political condition supports economic growth by boosting investment in recipient countries. The study also demonstrated a non-linear relationship between aid and investment, and the positive impact exhibited diminishing returns to aid. The strong assumption in the study was that a stable political environment positively influences the government's policy choice, which encourages the effective use of public resources, such as foreign aid for the desired purpose.

Nonetheless, it is worth noting here that the aid-conditional argument is not free from criticism. To say the least, for instance, Easterly *et al.* (2004) simply extended the period from 1970-1993 (as in Burnside & Dollar, 2000) to 1970-1997 and found that aid does not affect growth in good policy conditions. More recently, Askarov and Doucouliasgos (2015) revisited the same data set in Burnside and Dollar (2000) with time lag aid and found that the positive impact of growth does not depend on a good policy package in transition economies.

4.3.1.2 Aid-ineffectiveness argument: Aid doesn't support growth in aid recipient countries

Overall, as opposed to proponents of aid, this strand of literature argues that foreign aid is not effective for supporting economic growth in developing countries. In essence, a lack of evidence on aid effectiveness for stimulating growth implies that either aid decreases growth (i.e., the negative impact of aid) or aid has no impact on growth (i.e., a null or zero impact of aid).

Aid affects growth negatively

Evidence from some studies tends to demonstrate that foreign aid adversely affects, rather than promotes growth in developing countries. The most widely cited study that ignites the discussion on this aid ineffectiveness argument is Boone (1996). Using panel data for 96 countries over the period 1971-1990, Boone (1996) reported that aid does not boost investment and growth in developing countries. He adopted an instrumental variable approach (such as population size and a dummy for political ties to DAC donors) and empirically demonstrated no effect of aid on investment, which is the main driver of growth. Contrary to what aid proponents have argued for, Boone (1996) found that aid harmed investment as a greater proportion of aid has been used for consumption. Furthermore, recent studies have also demonstrated the negative relationship between aid and growth (Arawomo *et al*., 2015; Adedokun & Folawewo, 2017). Arawomo *et al*. (2015) employed GMM techniques to investigate whether aid complements savings as a driver of growth in the West African Monetary Zone (WAMZ) over the period 1980-2012. The study found a significant negative impact of aid on growth while savings positively affected growth in WAMZ. The study concluded that aid does not complement domestic savings in driving growth across

countries in WAMZ. Employing the same estimation approach, Adedokun and Folawewo (2017) found a negative, but insignificant relationship between aid and growth in sub-Saharan Africa (SSA) between 1996 and 2012.

In addition to the above evidence from the full sample, similar negative impacts of aid on growth have been reported based on disaggregated panel data analyses by income groups (Rahnama *et al.*, 2017; Alemu & Lee, 2015). Both studies applied the GMM estimation techniques and found a negative effect of aid on growth in the low-income group of developing countries (Rahnama *et al*., 2017) and middle-income countries in Africa (Alemu & Lee, 2015). According to Rahnama *et al.* (2017), foreign aid harms growth at the early stage of development and providing some "traction" is critical before a country can make good use of foreign aid. The study concluded that the main hindering factors for aid effectiveness are corruption and inefficient institutions in recipient countries.

There is no impact of aid on growth

Interestingly, some empirical studies have found a null or zero effect of foreign aid on growth (Rajan & Subramanian, 2008; Dreher & Langlotz, 2017; Phiri, 2017). The most widely cited study in this regard is Rajan and Subramanian (2008), who investigated the aid-growth nexus using cross-sectional and panel data. Rajan and Subramanian (2008) included more instrumental variables, such as population size, dummies for language, colonial relationship and some interaction variables, in their regression model. They found no evidence, not only on the impact of aid (be it positive or negative) on growth, but also on the fact that *"aid works better in better policy or geographical environment or that certain forms of aid work better than others"* (Rajan & Subramanian, 2008: 643). Indeed, the study suggested a rethinking of the aid apparatus if aid were to be supportive of growth in recipient countries.

Apart from these earlier studies, the null effect of aid on growth has also been reported in more recent studies (Dreher & Langlotz, 2017; Phiri, 2017). Using donor fractionalisation as an excludable instrument in a panel data for a sample of 96 developing countries between 1974 and 2009, Dreher and Langlotz (2017) reported no significant positive impact of aid, not only on growth for the whole sample, but also on the different components of GDP (savings, investment

and consumption). On the other hand, Phiri (2017) adopted a fixed effect instrumental variable approach and found no significant negative impact of aid on growth in SSA. Based on this result, Phiri (2017) argued that aid is ineffective to support growth in sampled SSA countries. The author concluded that aid ineffectiveness may suggest that aid flows into these countries were either misallocated or used insufficiently.

Moreover, the evidence of a null effect of aid on growth shown in the studies above has received substantial criticism for its failure to account for the endogeneity problem correctly. Recent studies argue that a lack of evidence on the aid effect on growth is strongly linked to the difficulty of finding plausible instrumental variables to control for the problem of aid endogeneity (Clemens *et al*., 2012; Juselius *et al.,* 2013; Lof *et al*., 2015). A detailed discussion on this issue is presented in the section below (See sub-section 4.4.2).

4.3.2 Empirical literature on the aid-growth causal relationship

The critical issue in the aid-growth nexus is to understand whether it is aid that causes growth or it is growth that leads to aid flows, and yet, no consensus has been reached on whether or not aid causes growth (Pradhan & Arvin, 2015). In theory, the relationship between aid and growth is ambiguous and strongly influenced by many factors that not only determine growth but also jointly influence both aid and growth (Herzer & Morrissey, 2013; Herzer, 2015; Addison & Tarp, 2015). In this regard, as highlighted in the theoretical review section above, the "financing-gap" models (Chenery & Strout, 1966; Bacha, 1990) have been used as the main theoretical underpinnings to disentangle the most relevant causal channels (such as investment and consumption) through which aid affects growth. From the empirical literature side, as discussed above, the aid-growth nexus is the most extensively studied subject but most of the studies have widely investigated the correlation or impact of aid on growth with little success to disentangle the causal link between them (Clemens *et al*., 2012; Juselius *et al*., 2013; Dreher & Langlotz, 2017; Lof *et al.,* 2015; Pradhan & Arvin, 2015). Therefore, the fact that only a few studies have formally investigated the Granger causality between aid and growth is not surprising.

This sub-section presents a brief recap of these few empirical literature on the aid-growth causal link both in the short-run and long-run. For brevity, the review is organised by the types of causality: bidirectional, unidirectional, and neutrality.

4.3.2.1 Empirical literature on the aid-growth casual nexus: Bidirectional causality

Recent literature has found evidence of bidirectional causality between aid and growth in a bivariate (Pan *et al.*, 2018; Lof *et al*., 2015) and multivariate causal frameworks (Gounder, 2003; Pradhan & Arvin, 2015; Das & Sethi, 2019). Pan *et al.* (2018) adopted a Granger causality test between aid and growth based on the Pooled Mean Group Estimator (PMGE) among 53 African countries over the period 1990-2015. The study shows that the direction of causality between aid and growth differs by aid types (bilateral and multilateral aid) and across income groups (LICs, LMICs and UMICs). The study found bidirectional causality between aid and growth only for the aggregated aid (both bilateral and multilateral aid) in LICs and both for aggregated aid and disaggregated aid by the two types in LMICs. Another recent study by Lof *et al.* (2015) examined the aid-growth causality based on a dynamic panel VAR model GMM estimation among 59 developing countries during 1970-2006. The study found evidence of bidirectional causality between aid and growth.

Moreover, Gounder (2003) employed the autoregressive distributed lag (ARDL) specification and investigated the aid-growth causal nexus in the Solomon Islands over the period 1975-1995. The study found a similar feedback effect between aid and growth. This study also found that aid and domestic investment are vital determinants of economic growth in the Solomon Islands. Pradhan and Arvin (2015) adopted a panel Vector Error Correction Model (VECM) Granger causality framework and examined the causality among aid, growth, FDI, and trade openness in the context of LMICs. The study found a bidirectional causality between them in the long-run. More recently, Das and Sethi (2019) employed the same approach and investigated the causal relationship between FDI, ODA, remittance, and growth in India and Sir Lanka over the period 1960-2016. The study found bidirectional causality between aid and growth in Sir Lanka, which supports the feedback or two-way causal nexus between aid and growth.

4.3.2.2 Empirical literature on the aid-growth casual nexus: Unidirectional causality

In the context of the aid-growth causal nexus, evidence from empirical literature has found unidirectional causality in both directions: from aid to growth and/or from growth to aid. The causality from aid to growth supports the aid-led growth hypothesis while the causality from growth to aid implies a reverse causality where growth appears to influence/cause more aid flows. In this brief review, the empirical studies which have found evidence of unidirectional causality from aid to growth are discussed first, followed by a discussion on the findings of causality from growth to aid.

Regarding the first case, several recent studies have reported evidence of unidirectional causality from foreign aid to economic growth (Jones, 2013; Pradhan & Arvin, 2015; Jena & Sethi, 2019; Jena & Sethi, 2020; Sethi *et al*., 2019; Forson *et al.,* 2015; Pan *et al*., 2018). These results are consistent with the aid-led growth hypothesis where aid causes growth to change. Within the Two-Gap Model and a bivariate panel VAR framework, Jones (2013) examined the aid-growth causality in West Africa over the period 1970-2008. The study found unidirectional causality from aid to growth. Pradhan and Arvin (2015), as discussed above, examined the causality between aid and growth and found unidirectional causality from aid to growth in the short-run in the context of LMICs. Similarly, Jena and Sethi (2019) also investigated the causality between aid and growth with other macroeconomic variables (investment, financial deepening, price stability, and trade openness) among 45 SSA countries over the period 1993-2017. The study found a unidirectional causality from aid to growth in the short-run.

Using the same approach and variables, Jena and Sethi (2020) investigated the aid-growth causality among eight South-Asian countries over the period 1996-2017. The study found unidirectional causality running from aid to growth in the short-run. More recently, Sethi *et al*. (2019) adopted the VECM procedure and examined the aid-growth causality with other macroeconomic variables for India and Sri Lanka using annual time series data from 1960–61 to 2014–15. The study found a long-run unidirectional causality from aid to growth for both India and Sir Lanka. It also found a similar long-run unidirectional causality from aid to domestic investment, in Sir Lanka, which supports the aid-financed growth hypothesis stated in the Two-Gap Model. Similarly, Forson *et al.* (2015) examined the Granger Causality between aid and

growth using trade and corruption as control variables in Ghana over the period 1970-2013. The study found a long-run unidirectional causality from aid to growth. Besides, the same study mentioned above (Pan *et al*., 2018) also found unidirectional causality from bilateral aid to growth UMICs in Africa.

Furthermore, a strand of recent studies has found unidirectional causality running from growth to aid implying that economic growth attracts more aid flows (Mahembe & Odhiambo, 2019; Amin & Murshed, 2017; Pan *et al.*, 2018). Mahembe and Odhiambo (2019) employed a dynamic panel VECM Granger causality test between aid, growth and poverty among 82 developing countries over the period 1981-2013. This study found evidence of unidirectional causality from growth to aid both in the short-run and long-run. Similarly, a recent study by Amin and Murshed (2017) investigated the causal link between aid and growth in Bangladesh over the period 1980-2013. This study found a long-run unidirectional causality from growth to aid. Besides, the same study discussed above (Pan *et al*., 2018) found a unidirectional causality from growth to bilateral aid for LICs in Africa.

4.3.2.3 Empirical literature on the aid-growth casual nexus: No causality

In contrast to the findings of either bidirectional or unidirectional causality between aid and growth, some recent studies reported no evidence of significant causality between them (Tekin, 2012; Das & Sethi, 2019). Tekin (2012) examined a trivariate panel Granger causality test between trade openness, aid, and growth among LDCs in Africa for the period 1970-2010. The study found no significant causality between aid and growth. Besides, as noted above, a recent study by Das and Sethi (2019) investigated the aid-growth causal relationship in India and Sri Lanka over the period 1960-2016. While the study found bidirectional causality between aid and growth in Sri Lanka, they found no evidence of causality between them in India.

4.4 The Puzzle behind the Inconclusive Conception of the Aid-Growth Link

The previous sections stated that there is no conclusive understanding of the link between foreign aid and economic growth. It seems rather puzzling to observe divergent and contradictory empirical evidence on the aid-growth nexus given that the same data (aid and growth) from the same sources (OECD-DAC for aid and World Bank for growth) have been used in the studies (Juselius *et al*., 2013). Most tend to argue that the root causes of such a lack of conclusive understanding are strongly linked to the deficiencies of theoretical and empirical frameworks employed by past studies. This section presents the underlying reasons behind the inconclusive evidence about the aid-growth nexus. The theoretical drawback is presented first, followed by a discussion on the main methodological deficiencies. The section concludes by highlighting some potential strategies to address the methodological problems and minimise the contradictions in empirical evidence on the aid-growth nexus.

4.4.1 Lack of compelling theory on the aid-growth link

A lack of compelling economic theory to correctly specify how aid spurs growth in developing countries may explain part of the puzzle regarding inconsistent approaches pursued by empirical studies on the aid-growth nexus. Although the Harrod-Domar model proved to be successful through the Marshal Aid programme in Europe, there was no well-defined theoretical instrument to understand the process of economic growth in developing countries. In the absence of such theories, therefore, western economists had no option other than to apply the economic theory of development which succeeded in modernising economies in today's advanced world. This seemed to have convinced Boone (1996: 289) to conclude that *"foreign aid programs were launched long before there was a compelling theory or compelling evidence that proved they could work".* Indeed, Boone (1996) described the massive aid programmes of the 1960s as an *"unprecedented economic experiment"*. As Todaro and Smith (2015) also noted, the Rostow and Harrod-Domar growth models implicitly assumed that the necessary structural, institutional and attitudinal conditions that enabled foreign aid to support growth in Europe also exist in developing countries.

In light of disappointing outcomes of foreign aid in spurring growth in developing countries, the Harrod-Domar growth model and the Two-Gap Model encountered challenges and critics. The critics started from the assumption of the "financing gap" models that there is a stable linear relationship between investment and growth over the short to medium term. Easterly (2003) challenged the theoretical validity of this assumption based on the Solow and Endogenous growth models. These models have incorporated other inputs such as technology, human capital, and institutional capacity, unlike the "financing gap" models that focus on physical capital. Easterly (2003) has argued that the ICOR would change with the other inputs, implying that a stable linear association between investment and growth does not hold. He also criticised the other strong assumption of the "financing gap" model, which states that aid finances investment rather than consumption. In the absence of a favourable investment climate in many developing countries, according to Easterly (2003), aid funds consumption rather than investment. Moreover, Todaro and Smith (2015: 753) argue that the Two-Gap Model *"forecasts are very mechanistic and are themselves constrained"* by government policy of fixing import and export parameters. They argue that the necessity of altering import and export parameters strongly influences which gap (saving or foreign-exchange) is the binding constraint on economic growth.

Nonetheless, although its theoretical and empirical validity is subjected to critics, most argue that the Two-Gap Model remains a standard theoretical model to analyse the aid-growth nexus in developing countries. Evidence has shown that International Financial Institutions (IFIs), such as the World Bank and IMF, as well as other policy-making institutions, continue to use this model to justify increasing aid flows to recipient countries (Easterly, 1999; Dollar & Easterly, 1999; Easterly, 2003). As noted in Easterly (1999: 424), "*over 90% of the country desk economists at the World Bank, for example, use this variant of the financing gap model today to make growth and financing gap projections*". This is because, according to Easterly (1999), no other models other than the Two-Gap Model provide an easier and cheaper way of calculating aid requirements, as well as the rationalisation of such aid requirements as "necessary" for growth. Indeed, Dollar and Easterly (1999: 548) conclude that the Two-Gap Model remains the main tool in aid allocation, because "*applied development economists have not yet found a fully satisfactory replacement for the aid-financed investment paradigm*". More recently, Tang and Bundho (2017: 1475) recognise the Two-Gap Model as an "*important growth theory which explains the relationship between foreign aid and economic growth*". Moreover, this model has increasingly been used as a

theoretical framework to explore whether or not foreign aid supports growth in developing countries (Juselius *et al*., 2013; Dutta *et al*., 2015; Tang & Bundho, 2017, among others).

Furthermore, the two-gap model has been extended to the Three-Gap' Model, adding a fiscal-gap as a third financing gap hindering growth in poor countries (Bacha, 1990; Taylor, 1994). The Three-Gap Model argues that growth prospects in developing countries are constrained by fiscal limitations on government spending and public investment choices, and aid is critical for narrowing such fiscal gap and support growth in poor countries (Bacha, 1990; Taylor, 1994). Therefore, on the basis of the "financing-gap" models (Chenery & Strout, 1966; Bacha, 1990; Taylor, 1994), the current state of understanding on aid allocation is that aid aims at financing not only investment but also government consumption expenditure in the productive social sectors, and supports growth in recipient countries (Chatterjee *et al.*, 2007; Herzer & Morrissey, 2013; Arndt *et al*., 2015; Temple & Van de Sijpe, 2017; Addison *et al.*, 2017).

4.4.2 Methodological problems: The use of inappropriate estimation procedures

Apart from its unconvinced theoretical foundations, according to Easterly (2003), the "financing gap model" has numerous empirical shortcomings. By and large, the underlying causes of the inconclusive empirical results on the aid-growth nexus were linked to serious methodological problems observed in past studies in terms of data handling, model specification, and econometric estimation techniques to control for aid endogeneity (Easterly, 2003; Clemens *et al*., 2012; Juelius *et al*., 2013; Lof *et al.*, 2015; Askarov & Doucouliasgos, 2015; Addison *et al.*, 2017).

Easterly (2003) has underscored that the inconclusive evidence among earlier studies during the 1960s-1980s were strongly linked to limited data availability and the intense debate regarding the specification and the mechanisms through which aid would increase growth. He added that *"if greater aid was given in response to slower growth, then interpreting how aid flows affect growth could be difficult"* (Easterly, 2003: 6). After a careful review of three studies with divergent results (Boone, 1996; Burnside & Dollar, 2000; Rajan & Subramanian, 2008), Clemens *et al.* (2012: 590) concluded that the divergent results in these studies have been due to the misrepresentation of the

"*timing of causal relationship between aid and growth"*, as well as a lack of powerful instrumental variables to "*disentangle causation from correlation"*.

Similarly, Lof *et al*. (2015: 27) argued that the single-equation approach pursued by past studies (such as Nowak *et al.*, 2012) had substantial methodological problems related to data handling (taking logs of non-positive numbers) and the usage of time-series techniques (interpreting a co-integrating vector as a causal model). In a way, a single-equation estimation approach used in past studies has been considered as less powerful to account for the recognised problem of aid endogeneity and, therefore, inappropriate to capture the true effects of aid on growth (Juselius *et al*., 2013, Lof *et al*., 2015). By and large, therefore, the difficulty of finding plausible instrumental variables to control the problem of endogeneity contributes to the inconsistent evidence on the aid-growth nexus.

4.4.3 Potential strategies to address the methodological problems

In light of the difficulty to find powerful instrumental variables for aid, recent studies have proposed alternative strategies to address the potential problems associated with endogeneity, both reverse, as well as simultaneous causation. The most common alternative strategies proposed include the use of lagged values (Clemens *et al.*, 2012; Askarov & Doucouliasgos, 2015) as well as a system of equations based on panel Vector Auto Regressive (VAR) models (Juselius *et al*., 2013, Lof *et al*., 2015) and GMM (Hanssen & Tarp, 2001; Addison & Tarp, 2015; Herzer & Morrissey, 2013). The use of aid in lagged form has been promoted by Clemens *et al.* (2012). Using the same data set in three studies, Clemens *et al*. (2012) found an average positive impact of aid on growth. This contradicts the findings by some of the reviewed studies that reported zero or no correlation between aid and growth (Rajan & Subramanian, 2008), no association between aid and investment (Boone, 1996), and aid works for growth only under "good policies" (Burnside & Dollar, 2000). Following the strategy adopted in Clemens *et al*. (2012), Askarov and Doucouliasgos (2015) also revisited the same data set used in Burnside and Dollar (2000) and found that the effectiveness of aid does not depend on "good policies", at least in transition economies.

Lof *et al.* (2015), employing a system of equations under the panel VAR model, re-evaluated the same data set used in Nowak *et al.* (2012) and found evidence supporting not only the two-way causal associations between aid and growth (of course with "opposing effects"'), but also the long-run significant positive impact of aid on growth. Using a co-integrated VAR model with a system of equations technique for each country, Juselius *et al.* (2013) also found similar significant long-run positive impacts of aid on growth in 36 SSA countries over a longer period (the mid-1960s to 2007). Contrary to a single-equation approach commonly adopted in past studies, a system of equation techniques, along with the panel VAR model appears to be superior to addressing the underlying problem of aid endogeneity in the growth equation (Lof *et al.,* 2015, Juselius *et al*., 2013). By and large, a strand of recent literature has argued that a consistent dynamic panel data estimation approach such as GMM can help minimise the main econometric challenge in the aid-growth empirical studies (Hanssen & Tarp, 2001; Addison & Tarp, 2015; Herzer & Morrissey, 2013; Judson & Owen, 1999; Bond *et al*., 2001). According to these studies, a consistent dynamic panel estimator should be the one that properly addresses, *(i)* the endogenous feature of aid and other regressors; *(ii)* the numerous factors that influence not only growth (i.e. growth determinants) but also both aid and growth (i.e. mediating factors); and *(iii)* a peculiar panel data characteristics (persistency and short panels). Overall, the above discussion shows that correcting the faulty estimation strategies pursued in past studies would greatly minimise the inconsistent empirical evidence on aid effectiveness.

4.5 Conclusion

This chapter provided a critical discussion and summary of the theoretical and empirical literature on the ongoing debates on the aid-growth nexus and aid effectiveness in developing countries. On the basis of reviewed literature, the main finding is that the relationship between foreign aid and economic growth in developing countries is not clear cut. Lack of compelling economic theory to correctly specify how aid spurs growth in developing countries, and methodological problems encountered in the aid-growth regression were the underlying reasons behind the puzzles of inconclusive evidence on the link between aid and growth. This review found that the financing gap model has induced donors to maintain a common belief that aid has positively affected growth

and promoted more aid flows to developing countries since the 1960s. In light of the disappointing outcomes of aid in spurring growth, however, the financing gap model received criticism that it failed to provide a compelling theoretical model to (i) correctly specify how aid spurs growth in developing countries, and (ii) provide a consistent approach for establishing conclusive empirical evidence from the aid-growth regressions. As a result, the findings from this discussion concluded that the theoretical debate whether or not aid works for growth has emerged into two lines of debate in the aid-growth nexus, namely aid effectiveness (aid proponents) and aid ineffectiveness (aid opponents).

While aid proponents have argued that aid has been effective for supporting growth in developing countries (i.e. aid effectiveness theses), aid opponents argued for the opposite view that aid doesn't work for growth (i.e. aid ineffectiveness theses). The main findings from the discussion of theoretical debate on aid effectiveness have shown that (i) the positive role of aid for growth promoted by the financing gap model has induced donors to have a common belief that aid works for growth, and have called for increasing aid flows to developing countries since the 1960s; (ii) aid positively affects growth through different channels: investment, imports and public productive consumption expenditure; and (iii) aid continues to be a critical resource for most poor countries in Africa to boost capital accumulation (both physical and human capital) and sustain growth in the post-2015 development era. On the contrary, according to aid opponents, the main thesis of aid ineffectiveness is that aid doesn't work for growth; rather, it adversely affects growth in developing countries. They have further noted that the adverse impact of aid on growth has been linked to different factors such as (i) aid dependency and corruption, (ii) volatility and unpredictability of aid flows, (iii) aid fungibility, (iv) Dutch Disease effect, and (v) lack of donors' coordination, aid fragmentation and proliferation.

On the empirical front, the main findings show that the evidence on the relationship between aid and growth is not clearly established, as the results are either positive, or negative or null. While the empirical evidence of a positive aid-growth nexus supports the aid effectiveness thesis, the negative and null findings are supportive evidence for the aid ineffectiveness theses. The findings from this literature review show that most of the literature found a positive impact of aid on growth; thus, aid is effective for growth. It was shown that this evidence on aid effectiveness seemed to have induced donors to have a common belief that aid has been effective for growth. Indeed, such

belief seems to have influenced the international aid community to advocate for doubling aid flows to developing countries since 2000 to finance public investment needs in infrastructure and human capital development. Nonetheless, some influential studies have found evidence that the impact of aid on growth has been either negative or null, thus, aid is ineffective for stimulating growth in developing countries. Based on the empirical literature discussed in this chapter, it can be concluded that empirical evidence on the aid-growth nexus is inconclusive, albeit the average positive impact of aid on growth is reported by the majority. The fact that the international aid community continues to advocate for increasing aid flows to the poorest countries to fund unmet public investment in infrastructure and human development may imply that aid cannot be easily ignored as aid opponents believe. Therefore, this suggests that the aid-growth nexus debate is an unfinished issue and needs further empirical investigation, taking into account the main methodological issues (endogeneity etc.) and the different conditions such as the types of aid etc.

CHAPTER 5 : RESEARCH METHODOLOGY: EMPIRICAL MODEL SPECIFICATION AND ESTIMATION STRATEGIES

5.1 Introduction

The previous chapter presented a critical review of both the theoretical and empirical literature on aid effectiveness focusing on the aid-growth nexus. This chapter presents a detail discussion on the overall research methodology involving the data sources and variables, as well as the empirical model specification and estimation strategy. The chapter discusses two econometric models. The first empirical model involves a dynamic panel model based on System Generalised Methods of Moments (SGMM) to investigate the impact of aid on growth. The second empirical model is the Error Correction Mechanism (ECM)-based multivariate panel Granger causality model to formally test the causality between aid and growth. The chapter is organised under five sections. The second section discusses the theoretical and empirical analytical frameworks for an SGMM model specification to examine the impact of aid on growth. It also discusses the associated methodological issues such as endogeneity and heterogeneity, the rationale for choosing SGMM, identification/instrumentation strategies and specification/robustness checks. The third section discusses the empirical model specification for the ECM-based multivariate panel Granger causality test. The data sources and variables definitions are presented in section four. Finally, section five concludes the chapter.

5.2 A Dynamic System GMM for Estimating the Impact of Aid on Growth

5.2.1 Theoretical framework

The theoretical relationship between foreign aid and economic growth could be linked to the post-WWII "financing-gap" model outlined in the Harrod-Domar growth theory. By then, development was conceived to be similar to rapid economic growth and foreign aid was considered as a key factor to boost growth in developing countries. This was because the main constraint for economic development in developing countries is a low level of capital formation (investment) due to low

rates of domestic saving. This creates a critical "financing gap", which is the difference between the level of investment required to produce a certain rate of growth and the amount of actual domestic saving. As discussed in section 2 of Chapter 4, the financing-gap model and its extension of the Two-Gap Model in the 1960s (Chenery & Strout, 1966) and Three-Gap Model in the 1990s (Bacha, 1990; Taylor, 1994) serves as the underlying theoretical and analytical basis to justify the role of aid for growth and rationalising for increasing aid flows to poor countries mostly in Africa since the 1960s.

Basically, the Three-Gap Model added a fiscal gap as an additional resource constraint to the saving-gap and exchange rate-gap stipulated in the Two-Gap Model. The Three-Gap Model provides a theoretical and an analytical basis to identify and explain the three critical financing-gaps such as the saving-investment gap, foreign exchange-gap, and fiscal-gap that have constrained economic growth in developing countries. In view of this, the Three-Gap Model advocates foreign aid as a key instrument to fill the three financing gaps and sustain growth in poor countries mostly in Africa. This implies that the Three-Gap Model serves as a framework to identify the three macroeconomic constraints (i.e. three-gaps) of growth that are manifested across the different components of Gross Domestic Product (GDP). Based on the basic national income accounts, the Three-Gap Model can be expressed as in Equation 5.1:

$$Y = C + I + G + X - M \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad [5.1]$$

where Y is income or GDP, C is consumption, I is investment, G is government expenditure, X is export, and M is import. The premise of the financing-gap model is that developing countries have encountered critical resources required to finance investment and foster growth due to low domestic savings (Y-C), narrow tax basis and insufficient foreign exchange to import capital goods for productive investment. This leads to the Three-Gap Model which can be expressed in Equation[29] 5.2 as:

$$I = (Y - C) + (T - G) + (X - M) \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad [5.2]$$

where T is government revenue and other variables are as defined above in Equation 5.1. The "saving-investment" gap, which occurs when domestic saving (Y – C) falls short of investment because consumption (C) exceeds income (Y). The "fiscal-gap" (T – G) exists when government

[29] https://rsa.tandfonline.com/doi/pdf/10.1080/21665095.2021.1976658 p. 4

expenditure (G) is higher than its revenue (T). The "foreign exchange-gap" (X- M) occurs when export earnings are lower than import costs.

The Three-Gap Model in Equation 5.2 states that the three financing-gaps have induced developing countries to seek for foreign aid to fill the gaps and support growth. In view of the financing-gap model, foreign aid positively affects growth through capital accumulation in both physical investment and human capital (Hansen & Tarp, 2001). As discussed in section 2 of Chapter 4, the financing-gap model or the Three-Gap Model has identified investment and government consumption as the key transmission channels through which aid affects growth. This means that aid increases growth by increasing investment (i.e. Two-Gap Model) and human capital through government spending in the productive social sectors such as education and health (i.e. fiscal-gap model). As a result, the "financing-gap" model. Mostly the two/three-gap model has been used as a standard theoretical model to analyse the aid-growth nexus or aid-effectiveness in developing countries since the 1960s (Jones, 2013; Juselius *et al*., 2013; Dutta *et al*., 2015; Tang & Bundho, 2017).

Although aid is still critical for boosting growth through capital accumulation (as outlined in the financing-gap model/Harrod-Domar growth model), the main theoretical framework employed in the modern empirical aid-growth model appears to have moved beyond the Harrod-Domar model (Hansen & Tarp, 2001). In essence, this implies that the theoretical link between aid and growth is influenced by several factors apart from the three macroeconomic constraints stipulated in the Three-Gap Model. The analytical model for the aid-growth nexus is extended based on the new growth theory by considering additional macroeconomic factors related to economic policies and institutional factors, as well as the endogenous feature of aid (Hansen & Tarp, 2001).

One of the objectives of this study is to empirically investigate whether aid sources matter for growth in Africa based on the theoretical and analytical framework discussed above. This means that the study examines the aid-growth nexus in the presence of factors including both the key mediating factors (i.e. Three-Gap Model), as well as the most important determinants of growth commonly used in the modern empirical aid-growth model. Moreover, unlike the previous studies, this study investigates the aid-growth nexus in the context of the rapidly changing global aid landscape since the 2000 following the rising influence of NTDs alongside the TDs. To do so, this

study considered three proxies to measure aid flows by sources of aid: total aid (TA), traditional aid (TDA) and non-traditional aid (NTDA).

5.2.2 Empirical model specification: the impact of aid on growth

Based on the financing-gap model such as the two/three-gap model, aid positively impacts growth by increasing investment and government consumption. According to this theoretical framework, aid emerges as key determinants of growth and the link between aid and growth can be expressed in a functional form as in Equation 5.3:

$$Y = f(AID, INV, CON) \text{ .... } (5.3)$$

where Y is economic growth expressed as real GDP per capita growth rate. AID stands for total net bilateral aid flows as percentage of GDP; INV is domestic investment expressed and gross capital formation as percentage of GDP; and CON is government expenditure as percentage of GDP. To account for the rapidly changing global aid landscape since 2000, this study uses three proxies of aid: total aid (TA), TDs' aid (TDA) and NTDs' aid (NTDA). Thus, the AID variable is expressed separately for the three aid proxies.

Theoretically, however, the effect of aid on growth is complex due to other factors (beyond the key mediating factors shown in Equation 5.3) which have also influenced growth and which further affect the aid-growth nexus. This suggests that a proper identification of the effect of aid on growth is required to correctly account for all the factors not only to jointly influence aid and growth (i.e. mediating factors in Equation 5.3) but also those factors that determine growth (Hansen & Tarp, 2001; Addison & Tarp, 2015). Thus, the aid-growth regression is extended to incorporate the most important growth determinants based on the new growth theory related to labor force, macroeconomic policies, and institutional factors among others (Hansen & Tarp, 2001).

Consistent with the recent aid-growth empirical literature (such as Hansen & Tarp, 2001; Rahnama *et al.*, 2017; Adedokun & Folawewo, 2017; Wamboye *et al.*, 2013), this study adopted an empirical model that applies a dynamic panel model for the aid-growth estimation and considers aid as endogenous. Therefore, taking into account the growth dynamics, the key mediating factors (such as investment and consumption) and additional conventional control variables (i.e. growth

determinants), the main estimation model is given by the following dynamic multivariate panel model specification:

$$Y_{it} = \beta_0 + \beta_1 Y_{it-1} + \beta_2 INT_{it} + \beta_3 CON_{it} + \beta_4 AID_{it} + \beta_5 INF_{it} + \beta_6 TOP_{it} + \beta_7 BBL_{it} + \beta_8 M2_{it} + \beta_9 POPG_{it} + \mu_i + \varepsilon_{it} \quad [5.4]$$

where the subscripts i and t are indexed for countries in Africa and time period (2000-2017) respectively considered in the study. Y_{it}, AID_{it}, INT_{it}, CON_{it} are as defined in Equation 5.3. Y_{it-1} is the lagged dependent variable to account the persistent effects in the dynamic growth process, μ_i, is the unobservable or time-invariant country-specific effects, and ε_{it} is the idiosyncratic error term. To minimise omitted variable bias and properly capture the real effect of aid on growth, the study includes the most relevant control variables commonly used as conventional growth determinants apart from the two important intermittent variables (i.e. investment (INT_{it}) and government consumption (CON_{it}) shown in Equation 5.3). Following the literature (Durray *et al.*, 1998; Adedokun & Folawewo, 2017; Wamboye *et al*., 2013), the control variables include the three macroeconomic policy variables[30] (inflation rate- INF_{it}, budget balance- BBL_{it}, and trade openness- TOP_{it}), financial development proxy (Money supply- $M2_{it}$); and labour force growth (population growth- $POPG_{it}$). Consistent with Adedokun and Folawewo (2017), control variables on good policy or rule of law (good governance) prescribed in Burnside and Dollar (2000) are not included as they are relevant for multilateral aid but not for bilateral aid flows (like ours).

Furthermore, this study aims at investigating the effect of aid on growth by addressing two main heterogeneity issues of aid. The first aid heterogeneity is related to aid sources. Since the turn of the 21st century, the global aid landscape has been changing following the rising influence of NTDs alongside the existing TDs, which have dominated the aid system since the 1960s. Since then, the motivation that aid sources may matter in explaining the aid-growth nexus has received increasing focus. Most past studies have focused on aid flows solely from TDs. This study attempts to empirically examine whether aid sources (TDs and NTDs) matter for explaining aid effectiveness. As shown in Equation (5.3), three aid proxies (TA, TDA, NTDA) are used to reflect the real picture

[30] Consistent with recent literature (Herzer & Morrissey, 2013; Wamboye *et al*., 2013), we use the three macroeconomic policy variables separately rather than a policy index (or interaction term between aid and policy index) used in Burnside and Dollar (2000) at least for two reasons. *First*, it is hardly possible to empirically disentangle which variable drives the effects as the policy index may hide the different effects of each policy component. *Second*, available empirical evidence on the relationship between interactive terms and aid effectiveness is highly inconclusive.

of the changing global aid landscape and address the possible heterogeneity of aid by sources of aid. To accommodate this, Equation (5.4) is estimated separately for the three aid proxies: TA, TDA, and NTDA.

The second sources of aid heterogeneity addressed in this study are income differences among aid-recipient countries. Based on the World Bank income classification, the study grouped aid recipient countries in Africa into LICs and MICs. Thus, Equation (5.4) was estimated separately for the two country income groups – LICs and MICs. This means that the impact of aid on growth is assessed by addressing the different heterogeneity issues such as country income groups and sources of aid. This study employs a system GMM estimation procedure to consistently estimate Equation 5.4 for each aid proxy and country income groups. The motivation for choosing system GMM approach, model specification and estimation procedure is presented under sub-sections 5.2.4- 5.2.7.

5.2.3 Variable definitions and prior expectation

Dependent variable

The main dependent variable of the current study is economic growth in aid-recipient countries in Africa. *GROWTH* is the average per capita GDP growth of recipient countries i in Africa at time *t*. The common approach pursued among empirical studies on the aid-growth nexus is to express economic growth as an annual growth rate of GDP per capita (Burnside & Dollar, 2000; Ekanakaye & Chatrna, 2010; Arawomo *et al*., 2015; Askarov & Doucouliasgos, 2015; Arndt *et al.,* 2015; Chirpanhura & Nino-Zarazua, 2015; Eregha & Oziegbe, 2016; Gillanders, 2016; Galiani *et al*., 2017; Dreher & Langlotz, 2017). We are consistent with the attendant literature in measuring growth as real GDP per capita growth rate (annual %).

Main explanatory variable

Foreign aid is the main explanatory variable in this study and it is accessed from the OECD-DAC online database. Apparently, aid disbursement is preferred to aid commitment as a robust measurement strategy in the aid-growth nexus studies. Basically, the OECD database provides disaggregated aid data by sectors for aid commitments but not for aid disbursements. As a result,

some recent studies tend to rely on aid commitments to estimate sector-specific aid disbursements for countries used in their sample (Clemens *et al*., 2012). However, imputing disaggregated aid disbursements by sectors based on aid commitments is believed to be inefficient because aid commitments tend to reveal significant variations both for total aid and individual aid components (Arndt *et al*., 2015: 9). Therefore, using overall net aid disbursement is considered as a relatively better measurement of aid to test the aid-growth nexus (Arndt *et al*., 2015; Dreher & Langlotz, 2017).

On account of lack of disaggregated aid disbursements by sectors from the OECD-DAC, this study follows the recent literature and uses overall net aid disbursements to evaluate the overall impact of aid on growth across a panel of countries (Arndt *et al*., 2015). The study considered only bilateral aid (both grants and loans) excluding aid for military purpose and aid by multilateral institutions.

The fact that aid recipient countries are different in income and population size implies that raw aid data does not appear to be informative. Therefore, aid needs to be measured in some forms of ratio, either in terms of GDP (Burnside & Dollar, 2000; Clemens *et al*., 2012; Juselius *et al*., 2013; Arndt *et al*., 2015; Arawomo *et al*., 2015; Chirpanhura & Nino-Zarazua, 2015; Eregha & Oziegebe, 2016; Dreher & Langtloz, 2017; Rahnama *et al*., 2017) or per capita (Lof *et al*., 2015). Lof *et al*. (2015) prefer aid per capita to aid-to-GDP ratio because the latter appears to be problematic to clearly capture the effect of aid on GDP. On the contrary, Arndt *et al*. (2015) prefer aid-to-GDP ratio to aid per capita for two reasons. *First*, interpreting the effect of aid per capita on growth is difficult as most macroeconomic variables are expressed in terms of GDP. *Second*, the real costs of providing public services increase with GDP implying that "*the relative purchasing power of aid over a wide range of outcomes is best considered in economic terms, not population terms*" (Arndt *et al.*, 2015: 9). Indeed, most studies use aid-to-GDP ratio (Aid/GDP) and this study follows the same. Foreign aid is expressed as real net disbursements in percentage of real GDP, constant $2017. Consistent with the main objective of the study to focus on the changing aid landscape since 2000, three proxies of aid are used: total aid (TA), traditional aid (TDA), and non-traditional aid (NTDA). Foreign aid is hypothesised to have mixed effects on growth. Thus, the main interest is to test whether the impact of *AID* (aid sources) on growth is statistically significant with positive or negative association.

Control variables

In theory, identification of the true effect of aid on growth could be confounded by omitted variables bias due to several unobserved factors that not only determine growth but also jointly influence both aid and growth (Herzer & Morrissey, 2013; Herzer, 2015; Addison & Tarp, 2015). Broadly speaking, this implies that the aid-growth nexus is influenced by two groups of factors. The first group of factors refers to the main independent variables that explain the transmission or mediating channels through which aid influences growth. The second group of factors are those variables that influence only growth and commonly known as the conventional growth determinants. Both groups of factors are included in this study to overcome the problem of omitted variable bias and to properly identify the true effect of aid on growth.

The choice of the main independent variables as key mediating factors in the aid-growth link is based on the "financing-gap" models discussed in Section 2 of Chapter 4. According to the "financing-gap" model, investment and government consumption are the most important transmission variables through which aid affects growth. In theory, aid positively affects growth by increasing physical investment and government consumption expenditure for the productive sectors (such as education and health). Moreover, recent empirical literature has shown that investment and consumption are the most relevant intermittent variables to explain the paths through which aid affects growth (Burnside & Dollar, 2000; Gomanee *et al*., 2005; Clemens *et al*., 2012; Herzer & Morrissey, 2013; Herzer, 2015; Lof *et al*., 2015; Arndt *et al.*, 2015). ***Investment*** stands for the level of domestic investment in recipient countries. Gross fixed capital formation as a percentage of GDP is used as a proxy to measure investment. Investment is hypothesised to positively affect growth. ***Government consumption*** is measured as general government final consumption expenditure as a percentage of GDP. Government consumption expenditure is expected to affect growth either positively or negatively. The positive effect comes when a rise in government expenditure increases GDP through different multipliers' effects. The negative effect occurs when government consumption expenditure goes to activities that do not directly affect productivity but rather reduce investment (Dutta *et al*., 2015). According to Dutta *et al* (2015: 246), government consumption reduces investment in two ways. First, it crowds out private investment through distortionary taxes on investment, as well as raising the interest rate and

reducing the available funds in the market. Second, it harms investment because the government may also default on its own loan. Thus, the impact of government consumption on growth could be either positive or negative depending on whether aid finances government spending on productive social sectors such as education and health.

Apart from these two intermittent variables, the study used additional control variables based on the conventional growth determinates mostly related to economic policy, institutional/financial environments and labour force (Durbarry *et al*., 1998; Hansen & Tarp, 2001; Wamboye *et al*., 2013; Addison & Tarp, 2015; Lof *et al*., 2015; Adedokun & Folawewo, 2017). Following the recent empirical aid-growth literature, this study considered control variables such as the three macroeconomic policy variables (inflation rate, budget balance and trade openness), financial development proxy (Money supply) and labour force growth (population growth**).** Consistent with Adedokun and Folawewo (2017), control variables on good policy or rule of law (good governance) prescribed in Burnside and Dollar (2000) are not included in this study as they are relevant for multilateral aid but not for bilateral aid flows (like ours). A brief definition and variable measurement for these variables is presented below.

Inflation rate: - Inflation is considered to be a key macroeconomic policy variable that determines economic growth (Fisher, 1993). It is expected to affect growth negatively. According to Fisher (1993), inflation hurts economic growth by decreasing investment and productivity growth. Inflation is measured as the annual growth rate of Consumer Price Index (CPI).

Budget balance/deficit: - Fisher (1993) considers budget deficit as the second basic indicator next to inflation for measuring the suitability of macroeconomic conditions for growth. It "*serves as an indicator of a government that is losing control of its activities*" (Fisher, 1993: 7). It is measured as a percentage of GDP. Budget deficit is expected to negatively affect growth. As noted in Fisher (1993), budget deficit reduces growth by decreasing not only capital accumulation but also productivity.

Trade openness: - It is measured as a ratio of imports plus exports to GDP. According to Durbarry *et al*. (1998), the main channels through which trade openness increases growth are by creating access to: advanced technologies, catch-up opportunities, different factors/inputs of production, and wider markets. These channels are key inputs to strengthen specialisation and enhance productivity in the domestic economy. Moreover, another study also documented a strong

relationship between trade openness and investment – both domestic and foreign investments (Dutta *et al.*, 2015). Overall, it shows that the degree of openness of an economy is expected to positively affect growth through increasing investment (Durbarry *et al.*, 1998; Dutta *et al*., 2015).

Money supply: Money supply (M2) is used as a proxy for the depth of financial intermediation in a country. It is measured mostly as M2 as percentage of GDP (Durbarry *et al*., 1998; Chirpanhura & Nino-Zarazua, 2015). While the small values imply financial repression, large/high values suggest greater financial liberalisation in a country. Financial liberalisation is hypothesised to affect growth positively.

Population growth: Population growth is expressed as annual growth rate of the total population in a country and used as a measure of the labour force growth in the economy. In the event of lack of data on labour (i.e. economically active population), population growth can be used as a proxy for labour (Jones, 2013). As Jones (2013) noted, the impact of population growth on economic growth could be either positive or negative depending on different factors such as productivity, competition for resources, the share of economically active population, and quality of human capital.

5.2.4 Methodological issues (i.e. aid endogeneity, heterogeneity and panel data features) and the choice of system GMM

There is an increasing application of a dynamic panel model (such as Equation 5.4) in the recent empirical aid-growth study. By and large, however, a strand of recent literature seems to have concluded that the estimation results on the aid-growth regression among most previous studies are biased and unreliable. This is because the critical methodological issues, mostly the problem of aid endogeneity, have not been properly addressed among most previous studies (Hansen & Tarp, 2001; Bond *et al*., 2001). There is growing recognition among recent literature that aid endogeneity is the central problem in capturing the true effects of aid on growth (Boone, 1996; Burnside & Dollar, 2000; Hanssen & Tarp, 2001; Juselius *et al.*, 2013; Morrissey, 2015; Lof *et al*., 2015). In principle, foreign aid is channelled to developing countries to support economic growth and aid flows are expected to fall when the recipient country keeps on growing and getting richer. This is the notion behind the argument that aid positively affects growth in recipient countries.

However, it is also possible to argue the other way round where an increase in economic growth may cause a reduction in aid flows.

The main source of aid endogeneity is simultaneity bias or reverse causality between aid and growth due to at least four reasons or causes. *First*, aid allocation depends on the level of income of aid recipient countries, and it is hardly possible to consider aid as a lump-sum disbursement (Boone, 1996; Burnside & Dollar, 2000; Hanssen & Tarp, 2001). In line with this, Hanssen and Tarp (2001) argue that the fact that aid depends on the level of income implies that aid is more likely to be predetermined with respect to growth but not exogenous as traditionally assumed. *Second*, aid allocation is influenced by the recipient's macroeconomic conditions (Juselius *et al.*, 2013). *Third*, aid-recipient countries with poor economic performance may continue to receive increasing volume aid flows (Hanssen & Tarp, 2001). *Fourth*, not only economic growth performance in aid-recipient countries influences aid received but also aid influences growth performance with any two-way links tending to be persistent (Morrissey, 2015). Moreover, Morrissey (2015) concludes that the likelihood of an inherent and persistent endogeneity problem makes identification of the true effects of aid on growth highly difficult 'if not strictly impossible'.

Apart from the problem of aid endogeneity discussed above, the typical characteristics of panel data and the inclusion of the lagged dependent variable (Y_{it-1}) as regressor in Equation 5.4 introduces additional methodological challenges related to autocorrelation and heterogeneity. A persistent growth (real GDP per capita) series over time and short panels (the number of time series observations is relatively short) constitute typical panel data characteristics causing such methodological issues (Judson & Owen, 1999; Bond *et al*., 2001). Besides, the panel data introduces unobserved individual country and time-specific factors which may create some degree of heterogeneity across countries and time in the aid-growth regression in Equation 5.4 (Hansen & Tarp, 2001).

By and large, the recent empirical literature has underscored that the critical methodological issues and panel data features may bias the aid-growth estimates unless properly addressed. To overcome these methodological challenges, mostly aid endogeneity, the Instrumental Variable (IV) approach seemed to have been considered as a better option over the standard Ordinary Least Square (OLS) and Fixed Effect (FE) models. In the presence of endogeneity, autocorrelation and heterogeneity, the standard OLS and FE models turned out to be inconsistent and generated biased estimation

results. In this study, the IV approach is used which follows an instrumentation procedure to identify the relevant instrumental variables for aid and address the problem of aid endogeneity in the aid-growth regression. In essence, the relevant instrumental variables for aid are assumed to be those which are correlated with aid but not with growth (the dependent variable). This study employs a system GMM (SGMM) as an appropriate IV method to properly address aid endogeneity and other related methodological issue discussed above. The rationale for the choice of a SGMM estimation technique and model specification is presented in the next sub-section.

5.2.5 The rationale for the choice of system GMM and model specification

A dynamic panel model like Equation 5.4 requires a consistent dynamic panel estimator to correctly identify the true effects of aid on growth. A strand of recent empirical literature (Hanssen & Tarp, 2001; Addison & Tarp, 2015; Herzer & Morrissey, 2013; Judson & Owen, 1999; Bond *et al*., 2001) has highlighted that a consistent dynamic panel estimator should be the one that properly addresses, *(i)* the endogenous feature of aid and other regressors; *(ii)* the numerous factors that influence not only growth (i.e. growth determinants) but also both aid and growth (i.e. mediating factors); and *(iii)* peculiar panel data characteristics (persistency and short panels). Based on such criteria, a system GMM approach appears to be the preferred estimation method over other potential dynamic panel estimators: the standard OLS and FE estimations; the traditional IV (Anderson & Haiso, 1982); and first-differenced GMM (Arellano & Bond, 1991). The OLS and FE are inconsistent in the presence of a lagged dependent variable as a regressor and persistent growth data (dependent variable). While the extent of persistency is overestimated by OLS, it is underestimated by FE. The traditional IV approach suffers from weak instruments and the difficulty of finding valid external instruments to properly account for aid endogeneity. Although the first-differenced GMM relies on internal instrumentation to control aid endogeneity, it suffers from the problem of weak instruments and finite sample bias (Blundell & Bond, 1998; Blundell *et al.*, 2000; Bond *et al.*, 2001; Bond, 2002).

To resolve the weak instrument problems associated with both the traditional IV and the first-differenced GMM estimators, Blundell and Bond (1998) proposed a system GMM dynamic estimator for a highly persistent growth data (i.e. dependent variable) and short panel. It is based

on simultaneous estimation of two system equations in first differences and levels. Consequently, two instrument sets are used where the equation in levels is instrumented by lagged first differences and the equation in the first difference is instrumented by lagged levels. As nicely summarised in Bond *et al.* (2001), a system GMM mostly with the two-step option is used as a better option for empirical growth models to control for endogeneity, unobserved country-specific factors, omitted variable bias, and measurement error. Therefore, this study adopts a system GMM with a two-step option. To be specific, the main rationale/reasons why such an estimation approach is preferred in this study include the following:

First, it works relatively better for accounting the problem of aid endogeneity by controlling for simultaneity bias or reverse causality in the aid-growth regression. To tackle endogeneity, it uses suitable lagged values of the explanatory variables as "internal" instruments, and avoids the necessity of searching for external instruments. *Second*, it works well for a dynamic panel model with highly persistent series such as growth and short panels like ours. As shown in Chapter 6[31], the correlation coefficients for LICs (0.97) and MICs (0.99) associated with the lagged dependent variables were higher than the rule of thumb 0.8, which implies that the dependent variable is persistent over time and this estimation technique is appropriate. *Third*, a two-step system GMM exploits the finite sample correction techniques proposed by Windmeijer (2005), which makes the two-step GMM estimator superior to the one-step GMM estimator in the presence of autocorrelation and heteroscedasticity (Roodman, 2009b). *Fourth*, it is suitable for a panel dataset with larger N than T (i.e. $N > T$), which is the case in this study in both income groups. The study used a panel dataset of N (25) and T (18) for LICs and N (26) and T (18) for MICs. *Fifth*, it controls unobserved cross-country factors and measurement error, and works better for a dynamic multivariate panel data analysis such as ours (Blundell *et al*., 2000; Bond *et al*., 2001). Besides, this study employed orthogonal deviations than differencing.

In light of the above, this study adopts a system GMM approach to consistently estimate Equation (5.4). The system GMM estimation procedure entails estimating Equation (5.4) both in levels and first difference. As shown the recent literature (such as, Asongu & Nwachukwu, 2018; Asongu &

[31] See Chapter 6 Table 6.2 and Table 6.13 for correlation results for LICs and MICs, respectively.

Tchamyou, 2019; Odhiambo, 2020), a system GMM estimation model used in this study is expressed based on the following equations in levels (5.5a) and first difference (5.5b):

$$Y_{it} = \beta_0 + \beta_1 Y_{it-1} + \beta_2 AID_{it} + \sum_{j=1}^{6} \partial_j X_{i,t} + \eta_i + \xi_t + \varepsilon_{i,t} \quad \text{..... (5.5a)}$$

$$Y_{it} - Y_{i,t-1} = \beta_1 (Y_{i,t-1} - Y_{i,t-2}) + \beta_2 (AID_{i.t} - AID_{i,t-1}) + \sum_{j=1}^{6} \partial_j (X_{i,t} - X_{i,t-1}) + (\xi_t - \xi_{t-1}) + (\varepsilon_{it} - \varepsilon_{i,t-1}) \quad \text{.....} \quad \text{(5.5b)}$$

where i and t are as defined in Equation 5.4. Y and AID are as defined in Equation 5.3. AID denotes the three proxies of aid: total aid (TA), TDs' aid (TDA) and NTDs' aid (NTDA). Thus, the AID variable is expressed separately for the three aid proxies. X is the set of control variables as defined in Equation 5.4 *(investment, Government consumption, inflation rate, budget balance, trade openness, money supply, and labour force growth);* η_i is a country-specific effect; ξ_t is a time-specific constant, and ε_{it} is an error term. As discussed above, this study aims at investigating the effect of aid on growth in Africa by addressing two main heterogeneity issues of aid. These are aid sources and income differences among aid-recipient countries. To accommodate this, Equation 5.5a and 5.5b are estimated separately for the three aid proxies (TA, TDA, and NTDA) and the two country income groups in Africa – LICs and MICs. This means that the impact of aid on growth is assessed by addressing the different heterogeneity issues such as country income groups and sources of aid.

5.2.6 The system GMM: identification, instrumentation and exclusion restrictions

The identification, simultaneity/instrumentation strategy and exclusion restrictions linked to the system GMM specification follow the recent literature (Roodman, 2009a, 2009b; Love & Zicchino, 2006; Mahembe & Odhiambo, 2018; Asongu & Nwachukwu, 2018; Boateng *et al*., 2018; Asongu & Tchamyou, 2019; Odhiambo, 2020). As a standard treatment, all the independent variables are treated as predetermined or suspected endogenous, and treated as a *gmmstyle* instrument, while the time-invariant variables or time/year dummies are assumed to be strictly exogenous and treated as *ivstyle* instrument or iv(years, eq(diff)). The year or time dummy is

considered exogenous because it is less likely for the time-invariant variable to become endogenous in the first difference (Roodman, 2009b). Thus, a full set of time dummies are included in a system regression to control for cross-individual correlation in the idiosyncratic disturbances. To tackle endogeneity, the instrumentation strategy used lagged independent variables as instruments and all regressors are included in the instrument set. By and large, such internal instrumentation strategy avoids the difficulty of finding a valid external instrumental variables[32] to properly address for aid endogeneity in the aid-growth nexus (Bond *et al*., 2001; Wamboye *et al*., 2013). Furthermore, as highlighted in Labra and Torrecillas (2018), the instrumentation strategy exploits all available methods to tackle the problem of instrument proliferation as the number of instruments appears to explode with the time (T). Among others, this study considers: *(i)* both collapse and lag limit options built-in the "***xtabond2"*** Stata command (Roodman, 2009b), *(ii)* all explanatory variables as predetermined where the maximum lag of dependent and independent variables to be used as instrument are limited to one (Wamboye *et al*., 2013), *(iii)* a three years' non-overlapping averaged data rather than annual data as averaged data reduces the time (T) (Wamboye *et al*., 2013; Asiedu & Nandwa, 2007); and *(iv)* restrict the number of control variables to enter in the system GMM estimation (Asongu & Nwachukwu, 2018; Mahembe & Odhiambo, 2018).

5.2.7 The system GMM: Specification tests and robustness check

The validity of the system GMM instruments and estimations is evaluated using four information criteria (Asongu & Nwachukwu, 2018; Boateng *et al*., 2018). *First,* the Arellano and Bond AR(2) test in difference with a null hypothesis of "no second-order autocorrelation" in the residuals is checked. The non-rejection of this hypothesis implies the absence of second-order autocorrelation

[32] The traditional IV approach that relies on "external" instruments using OLS/2SLS and fixed-effects model has been highly criticised for failing to find a valid "external" instrument to control aid endogeneity in the aid-growth regression. After carefully reviewing the existing standard external instruments for aid (such as lagged aid, population, rainfall, colonial legacy, primary exports, arms imports, policy, policy interactions, GDP per capita, Egypt dummy) commonly used among past studies, recent literature (Werek *et al.,* 2008; Armah, 2010) has argued that these instruments have been hardly valid. Moreover, based on a critical review of recent literature, Hanssen and Tarp (2001) seemed to have concluded that most of the regressors/explanatory variables used in the recent aid-growth empirical literature are more likely to be endogenous. This is because these instruments have either: failed to satisfy the main requirement for instrument validity which is exogeneity, or tended to be time-invariant.

and consistency of GMM estimates. *Second*, the null hypothesis that "instruments used are valid" is checked by the Sargan and Hansen tests for Over-Identification Restrictions (OIRs). The non-rejection of this hypothesis confirms that the instruments are valid. Besides, as a rule of thumb, Roodman (2009a) advises that the number of instruments should be lower than the number of countries (N) so as to avoid the problem of instrument proliferation.

The *third* information criterion is the Difference-in-Hansen Test (DHT). It is an important information criterion to evaluate the assumption of the exclusion restriction with the null hypothesis of "exogeneity" of the time invariant variables (i.e. time dummies). The assumption of the exclusion restriction is satisfied when the null hypothesis of the DHT associated with IV(year, eq(diff)) is not rejected. *Fourth*, the Fisher test is employed to examine the joint validity of estimated coefficients associated with system GMM model. Furthermore, the value of the coefficient of the lagged dependent variables provides useful insights about the relevance of the system GMM estimation approach. It is noted that a positive and strongly significant coefficient of the lagged dependent variables indicates that real GDP per capita is persistent and a dynamic panel system GMM estimation is an appropriate econometric approach.

As a robustness check, the study follows the standard approach and evaluated the system GMM estimation results against the OLS and FE estimation results. Although the OLS and FE estimations are inconsistent in the presence of a lagged dependent variable as a regressor, they can be used as a benchmark to check the consistent estimates of a dynamic panel system GMM estimation (Bond *et al*., 2001; Mahembe & Odhiambo, 2018). The literature indicates that a consistent estimation of a dynamic panel model requires that the coefficient of the lagged dependent variable to be below 1.00 and lies within the range of OLS and FE estimations. The system GMM estimation is consistent and reliable when its coefficient linked to the lagged dependent variable lies below the OLS estimation and above the FE estimation. This is checked against each aid proxies: TA, TDA, and NTDA.

5.3 ECM-Based Multivariate Panel Granger Causality Model: the Aid-Growth Causality

In addition to investigating the impact of aid on growth (model 1), this study also aims at explaining the direction of causality between them. The concept of the Granger (1969) causality test is based on the assumption that a Granger causality between two variables exists (say X Granger causes Y) only when the current values of Y are dependent or conditional on past values of X. Based on this concept, this study investigates the three main forms of causality among the variables of interest. They are, (i) unidirectional causality from the corresponding independent variables to the dependent variables, (ii) bidirectional/feedback effects among the variables of interest; and (iii) no causality among them.

Recent development on Granger causality analysis based on Engle-Granger (1987) two-steps procedure seems to have greatly simplified a formal causality test in a panel setting. As a result, this approach has become a common econometric estimation test in a dynamic panel causality study. As outlined in Engle and Granger (1987), causality test can be done using a VAR model or VECM/ECM[33] model. A panel VECM model or the ECM-based Granger causality model is preferred when variables are of I(1) and cointegrated while a VAR model is preferred when variables' cointegration cannot be confirmed. Furthermore, the Engle-Granger two-step procedure allows for identifying causality in the short-run and long-run giving three types of causal inferences. These are: (i) short-run causality; (ii) long-run causality; and (iii) strong causality in the presence of a joint short-run and long-run causal effects.

The key conditions for implementing ECM-based multivariate panel Granger causality test are that: (i) the series should be stationary; and (ii) the variables should be cointegrated (Mahmoodi & Mahmoodi, 2016; Tan & Tang, 2016; Odhiambo *et al.*, 2018; Mahembe & Odhiambo, 2019; Sethi *et al.*, 2019). Thus, the empirical strategy to build and implement the ECM-based multivariate panel Granger causality test follows a standard procedure or step such as: (i) model specification for ECM-based multivariate panel Granger causality test; (ii) panel unit root test; (iii) optimal lag

[33] In this study, the ECM-based multivariate panel Granger causality model is preferred than the VECM framework. This is because there are only two variables of interest (i.e. aid & growth) and that the other two variables (i.e. investment & consumption) in this multivariate model are merely intermittent variables, which are included in order to reduce the omission-of-variable bias.

selection; (iv) panel cointegration test; and (v) ECM-based multivariate panel Granger causality test . The subsequent sub-sections briefly discussed each procedure or step.

5.3.1 ECM-based multivariate panel Granger causality model specification for testing the aid-growth causal link

The principal objective of this causality analysis is to empirically investigate the direction of causality between aid and growth. However, in theory, identification of the real causal impact of aid on growth could be confounded by several unobserved factors that influence both aid and growth or the mediating factors through which aid affects growth (Herzer & Morrissey, 2013; Herzer, 2015). This implies that the aid-growth causal nexus should be examined in the presence of key intermittent variables, as shown in Equation 5.3. Therefore, this study included investment and government consumption as key intermittent variables in the aid-growth regression to control the potential omitted variable bias and properly identify the real causal effects of aid on growth. The choice of these two mediating variables is guided by both theoretical (i.e. financing-gap models) and empirical literature discussed before.

As a result, this study adopted a dynamic ECM-based multivariate panel Granger causality model to examine the causality between foreign aid and economic growth in the presence of the two important intermittent variables (See Equation 5.3). When the variables are integrated of the same order of I(1) and cointegrated, the direction of causality among them is evaluated through the VECM or ECM-based Granger causality test following the Engle and Granger (1987) two-step estimation procedure (Pradhan & Arvin, 2015; Muye & Muye, 2016; Mahmoodi & Mahmoodi, 2016; Tan & Tang, 2016; Odhiambo *et al.*, 2018; Mahembe & Odhiambo, 2019; Sethi *et al.*, 2019). Following the recent literature, the empirical model specification for a dynamic ECM-based multivariate panel Granger causality test used in this study is given below, Equation 5.6a-d:

$$\Delta RGDPC_{it} = \delta_{1i} + \sum_{p=1}^{k} \delta_{11ip}\,\Delta RGDPC_{it-p} + \sum_{p=1}^{k} \delta_{12ip}\Delta AID_{it-p} + \sum_{p=1}^{k} \delta_{13ip}\,\Delta INVST_{it-p} + \sum_{p=1}^{k}\delta_{14ip}\,\Delta GCONS_{it-p} + \varphi_{1i}ECT_{it-1} + \varepsilon_{1it}. \quad \textbf{(5.6a)}$$

$$\Delta AID_{it} = \delta_{2i} + \sum_{p=1}^{k} \delta_{21ip}\,\Delta AID_{it-p} + \sum_{p=1}^{k} \delta_{22ip}\Delta RGDPC_{it-p} + \sum_{p=1}^{k} \delta_{23ip}\,\Delta INVST_{it-p} + \sum_{p=1}^{k}\delta_{24ip}\,\Delta GCONS_{it-p} + \varphi_{2i}ECT_{it-1} + \varepsilon_{2it}\cdots \quad \textbf{(5.6b)}$$

$$\Delta INVST_{it} = \delta_{3i} + \sum_{p=1}^{k} \delta_{31ip}\,\Delta INVST_{it-p} + \sum_{p=1}^{k} \delta_{32ip}\Delta RGDPC_{it-p} + \sum_{p=1}^{k} \delta_{33ip}\,\Delta AID_{it-p} + \sum_{p=1}^{k}\delta_{34ip}\,\Delta GCONS_{it-p} + \varphi_{3i}ECT_{it-1} + \varepsilon_{3it}\cdots \quad \textbf{(5.6c)}$$

$$\Delta GCONS_{it} = \delta_{4i} + \sum_{p=1}^{k} \delta_{41ip}\,\Delta GCONS_{it-p} + \sum_{p=1}^{k} \delta_{42ip}\Delta RGDPC_{it-p} + \sum_{p=1}^{k} \delta_{43ip}\,\Delta AID_{it-p} + \sum_{p=1}^{k}\delta_{44ip}\,\Delta INVST_{it-p} + \varphi_{4i}ECT_{it-1} + \varepsilon_{4it} \quad \textbf{(5.6d)}$$

where Δ stands for the first differences of the variables which are expressed in natural logarithms; $RGDPC$ is real GDP per capita and represents for economic growth; AID is real net aid disbursement as a share of real GDP and stands for three aid proxies:- Panel A (total aid-*TA*), Panel B (TDs' aid-*TDA*) and Panel C (NTDs' aid-*NTDA*); $INVST$ is investment expressed in domestic gross capital formation as a share of GDP; $GCONS$ is consumption expressed in government final consumption expenditure as a share of GDP; δ are the parameters to be estimated; p is the optimum lag length by minimising the Akaike Information Criteria (AIC) and validated by the absence of serial correlation; ε_{it} are the error terms and assumed to be serially uncorrelated. The short-run causality will be tested using Wald Test, while the long-run causality will be tested using the coefficient of the ECT lagged one period, which should be negative and statistically significant for the long-run causality to prevail.

5.3.2 Panel unit root test

Prior to undertaking causality tests, the first step involves determining the order of integration of the variables used in the estimation. This is because macroeconomic time series data tends to show a trend over time and exhibits non-stationarity behaviour. The order of variable integration is

checked using panel unit root tests. In this study, three of the common tests are implemented: Breitung (2000) test; Im, Pesaran and Shin-IPS (2003) test; and Hardi (2000) LM test. These panel unit root tests are implemented in this study using a Stata built-in command- ***xtcointtest***[34].

The IPS and Breitung tests are based on the ADF procedures (Muye & Muye, 2016; StataCorp, 2017). The Hardi test is a residual- based LM test. For IPS and Breitung tests, the starting point is a set of Dickey–Fuller regressions of the form (StataCorp, 2017: 534):

$$\Delta y_{it} = \emptyset_i y_{i,\ t-1} + Z'_{it}\gamma_i + \epsilon_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots (5.7)$$

where Δ denotes the first difference operator; y_{it} is the variable tested for unit root; $i = 1, \ldots, N$ indexes panels; $t = 1, \ldots, T$ indexes time; Z_{it} denotes panel-specific terms (intercept only; time trend only; both intercept & time trend; or none); ϵ_{it} is a stationary error term. For both tests (IPS & Breitung), ϵ_{it} is assumed to be independently distributed normal for all i and t. In the case of IPS test, $\emptyset$ is panel-specific, indexed by i, whereas it is constant for Breitung test. Both IPS and Breitung tests are used to test the null hypothesis that panels contain unit root, $H_0: \emptyset_i = 0$ against the alternative hypothesis of stationarity, $H_\alpha: \emptyset_i < 0$.

In a panel data model regression, ϵ_{it} is likely to be plagued by serial correlation. To mitigate this problem, the IPS test augments the Dickey–Fuller regression in Equation 5.7 with further lags of the dependent variable:

$$\Delta y_{it=} \emptyset_i\, y_{i,\ t-1} + z'_{it}\, \gamma_i + \sum_{j=1}^{p} \Delta y_{i,\ t-j} + \epsilon_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5.8)$$

where, p is the number of lags. This means that the IPS test uses additional lags of the dependent variable in the ADF regression in Equation 5.7 to control for serial correlation. On the other hand, the Breitung test controls for serial correlation by allowing for a prewhitening of the series before computing the test (StataCorp, 2017).

Besides the IPS and Breitung tests, this study used the Hardi (2000) LM test. While IPS and Breitung tests consider the null hypothesis that the series have unit root, the Hardi (2000) test

[34] Following StataCorp (2017: 540-546), Stata (version 15) built-in command **xtunitroot** is implemented to each panel unit root test: (i) IPS 2003 test- *xtunitroot ips*; (ii) Breitung 2000 test- *xtunitroot breitung*; and (iii) Hardi 2000 LM test- *xtunitroot hadri*. For Breitung test, the robust option provides a test statistic that is robust to cross-sectional correlation. The Hardi test offers two options to relax the assumption that ϵ_{it} is i.i.d: (i) the ***robust*** option to obtain the test that is robust to heteroscedasticity across panels; or (ii) the ***kernel ()*** option to obtain the result that is robust to serial correlation and heteroscedasticity.

reverses the test taking the null hypothesis that panels are stationary against the alternative of a unit root. Such reverting role is important because *"unit-root tests typically are not very powerful against alternative hypotheses of somewhat persistent but stationary processes"* (StataCorp, 2017: 545).

Model specification in the Hadri 2000 LM test is not framed in terms of an equation like (5.7); thus the distinction based on $\emptyset$ is not applicable (StataCorp, 2017). Hadri (2000) derives a residual-based Lagrange multiplier (LM) test based on OLS residuals of y_{it} on a constant, or on a constant and a trend (Baltig, 2005; StataCorp, 2017). The Hardi (2000) LM unit root test considers the model given below (StataCorp, 2017: 545-546):

$$y_{it} = r_{it} + \beta_i t + \epsilon_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5.9)$$

where r_{it} is a random walk,

$$r_{it} = r_{i,\ t-1} + u_{it}$$

and ϵ_{it} and u_{it} are zero-mean i.i.d. normal errors. For zero variance of u_{it}, r_{it} collapses to a constant, then y_{it} becomes trend stationary. The Hardi (2000) test is used to test the null hypothesis that panels are stationary against the alternative that at least one panel contains a unit root.

While the IPS test doesn't require balanced dataset, Breitung and Hardi tests require balanced dataset. It is also further noted that the Breitung test has good power even with small datasets (StataCorp, 2017). The panel unit root tests are computed for the three deterministic specifications (i.e. with a constant/intercept term only; both with a constant and a time trend; and with no intercept and trend), and the test statistics are reported both for the level and first-difference forms.

5.3.3 Determination of optimal lag

Panel Granger causality test is very sensitive to the lag order. Before implementing a dynamic panel Granger causality test, the optimal lag needs to be correctly specified. In the context of panel VECM estimation (Mahembe & Odhiambo, 2019), the Akaike Information Criteria (AIC) and Schwarz Information Criteria (SIC) constitute the most comment lag selection methods among the existing ones such as the Sequential Modified LR test, Final Prediction Error (FPE) and Hanna-

Quinn Information Criterion (HQIC). This study applied the AIC[35] method based on the standard/unrestricted VAR model to determine the optimal lag length selection.

5.3.4 Panel cointegration test

As stated above, most macroeconomic variables may typically follow a non-stationary trend; thus, a potential of cointegration relationship among variables needs to be investigated. In this study, a potential cointegration among the variables of interest was checked using a Stata built-in command- ***xtcointtest***[36]***,*** which implements three panel cointegration tests***:*** Pedroni (1999, 2004), Kao (1999), and Westerlund (2005) (StataCorp, 2017).

The Kao (1999), Pedroni (1999, 2004) and Westerlund (2005) tests are all based on examining the stationarity of the error term e_{it} in the following panel-data model for the *I*(1) dependent variable y_{it} (Westerlund & Basher, 2007: 4; StataCorp, 2017: 80)

$$y_{it} = x'_{it}\beta_i + z'_{it}\gamma_i + e_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (5.10)$$

where $\boldsymbol{i} = 1, \ldots, N$ denotes the panel (individual); $\boldsymbol{t} = 1, \ldots, T$ denotes time. $\boldsymbol{y_{it}}$ denotes the tested variable. For each panel i, $\boldsymbol{y_{it}}$ is a non-stationary dependent variable for which the first difference is stationary (i.e., it is integrated of order 1- denoted *I*(1)- for each panel); x_{it} is a k X 1 vector of I(1) variables; $\boldsymbol{\beta_i}$ is the cointegrating vector, which may vary across panels; $\boldsymbol{z_{it}}$ contains terms to control for panel-specific effects and or panel-specific time trends or nothing, depending on the options specified to *xtcointtest;* $\boldsymbol{\gamma_i}$ denotes the coefficients on the deterministic terms (i.e., panel-specific means and panel-specific linear time trends); $\boldsymbol{e_{it}}$ denotes the error term.

As noted in StataCorp (2017: 73), all the tests in ***xtcointtest*** (i.e., *xtcointtest kao, xtcointtest pedroni, and xtcointtest westerlund*) are based on the panel-data model in Equation 5.10. Pedroni (1999, 2004) and Westerlund (2005) assume a panel-specific cointegrating vector as in Equation

[35] The choice of AIC over SIB in this study is guided by VAR estimation results. First we estimate VAR in level data and identify which ICs are the lowest value, AIC or BIC. In our case, the VAR estimates for each panel shows that AIC is the lowest than SIC implying that AIC is the best method to determine the optimal lag length for Granger causality test using VECM or ECM-based approach.

[36] See StataCorp (2017: 74-90), xt.pdf for detailed explanation of ***xtcointtest***- panel data cointegration tests. This command is available for Stata Version 15 and above.

5.10 whereas Kao (1999) assumes the same cointegrating vector $\beta_i = \beta$ in Equation 5.10 (StataCorp, 2017). All panels have individual slope coefficients for Pedroni (1999, 2004) and Westerlund (2005), while all panels share a common slope coefficient for Kao (1999). Apart from the tests' difference in the assumption of cointegrating vector, correcting serial correlation is another key issue when testing for cointegration in panel data (Westerlund & Basher, 2007).

The Kao (1999), Pedroni (1999, 2004) and Westerlund (2005) tests implement different types of tests for whether e_{it} is non-stationary in Equation 5.10 (StataCorp, 2017; Westerlund & Basher, 2007). The Kao (1999), Pedroni (1999, 2004) tests extend the Engle and Granger (1987) framework to panel data setting (Muye & Muye, 2016). Kao (1999) proposes the variants of Dickey Fuller (DF) and Augmented Dickey-Fuller (ADF) tests. These include five test statistics such as the Modified Dickey-Fuller t, Dickey-Fuller t, Augmented Dickey-Fuller t, Unadjusted modified Dickey-Fuller t, and Unadjusted Dickey-Fuller t. Pedroni (1999, 2004) proposes seven test statistics, three of them with panel-specific AR parameter (Modified Phillips-Perron t, Phillips-Perron t, and Augmented Dickey-Fuller t) and four of them with the same AR parameter (Modified variance ratio, Modified Phillips-Perron t, Phillips-Perron t, and Augmented Dickey-Fuller t). Westerlund (2005) proposes two simple residual-based test statistics such as variance ratio (VR) *t* and Modified variance ratio *t*. The Westerlund (2005) VR tests are known to be fully nonparametric, while the tests of Kao (1999) and Pedroni (1999, 2004) tests are parametric/semiparametric (Westerlund & Safri, 2007). Thus, the Westerlund (2005) tests don't require any adjustment for serial correlation, while all the tests of Pedroni (1999, 2004) and Kao (1999) require correcting serial correlation, either parametrically or semi-parametrically. Overall, the VR tests do not require modelling or accommodating for serial correlation whereas all the variants of DF and PP tests use different regression approaches to mitigate this problem (StataCorp, 2017).

All variants of the DF t test and PP t test statistics are constructed by fitting the model in Equation 5.10 using OLS, obtaining the predicted residuals $\hat{e}_{it}$, and then fitting the DF regression model (StataCorp, 2017: 74; Baltagi, 2005: 252). For the variants of DF t tests, the fitted DF regression model is

$$\hat{e}_{it} = \rho \hat{e}_{i,\ t-1} + v_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (5.11)$$

where ρ is the AR parameter and v_{it} is a stationary error term. For Kao (1999), ρ is a common AR parameter whereas it is either panel-specific or the same over the panels for Pedroni (1999, 2004). Pedroni (1999, 2004) denotes the panel-specific-AR test statistics "group-mean statistics" and the same-AR test statistics "panel cointegration statistics". The DF t and the unadjusted DF t test whether the coefficient ρ is 1, whereas the modified DF t and the unadjusted modified DF t test whether $\rho - 1 = 0$. The test statistics are adjusted for serial correlation using the Newey–West nonparametric adjustments.

For the variants of PP t test, the fitted DF regression model is

$$\hat{e}_{it} = \rho_i \hat{e}_{i,\ t-1} + v_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (5.12)$$

where ρ_i is a panel-specific AR parameter. The PP t tests whether the coefficient $\rho_i s$ are 1, whereas the modified PP t tests whether $\rho_i - 1 = 0$. The PP t test statistics are adjusted for serial correlation in the residuals using the Newey–West nonparametric adjustments.

The ADF t tests $\rho = 1$ – similar to the DF tests and PP tests. However, instead of the Newey–West nonparametric adjustments, the ADF test uses additional lags of the residuals to control for serial correlation (StataCorp, 2017). The ADF regression model is

$$\hat{e}_{it} = \rho_i \hat{e}_{i,\ t-1} + \sum_{j=1}^{p} \rho_{ij} \Delta \hat{e}_{i,\ t-j} + v^*_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (5.13)$$

where $\Delta \hat{e}_{i,\ t-j}$ is the jth lag of the first difference of $\hat{e}_{it}$, and $j = 1, \ldots, p$ is where p is the number of lag differences. The AR parameter, $\rho_{i\ ,}$ is assumed to be the same for Kao (1999) tests ($\rho_i = \rho$), while it is either panel-specific (ρ_i) or the same ($\rho_i = \rho$)for Pedroni (1999, 2004) tests.

The VR test statistics are constructed as a ratio of variances. These tests do not require modelling or accommodating serial correlation even though the data generating process is similar to the one used by Predroni (1999, 2004) (Westerlund & Basher, 2007; StataCorp, 2017). The VR tests also test for no cointegration by testing stationarity in the residuals using the ratio of variances of the predicted residuals.

All the three tests have the same null hypothesis of "no cointegration". While Kao (1999) and Pedroni (1999, 2004) tests have the same alternative hypothesis of "all panels are cointegrated", the alternative hypothesis for Westerlund (2005) test has two options as "some panels are

cointegrated" or "all panels are cointegrated". The rejection of the null hypothesis at the conventional significance level suggests that the variables of interest are cointegrated. In the case of small samples, like ours, Pedroni ADF statistics (both panel & group tests) tend to be more reliable compared to the other panel statistics (Mahembe & Odhiambo, 2019). Moreover, the Westerlund (2005) tests avoid the need for making adjustments for serial correlation when testing panel cointegration, *"which of course reduces the uncertainty and ambiguity of the test outcome"* (Westelund & Basher, 2007: 3).

5.3.5 ECM-based multivariate panel Granger causality test

Once the stationarity and cointegration conditions are established, the next step is to formally test the direction of Granger causality based on a dynamic panel causality model shown in Equation 5.6a-d. The choice of the dynamic panel causality model between panel VAR and panel ECM-based or VECM approaches depends on the results of panel cointegration tests. When the variables are the same order of one or I (1) and cointegrated, the variables have Error Correction Term (ECT) and Granger causality is expected to exist at least in one direction (Engle & Granger, 1987). In this case, a formal test of causality requires an error correction model that uses the ECT to correct the disequilibrium in the cointegrated relationships. This implies that the ECM-based Granger causality approach such as panel VECM (i.e. Equation 5.6a-d) is preferred over the panel VAR approach when cointegration is confirmed. The panel VAR model is a relevant method to test causality in the absence of cointegration. Indeed, a panel VAR model resembles Equation 5.6a-d but excludes the ECT. Equation 5.6a-d stands for a panel VECM, which is a restricted panel VAR. As a result, the panel VAR captures only the short-run causal relationship while a panel VECM or ECM-based model allows us to capture both the short-run and long-run causality. In the presence of stationarity and cointegration, therefore, the ECM-based Granger causality model becomes the appropriate empirical strategy to test the direction of causality. This means that the first difference of each variable is expressed as a function of the lagged level of the explanatory variable and error correction term.

Following the ECM-based causality test, the source and direction of causality are determined by testing the significance of the coefficients for each dependent variable in Equation 5.6a-d shown

in the model specification sub-section. For each equation or dependent variable, three types of causality can be identified: short-run, long-run and strong/joint causality. The short-run causality is detected from the *F*-statics after a Wald test on the lagged independent variables. The long-run causality can be inferred by examining the significance of the t-statistics[37] on the coefficients of the lagged ECT_{it-1}, φ_i in each equation. A negative and statistically significant ECT_{it-1} is an indication of a long-run causality running from the independent variables to the dependent variable in the respective equation. The strong causality is exploited by a joint Wald test for both short-run and long-run causality. It is determined by the joint significant test of the ECT and the lagged variables of each equation.

5.4 Data Sources and Definition of Variables

This study used a strongly balanced panel dataset from Africa for the period 2000-2017. The study used a disaggregated dataset by country income groups such as LICs and MICs. The list of aid-recipient African countries used in this study is shown by income groups (and also by donor types – TDs & NTDs) in Chapter 2 for LICs (See Table 2.6) and Chapter 3 for MICs (See Table 3.5). The main data sources for the variables of interest are publicly available online databases such as the World Bank World Development Indicator (WDI, 2019), the United Nations statistics division (UN, 2019), the OECD DAC (2019) and the *AidData* (2017). Table 5.1 presents the list of all the variables and definitions with the corresponding data sources.

Economic growth is the dependent variable which is expressed as real GDP per capita growth rate consistent with the literature. Annual data for this variable is collected from WDI (2019) and UN (2019). Foreign aid is the key variable of interest or the main independent variable in this study. It is measured based on the OECD-DAC standard definition[38]. As highlighted in Chapter 1 (Introduction), this study deviates from most past studies and consider aid flows from all official bilateral donors and disaggregated by main aid sources (i.e. TDA and NTDA) while most past

[37] A simple Wald test can also offer similar results about the long-run causality.

[38] According to OECD DAC, foreign aid or Oversea Development Assistance (ODA) is defined as the flows of foreign resources from official sources (donor governments) to governments in the developing countries primarily for supporting economic development and warfare and has concessional nature composed of grants and soft loans with grant elements of at least 25 percent.

studies solely focus on aid flows from TDs. Thus, to account for the changing global aid landscape since 2000, this study adopted three proxies for aid: total aid (TA) which measures the sum of aid flows from both aid sources/donor groups[39]; aid flows from TDs (TDA); and aid flows from NTDs (NTDA). Following the recent literature (Greenhill *et al*., 2013), TDA is defined as aid flows from TDs consisting of the 28 DAC member countries while NTDA is defined as aid flows from the newly emerging donors or NTDs outside the DAC system. NTDs include 30 donors where 20 of them report their aid flows to the OECD DAC system while 10 of them (such as China[40]) don't. For each aid proxy, annual data on net bilateral aid disbursement (in real terms in constant 2017 USD) was collected. For all TDs and those NTDs reporting to the OECD DAC aid system, aid data was collected from the OECD DAC (2019) online database. For NTDs (such as China) that don't report their annual aid flows to the OECD DAC aid system, aid data was collected from *AidData* (2017) online database. To maintain consistency, the OECD DAC standard definition of aid commonly followed by the TDs is adopted to collect aid data from the NTDs (i.e. China). Besides, aid is measured as a percentage of GDP and both (i.e. aid and GDP) of them are expressed in real terms using the same constant 2017 USD.

The data sources for the control variables are the same as that of the dependent variable. The two data sources (WDI, 2019; UN, 2019) were used to collect annual data (2000-2017) for the control variables including investment, government consumption, inflation rate, trade openness, budget balance, money supply and population growth rate. In this study, the selection of control variables is restricted to only the key mediating factors and the most important conventional growth determinants due to the concern for instrument proliferation. In a dynamic panel system GMM framework, recent literature comments on limiting the number of control variables to avoid biased estimation associated with instrument proliferation (Asongu & Nechalwe, 2018; Boateng *et al*.,

[39] The lists of both donor groups - TDs and NTDs - that have disbursed aid to Africa during 2000-2017, and used in this study are presented in Chapter 2 Table 2.4 for LICs and Chapter 3 Table 3.3 for MICs.

[40] Among 10 NTDs (Brazil, Chile, China, Colombia, Costa Rica, India, Indonesia, Mexico, Qatar, and South Africa) that don't report to the OECD system, nine of them are excluded from the study due to unavailability of the required dataset from any credible sources. Data on aid from China is extracted from *AidData* online database, which is increasingly becoming the most credible source of data for Chinese global aid flows since 2000. *AidData* has compiled "ODA-like" (such as grants, interest-free loans and concessional loans) flows from China since 2000 and the latest to 2014 (constant 2014 USD). Unlike other studies that have used "ODA-like" flows as foreign aid, we excluded interest-free loans as they don't qualify the DAC aid definition. Only the type of aid flows that qualify DAC ODA criteria (grants and concessional loans with a grant element of at least 25%) are extracted from *AidData* and included in this study. Moreover, concessional loans with no information on the grant element are excluded.

2018; Mahembe & Odhiambo, 2019). Thus, the maximum number of control variables included in each model/aid proxy is subjected to the absence of instrument proliferation.

Table 5.1: Definition of variables and their corresponding sources

Variables	Definition	Data Sources
Economic growth	the log difference of real GDP per capita	WDI (2019) and UN (2019). The data is expressed in constant 2017 USD.
Total aid	Net total bilateral aid disbursement from TDs and NTDs as percentage of real GDP (%)	OECD DAC (2019) for TDs and NTDs, excluding China. AidData (2017) for NTDs (China). Net aid is divided by real GDP (both in constant 2017 USD).
TDs' aid	Net total bilateral aid disbursement from TDs as percentage of real GDP (%)	
NTDs' aid	Net total bilateral aid disbursement from NTDs as percentage of real GDP (%)	
Domestic investment	Gross capital formation as a ratio of GDP (%)	WDI (2019) and UN (2019).
Government consumption	General Government final consumption as a ratio of GDP (%)	
Inflation	Annual inflation growth rate (%)	
Trade openness	the ratio of exports plus imports (as % of GDP)	
Money supply	Broad money (M2 as % of GDP)	
Budget surplus	Budget surplus (as % of GDP)	
Population growth	Annual population growth rate (%)	

Note: Abbreviations: GDP - Gross Domestic Product; TDs- Traditional Donors; NTDs- Non-Traditional Donors; WDI- World Development Indicator; OECD- Organization for Economic Cooperation and Development; DAC- Development Assistance Committee.

5.5 Conclusion

This chapter presented the data and empirical methodology pursued in this study. It briefly discussed the theoretical and empirical perspectives related to dynamic panel model specification and estimation techniques employed to investigate the impact of aid on growth (using system GMM), as well as the causality between them (using ECM-based multivariate panel Granger causality test). It also discussed the rationale for choosing system GMM estimation approach and the main methodological challenges mostly related to the problem of aid endogeneity. Besides, the chapter provided a brief discussion on the list of variables used in this study, variables definition, and their corresponding sources.

CHAPTER 6 : ECONOMETRIC ANALYSIS AND EMPIRICAL FINDINGS

6.1 Introduction

The preceding chapter presented the theoretical and empirical analytical base for econometric model specification and estimation approach used in this study. Based on the empirical strategy developed in the previous chapter, this chapter discusses the econometric analysis and empirical findings using two main econometric methodologies employed in this study as shown in the previous chapter. The first methodology examines the impact of foreign aid on economic growth using a dynamic panel two-system GMM estimation technique. The second methodology assesses the direction of causality between foreign aid and economic growth using the ECM-based multivariate panel Granger causality approach. Given that the aim of this study is to evaluate whether aid sources matter for explaining the aid-growth nexus, three proxies of aid are considered in the model estimations: total aid (TA), TDs' aid (TDA) and NTDs' aid (NTDA). Apart from the aid sources, this study also aims at considering the heterogeneity of aid in relation to aid recipient country income classifications or groups. Based on the World Bank classification (See Appendix B), this study categorised African countries into two income groups[41]. They are LICs consisting of 27 countries and MICs consisting of 26 countries in 2017. In this study, therefore, the econometric analysis and empirical findings based on the two methodologies are discussed by aid sources and income groups.

Based on a system GMM technique, the impact of aid on growth is examined for each aid proxy and income group. For each income group (i.e. LICs & MICs), three separate models are estimated representing each aid proxy: TA, TDA, and NTDA. Consistent with the study objectives, the study employed a dynamic panel system GMM to:

- investigate the impact of the different aid proxies/sources on economic growth among LICs and MICs in Africa.

[41] South Africa is excluded from this study because it has been classified as NTDs.

- compare the impact of the different aid proxies on economic growth in Africa according to country income groups (LICs and MICs).

Using the ECM-based approach, the study explores the direction of causality between aid and growth for each aid proxy and income group. For each income group (i.e. LICs & MICs), three separate models are estimated representing each aid proxy: TA, TDA, and NTDA. Consistent with the study objectives, the study employed the ECM-based Granger causality test to:

- examine the direction of causal relationship between the different aid proxies and economic growth in LICs and MICs in Africa.
- compare the direction of causality between the aid proxies and economic growth in Africa according to country income groups (LICs and MICs).

The chapter is organised into five sections including the introduction section (Section 6.1). As a matter of convenience, the analysis is organised by country income groups (i.e. LICs & MICs). Section 6.2 presents the econometric analysis and empirical findings of a dynamic panel SGMM and a dynamic ECM-based multivariate panel Granger causality test for LICs. Section 6.3 discusses the econometric analysis and empirical findings on the impact of aid on growth using a dynamic panel SGMM and the causality between them using ECM-based multivariate panel Granger causality test for MICs. A discussion on the summary of the main empirical findings is presented in section 6.4. Finally, section 6.5 concludes the chapter.

6.2 Empirical Findings and Analysis for Low-Income Countries in Africa

This section presents the empirical findings and analysis on the impact of aid on growth and their causality for LICs in Africa. The section is divided into two sub-sections. Sub-section 6.2.1 discusses the impact of aid on growth based on results from a dynamic system GMM estimations. Sub-section 6.2.2 presents the investigation results on the causality between aid and growth using the ECM-based multivariate panel Granger causality framework.

6.2.1 Empirical results and analysis on the impact of aid on growth[42]

This section provides the discussion of the empirical results on the impact of aid on growth by aid sources (TA, TDA, and NTDA) in LICs. It starts by providing a summary of results and correlation matrix to reveal the characteristics of the data used in this study.

6.2.1.1 Summary results

The summary statistics are based on a strongly balanced panel dataset of 25 LICs[43] in Africa over the period 2000-2017 (using non-overlapping 3-years averaged). Economic growth is the dependent variable and measured by real GDP per capita. Bilateral aid is the main explanatory variable. Based on the evolution of major sources of foreign aid since 2000, three proxies of aid are used to measure aid flows such as total aid (TA), TDs' aid (TDA) and NTDs' aid (NTDA). Consistent with the "financing-gap model", domestic investment and government expenditure/consumption are included in the aid-growth regression to account for the key mediating factors through which aid affects growth. Moreover, the most important growth

[42] A peer-reviewed research article is published based on the empirical results on the impact of aid on growth in LICs form this section (Section 6.2.1). **Mamo G., Tefera and Odhiambo M., Nicholas, (2022). "The Impacts of Foreign Aid on Economic Growth in Africa: Empirical Evidence from Low-Income Countries",** *Forum for Development Studies*. Vol. 49, Issue 2: 175-210. DOI: 10.1080/08039410.2022.2080760 *Note: the methodological section of this published article is based on Chapter 5 Section 5.2.1 while the descriptive part is based on Chapter 2 Section 2.3.*

[43] 25 out of the 27 LICs are included in this study excluding South Sudan due to data unavailability before 2011 and Somalia due to missing data for some of the control variables.

determinants are included as additional control variables. These include variables on: (i) macroeconomic policy conditions such as inflation, trade openness and budget balance; (ii) institutional/financial environment such as money supply; and (iii) labour force measured by population growth.

Table 6.1 presents summary statistics for the variables of interest. All the variables except for inflation and budget balance are linearised using natural logarithm. The summary statistics show the characteristics of the variables in terms of mean, standard deviation, minimum and maximum values for the variables used in this study.

Table 6.1: Summary statistics

Variables	Observations	Mean	SD	Min	Max
Growth	175	6.38	0.43	5.42	7.48
Total aid	175	1.49	0.66	-0.104	3.29
TDs' aid	175	1.43	0.69	-0.53	3.28
NTDs' aid	175	0.18	0.21	-0.25	1.01
Investment	175	2.88	0.53	0.09	3.92
Government consumption	175	2.55	0.46	0.72	4.23
Trade openness	175	3.99	0.37	3.11	5.63
Money supply	175	3.11	0.61	1.09	5.48
Population growth	175	0.97	0.40	-1.28	1.75
Inflation	175	10.69	40.17	-26.74	513.91
Budget balance	175	-3.19	4.90	-36.48	11.61

Notes: The abbreviations: TDs- Traditional Donors; NTDs- Non-Traditional Donors; SD- Standard Deviation; Min- Minimum; Max- Maximum.

As shown in Table 6.1, for the variables in logarithm form, the basic summary statistics seem to have shown lower variations. For inflation and budget balance variables, however, the variation is large because they could not be transformed into logarithm as some of the values were negative.

6.2.1.2 Cross-correlation analysis

Based on a Pearson (1986) correlation matrix, this study assessed the extent and direction of association between two continuous variables. The Pearson correlation matrix for all variables and

the lagged dependent variable are displayed in Table 6.2. The asterisk (*) associated with each coefficient shows that the correlation is significant at 5 percent or below. As shown in Table 6.2, the correlation between aid and growth appears to be negative and significant when the aid proxies are total aid (TA) and TDs' aid (TDA) while it is positive and insignificant for NTDs' aid (NTDA) proxy. Theoretically, foreign aid positively affects growth by increasing investment in physical capital and government consumption expenditure for productive social sectors. In this regard, although correlation may not necessarily imply causation[44], a positive association between NTDA and growth may suggest that aid has been used for financing direct growth-enhancing sectors (i.e. economic infrastructure and physical investment infrastructure) and productive social sectors (i.e. education and health) while a negative association between aid (i.e. TA & TDA) and growth may suggest that a great volume of aid has been used in the unproductive sectors.

[44] The results of Granger causality test are presented in sub-section 6.2.2 of this chapter.

Table 6.2: Pearson correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12
1. RGDPC	1.000											
2. L.RGDPC	0.97*	1.000										
3. Total aid	-0.51*	-0.544*	1.000									
4. TDs' aid	-0.52*	-0.543*	0.99*	1.000								
5. NTDs' aid	0.06	0.02	0.21	0.09	1.000							
6. Investment	0.05	-0.09	0.10	0.12	0.02	1.000						
7. Consumption	-0.02	-0.06	0.24	0.22	0.10	0.07	1.000					
8. Trade openness	0.15	0.08	0.13	0.14	0.13	0.25	0.03	1.000				
9. Money supply	0.18	0.18	-0.09	-0.13	0.21	0.05	0.65*	0.01	1.000			
10. Population growth	-0.28*	-0.32*	0.23	0.26*	-0.09	0.36*	-0.06	0.04	-0.23	1.000		
11. Inflation	-0.18	-0.24	-0.11	-0.09	-0.05	-0.07	-0.35*	-0.14	-0.3*	-0.01	1.000	
12. Budget balance	0.09	-0.05	-0.16	-0.15	-0.15	-0.02	-0.45*	-0.03	-0.5*	-0.03	-0.03	1.000

Note: The asterisk (*) associated with each coefficient shows the correlation is significant at 5 percent or below. Abbreviations are: RGDPC- Real Gross Domestic Product per capita (dependent variable- growth); L. lagged; TDs- Traditional Donors; NTDs- Non-Traditional Donors.

As shown in Table 6.2, the correlation between TA and TDA is strong and significant at a 5 and below percent level of significance. This may suggest that the aid-growth regression should include each aid proxy separately rather than including all three measurements of aid at a time because the latter may bias the estimates due to a potential multicollinearity problem. Indeed, a dynamic two-step system GMM estimator used in this study also controls any omitted variable bias and measurement error in this regard (Asiedu & Nandwa, 2007). Thus, to address the issue of multicollinearity, the study estimated three separate models for each measurement of aid or aid proxies: Panel A (TA), Panel B (TDA) and Panel C (NTDA).

6.2.1.3 Results on the impact of aid on economic growth (by aid proxies)

The primary purpose of this study is to evaluate how aid sources affect economic growth based on a dynamic multivariate panel model (Equation 5.4) employing a consistent system GMM estimation of Equation 5.5a-5.5b. This sub-section discusses the results of the impact of the different aid proxies on growth for LICs. In theory, foreign aid positively affects growth by increasing investment in physical capital and government consumption expenditure for productive social sectors. This holds true when the coefficient of the aid proxies is positive and significant, and this confirms that aid is effective for boosting growth. The converse is true if the coefficient associated with the aid proxies is negative and significant. Table 6.3 presents the main empirical results on the impact of aid on growth for the three aid proxies: total aid - TA (Panel A); TDs' aid-TDA (Panel B) and NTDs' aid-NTDA (Panel C). The main results are based on a two-step SGMM estimator shown in the 3rd column for each Panel or aid proxy while OLS (1st column in each Panel) and FE (2nd column in each Panel) estimations are presented as a robustness check.

Table 6.3: The impact of foreign aid on economic growth among LICs in Africa by aid proxies

Variables	*Dependent variable: Growth (log of real GDP per capital)*								
	Panel A:Total Aid- TA			**Panel B: TD's Aid- TDA**			**Panel C: NTD's Aid- NTDA**		
	OLS	**FE**	**SGMM**	**OLS**	**FE**	**SGMM**	**OLS**	**FE**	***SGMM***
Lagged RGDPC	0.94*** (46.50)	0.70*** (7.51)	*0.899**** *(13.35)*	0.937*** (46.52)	0.698*** (7.56)	*0.916**** *(19.51)*	0.944*** (53.54)	0.741*** (8.60)	*0.931**** *(21.57)*
Total aid	-0.003 (-0.21)	-0.049* (-1.77)	*-0.088*** *(-2.14)*	-	-	-	-	-	-
TDs' aid	-	-	-	-0.009 (-0.63)	-0.053** (-2.16)	*-0.087*** *(-2.40)*	-	-	-
NTDs' aid	-	-	-	-	-	-	0.049 (1.39)	0.034 (1.25)	*0.031* *(0.84)*
Investment	0.06*** (3.23)	0.031 (1.36)	*0.131*** *(2.23)*	0.057*** (3.24)	0.034 (1.41)	*0.161*** *(2.57)*	0.058*** (3.31)	0.032 (1.55)	*0.094*** *(2.18)*
Government consumption	0.003 (0.13)	0.013 (0.49)	*-0.017* *(-0.21)*	0.006 (0.27)	0.012 (0.47)	*0.001* *(0.01)*	0.003 (0.13)	0.006 (0.22)	*0.009* *(0.22)*
Trade openness	-0.029 (-1.43)	0.009 (0.15)	*-0.031* *(-0.23)*	-0.027 (-1.35)	0.008 (0.14)	*-0.096* *(-1.17)*	-0.033* (-1.70)	-0.024 (-0.44)	*-0.097*** *(-2.24)*
Money supply	0.008 (0.40)	-0.010 (-0.17)	*-0.003* *(-0.06)*	0.005 (0.23)	-0.007 (-0.11)	*-0.023* *(-0.69)*	0.007 (0.35)	-0.001 (-0.02)	*-0.007* *(-0.16)*
Population growth	0.039* (1.80)	0.11*** (4.11)	*0.120*** *(2.14)*	0.039* (1.80)	0.115*** (5.33)	*0.105** *(1.95)*	0.041* (1.88)	0.100** (2.76)	*0.100** *(1.76)*
Inflation	-0.001 (-1.36)	-0.001 (-1.53)	*-.0005* *(-1.22)*	-0.001 (-1.38)	-0.001 (-1.52)	*-0.001* *(-1.22)*	-0.001 (-1.38)	-0.001 (-1.61)	*-0.001** *(-2.03)*
Budget balance	0.006** (2.75)	0.004* (1.78)	*0.008** *(1.73)*	0.005** (2.65)	0.003 (1.57)	*0.006* *(1.31)*	0.006*** (2.93)	0.005** (2.59)	*0.008*** *(2.10)*
Constant	0.303* (1.79)	1.76*** (3.15)	*0.521* *(1.09)*	0.330* (1.97)	1.761*** (3.24)	*0.622* *(1.55)*	0.292* (1.91)	1.559** (2.95)	*0.545* *(1.42)*
AR(1) **AR(2)**	-	-	*0.030* ***0.826***	-	-	*0.041* ***0.415***	-	-	*0.017* ***0.279***
Sargan **Hansen** **DHT**	-	-	*0.440* ***0.592*** ***0.694***	-	-	*0.358* ***0.519*** ***0.623***	-	-	*0.655* ***0.717*** ***0.458***
Fisher	385***	36.0***	***380****	386***	58.2***	***509****	391***	18.1***	***199****

R^2	0.9607	0.820	-	0.9608	0.823		0.961	0.811	
Observations	150	150	*150*	150	150	*150*	150	150	*150*
No. of countries	-	25	*25*	-	25	*25*	-	25	*25*
No. of instruments	-	-	*24*	-	-	*24*	-	-	*24*

Note: *All variables are measured as a non-overlapping 3-year averaged. ***, **, and * indicate a 1%, 5% and 10* significant level respectively. The t-statistics are in parenthesis. All model estimations are done using a dynamic panel two-step system GMM estimator (using* ***xtabond2*** *Stata command) with Windmeijer's (2005) finite sample correction and first-differencing (FD) option. A maximum of 1 lag is used for the dependent and predetermined explanatory variables as gmmstyle instruments. While both F-statistics and p-values are reported for Fisher test, only the p-values are reported for the three misspecification tests: autocorrelation tests (AR (1) & AR (2)); Over-Identifying Restrictions Tests (Sargan and Hansen); and Difference-in-Hansen Test (DHT) associated with iv (i.year, eq(diff)). Adjusted and within R^2 are reported for OLS and FE models respectively. Time effects (year dummies) are included in each estimation but not reported for the sake of space. Abbreviations for the variables are as defined in Table 6.1.*

The main empirical analysis: the impact of the different aid proxies on growth (system GMM)

As shown in Table 6.3, the main result shows that foreign aid does not appear to be effective for growth among LICs in Africa over the study period. This result happens irrespective of the different aid proxies used: TA (Panel A), TDA (Panel B) and NTDA (Panel C). However, the result reveals variations in terms of the sign, level of significance and magnitude across the three aid proxies. It shows that aid has a significant negative impact on growth (measured in real GDP per capita) among LICs in Africa when the aid proxies are TA (Panel A) and TDA (Panel B). In Panel A, when TA is used as a proxy for aid, aid affects growth negatively at a 5 percent level of significance. In terms of magnitude, a 1 percent increase in the average share of TA to GDP decreases the average growth by 0.088 percent. In Panel B, aid negatively influences growth at a 5 percent level of significance when the aid proxy is TDA. In terms of magnitude, a 1 percent increase in the average share of TDA to GDP makes growth fall by 0.087 percent. Given TDA constitutes the dominant share (94.8 percent) of total net aid disbursement to LICs, the total aid proxy (TA) follows similar patterns as the TDA proxy and a negative significant effect of TA is expected. On the other hand, the effect of aid on growth appears to be positive but insignificant when NTDA is used as a proxy for aid (Panel C).

Overall, the main result shows that the impact of aid on growth among LICs in Africa differs when the different sources of foreign aid are considered. While the impact of TA and TDA on growth is significant negative, the impact of NTDA on growth is insignificant positive (i.e. the impact is zero). Given that other things remain constant, the findings of this study could be strongly linked to whether or not a larger share of each aid proxy goes to finance the direct growth-enhancing productive sectors or the non-productive sectors. In this regard, the findings of a descriptive analysis presented in Chapter 2 (See Table 2.5, Columns 2 & 4) on sectoral aid compositions could provide some insights to explain the empirical results. The strong negative impact of aid on growth for the two-aid proxies (TA & TDA) could be associated with the shift of a large share of TDA away from the productive sectors towards non-productive sectors. As shown in column 4, the two key growth-enhancing sectors, such as the economic (8.1 percent) and productive (7.5 percent) sectors, received a lower average share of TDA than the unproductive sectors including humanitarian support (13 percent), debt-relief purposes (12.7 percent) and commodity aid (10.4 percent). Although the social sector

received the largest share (41.6 percent) of TDA, it might have been used to finance unproductive government social spending. The same story goes on for TA aid proxy as shown in column 2. Although the social sector received a relatively higher share (40.5 percent) of this aid, the two key sectors, such as the economic (11.2 percent) and productive (7.9 percent) sectors, received a lower share of aid commitments compared to the unproductive sectors – humanitarian aid (12.3 percent) and debt-relief (12 percent).

Indeed, the main finding of this study is in contrast to the proposition of the "financing-gap" model (Chenery & Strout, 1966; Bacha, 1990) and empirical literature on aid effectiveness, which have found a significant positive impact of aid on growth (Clemens *et al.*, 2012; Jones, 2013; Juselius *et al.*, 2013). However, they are comparable to most of the past empirical literature on the aid ineffectiveness theses where the impact of aid on growth is either significantly negative or null/zero. In this study, for instance, the results of a significant negative impact of aid on growth for TA and TDA aid proxies are in line with the recent studies which have reported similar significant negative impact of aid on growth in developing countries (Boone, 1996; Rahnama *et al*., 2017) and West African Monetary Zone (WAMZ) (Arawomo et al., 2015). Rahnama *et al.* (2017) concluded that the main hindering factors for aid effectiveness among LICs in developing countries are corruption and insufficient institutions in aid recipient countries. Boone (1996) has argued that aid doesn't work for growth by harming investment as a greater proportion of aid has been used for unproductive consumption.

Regarding the NTDA aid proxy, the result of no significant impact of NTDA on growth is consistent with the findings of recent studies (Dreher & Langlotz, 2017; Adedokun & Folawewo, 2017; Phiri, 2017). Dreher and Langlotz (2017) found no significant positive impact of aid on growth in developing countries while Adedokun and Folawewo (2017) and Phiri (2017) found no significant negative impact of aid on growth in SSA. Phiri (2017) further noted that such aid ineffectiveness may suggest that aid flows to SSA were either misallocated or insufficiently used.

Other results-control variables

Given that the main interest of the study is on the impact of aid on growth but not to examine the determinants of growth, the study only focuses on explaining the overall effect of the control variables on growth across the three aid proxies. *In Panel A*, when the aid proxy is TA, the results show that: (i) investment has a positive and significant (at a 5 percent level) impact on growth; (ii) population growth has a positive and significant (at a 5 percent level) impact on growth; and (iii) budget balance influences growth positively and significantly at a 10 percent level. *In Panel B*, when the aid proxy is TDA, the results show that: (i) investment has a positive and significant (at a 5 percent level) impact on growth; and (ii) population growth affects growth positively and significantly at a 10 percent level. *In Panel C*, for NTDA proxy, the results show that: (i) investment has a positive and significant (at a 5 percent level) impact on growth; (ii) trade openness has a negative and significant (at a 5 percent level) effect on growth; (iii) population growth influences growth positively and significantly at a 10 percent level; (iv) inflation influences growth negatively and significantly at a 10 percent level; and (v) budget balance influences growth positively and significantly at a 5 percent level. The overall result shows that only domestic investment and population growth have shown a consistent positive and significant effect on growth across all aid proxies. Perhaps, the negative impact of trade openness on growth for the NTDA proxy may imply the existing low level of openness to trade in these economies. On the hand, government consumption and broad money have shown no significant effect (neither positive nor negative) on growth in all aid proxies.

6.2.1.4 Specification tests and robustness checks for SGMM

This sub-section discusses the specification and robustness checks of dynamic panel two-step SGMM estimations for each aid proxies shown in Table 6.3: TA (Panel A), TDA (Panel B) and NTDA (Panel C). Consistent with the recent literature (Asongu & Nechalwe, 2018; Boteng *et al*., 2018), four information criteria are used as specification tests to evaluate the validity of instruments and estimations of a two-step SGMM. *First*, the Arellano and Bond AR(2) test in difference with a null hypothesis of "no second-order autocorrelation" in the residuals is checked. The non-rejection of this hypothesis

implies the absence of second-order autocorrelation and consistency of GMM estimates. *Second*, the null hypothesis that "instruments used are valid" is checked by the Sargan and Hansen tests for Over-Identification Restrictions (OIRs). The non-rejection of this hypothesis confirms that the instruments are valid. Besides, the study ensured that the number of instruments used in each estimation is lower than the number of countries (N) so as to avoid the problem of instrument proliferation. *Third*, the Difference-in-Hansen Test (DHT) is used to evaluate the assumption of the exclusion restriction with the null hypothesis of "exogeneity" of the time invariant variables (i.e. time dummies). The assumption of the exclusion restriction is satisfied when the null hypothesis of the DHT associated with IV(year, eq(diff)) is not rejected. *Fourth*, the Fisher test is employed to examine the joint validity of estimated coefficients associated with system GMM model. Overall, as shown in Table 6.3, the results on the four tests show that the SGMM estimation for all aid proxies is valid. Furthermore, a positive and strongly significant coefficient of the lagged dependent variables in all aid proxies indicates that real GDP per capita is persistent and a dynamic panel SGMM estimation is an appropriate econometric approach.

For a robustness check, a consistent estimation of a dynamic panel two-step system GMM requires that the coefficient of its lagged dependent variable be below 1.00 and lies within the range of OLS and FE estimations. For all aid proxies, as shown in Table 6.3, the coefficient of the lagged dependent variable (i.e. real GDP per capita) for SGMM is below 1.00 and lies within the range of OLS and FE estimations. This confirms that the dynamic two-step system GMM estimates for all aid proxies are optimal and consistent.

6.2.2 Empirical results on the Granger causality between aid and growth[45]

This section presents the results of empirical analysis on the ECM-based panel Granger causality test between foreign aid and economic growth in a multivariate setting using investment and consumption as key intermittent variables across the three aid proxies

[45] A peer-reviewed research article is published based on the empirical results on the aid- growth causality test in LICs form this section (Section 6.2.2). ***Mamo G., Tefera and Odhiambo M., Nicholas, (2023). "Foreign Aid and Economic Growth Nexus in Africa: Evidence from Low-Income Countries"***, International Social Science Journal, Wiley. DOI: **https://doi.org/10.1111/issj.12449**
Note: the methodological section of this published article is based on Chapter 5 Section 5.3.1 while the descriptive part is based on Chapter 2 Section 2.3.

(TA, TDA & NTDA). Given that Granger causality requires a balanced data (Mehembe & Odhiambo, 2019), this study used a strongly balanced annual panel dataset from 26 LIC[46]s in Africa over the period 2000-2017. All the four variables are linearised using natural logarithms. The section starts by discussing the descriptive statistics in terms of summary statistics and cross-correlation matrix for the four variables. It then presents other relevant pre-estimation tests related to panel unit root test and co-integration test. Finally, the main empirical results of the Granger causality based on a dynamic multivariate panel error correction model are presented.

6.2.2.1 Descriptive statistics

Table 6.4 presents the descriptive/summary statistics for the variables of interest (RGDPC, TA, TDA, NTDA, INVST, and GCONS) used in the Granger causality test. It displays basic statistics related to the measure of central tendency (mean, minimum, & maximum); dispersion (standard deviation) and measure of normality (skewness, kurtosis, and Jarque-Bera tests). It is based on a strongly balanced annual dataset from 26 LICs excluding South Sudan due to data unavailability before 2010. As shown in Table 6.4, the summary statistics show lower variations among the four variables among 26 LICs in Africa over the period 2000-2017. As noted above, all the four variables has been linearised based on natural logarithms; hence, the lower variations are expected. The summary statistics on normality tests show that growth (measured in real GDP per capita) and investment have a negative skewness (long-left tail) while consumption and all aid proxies have a positive skewness (long-right tail). All four variables have a kurtosis of more than 3, and this suggests that the distribution of the variables has heavier tails than the normal distribution due to outliers.

In terms of a joint test for normality – skewness and kurtosis tests (Jarque-Bera test) – both the individual-specific and reminder error components are evaluated to show the sources of deviations from the normal distribution. The null hypothesis for the Jarque-Bera tests is that the data is normally distributed, and it is rejected when the p-value is less than 0.05. The test results for the individual-specific components reveal that all the variables seemed to have been normally distributed. On the other hand, the test on the

[46] South Sudan is excluded from the analysis due to unavailability of data between 2000 and 2010.

error component shows that the variables of interest don't seem to be normally distributed[47]. The evidence from the error components may suggest a potential presence of outliers in the data (Mahembe & Odhiambo, 2019).

Table 6.4: Summary of descriptive statistics

Variables	N	Mean	SD	Min	Max	Skew.	Kur.	JB[48] Test Pro.	
								u	e
RGDPC	468	6.257	0.557	4.499	7.306	-0.932	4.885	0.1242	0.0072
INVST	468	2.093	0.504	0.092	4.097	-1.229	7.088	0.3714	0.0218
GCONS	468	2.530	0.452	0.716	4.298	0.107	5.294	0.9019	0.0690
TA	468	1.658	0.789	-0.776	4.633	0.625	4.371	0.2315	0.0028
TDA	468	1.588	0.809	-0.977	4.561	0.456	4.206	0.3034	0.0007
NTDA	468	0.236	0.431	-0.268	3.246	3.442	16.777	0.0906	0.0000

Note: The abbreviation stands for RGDPC: Real Gross Domestic Product Per Capita; TA: Total aid; TDA: Traditional Donors aid: NTDA: Non-Traditional Donors aid; INVST: Investment; GCONS: Government Consumption; N: Number of observations; Std.: standard deviations; Min.: minimum; Max.: maximum; Skew: skewness; Kur: kurtosis; JB: Jarque-Bera statistics; Pro: probability; u: individual-specific component; e: reminder error component.

Table 6.5 presents the cross-correlation matrix between the variables of interest. The result shows a negative correlation between real GDP per capita and real net aid for all aid proxies – TA (-0.635), TDA (-0.638) and NTDA (-0.282). The correlation between investment and aid is positive for all aid proxies- TA (0.075), TDA (0.102), and NTDA (0.012). Consumption has a positive correlation with TA (0.063) and TDA (0.058) while its correlation with NTDA is negative (-0.050). For all aid proxies, a positive correlation is revealed between real GDP per capita, investment, and consumption.

[47] Only the variable for consumption resembles a normal distribution at 10 percent level of significance.
[48] Alejo et al (2015) implemented ***xtsktest*** Stata command to test for normality or the JB tests for skewness and kurtosis. cedlas-wp-178.pdf (econstor.eu). This study used xtsktest to compute the joint test for normality of JB tests.

Table 6.5: Correlation matrix (by aid proxies)

Variables	***Total Aid- TA (both TDA & NTDA)***			
	RGDPC	TA	INVST	GCONS
RGDPC	1.0000			
TA	-0.6353	1.0000		
INVST	0.0379	0.0757	1.0000	
GCONS	0.0458	0.0631	0.0866	1.0000
TDA only				
Variables	RGDPC	TDA	INVST	GCONS
RGDPC	1.0000			
TDA	-0.6380	1.0000		
INVST	0.0379	0.1022	1.0000	
GCONS	0.0458	0.0588	0.0866	1.0000
NTDA only				
Variables	RGDPC	NTDA	INVST	GCONS
RGDPC	1.0000			
NTDA	-0.2821	1.0000		
INVST	0.0379	0.0123	1.0000	
GCONS	0.0458	-0.0504	0.0866	1.0000

Note: Abbreviations for the variables are as shown above (Table 6.4).

6.2.2.2 Panel unit root test results

Macroeconomic time series data tends to show a trend over time and exhibits non-stationarity behaviour. Therefore, before undertaking causality tests, the first step involves determining the order of integration of the variables used in the estimation. In this study, the order of variable integration is checked using three panel unit root tests: Breitung (2000); IPS- Im-Pesaran-Shin (2003); and Hardi (2000) LM Tests. The tests are computed based on three deterministic specifications: with a constant/intercept term only; both with a constant and a time trend; and with no intercept and trend. Table 6.6 presents the results of the three panel unit tests – Breitung, IPS and Hardi. The result is presented both in levels and first differences and across the three deterministic specifications: only intercept, both intercept and trends, and none (no intercept & trend).

As shown in Table 6.6, the overall test results show that the variables used in this study are not conclusively stationary in levels while they become stationary in first differences. Thus, it can be concluded that the variables of interest are integrated of order one- I(1).

Table 6.6: Panel unit root test results for African LICs

Variables	Breitung- lambda-sta.		IPS- W-statistics		Hardi- Z- statistics		Breitung- lambda-sta.		IPS- W-statistics		Hardi- Z- statistics	
	Stationarity of all variables in Levels						**Stationarity of all variables in First Difference**					
	Intercept	Intercept & Trend	Intercept	Intercept & Trend	Intercept	Intercept & Trend	Intercept	Intercept & Trend	Intercept	Intercept & Trend	Intercept	Intercept & Trend
RGDPC	2.571	1.397	2.458	1.603	22.909***	14.327***	-3.13***	-4.227***	-5.646***	-3.821***	3.096**	2.217**
TA	-1.169	-1.186	-0.468	-0.206	13.242***	8.887***	-2.257**	-2.606**	-5.117***	-2.052**	-1.349	0.175
TDA	-0.985	-0.523	-0.399	-0.767	15.154***	8.806***	-7.50***	-5.275***	-4.983***	-1.954**	-1.178	0.504
NTDA	0.479	-1.649*	-2.497**	-0.332	8.763***	3.838***	-2.476**	-4.329***	-4.085***	-6.545***	-2.960	0.059
INT	-0.266	0.489	-2.580**	-0.162	12.598***	9.377***	-5.58***	-5.171***	-8.536***	-6.852***	0.767	2.656**
CON	-0.864	1.265	-2.372	0.781	14.101***	12.043***	-1.853**	-2.169**	-4.179***	-2.656**	0.395	0.883

*Note: ***, **, * denote the levels of significance at 1%, and 5% respectively. The test statistics are based on the natural logarithms of the variables in levels (NTDA has some negative value below one, and its log form takes ln (NTDA + 1). Variable abbreviations are as in Table 6.5. Panel unit test statistics are: Breitung (2000); IPS- Im-Pesaran-Shin (2003); Hardi (2000) LM Tests. Optimal lag length for Brietung (2000) and IPS tests are determined by AIC automatic selection with maximum lag of 3, and the Hardi (2000) LM test is done based on Bartlett kernel with Newey West automatic bandwidth selection. . These tests are implemented using Stata (version 15) built-in command* ***'xtunitroot'.***

6.2.2.3 Results of panel cointegration test

Given that the variables have shown the same integration order of one or *I(1)*, a potential of cointegration relationship among variables needs to be investigated before a formal Granger causality test is performed. In this study, the most common residual-based panel cointegration tests proposed by the Pedroni test (1999, 2004), Kao test (1999) and Westerlund (2005) test are employed to check whether growth, aid, investment, and consumptions are cointegrated. Table 6.7 presents the cointegration results based on the growth equation with intercept option for the three aid proxies – Panel A (TA), Panel B (TDA), and Panel C (NTDA).

By and large, as shown in Table 6.7, most of the tests in Pedroni test statistics and all Westerlund VR statistics rejected the null hypothesis of "no cointegration" for the three aid proxies. Besides, Kao ADF statistics rejected the null hypothesis for all three panels, which implies that the series are cointegrated. Most importantly, both panel and group ADF statistics in Pedroni test (relevant tests for small samples like ours) strongly rejected the null hypothesis in all panels. Based on these results, therefore, it can be concluded that the variables used in this study are cointegrated, and it could be possible to go for testing Granger causality in each panel.

Table 6.7: Panel cointegration results for African LICs by aid proxies

Test types	Panel A: total aid-TA		Panel B: TDs' aid-TDA		Panel C: NTDs' aid-NTDA	
Pedroni test for cointegration						
Pedroni cointegration test: 'within-dimension tests' or 'panel statistics'						
	Statistics	**p-value**	**Statistics**	**p-value**	**Statistics**	**p-value**
Modified variance ratio	-5.689	0.000	-5.642	0.000	-5.944	0.000
Modified Phillips-Perron t	-0.409	0.341	-0.485	0.314	2.507	0.006
Phillips-Perron t	-5.029	0.000	-5.640	0.000	0.856	0.196
Augmented Dickey-Fuller t	-6.299	0.000	-6.649	0.000	2.740	0.003
Pedroni cointegration test:'between-dimension tests' or 'group statistics'						
	Statistics	**p-value**	**Statistics**	**p-value**	**Statistics**	**p-value**
Modified Phillips-Perron t	2.947	0.0016	3.053	0.001	3.913	0.000
Phillips-Perron t	-1.532	0.063	-1.375	0.085	0.751	0.226
Augmented Dickey-Fuller t	-2.904	0.0018	-2.548	0.005	1.980	0.024
Kao test for cointegration						
	Statistics	**p-value**	**Statistics**	**p-value**	**Statistics**	**p-value**
Augmented Dickey-Fuller t	1.810	0.035	1.620	0.053	2.338	0.010
Westerlund 2005 test for cointegration						
	t-statistics	**P-value**	**t-statistics**	**P-value**	**t-statistics**	**P-value**
Variance ratio	3.002	0.001	2.695	0.004	2.180	0.015

*Notes: The null hypothesis is "no cointegration"; and automatic lag selection is based on AIC with maximum lag length of 4. The test statistics are based the natural logarithms of the variables in levels. The three panel cointegration tests (Pedroni, Kao & Westerlund) are implemented using a Stata (Version 15) built-in command –**xtcointtest**.*

6.2.2.4 Results of panel Granger causality test

The results from the three panel cointegration tests revealed that there is evidence of cointegration among the variables of interest: real GDP per capita (i.e. growth), foreign aid, investment and consumption. When the variables are integrated of the same order and cointegrated, a dynamic ECM-based Granger causality or VECM framework is preferred to a VAR framework, which is appropriate when the variables are stationary but not cointegrated (Mehembe & Odhiambo, 2019). Thus, given that the variables are cointegrated, this section presents the results of the ECM-based multivariate panel Granger causality test in both the short-run and long-run for each aid proxies: TA (Panel A), TDA (Panel B) and NTDA (Panel C). Table 6.8 displays the causality results for the three Panels.

As shown in Table 6.8, when TA is used as a proxy for aid (Panel A), the evidence shows bidirectional causality between aid and growth in the short-run while a unidirectional causality from growth to aid has prevailed in the long-run. This result is confirmed by the F-statistics and the coefficients of the ECT in the respective growth and aid equations, which are found to be both statistically significant. In essence, the short-run result supports the feedback causality hypothesis or the existence of two-way causation between total aid and growth in LICs. Indeed, this result is consistent with the recent literature[49] (Pan *et al*., 2018; Lof *et al*., 2015; Gounder, 2003; Das & Sethi, 2019). For instance, a recent study by Pan *et al*. (2018) found bidirectional causality between aid (both bilateral and multilateral aid) and growth among LICs in Africa. On the other hand, the current study's long-run result supports a reverse causality hypothesis in which growth attracts more aid flows to LICs. It goes in conformity with the recent literature that found unidirectional causality from growth to aid in the long-run in Bangladish (Amin & Murshed, 2017) and developing countries (Mahembe & Odhiambo, 2019).

For Panel B, when TDA is used as a proxy for aid, the study found bidirectional causality between aid and growth in the short-run, which is confirmed by statistically significant F-statistics in the respective growth and aid equations. However, there is no evidence of significant causality between the two variables in the long-run in neither directions. This is confirmed by the lack of

[49] We consider total aid flows from both donors' groups - TDs and NTDs while past studies rely on total aid only from TDs which is similar to TDA proxy in our study. Thus, comparisons of results for TA and NTDA with past literature need to be taken consciously.

negative and statistically significant t-statistics associated with the ECT coefficients in both growth and aid equations. For this aid proxy, the short-run result is similar to TA proxy and goes in line with some recent literature discussed above. On the other hand, the long-run result for TDA proxy contradicts the group of literature that found a reverse causality or unidirectional causality from growth to aid, highlighted in the case of TA above.

For Panel C, when the aid proxy is NTDA, the study found no evidence of short-run causality between aid and growth in neither direction. This is shown by the F-statistics in the corresponding growth and aid equations, which are found to be statistically insignificant. In the long-run, however, there is evidence of unidirectional causality from growth to aid but not the other way round. This is confirmed by the coefficient of the ECT in each equation, which is statistically significant for the aid equation while it is statistically insignificant for the growth equation. This long-run result is similar to the findings for TA, and it is consistent with some recent literature (Amin & Murshed, 2017; Mahembe & Odhiambo, 2019). On the other hand, the short-run causality result contradicts the findings of bidirectional causality among the recent literature mentioned above in relation to TA proxy.

Table 6.8: Granger causality results for LICs by aid proxies

Dep. Var.	Panel A: Total aid-TA					Panel B: TD's aid-TDA					Panel C: NTD's aid-NTDA				
	Short-run causality (F-stat.)				**ECT-1 [t-stat.]**	**Short-run causality (F-stat.)**				**ECT-1 [t-stat.]**	**Short-run causality (F-stat.)**				**ECT-1 [t-stat.]**
	ΔGDP	**ΔAID**	**ΔINT**	**ΔCON**		**ΔGDP**	**ΔAID**	**ΔINT**	**ΔCON**		**ΔGDP**	**ΔAID**	**ΔINT**	**ΔCON**	
ΔGDP	-	2.28* [0.058]	6.52*** [0.000]	2.73** [0.029]	0.003 (2.209)	-	2.556** [0.039]	6.14*** [0.0001]	2.62** [0.035]	0.002 [2.284]	-	0.256 [0.906]	7.754*** [0.000]	2.280* [0.061]	0.002 [0.683]
ΔAID	2.03* [0.090]	-	1.081 [0.366]	1.96* [0.099]	-0.004** [-3.14]	2.008* [0.093]	-	1.020 [0.397]	1.561 [0.184]	0.006 [3.397]	0.146 [0.965]	-	1.156 [0.330]	2.293* [0.059]	-0.17*** [-3.882]
ΔINT	6.00*** [0.000]	2.08* [0.084]	-	1.89 [0.113]	-0.06** [-3.27]	5.835*** [0.000]	1.471 [0.211]	-	1.833 [0.122]	-0.06*** [-3.188]	7.753*** [0.020]	2.770** [0.027]	-	1.831 [0.123]	-0.06*** [-3.921]
ΔCON	2.48** [0.044]	1.125 [0.344]	6.23*** [0.0001]	-	-0.04* [-1.94]	2.53** [0.040]	0.909 [0.459]	6.16*** [0.0001]	-	-0.039* [-1.910]	2.592** [0.037]	1.520 [0.196]	5.881*** [0.000]	-	-0.020 [-1.381]

*Note: ***, **, and * stand for 1%, 5% and 10% levels of significance, respectively. F statistics and p-values in brackets for short-run. ECT coefficients and t-statistics in brackets for long-run. Lag length selection is based on minimum AIC subject to the removal residual serial/autocorrelation.*

Furthermore, other results for the intermittent variables provide interesting insights. For Panel A, the study found evidence of *(i)* a bidirectional causality between investment and growth, and between growth and consumption in the short-run; *(ii)* a unidirectional causality in both short-run and long-run from aid to investment, from consumption to aid, and from investment to consumption; and (iii) a long-run unidirectional causality from aid to investment, and from growth to both investment and consumption. For Panel B, there is evidence of *(i)* a bidirectional causality between growth and investment, growth and consumption in the short-run, and *(ii)* a unidirectional causality from growth to investment and consumption in the long-run; and (iii) a unidirectional causality from investment to consumption in both short-run and long-run. For Panel C, there is evidence of *(i)* a bidirectional causality between growth and investment, and growth and consumption in short-run; (ii) a unidirectional causality from investment and growth to consumption in the short-run; (iii) an unidirectional causality in both short-run and long-run from aid to investment and from consumption to aid; and (iv) no significant long-run causality from the independent variables to consumption (i.e. consumption equation). Overall, the evidence of long-run causality from aid to investment for TA and NTDA proxies supports the aid-financed investment hypothesis advocated by the "financing-gap" model. This result is also consistent with the findings of a recent study by Sethi *et al.* (2019).

6.3 Empirical Findings and Analysis for Middle-Income Countries in Africa

This section presents the empirical findings and analysis on the impact of the different aid proxies (TA, TDA & NTDA) on economic growth and the causal relationship between them among MICs in Africa over the period 2000-2017. The section is divided into two sub-sections. The first sub-section 6.3.1 discusses the impact of aid on growth based on results from a dynamic two-step system GMM estimation. The second-section 6.3.2 presents the investigation results on the ECM-based multivariate panel Granger causality test between aid and growth.

6.3.1 Empirical results and analysis on the impact of aid on growth- MICs

This section provides the discussion of the empirical results on the impact of aid on growth in MICs based on a dynamic system GMM approach. It starts by providing summary results and a correlation matrix to reveal the characteristics of the data used in this study. Then, it presents a detailed discussion of the empirical findings on the impact of the different aid proxies on growth.

6.3.1.1 Summary results

The summary statistics are based on a strongly balanced panel dataset of 26 MICs in Africa over the period 2000-2017 (using non-overlapping 3-years averaged). Economic growth is the dependent variable and measured by real GDP per capita. Bilateral net aid is the main explanatory variable. Since 2000, as explained before, the global aid landscape is characterised by the evolution of two main bilateral aid sources – aid from traditional donors (TDs) and aid from non-traditional donors (NTDs). In view of this, three proxies of aid are used to measure bilateral net aid flows to MICs such as total aid (TA), TDs' aid (TDA), and NTDs' aid (NTDA). The list of aid recipient MICs and aid sources (i.e. 28 TDs & 19 NTDs) used in this study are presented in Chapter 3, Table 3.5 and Table 3.3 respectively. Consistent with the "financing-gap model", domestic investment and government expenditure/consumption are included in the aid-growth regression to account for the key mediating factors through which aid affects growth. Moreover, the most important growth determinants are included as additional control variables. These include variables on: (i) macroeconomic policy conditions such as inflation, trade openness and budget balance; (ii) institutional/financial environment such as money supply; and (iii) labour force measured by population growth.

Table 6.9 presents summary statistics for the variables of interest. All the variables except for inflation and budget balance are linearised using natural logarithm. The summary statistics show the characteristics of the variables in terms of mean, standard deviation, minimum, and maximum values.

Table 6.9: Summary statistics

Variables	Observations	Mean	SD	Min	Max
Growth	182	7.89	0.77	6.50	9.73
Total aid	182	0.93	0.68	-0.18	2.93
TDs' aid	182	0.84	0.69	-0.25	2.93
NTDs' aid	182	0.16	0.23	-0.12	1.01
Investment	182	3.21	0.34	2.26	4.22
Government Consumption	182	2.74	0.50	0.31	4.18
Trade openness	182	4.43	0.47	3.02	5.77
Broad money	182	3.58	0.67	1.86	5.41
Population growth	182	1.05	0.37	-0.66	1.74
Inflation	182	9.32	25.82	-6.93	324.99
Budget balance	182	-1.76	11.04	-78.14	51.45

Notes: The abbreviations: TDs- Traditional Donors; NTDs- Non-Traditional Donors; SD- Standard Deviation; Min- Minimum; Max- Maximum.

As shown in Table 6.9, the basic summary statistics of the variables in logarithm form seem to have shown lower variations. For inflation and budget balance variables, however, the variation tends to be larger because they could not be transformed into logarithm as some of the values were negative.

6.3.1.2 Cross-correlation analysis

Table 6.10 presents the Pearson (1986) correlation matrix for all variables and lagged dependent variable. The Pearson (1986) correlation matrix is very useful to assess the extent and direction of association between two continuous variables. The asterisk (*) associated with each coefficient shows the correlation is significant at 5 percent or below. As shown in Table 6.10, all aid proxies seemed to have negatively correlated with economic growth. The negative correlation is significant at a 5 percent only for two of the aid proxies (total aid- TA and TDs' aid - TDA) while it is not significant for NTDs' aid (NTDA) proxy. In this regard, although correlation may not necessarily imply causation, such significant negative correlation of TA and TDA with growth may suggest that a great volume of aid has been either used in the unproductive sectors or misused. In theory,

the “financing-gap” model postulates a positive association between aid and growth assuming that aid would have been used to finance investment and productive government spending in the social sector.

Table 6.10: Pearson correlation matrix

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. RGDPC	1.000											
2. L.RGDPC	0.991*	1.000										
3. Total aid	-0.54*	-0.57*	1.000									
4. TDs' aid	-0.57*	-0.59*	0.97*	1.000								
5. NTDs' aid	-0.05	-0.09	0.30*	0.12	1.000							
6. Money supply	0.21	0.22	0.03	0.01	0.12	1.000						
7. Consumption	0.19	0.22	0.16	0.13	0.18	0.48*	1.000					
8. Investment	0.09	0.08	0.17	0.16	0.14	0.13	0.14	1.000				
9. Trade openness	0.41*	0.40*	0.04	0.01	0.17	0.15	0.51*	0.35*	1.000			
10. Population growth	-0.08	-0.07	-0.01	-0.01	-0.008	-0.52*	-0.43*	0.01	-0.33*	1.000		
11. Budget balance	0.01	0.002	0.02	0.04	-0.06	-0.36*	-0.23	-0.04	0.03	0.11	1.000	
12. Inflation	-0.06	-0.14	-0.02	-0.01	-0.05	-0.14	0.05	0.03	0.02	0.14	0.002	1.000

Note: The asterisk (*) associated with each coefficient shows the correlation is significant at 5 percent or below. Abbreviations are: RGDPC- Real Gross Domestic Product per capita (dependent variable- growth); L. lagged; TDs- Traditional Donors; NTDs- Non-Traditional Donors.

The results in Table 6.10 also show that the correlation among all the three aid proxies is strong and significant at a 5 and below percent level of significance. This may suggest that the aid-growth regression should include each aid proxy separately rather than including all three measurements of aid at a time because the latter may bias the estimations due to a potential multicollinearity problem (Asiedu & Nandwa, 2007). Indeed, a dynamic system GMM estimator used in this study also controls any omitted variable bias and measurement error in this regard (Asiedu & Nandwa, 2007). To be on the safe side, the study estimated the aid-growth regression using three separate models for each aid proxy: Panel A (TA), Panel B (TDA), and Panel C (NTDA).

6.3.1.3 Results on the impact of aid on growth - MICs (by aid proxies)

As mentioned in section 6.2.1 above (for LICs case), the primary purpose of this study is to evaluate how aid sources affect growth based on a dynamic panel system GMM estimation technique. Thus, the same equation (i.e. Equation 5.4) within a system GMM estimation (i.e. Equation 5.5a-5.5b) used for LICs is also used to examine the impact of aid on growth among MICs in Africa. In this sub-section, therefore, the discussion of the results of the impact of the different aid proxies on growth for MICs is presented. Table 6.11 presents the main empirical results on the impact of the aid on growth for the three aid proxies: TA (Panel A); TDA (Panel B), and NTDA (Panel C). The main results are based on a two-step system GMM estimator shown in the 3rd column for each Panel or aid proxy while OLS (1st column in each Panel) and FE (2nd column in each Panel) estimations are presented as a robustness check.

Table 6.11: Impact of the different foreign aid proxies on economic growth in African MICs

Variables	*Dependent variable: Growth (log of real GDP per capital)*								
	Panel A:Total Aid- TA			**Panel B: TD's Aid- TDA**			**Panel C: NTD's Aid- NTDA**		
	OLS	**FE**	**SGMM**	**OLS**	**FE**	**SGMM**	**OLS**	**FE**	***SGMM***
Lagged RGDPC	0.96*** (58.42)	0.567*** (6.22)	0.900*** (9.78)	0.967*** (56.95)	0.562*** (6.26)	0.908*** (10.94)	0.97*** (71.54)	0.563*** (6.47)	0.884*** (12.43)
Total aid	-0.018 (-1.50)	-0.017 (-0.84)	0.022 (0.476)	-	-	-	-	-	-
TDs aid	-	-	-	-0.012 (-1.03)	0.003 (0.12)	0.045* (1.84)	-	-	-
NTDs aid	-	-	-	-	-	-	-0.049* (-1.79)	-0.048* (-1.95)	-0.094** (-2.35)
Investment	0.072** (2.96)	0.067 (1.59)	0.150* (1.83)	0.071** (2.90)	0.070 (1.62)	0.142 (1.48)	0.071** (2.94)	0.068 (1.59)	0.139* (2.03)
Trade openness	0.025 (1.03)	0.078 (1.30)	0.090 (1.50)	0.022 (0.93)	0.081 (1.37)	0.086 (1.45)	0.025 (1.09)	0.085 (1.45)	0.100 (1.24)
Inflation	0.0003 (0.76)	-.002*** (-6.11)	-0.001* (-1.76)	0.0004 (0.79)	-.002*** (-6.18)	-0.0009 (-1.12)	0.0004 (0.81)	-.001*** (-5.34)	-0.0007 (-1.57)
Money supply	-0.005 (-0.29)	-0.175** (-3.24)	-0.078** (-2.04)	-0.006 (-0.35)	-0.175** (-3.21)	-0.079 (-1.67)	-0.005 (-0.30)	-0.179** (-3.32)	-0.048 (-1.14)
Budget balance	0.002** (3.08)	0.001 (1.61)	0.002** (2.54)	0.002** (3.06)	0.002* (1.77)	0.003** (2.83)	0.002** (2.93)	0.001 (1.68)	0.003** (2.08)
Population growth	-0.017 (-0.67)	0.092 (1.53)	0.060 (1.17)	-0.018 (-0.74)	0.085 (1.42)	0.039 (0.60)	-0.015 (-0.63)	0.094 (1.66)	0.072 (1.48)
Constant	0.047 (0.45)	3.43*** (4.01)	0.187 (0.27)	0.035 (0.33)	3.372** (3.96)	0.184 (0.25)	-0.019 (-0.17)	3.360*** (4.02)	0.206 (0.47)
AR(1)	-	-	0.337	-	-	0.408	-	-	0.299
AR(2)	-	-	**0.235**	-	-	**0.210**	-	-	**0.375**
Sargan	-	-	0.000	-	-	0.001	-	-	0.000
Hansen	-	-	**0.509**	-	-	**0.601**	-	-	**0.412**
DHT	-	-	**0.794**	-	-	**0.836**	-	-	**0.322**
Fisher	1577***	223***	***21******	1625***	217***	***27******	1534***	221***	***89.7******
R^2	0.98678	0.86302	-	0.98671	0.86236	-	0.98683	0.86501	-
Observations	156	156	156	156	156	156	156	156	156
Number of countries	-	26	26	-	26	26	-	26	26

Number of instruments	-	-	24	-	-	24	-	-	24

*Note: ***, **, and * indicate a 1%, 5% and 10* significant level respectively. The main regression model is a dynamic two-step SGMM estimator with Windmeijer (2005) finite sample correction and orthogonal deviation (OD) option. The t-statistics are in parenthesis. A maximum of 1 lag is used for the dependent and predetermined explanatory variables as gmmstyle instruments. While both F-statistics and p-values are reported for Fisher test, only the p-values are reported for the three misspecification tests: autocorrelation tests (AR(1) & AR(2)); Over-Identifying Restrictions Tests(Sargan and Hansen); and Difference-in-Hansen Test (DHT) associated with iv(i.year, eq(diff)). Adjusted R^2 (R-squared) is reported for OLS and FE models. Time dummies are included in all estimations but not reported to save space. Abbreviations for the variables are as defined in Table 6.13; OLS- Ordinary Least Square; FE- Fixed Effects; SGMM- System Generalised Method of Moments. Government consumption is used only as internal instrument in this estimation.*

The main empirical analysis: Impact of the different aid proxies on economic growth (system GMM)

As shown in Table 6.11, based on SGMM estimations (3rd column in each Panel), the overall result shows that the impact of foreign aid on economic growth among African MICs is mixed and depends on the different aid proxies used to measure net bilateral aid flows. In Panel A, when the aid proxy is total aid (TA), the result shows that the aid-growth nexus is positive but not statistically significant at the conventional significant levels. This implies that there is no significant impact of aid on growth when aid is measured in total or aggregate form. In Panel B, when the aid proxy is TDA, there is a 10 percent statistically significant positive impact of aid on growth. In terms of magnitude, a 1 percent increase in the average share of TDA to GDP increases the average growth by 0.045 percent. On the contrary, when the aid proxy is NTDA (i.e. Panel C), the impact of aid on growth appears to be negative and statistically significant at a 5 percent significant level. In terms of magnitude, a 1 percent increase in the average share of NTDA to GDP decreases the average growth by 0.094 percent.

By and large, the main findings of this study confirm that aid sources do matter for explaining the aid-effectiveness theses on whether or not aid works for growth in MICs. This means that the impact of aid on growth depends on the sources of aid: whether aid has come from TDs or NTDs. It is shown that TDA has a positive impact on growth among MICs in Africa while the impact of aid on growth is negative significant for NTDA and positive insignificant for TA. Moreover, this finding suggests that the significant impact of aid on growth is revealed when aid is disaggregated by sources but not at aggregate level. Other things remain constant, a positive significant impact of TDA on growth suggests that TDA flows have been instrumental to support growth among MICs in Africa over the past decades since 2000. Indeed, this evidence is consistent with the proposition of the "financing-gap" model (Chenery & Strout, 1966; Bacha, 1990) and empirical literature on the aid-effectiveness theses, which have found a significant positive impact of aid on growth (Clemens *et al.*, 2012; Jones, 2013; Juselius *et al.*, 2013; Jena & Sethi, 2019, 2020). More recent studies, for instance, have found a significant positive impact of aid on growth in South Asian (Jena & Sethi, 2020) and SSA (Jena & Sethi, 2019). In essence, this strand of literature (both the theoretical and empirical) has been used as the main rationale to justify the growth-enhancing role of aid and advocating increasing aid flows to poor countries since the 1960s.

On the other hand, the evidence of a negative significant impact of NTDA on growth contrasts to both the theoretical preposition and empirics on the aid-effectiveness theses discussed above. Nonetheless, this finding for the NTDA proxy could be seen as supportive evidence for the strand of empirical literature on the aid-ineffectiveness theses which argues that aid doesn't support growth rather its impact on growth is either significantly negative or null/zero. This means that the result for NTDA aid proxy is in line with the recent studies[50] which have reported a similar significant negative impact of aid on growth in developing countries (Boone, 1996; Rahnama *et al.,* 2017), West African Monetary Zone (WAMZ) (Arawomo *et al.,* 2015), Asia (Liaqat *et al.,* 2019), and across low and middle income groups in Africa (Yahyaoui & Bouchoucha, 2019). Rahnama *et al.* (2017) concluded that the main hindering factors for aid effectiveness are corruption and insufficient institutions in aid-recipient countries. Boone (1996) has argued that aid doesn't work for growth by harming investment as a greater proportion of aid has been used for unproductive consumption.

Other results - control variables

Apart from the main variables of interest (aid and growth) discussed above, the findings on the impact of other conventional control variables on growth across the three aid proxies appears to be interesting and consistent with the literature in most cases (See Table 6.12, third column SGMM in each Panel). In Panel A, for total aid proxy (TA), this study found that investment and budget balance have a positive impact on growth at a 10 percent and 5 percent level of significant respectively. Besides, the study found that inflation and broad money have a negative impact on growth at a 10 percent and 5 percent level of significant respectively. In Panel B, when TDA is used as aid proxy, the study found that budget balance is the only variable that significantly affected growth. Budget balance has a strong positive impact on growth at a 5 percent significant level. In Panel C, when the aid proxy is NTDA, the study found that investment and budget balance have affected growth positively at a 10 percent and 5 percent level of significance respectively.

[50] Comparing the finding of this study with these recent studies should be taken carefully because most past studies have examined the impacts of TDA on growth but none of them exclusively discussed the impacts of NTDA on growth.

Overall, this study found that budget balance is the most important determinant of growth for all three aid proxies while investment is an additional key factor for boosting growth for the two aid proxies (TA & NTDA). In essence, other things remain constant; this finding implies that a favourable government fiscal position and domestic investment seem to have played critical role to support economic growth among MICs in Africa during the study period.

6.3.1.4 Specification tests and robustness checks for SGMM estimations

Following the recent literature, four main information criteria are employed to check the validity of a two-step system GMM with orthogonal deviation[51] (Asongu & Nechalwe, 2018; Boteng *et al*., 2018; Mahembe & Odhiambo, 2019). As Table 6.11 displays, the non-rejection of the null hypothesis associated with the tests in AR(2), Hansen OIR and DHT IV(year, eq(diff)), as well as the significance of the Fisher test, indicate that all estimated coefficients in each model or aid proxy are valid. Besides, the study ensures that the number of instruments used in each estimation is lower than the number of countries (N) so as to avoid the problem of instrument proliferation. Furthermore, as shown in Table 6.11, a positive and strongly significant coefficient of the lagged dependent variables in all aid proxies indicates that real GDP per capita is persistent and a dynamic panel system GMM estimation is an appropriate econometric approach.

As a robustness check, the Ordinary Least Square (OLS) and Fixed Effect (FE) are used as a benchmark model to compare the consistency of SGMM model (Bond *et al*., 2001; Mahembe & Odhiambo, 2018, 2019). Table 6.11 shows that the coefficient of the lagged dependent variable for the two-step system GMM is below 1.00 and lies within the range of OLS and FE estimations. This confirms that the two-step SGMM model is consistent and optimal. By and large, therefore, the use of SGMM in this study as the main model to discuss the impact of aid on growth for all the three aid proxies is appropriate. For each model, therefore, the impact of aid on growth is

[51] First, the Arellano and Bond AR (2) test in difference with a null hypothesis of "no second-order autocorrelation" in the residuals should not be rejected. Second, the Sargan and Hansen tests for Over-Identification Restrictions (OIRs) with the null hypothesis that "instruments used are valid" should not be rejected. Third, the Difference-in-Hansen Test (DHT) evaluates the assumption of the exclusion restriction with the null hypothesis of "exogeneity" of the time invariant variables (i.e. time dummies) associated with IV (year, eq (diff)) should not be rejected. Fourth, the Fisher test is employed to examine the joint validity of estimated coefficients associated with system GMM model.

examined after controlling for investment, financial sector development, inflation, trade openness, budget balance, and population growth.

6.3.2 Empirical results on the Granger causality between aid and growth – African MICs

This section presents the results of empirical analysis based on the panel Granger causality test between foreign aid and economic growth in a multivariate setting using investment and consumption as key intermittent variables across the three aid proxies (TA, TDA & NTDA). Given that Granger causality requires a balanced data (Mehembe & Odhiambo, 2019), this study used a strongly balanced annual panel dataset from 26 MICs in Africa over the period 2000-2017. All the four variables are linearised using natural logarithms. The section starts by discussing the descriptive statistics in terms of summary statistics and cross-correlation matrix. It then presents other relevant pre-estimation tests related to panel unit root test and co-integration test. Finally, the main empirical results of the ECM-based multivariate panel Granger causality model are presented.

6.3.2.1 Descriptive statistics

Table 6.12 presents the descriptive/summary statistics for the variables of interest used in the Granger causality test. It displays basic statistics related to the measure of central tendency (mean, minimum, & maximum); dispersion (standard deviation) and measure of normality (skewness, kurtosis & Jarque-Bera tests). As shown in Table 6.12, the summary statistics show lower variations among the four variables among 26 MICs in Africa over the period 2000-2017. As noted above, all the four variables has been linearised using their natural logarithms; hence, the lower variations are expected. The summary statistics on normality tests show that investment and consumption have a negative skewness (long-left tail) while growth (measured in real GDP per capita) and all aid proxies have a positive skewness (long-right tail). Growth and two of the aid proxies (TA & TDA) have a kurtosis of lower or around 3 (i.e. platykurtic). However, NTDA, investment, and consumption have a kurtosis of more than 3 (i.e. leptokurtic), which suggests that

the distribution of the variables has heavier tails than the normal distribution due to outliers. In terms of a joint test for normality-skewness and kurtosis tests (Jarque-Bera test), both the individual-specific and reminder error components are evaluated to show the sources of deviations from the normal distribution. The null hypothesis for Jarque-Bera tests is that the data is normally distributed and it is rejected when the p-value is less than 0.05. The test results for the individual-specific components reveal that all the variables except NTDA seemed to have been normally distributed. On the other hand, test on the error component shows that the variables of interest except growth don't seem to be normally distributed. By and large, the evidence from the error components may suggest a potential presence of outliers in the data (Mahembe & Odhiambo, 2019).

Table 6.12: Summary of descriptive statistics

Variables	**N**	**Mean**	**SD**	**Min**	**Max**	**Skew.**	**Kur.**	**JB[52] Test Pro.**	
								u	e
RGDPC	468	7.912	0.776	6.508	9.780	0.483	2,293	0.196	0.154
TA	468	0.946	0.727	-0.641	3.085	0.680	2.689	0.121	0.000
TDA	468	0.859	0.716	-1.001	3.085	0.836	3.055	0.078	0.038
NTDA	468	0.165	0.332	-0.273	2.235	3.049	14.229	0.031	0.000
INVST	468	3.224	0.379	1.548	4.444	-0.358	4.340	0.579	0.022
GCONS	468	2.747	0.499	-0.049	4.623	-0.824	7.389	0.435	0.015

Note: The abbreviation stands for RGDPC: Real Gross Domestic Product Per Capita; TA: Total aid; TDA: Traditional Donors aid: NTDA: Non-Traditional Donors aid; INVST: Investment; GCONS: Government Consumption; N: Number of observations; Std.: standard deviations; Min.: minimum; Max.: maximum; Skew: skewness; Kur: kurtosis; JB: Jarque-Bera statistics; Pro: probability; u: individual-specific component; e: reminder error component.

Table 6.13 presents the cross-correlation matrix between the four variables considered in the ECM-based multivariate panel Granger causality test. The result shows a negative correlation between real GDP per capita and real net aid for all aid proxies- TA (-0.5243), TDA (-0.5557), and NTDA (-0.0523). There is a positive correlation between all aid proxies and investment as well as consumption. For all aid proxies, a positive correlation is revealed between real GDP per capita, investment, and consumption.

[52] Alejo *et al.* (2015) implemented ***xtsktest*** Stata command to test for normality or the JB tests for skewness and kurtosis. cedlas-wp-178.pdf (econstor.eu). This study used xtsktest to compute the joint test for normality of JB tests.

Table 6.13: Correlation matrix (by aid proxies)

Variables	***Total Aid- TA (both TDA & NTDA)***			
	RGDPC	TA	GCONS	INVST
RGDPC	1.0000			
TA	-0.5243	1.0000		
GCONS	0.1771	0.1467	1.0000	
INVST	0.1089	0.1480	0.1464	1.0000
TDA only				
Variables	RGDPC	TDA	GCONS	INVST
RGDPC	1.0000			
TDA	-0.5557	1.0000		
GCONS	0.1771	0.1188	1.0000	
INVST	0.1089	0.1323	0.1464	1.0000
NTDA only				
Variables	RGDPC	NTDA	GCONS	INVST
RGDPC	1.0000			
NTDA	-0.0523	1.0000		
GCONS	0.1771	0.1240	1.0000	
INVST	0.1089	0.1250	0.1464	1.0000

Note: Abbreviations for the variables are as shown above (Table 6.12).

6.3.2.2 Panel unit root test results

Before undertaking causality tests, the first step involves determining the order of integration of the variables used in the estimation. This is because macroeconomic time series data tends to show a trend over time implying non-stationarity behaviour. In this study, the order of variable integration is checked using three panel unit root tests: Breitung (2000); IPS-Im-Pesaran-Shin (2003); and Hardi (2000) LM Tests. The tests are computed based on three deterministic specifications: with a constant/intercept term only; both with a constant and a time trend; and with no intercept and trend. Table 6.14 presents the results of the three panel unit tests – Breitung, IPS and Hardi. The result is presented both in levels and first differences using two deterministic specifications: only intercept and both intercept and trends.

As shown in Table 6.14, the overall test results show that the variables used in this study are not conclusively stationary in levels while they become stationary in first differences. Thus, it can be concluded that the variables of interest are integrated of order one- I(1).

Table 6.14: Panel unit root test results for African MICs

Variables	Breitung- lambda-sta.		IPS- W-statistics		Hardi- Z- statistics		Breitung- lambda-sta.		IPS- W-statistics		Hardi- Z- statistics	
	Stationarity of all variables in Levels						**Stationarity of all variables in First Difference**					
	Intercept	Intercept & Trend	Intercept	Intercept & Trend	Intercept	Intercept & Trend	Intercept	Intercept & Trend	Intercept	Intercept & Trend	Intercept	Intercept & Trend
RGDPC	-0.6390	0.9790	0.5453	2.8637	22.325***	17.924***	-2.1047**	-1.7514**	-6.937***	-6.589***	6.687***	1.5014*
TA	-1.1648	-1.398*	-0.2713	-0.0692	6.389***	8.450***	-3.352***	-4.414***	-5.341***	-2.851**	-2.3550	-0.4101
TDA	-0.8171	-1.651*	0.1295	0.3343	8.464***	8.389***	-2.585**	-3.458***	-5.583***	-3.610***	-2.3035	-0.5932
NTDA	-1.785**	-0.7325	-4.06***	-0.6121	0.5462	3.431***	-5.953***	-7.541***	-6.122***	-3.557***	-2.9764	-0.7453
INVST	-1.435*	0.9722	-0.9986	0.3559	11.237***	7.373***	-3.108***	-3.946***	-4.83***	-1.963**	-2.2626	0.5615
GCONS	-0.7964	-0.1990	-0.7374	-1.347*	16.172***	11.047***	-3.915***	-3.772***	-5.405***	-3.42***	-0.3909	4.596***

*Note: ***, **, * denote the levels of significance at 1%, 5% and 10% respectively. The test statistics are based the natural logarithms of the variables in levels except for aid proxies, which have some negative values below one, and its log form takes ln(aid proxies + 1). Variable abbreviations are as in Table 6.12. Panel unit test statistics are: Breitung (2000); IPS- Im-Pesaran-Shin (2003); Hardi (2000) LM Tests. A maximum of lag 2 is used for Brietung (2000) and IPS tests, and the Hardi (2000) LM test is done based on Bartlett kernel with Newey West automatic bandwidth selection. These tests are implemented using Stata (version 15) built-in command* ***'xtunitroot'.***

6.3.2.3 Results of panel cointegration test

Given that the variables have shown the same integration order of one or *I(1)*, a potential of cointegration relationship among the variables needs to be investigated before a formal Granger causality test is performed. In this study, the most common residual-based panel cointegration tests proposed by the Pedroni test (1999, 2004), Kao test (1999), and Westerlund (2005) are employed to check whether growth, aid, investment, and consumptions are cointegrated. Table 6.15 presents the cointegration results based on the growth equation, for the three aid proxies- Panel A (TA), Panel B (TDA) and Panel C (NTDA).

By and large, as shown in Table 6.15, all of the tests in Pedroni test statistics and all Westerlund VR statistics rejected the null hypothesis of "no cointegration" for the three aid proxies. Besides, Kao ADF statistics rejected the null hypothesis for all three panels, which implies that the series are cointegrated. Most importantly, both panel and group ADF statistics in Pedroni test (relevant tests for small samples like ours) strongly rejected the null hypothesis in all panels. Based on these results, therefore, it can be concluded that the variables used in this study are cointegrated[53], and it could be possible to go for testing Granger causality in each panel.

[53] The cointegration results are based on the growth equations in all the three aid proxies. A separate cointegration test for the three equations (aid, investment & consumption) was also conducted where the results reveal a strong rejection of the null for the three tests, similar to the growth equation. Thus, we conclude that the four variables used in this study are cointegrated. The results for the other three equations are not reported here.

Table 6.15: Panel cointegration results – African MICs by aid proxies

Test types	Panel A: total aid-TA		Panel B: TD's aid-TDA		Panel C: NTD's aid-NTDA	
Pedroni test for cointegration						
Pedroni cointegration test: 'within-dimension tests' or AR parameter is the same for all panels'						
	Statistics	**p-value**	**Statistics**	**p-value**	**Statistics**	**p-value**
Modified variance ratio	-4.9371	0.0000	-4.6326	0.0000	-5.1653	0.0000
Modified Phillips-Perron t	4.8340	0.0000	4.6879	0.0000	5.5443	0.0000
Phillips-Perron t	2.9272	0.0017	2.7963	0.0026	4.4190	0.0000
Augmented Dickey-Fuller t	4.1179	0.0000	2.8346	0.0023	5.2932	0.0000
Pedroni cointegration test:'between-dimension tests' or AR parameter is panel/group specific'						
	Statistics	**p-value**	**Statistics**	**p-value**	**Statistics**	**p-value**
Modified Phillips-Perron t	5.8621	0.0000	5.6847	0.0000	6.2981	0.0000
Phillips-Perron t	1.9972	0.0229	2.2549	0.0121	3.5726	0.0002
Augmented Dickey-Fuller t	3.4728	0.0003	2.0173	0.0218	4.3986	0.0000
Kao test for cointegration						
	Statistics	**p-value**	**Statistics**	**p-value**	**Statistics**	**p-value**
Augmented Dickey-Fuller t	3.0253	0.0012	3.5940	0.0002	2.6424	0.0041
Westerlund 2005 test for cointegration						
	t-statistics	**P-value**	**t-statistics**	**P-value**	**t-statistics**	**P-value**
Variance ratio: *AR parameter- Same*	2.7241	0.0032	2.3004	0.0107	4.5795	0.0000
Variance ratio: *AR parameter- Panel Specific*	7.5295	0.0000	5.9511	0.0000	11.2145	0.0000
Inference	*Co-integrated*		*Co-integrated*		*Co-integrated*	

*Notes: The null hypothesis is 'no cointegration'; and optimal lag length is selected using AIC. The test statistics are based the natural logarithms of the variables in levels. The three panel cointegration tests (Pedroni, Kao & Westerlund) are implemented using a Stata (Version 15) built-in command –**xtcointtest**.*

6.3.2.4 Results of panel Granger causality test

The results from the three panel cointegration tests revealed that there is evidence of cointegration among the variables of interest: real GDP per capita (i.e. growth), foreign aid, investment and consumption. When the variables are integrated of the same order and cointegrated, a dynamic ECM-based multivariate panel Granger causality model or VECM is preferred to a VAR framework which is appropriate when the variables are stationary but not cointegrated (Mehembe & Odhiambo, 2019). Thus, given that the variables are cointegrated, this section presents the results of the ECM-based multivariate panel Granger causality test in both short-run and long-run for each aid proxies: TA (Panel A), TDA (Panel B) and NTDA (Panel C). Table 6.16 displays the causality results for the three aid proxies.

As shown in Table 6.16, when TA is used as a proxy for aid (Panel A), the evidence shows a unidirectional causality from aid to growth in the short-run, which is confirmed by a statistically significant F-statistics in the growth equation. Besides, the study found a unidirectional causality from growth to aid in the long-run. This result is confirmed by the coefficient of the ECT in the aid equation, which is found to be negative and statistically significant. For Panel B, when TDA is used as a proxy for aid, the study found a unidirectional causality from growth to aid both in the short-run and long run. This result is confirmed by statistically significant F-statistics and the coefficient of the ECT in the aid equation.

For Panel C, when the aid proxy is NTDA, the study found no evidence of short-run causality between aid and growth in neither directions. This is shown by the F-statistics in the corresponding growth and aid equations, which are found to be statistically insignificant. In the long-run, however, there is evidence of unidirectional causality from growth to aid but not the other way round. This is confirmed by the coefficient of the ECT in each equation, which is statistically significant for the aid equation while it is statistically insignificant for the growth equation.

Table 6.16: Granger causality results for all aid proxies[54] (African MICs)

Dep. Var.	Panel A: Total aid-TA					Panel B: TDs' aid-TDA					Panel C: NTDs' aid-NTDA				
	Short-run causality (F-stat.)				**ECT-1 [t-stat.]**	**Short-run causality (F-stat.)**				**ECT-1 [t-stat.]**	**Short-run causality (F-stat.)**				**ECT-1 [t-stat.]**
	ΔGDP	**ΔAID**	**ΔINT**	**ΔCON**		**ΔGDP**	**ΔAID**	**ΔINT**	**ΔCON**		**ΔGDP**	**ΔAID**	**ΔINT**	**ΔCON**	
ΔGDP	-	3.386** [0.003]	1.388 [0.220]	1.201 [0.306]	-0.0001 [-0.062]	-	1.602 [0.136]	1.135 [0.342]	2.528** [0.016]	0.002 [1.376]	-	1.717 [0.146]	1.396 [0.235]	2.711** [0.030]	0.002 [1.992]
ΔAID	1.622 [0.141]	-	1.986* [0.068]	4.345*** [0.000]	- 0.127*** [-5.174]	4.178*** [0.000]	-	1.514 [0.163]	3.753** [0.001]	- 0.124*** [0.000]	0.727 [0.574]	-	1.649 [0.162]	3.192** [0.014]	- 0.649*** [-6.446]
ΔINT	7.615*** [0.000]	1.878* [0.085]	-	5.571*** [0.000]	-0.023 [-1.331]	5.929*** [0.000]	2.998** [0.005]	-	4.633*** [0.000]	-0.001 [-0.127]	6.609*** [0.000]	1.810 [0.127]	-	2.147* [0.075]	-0.046** [-2.324]
ΔCON	23.876*** [0.000]	2.827** [0.011]	3.502** [0.002]	-	-0.038 [-1.244]	12.772*** [0.000]	3.46** [0.002]	4.972*** [0.000]	-	-0.012 [-0.613]	23.504*** [0.000]	2.774** [0.027]	4.251** [0.002]	-	-0.001* [-1.765]

*Note: ***, **, and * stand for 1%, 5% and 10% levels of significance, respectively. F statistics and p-values are in brackets for the short-run. ECT coefficients and t-statistics are in brackets for the long-run. Lag length selection is based on minimum AIC subject to the removal residual serial/autocorrelation. Variables definition is as in Table 6.12. The estimation is done using Eviews 12.*

[54] The study has also checked the robustness of the results using a pairwise Granger Causality Test. It was noted that the results are robust to this alternative approach. The results are not reported here.

Furthermore, as depicted in Table 6.16, other results for the intermittent variables provide interesting insights. For Panel A, we found evidence of *(i)* a bidirectional causality between aid and investment, aid, and consumption, as well as between investment and consumption in the short-run; *(ii)* a long-run unidirectional causality from investment and consumption to aid; *(iii)* a unidirectional causality from growth to both investment and consumption in the short-run; and *(iv)* no significant long-run causality has been prevailed when the dependent variables are growth, investment, and consumption. For Panel B, there is evidence of *(i)* a bidirectional causality between growth and consumption, aid and consumption, and investment and consumption in the short-run; (i) a unidirectional causality from growth to both investment and consumption, and from aid to investment in the short-run; *(ii)* a unidirectional causality from growth and consumption to aid in the long-run; and *(iii)* no significant long-run causality has been prevailed when the dependent variables are growth, investment, and consumption. For Panel C, there is evidence of *(i)* a bidirectional causality between growth and consumption, aid and consumption, as well as investment and consumption in short-run; (ii) a unidirectional causality from growth to investment in the short-run; *(iii)* a bidirectional causality between aid, investment, and consumption in the long-run; *(iv)* a long-run unidirectional causality from independent variables to the dependent variables – aid, investment, and consumption; and *(v)* no significant long-run causality from the independent variables to growth (i.e. growth equation).

6.4 Summary and Discussion of Empirical Findings

The purpose of this section is to provide a summary of the discussion on the main empirical findings discussed in the previous sections and how the findings are compared or contrasted with previous studies. It focuses on the findings of the main variables of interest (i.e. the aid-growth nexus by aid proxies) regarding the impact of aid on growth and their causality. The discussion is organized into two sub-sections. The first sub-section (6.4.1) summarises the main findings of the system GMM estimations on the impact of aid on growth by country income groups in Africa – LICs and MICs. The second sub-section (6.4.2) presents the summary and discussion of the main findings of the ECM-based multivariate panel Granger causality estimations on the causality between aid and growth by income groups – LICs and MICs.

6.4.1 Main findings from SGMM estimations on the impact of aid on growth by country income groups in Africa (LICs & MICs)

As shown in Table 6.3 (for LICs) and Table 6.11 (for MICs), the system GMM estimation is found to be consistent compared to the OLS and FE estimations. This is because real GDP per capita associated with system GMM has shown a high degree of persistence, which is supported by a positive and statistically significant coefficient of the lagged real GDP per capita. This result is observed across all the three aid proxies and income groups, and this confirms that the empirical findings for system GMM are optimal. The main findings are summarised as follows.

First, the overall finding shows that the impact of aid on growth in Africa depends on the different aid proxies used to measure aid flows and country income groups considered. The finding of this study is consistent with recent studies that have found a differing impact of aid on growth across income groups in Africa (Ekanayake & Chatrna, 2010; Alemu & Lee, 2015) and developing countries (Rahnama *et al.,* 2017).

Second, foreign aid doesn't seem to have been supportive of growth among LICs in Africa regardless of the different aid proxies used in this study. This study found that the impact of aid on growth in LICs is a significant negative for TA and TDA proxies while it is positive but insignificant for NTDA proxy. This result contrasts with the underlying theory of the "financing-gap" model that has been promoting aid as an instrument for growth in developing countries (Chenery & Strout, 1966; Bacha, 1990). It also contrasts with the findings of a recent study by Alemu and Lee (2015) that found a positive impact of aid on growth among LICs in Africa. However, the finding of the current study goes in line with the strand of recent literature on aid-ineffectiveness theses which argue that aid has not been supportive of growth in developing countries mostly in Africa (Boone, 1996; Rajan & Subramanian, 2008; Arawomo *et al*., 2015; Adedokun & Folawewo, 2017; Rahnama *et al.,* 2017; Dreher & Langlotz, 2017; Phiri, 2017; Arawomo *et al*., 2015; Liaqat *et al*., 2019; Yahyaoui & Bouchoucha, 2019). Besides, the positive but insignificant impacts of NTDA on growth when NTDA is consistent with the recent studies that have found null or zero impact of aid on growth in Africa (Dreher & Langlotz, 2017; Phiri,

2017). According to the aid-ineffectiveness theses, the main hindering factors to aid effectiveness are corruption, misallocation, and inefficient institutions in aid recipient countries.

Third, in MICs, the impact of the different aid proxies on growth is found to be mixed and contradictory. The study found that the impact of aid on growth in MICs is significantly positive for TDA while it is significantly negative for NTDA. Based on this result, it can be concluded that TDA flows have been instrumental in supporting growth among MICs in Africa while NTDA doesn't prove to be effective in supporting growth in these countries. This means that the result for TDA contrasts the result for NTDA which goes in line with the aid-ineffectiveness these discussed above for LICs. The result for TDA is consistent with the proposition of the "financing-gap" model (Chenery & Strout, 1966; Bacha, 1990) and empirical literature on aid effectiveness theses which have found a significant positive impact of aid on growth (Clemens *et al*., 2012; Jones, 2013; Juselius *et al*., 2013; Jena & Sethi, 2019, 2020). This strand of literature (both the theoretical and empirical) has been used as the main rationale to justify the growth-enhancing role of aid and advocating increasing aid flows to poor countries since the 1960s. On the other hand, the result for NTDA contrasts with the theoretical proposition of the "financing-gap" model but supports the findings of a strand of empirical literature[55] on aid- ineffectiveness theses discussed above for LICs.

Fourth, aid sources do matter for explaining the magnitude and sign of the impact of aid on growth across income groups in Africa. The main result shows that the magnitude and sign of the impact of aid on growth among income groups in Africa differ when the different sources or proxies of aid are considered. The findings of conflicting results in terms of magnitude and sign could be strongly linked to whether a larger share of each aid proxy goes to finance the direct growth-enhancing productive sectors or the non-productive sectors. In theory, a positive impact of aid on growth manifests when a larger share of aid is allocated to the growth enhancing productive sectors while a negative impact prevails when such aid goes to the unproductive sectors. In this regard, the findings of a descriptive analysis presented in Chapter 2 for LICs (see Table 2.5) and Chapter 3 for MICs (see Table 3.4) on sectoral aid compositions could provide some insights to explain the empirical results. It was shown that a significant negative impact of aid on growth for TA and

[55] Comparing the finding of this study with these recent studies should be taken carefully because most past studies have examined the impacts of TDA on growth but none of them exclusively discussed the impacts of NTDA on growth.

TDA in LICs could have been associated with the shift of a large share of TDA away from the productive sectors toward non-productive sectors such as humanitarian aid and debt relief. On the other hand, a significant positive impact of TDA on growth in MICs could have been associated with the allocation of more share of aid to the productive sectors. Although the result is statistically insignificant, a positive aid-growth nexus for TA in MICs and NTDA in LICs occurred because a larger share of such aid was used to finance the productive sectors.

Fifth, another interesting finding of this study is that the impact of NTDA on growth has been more pronounced in MICs compared to LICs. The study found that the impact of NTDA on growth is significant negative in MICs while it is insignificant positive in LICs.

6.4.2 Main findings from ECM-based multivariate Granger causality analysis by income groups in Africa (LICs vs MICs)

Based on a dynamic ECM-based multivariate panel Granger causality analysis, this section summarises the main empirical findings for the main variables of interest (aid & growth). The overall finding reveals that the magnitude and direction of the aid-growth causal relationship depends on the different aid proxies (TA, TDA & NTDA), time horizons (short-run & long-run), and country income groups (LICs & MICs). The main results are summarised below.

First, in the short-run, the study found bidirectional causality between aid and growth for TA and TDA proxies in LICs. These results of a short-run feedback or two-way causality between aid and growth are consistent with the findings of recent literature (Pan *et al*., 2018; Lof *et al*., 2015; Gounder, 2003; Das & Sethi, 2019). For MICs, the study found a conflicting short-run causal relationship between aid and growth. There is evidence of a unidirectional causality from aid to growth for TA and from growth to aid for TDA. This result goes in line with recent literature which found a short-run unidirectional causality from aid to growth (Jones, 2013; Pradhan & Arvin, 2015; Jena & Sethi, 2019), and from growth to aid (Mahembe & Odhiambo, 2019).

Second, in the long-run, there is evidence of (i) unidirectional causality from growth to aid for TA and NTDA proxies in LICs, and all aid proxies in MICs; and (ii) no evidence of long-run causality in neither directions for TDA in LICs. The results of a long-run unidirectional from growth to aid

go in line with the findings of Amin and Murshed (2017) and Mahembe and Odhiambo (2019). On the other hand, this result contrasts with the finding of Pradhan and Arvin (2015) who found evidence of long-run bidirectional causality between aid and growth.

Third, the significant joint causal effect growth and the two intermittent variables (investment and consumption) to aid in the three aid proxies confirm that foreign aid allocations have been a targeted growth in Africa. As highlighted in Section 2.2.6 of Chapter 2, the principle of aid allocations has shifted towards poverty reduction in developing countries following the launch of the MDGs in 2000. In this regard, the findings of this study may suggest that economic growth has been a key variable in the aid allocation decisions even in the 2000s despite the shift of focus towards poverty reduction. Thus, the role of aid for promoting growth among MICs cannot be ignored.

6.5 Conclusion

This chapter empirically investigated the main research objective of the study regarding whether the different sources/proxies of foreign aid (TA, TDA, & NTDA) matter for explaining the impact of aid on growth and their causal relationship. More specifically, it conducted an empirical examination of whether (i) aid sources (i.e. TA, TDA, & NTDA) matter in explaining the impact of aid on growth among LICs in Africa, (ii) aid sources (i.e. TA, TDA, & NTDA) matter in explaining the impact of aid on growth among MICs in Africa, (iii) aid sources (i.e. TA, TDA, & NTDA) matter in explaining the causal relationship between aid and growth among LICs in Africa, and (iv) aid sources (i.e. TA, TDA, & NTDA) matter in explaining the causal relationship between aid and growth among MICs in Africa. In the light of the persistent nature of the dependent variable (real GDP per capita) and the problem of endogeneity, the study adopted a dynamic panel data model to address the main research objectives outlined above. The impact of the different aid proxies on growth was examined using a dynamic system GMM estimation technique. The causal nexus between the aid proxies and growth was assessed using a dynamic ECM-based multivariate panel Granger causality framework. The study also conducted the appropriate diagnostic checks for the validity of a system GMM estimations.

The main findings of the study are summarised as follows. First, the main finding reveals that the impact of aid on growth in Africa depends on the different aid proxies used to measure aid flows. Second, the impact of the different aid proxies on growth also differs across country income groups. The study found that TDA has a positive impact on growth in MICs, and a negative impact on growth in LICs. TA has a negative impact on growth in LICs, and null or zero (insignificant positive) impact on growth in MICs. For NTDA proxy, the impact of aid on growth has been negative in MICs and zero (insignificant positive) in LICs. Third, the impact of NTDA on growth has been found to be more pronounced in MICs compared to LICs.

Fourth, the main finding from the ECM-based multivariate panel Granger causality analysis exhibits variations across the aid proxies, time horizons, and country income groups. In the short-run, the study found a bidirectional causality between aid and growth for TA and TDA proxies in LICs. In MICs, a unidirectional causality has been prevailed from aid to growth for TA and from growth to aid for TDA. In the long-run, the results show evidence of unidirectional causality from growth to aid regardless of the aid proxies in MICs, and for two aid proxies (TA & NTDA) in LICs. However, contrary to expectations of this study, no evidence of causality between aid and growth has been found to prevail in neither directions in the short-run for NTDA and long-run for TDA in LICs.

CHAPTER 7 : CONCLUSION AND POLICY IMPLICATIONS

7.1 Introduction

The previous chapter presented a discussion of the empirical findings of this study using two econometric model estimations to examine the impact of aid on growth and their causal relationship among country income groups (LICs & MICs) in Africa. This final chapter presents the conclusion to the study, policy implications based on the main empirical findings of the study, and suggestion of areas for further research. This chapter is organised into 5 sections including the introduction. Section 7.2 briefly summarises the study. Section 7.3 provides a summary and discussion of the main empirical findings. Section 7.4 presents the conclusions and policy implications of the study. Finally, Section 7.5 presents the limitation of the study and suggestion of areas for further research.

7.2 Summary of the Study

Chapter 2 presented the conceptual framework of the study through exploring and documenting the main issues which emerged in the history of foreign aid to formulate a common language for discussing aid flows to recipient countries and group of bilateral donors (TDs & NTDs). The main focus of this chapter was to provide the overall conceptual background for the study. In doing so, the chapter started by explaining the origin and definition of the concept of foreign aid, the common aid modalities, instruments, delivery channels, and the unique features of aid in the contexts of poor countries. It then presented a brief discussion on the evolving global aid landscape and associated aid doctrines with a focus on the rapidly changing global aid landscape since the turn of the 21st century. After presenting the background to the concepts of aid, it goes on to provide an extensive descriptive discussion on the dynamics of foreign aid among LICs in Africa within the contexts of the current changing global aid landscape since 2000. Moreover, it explored the trends in foreign aid and economic growth and associated co-movements between them in LICs during 2000 - 2017.

The main finding from the conceptual discussions in chapter 2 is that the global aid landscape, which was established and administered by the DAC donors or Traditional Donors (TDs) since the 1960s, has been evolving over time with having the most dynamic transformation at the beginning of the 21st century. This dynamic change was caused predominantly by the emergence of new donors or Non-Traditional Donors (NTDs) with diverse approaches for aid delivery and increasing partnership with existing TDs. Among others, the new aid landscape since 2000 has been characterised by major features such as that (i) the goal of foreign aid has been converged both for TDs and NTDs, (ii) there is increasing recognition of the role of new donors (NTDs) as global aid providers and there is high interest to integrate them into the existing aid landscape, and (iii) there is substantial development cooperation among all donors for joint effort to mobilise more aid resources. It was found that the MDGs and the SDGs established in 2000 and 2015 respectively have been a universally accepted vision that guided global development partnership in the 2000s. The main focus was to increase aid flows that are predictable and sustainable to enhance socio-economic and human development so as to reverse the rising marginalisation of the poor. Despite the broader approach on development in the 2000s, economic growth has been identified as a key focus area, and promoting economic growth in developing countries remains to be the underlying yardstick to evaluate aid effectiveness.

On the basis of the descriptive analysis on the trends in aid and growth among LICs in Africa during 2000-2017, the main findings are summarised as follows. *First,* total net aid disbursements to LICs increased significantly by two-fold (2.3 times): from $7.4 billion in 2000 to $16.7 billion in 2017, representing a 126 percent increase. In real terms, total net aid to LICs increased by $9.3 billion between 2000 and 2017. The same increasing trend is observed when aid is evaluated by the main aid sources: traditional aid (TDA) and non-traditional aid (NTDA). TDA contributed a lion's share (94 percent) of total net aid (TA) disbursed to LICs, while NTDA contributed about 6 percent. Although the contribution of NTDA is marginal compared to that of TDA, a relative importance of NTDs has shown a modest rising trend over time since 2000. During 2000 and 2017, the share of NTDA to total aid (TA) flows to LICs increased by 5.5 percent while the share of TDA increased only by 0.4 percent during the same period.

Second, LICs consumed the lion's share (55 percent) of total aid (TA) disbursed to Africa from all donors (both TDs & NTDs) during 2000–2017, with substantial variations by aid sources. Out of

the total aid (TA) disbursed to Africa during 2000-2017, LICs received a relatively larger share (57.7 percent) of TDA consistent with the aid convention, while it received a relatively lower share (30 percent) of NTDA, which is inconsistent with the aid convention.

Third, the average aid dependency (measured in real net aid as a share of real GDP) in LICs increased from 5.98 percent in 2000 to 9.27 percent in 2017. On average, total aid (TA) contributed to about 7.4 percent of GDP, which is 2.5 higher than the average for Africa (5 percent) during 2000–2017. Out of 27 LICs, total aid contributed over 5 percent of GDP in 16 countries with the ratio exceeded 10 percent in 5 countries (Somalia, Mozambique, South Sudan, Liberia, and Malawi). Besides, average aid flows to LICs exhibited instability or fluctuation. Indeed, this may pose some concern on the predictability of aid disbursement underscored in the aid convention.

Fourth, consistent with the theory, grants constituted a lion's share (94.5 percent) of the total aid (TA) disbursed to LICs during 2000-2017, while loans had a smaller share of 5.5 percent. *Fifth*, regarding sectoral aid allocations, a larger share of TDA went to the social sector (41.6 percent), while the two direct growth-enhancing sectors such as the economic sector (8.1 percent) and productive sector (7.5 percent) have received a lower share of aid than the unproductive sectors such as humanitarian support (13 percent) and debt relief (12 percent). On the other hand, about 49.1 percent of NTDA commitment went to the economic sector, followed by the social sector (36.6 percent) and productive sector (11.6 percent). Sectoral aid allocations for TA and TDA seem to have been inconsistent with the aid convention stipulated in the "financing-gap" models (Chenery and Strout, 1966; Bacha, 1990), while NTDAs' sectoral aid allocations tend to be consistent with the aid convention.

Sixth, economic growth dynamics in LICs revealed that average real GDP per capita has shown a modest increase of 145 USD during 2000-2017, from 550 USD in 2000 to 704 USD in 2017. However, LIC's average (615 USD) remained 3.5 times lower than the average for Africa (2162 USD). During the same period, LICs had an average growth rate (measured in real GDP per capita growth rate) of 1.6 percent which indicates a poor growth performance. Almost half of the LICs (13 countries) registered an average growth rate lower than 1.6 percent, with eight of them having a negative average growth rate. Besides, the average growth rates manifested swings or fluctuations at several times during 2000-2017.

Finally, the trends in aid and growth revealed inconclusive movements with the growth rate showing more swings than the three aid ratios (TA, TDA, and NTDA). By and large, the overall average for LICs showed that the two variables were moving in opposite directions for a relatively higher number of times/years at different points during 2000-2017. Moreover, average aid ratios (net aid as a share of real GDP) for TA and TDA were consistently higher than average growth during 2000-2017, while average NTDA was lower than the average growth rate for the majority of times during 2000-2017. Despite relatively higher average TA and TDA flow to LICs, the lower average growth performances in LICs remain challenging. Indeed, how the two variables are related is an empirical exercise that was examined in Chapter 6 Section 6.2.1.

Chapter 3 extensively discussed the dynamics of aid and growth among Middle-Income Countries (MICs) in Africa during 2000-2017. As a background to the study, this chapter started by briefly reviewing the underlying theoretical arguments about the role of aid in MICs and the transitions of aid recipient countries from LIC status to MIC status in Africa during 2000-2017. From this discussion, the main result showed that 15 countries have transitioned into MIC status in Africa over the last 18 years (2000-2017). As of 2017, there were 26 (excluding South Africa) MICs in Africa. Therefore, this chapter has covered these 26 countries to explore the dynamics between aid and growth among African MICs during 2000-2017. Similar to LICs case, the discussion for MICs was framed within the contexts of the current changing global aid landscape since 2000 which has been influenced by TDs and NTDs. This chapter focused on bilateral aid and provided some trend analysis and stylised facts in terms of net aid disbursements; main sources of aid; donors' focus/target; aid compositions and aid dependency. Moreover, the chapter discussed the dynamics of economic growth in MICs. It also assessed the trends in the movement between aid and growth among African MICs during 2000-2017.

On the basis of the descriptive analysis on the trends in aid and growth in MICs, the following conclusions are made. *First*, total net aid (TA) disbursements increased by 1.4 times: from $6.4 billion in 2000 to $9 billion in 2017, representing a 40.6 percent increase. In real terms, total net aid to MICs increased by $2.6 billion between 2000 and 2017. On average, out of the total net aid (TA) disbursed to Africa during 2000-2017, 45.2 percent of it went to MICs. Among other things, this may imply that transitions to MIC status were not necessarily accompanied by a fall in the volume of aid flows to MICs in Africa. Besides, the same increasing trend is observed when aid is

evaluated by main aid sources with TDA contributing the lion's share (83.7 percent) of total aid disbursed to MICs while NTDA contributing about 16.3 percent. Perhaps, although the contribution of NTDA is marginal compared to TDA, this may suggest that a relative importance of NTDA has shown a modest rising trend over time since 2000. For instance, the contribution of NTDA to total aid in MICs reached around one-third or 30 percent between 2013 and 2015 with its share was close to 40 percent in 2014.

Second, the patterns of aid distributions in MICs reveal inconsistencies or variations when aid is evaluated by sources (TDs and NTDs). Between 2000 and 2017, out of the total net aid disbursed to Africa from each donor, MICs received the lion's share (70 percent) of aid from NTDs, while it received a relatively lower share (42 percent) of aid from TDs. This implies that donors' focus differs across income countries in Africa where TDs gave more aid to LICs while NTDs gave more aid to MICs. *Third*, despite the share of grant dominated total aid disbursed to MICs, MICs received over three-fourth (79.6 percent) of total gross loans committed to Africa compared to less than half of the grant share (43.6 percent). This suggests that transition to MIC status seemed to have expanded more shares of loans in MICs.

Fourth, sectoral aid distributions in MICs revealed some variations by aid sources during 2000-2017. Out of total sectoral aid (TA) commitments to MICs, the social sector received a relatively higher average share (43.8 percent), followed by the economic sector (17.9 percent), debt relief (15.3 percent), humanitarian aid (8 percent), and the productive sector (6.9 percent). For TDA, out of the total TDA committed to MICs, the social sector received a relatively larger average share (40.2 percent), followed by debt relief (16.6 percent), economic sector (14.9 percent), humanitarian support (9.1 percent), and productive sector (6.8 percent). On the contrary, out of total NTDA commitments to MICs, nearly half (50.3 percent) of it targeted the economic sector followed by the social sector (21.6 percent), the productive sector (7.3 percent), commodity aid (6.7 percent), and humanitarian assistance (1 percent).

Fifth, in spite of the rising trends in net aid disbursements in absolute terms, the transition to MIC seemed to have contributed to a falling dependency on aid over the course of the study. Aid dependency (measured by real net aid as a share of real GDP) in MICs decreased by two-fold: from 2.73 percent in 2000 to 1.36 percent in 2017, representing about 50 percent fall. On average, total aid (TA) contributed to about 2.5 percent of GDP, which is twice less than the average for

Africa (5 percent) during 2000–2017. The results also revealed that aid dependency has shown a similar falling trends by aid sources (TDA and NTDA) but with some variations between them.

Sixth, economic growth showed good performance in the early 2000s or during the first decade (2000-2010) with an average growth rate of 3.12 percent, while it tends to perform poorly during the second decade (2011-2017) with an average growth rate of 1.74 percent. The recent sharp fall in growth rate since 2012 remains a challenge for MICs.

Finally, regarding the trends in aid and growth, the overall result shows that the movements between the two variables lacked a definite or consistent pattern. Besides, the trend in aid and growth movements revealed some variations between aid sources - TA, TDA, and NTDA. On the basis of comparing the dynamics between aid and growth for 16 years (2002-2017), the result showed that the two variables seemed to have experienced co-movements for relatively most of the times for TA (10 years) and TDA (12 years). In the case of NTDA, the two variables showed both co-movements and inconsistent/opposite paths for an equally eight years. Nonetheless, which pattern strongly influences the dynamics between aid and growth remains an empirical exercise which was examined in Chapter 6, Section 6.3.1

Chapter 4 presented a critical review of the theoretical and empirical literature on the ongoing debate on the aid-growth nexus and aid effectiveness in developing countries. While the theoretical relationship between foreign aid and economic growth is linked to the linear growth models (Rostow and Harrod-Domar growth theories), the "financing-gap" models are the dominant theoretical model for explaining the aid-growth nexus in development countries since the 1960s. The financing gap models (Two-Gap model & Three-Gap model) have argued that aid is a key resource to fill the critical resource-gaps and support growth in developing countries. According to these gap models, the main transmission channels through which aid positively affects growth in recipient countries are investment, public productive consumption expenditure, and imports. This line of argument has been used as a rationale by the international aid communities to justify their advocacy for increasing aid flows to developing countries since the 1960s.

Based on the reviewed literature in this chapter, the main finding is that the theoretical debate on the aid-growth nexus and aid effectiveness remains mixed and inconclusive. This has induced severe challenges and critics to the main assumption of the linear growth models/theories and the financing gap models that the necessary structural, institutional, and attitudinal conditions that

enabled aid to support growth in Europe also exist in developing countries. The growth theories and the financing gap models have been criticised that they failed to provide a compelling economic theory to correctly specify how aid spurs growth in developing countries, and provide a consistent theoretical basis/approach for empirical estimation of the aid-growth regression.

Chapter 4 also discussed that the lack of conclusive theoretical and empirical evidence on the aid-growth link leads to emergence of two main lines of debate on aid effectiveness. The first line of this debate states that aid is effective for supporting growth in developing countries, which is advocated by aid proponents (i.e. aid effectiveness theses). The aid effectiveness argument has been supported by the majority of empirical literature which found a positive impact of aid on growth in developing countries. On the contrary, the second line of debate comes from aid opponents who argue that aid has not been effective to support growth in developing countries (i.e. aid ineffectiveness theses). Although few, very influential empirical studies have found evidence in support of aid ineffectiveness theses where the impact of aid on growth is either negative or null. By and large, the overall findings from Chapter 4 imply that the aid-growth nexus and aid effectiveness issues remain unsettled, and the debate continues. Thus, further empirical research is inevitable to examine these debates on aid effectiveness, taking note of the main methodological issues as well as aid sources (TDs & NTDs) and country contexts.

Chapter 5 has extensively discussed the underlying theoretical and empirical model specifications and associated econometric estimation strategies employed in this study. The chapter is divided into five sections, and the applications of two main econometric estimation techniques have been explained in details. The SGMM estimation method is adopted to investigate the impact of the different aid sources or proxies on growth, while a multivariate panel VECM or ECM-based Granger causality framework is employed to examine the direction of causality between the two variables. For the impact model based on SGMM, economic growth is regressed on aid (AID-the main explanatory variable) and other control variables such as investment (INV), government consumption (CON), inflation (INF), budget balance (BBL), trade openness (TOP), money supply (M2), and labour force growth (POPG-population growth). For the second model, the study adopts the ECM-based multivariate panel Granger causality test to examine the causal relationship between aid and growth in the presence of the two key intermittent variables (investment & consumption) in a multivariate setting. In line with the objectives of the study, the SGMM and

ECM-based Granger causality model estimations are done separately for each aid proxy: total aid (TA), aid from traditional donors (TDA), and aid from non-traditional donors (NTDA).

The main reasons why this study preferred the SGMM estimation approach include the following. First, it works well for a dynamic panel model with highly persistent series such as growth which is a case in this study as shown by a positive and strongly significant coefficient of lagged dependent variable (growth). Second, it works relatively better to address the problem of aid endogeneity by controlling for simultaneity bias or reverse causality in the aid-growth regression. Third, it is suitable for a dataset with larger N than T (i.e. N>T), which is the case in this study with N (25) and T (18) for LICs and N (26) and T (18) for MICs. Fourth, a two-step system GMM exploits the finite sample correction techniques proposed by Windmeijer (2005), which makes the two-step GMM estimator superior to the one-step GMM estimator in the presence of autocorrelation and heteroscedasticity. Fifth, it controls unobserved cross-country factors, cross-country dependence, measurement error, and works better for a dynamic multivariate panel data analysis. Sixth, xtabond2 offers the opportunities to exploit all available methods (such as collapse & lag limit) to tackle the problem of instrument proliferation and restricts over-identification. Seventh, it avoids the difficulty of finding valid external instrumental variables by relying on internal instrumentation strategy.

The choice of the ECM-based/VECM Granger causality framework is motivated by the following reasons: (i) the variables of interest are integrated of the same order and co-integrated, (ii) this approach allows for identifying the causal relationship both in the short-run and long-run, and (iii) it is better suited for multivariate causality analysis and helps examine the aid-growth causal nexus in the presence of key intermittent (investment & consumption) variables.

7.3 Summary and Discussion of the Main Empirical Findings

The main objectives of this study are to investigate whether aid sources do matter in explaining the impact of aid on growth and its causal nexus in Africa during 2000-2017. The impact of the different aid sources on growth is examined using SGMM, while the causality between them is assessed based on the ECM-based multivariate Granger causality framework. This sub-section presents a brief summary and discussion of the main empirical findings from the two model estimations in relation to the two objectives of the study.

The main results from SGMM estimations on the impact of aid on growth, presented in the previous chapter, are summarised as follows:

- The main finding of the study shows that the impact of aid on growth in Africa depends on the different aid proxies used to measure aid flows (TA, TDA, & NTDA). The results also appear to vary across country income groups in Africa (LICs & MICs).
- When the aid proxy is traditional aid (TDA), the study found evidence of a positive impact of TDA on growth in MICs implying that TDA has been effective and instrumental in boosting growth among African MICs. This result is consistent with the underlying theoretical preposition of the "financing-gap" model (Chenery & Strout, 1966; Bacha, 1990) and empirical literature on aid effectiveness, which has argued that aid has been effective for growth (Ekanayake & Chatrna, 2010; Clemens *et al*., 2012; Jones, 2013; Juselius *et al*., 2013; Jena & Sethi, 2019). In essence, this strand of literature (both theoretical and empirical) has been used as the main rationale to justify the growth-enhancing role of aid and advocating for increasing aid flows to poor countries since the 1960s. However, contrary to the expectations of this study, TDA failed to support growth among LICs in Africa. Presumably, as highlighted in the descriptive findings in Chapter 2 (See Table 2.5), the shift of more share of such aid (TDA) away from the productive sectors towards non-productive sectors such as humanitarian and debt relief may explain part of the reason why the study found a negative impact of TDA on growth in LICs. This result contrasts with the underlying theoretical preposition of the "financing-gap" model (Chenery & Strout, 1966; Bacha, 1990) and the aid-effectiveness literature mentioned above. On the other hand, the result of this study could be seen as supportive evidence of

the aid-ineffectiveness literature which has found that the impact of aid on growth has been either negative (Rahnama *et al*., 2017; Arawomo *et al*., 2015; Liaqat *et al*., 2019; Yahyaoui & Bouchoucha, 2019) or zero/null (Boone, 1996; Adedokun & Folawewo, 2017; Dreher & Langlotz, 2017; Phiri, 2017). Phiri (2017) concluded that aid ineffectiveness in SSA may suggest that aid flows into these countries were either misallocated or insufficiently used. Boone (1996) also noted that aid doesn't support growth because aid has been used to finance unproductive consumption rather than investment.

- When the aid proxy is total aid (TA), the impact of TA on growth has not been favourable (i.e. negative or null) irrespective of the country income groups in Africa: whether aid recipients are from LICs or MICs. The study found that the impact of TA on growth has been negative in LICs and zero/null (insignificant positive) in MICs. Despite the variations in the sign of its impact, TA doesn't seem to be effective to support growth in both LICs and MICs in Africa. These results are consistent with the strand of literature on aid-ineffectiveness view discussed above (TDA case for LICs).
- When the aid proxy is non-traditional aid (NTDA), similar to the result for TA proxy, the impact of NTDA on growth has been ineffective for supporting growth irrespective of the country income groups considered. It corresponds to the aid-ineffectiveness view, which argues that aid has not been effective for growth. It can be seen from this result that the impact of NTDA on growth seems to have been more pronounced in MICs (significant negative) than LICs (null- insignificant positive) in Africa.

The empirical results from the ECM-based multivariate panel Granger causality analysis, which examined the direction of causality between aid and growth (with investment and consumption as intermittent variables), reveal that the aid-growth causal relationship depends on the aid proxies used to measure aid flows (TA, TDA & NTDA), time horizon considered, as well as across country income groups in Africa (LICs & MICs).

- For total aid (TA) proxy, the results show evidence of short-run bidirectional causality between TA and growth in LICs, and a unidirectional causality from TA to growth in MICs. The results for LICs support the feedback effect or two-way causations between the two variables. This result is consistent with the finding of the recent literature (Pan *et al*., 2018; Lof *et al*., 2015; Gounder, 2003; Das & Sethi, 2019). The result of causality from aid to

growth in MICs goes in line with the recent literature, which found evidence of aid-led growth view in the short-run (Jones, 2013; Pradhan & Arvin, 2015; Jena & Sethi, 2019, 2020; Sethi *et al*., 2019; Forson *et al*., 2015; Amin, 2017). In the long-run, the study found evidence of unidirectional causality from growth to aid irrespective of the country income groups (i.e. LICs or MICs). This result is consistent with the finding of Amin and Murshed (2017), as well as that of Mahembe and Odhiambo (2019). However, it contrasts with the finding of Pradhan and Arvin (2015), who found evidence of bidirectional causality between aid and growth in the long-run.

- For traditional aid (TDA) proxy, as in the case of the causal relationship between TA and growth in LICs, the study found similar evidence of a short-run bidirectional causality between TDA and growth in LICs. For MICs, the study found a short-run unidirectional causality from growth to TDA. This result is consistent with the finding of Mahembe and Odhiambo (2019). The result of causality in the long-run reveals evidence of unidirectional causality from growth to aid in MICs, which is similar to the findings for TA proxy in MICs discussed above. However, contrary to the expectations of this study, no evidence of causality between TDA and growth has been prevailed in neither directions in the long-run in LICs. This result corresponds with the findings of Tekin (2012) and Das and Sethi (2019).
- For non-traditional aid (NTDA) proxy, the study found an evidence of no causal relationship between NTDA and growth in neither directions in the short-run regardless of country income groups. This result contrasts with findings of the recent literature discussed above in the case of TA and TDA proxies. However, this result can be compared with the findings of Tekin (2012) and Das and Sethi (2019). In the long-run, the result shows an evidence of unidirectional causality from growth to NTDA irrespective of country income groups. This long-run result is consistent with the previous studies mentioned in the case of TA proxy above.
- Broadly speaking, the dominant causal flow tends to be bidirectional causality in the short-run in LICs, and unidirectional causality from growth to aid in the long-run in both LICs and MICs.

The finding of this study reveals that economic growth measured in real GDP per capita (i.e. dependent variable) is persistent, which confirms that a dynamic panel model specification is

optimal and estimation results are valid. This finding is consistent with Bond *et al.* (2001). This finding may imply that any study on the aid-growth nexus should take appropriate caution to properly account for the persistent nature of real GDP per capita in the econometric model specification.

7.4 Conclusions and Policy Implications

In line with the findings of the study, the following conclusions and policy implications/recommendations are presented.

The main finding of this study is that the impact of foreign aid on economic growth in Africa depends on the aid proxies used to measure aid flows: whether aid comes from Traditional Donors (TDA) or Non-Traditional Donors (NTDA) or a combination of both (TA). The results also show that the impact of aid on growth tends to vary across country income groups in Africa: whether aid recipients are from LICs or MICs. The result showed that TDA has been very effective and instrumental for supporting growth among MICs in Africa. This implies that TDA (aid flows from TDs) continues to play a critical role in stimulating growth in MICs despite that the international aid community and donors have shown major shift of focus for aid allocations towards poverty reductions since 2000 associated with the promulgations of the MDGs (2000-2015) and its successor, the SDGs (2016-2030). Based on this finding, therefore, the main policy implication of this study is that both donors and governments in MICs should continue to call for increasing TDA and further strengthen the growth-enhancing role of such aid. On the contrary, the study found that NTDA has been less effective for growth in MICs. This result may suggest some sort of inconsistencies of coordination regarding harmonising aid flows from TDs and NTDs. The main policy implication of this finding is that both donors and governments of MICs should strengthen their efforts to coordinate and harmonize aid flows from TDs and NTDs towards targeting the sectors favourable to economic growth. They should at least follow the same strategies that have enabled them to make TDA supportive for growth so as to make future NTDA flows supportive for growth.

The study found that all aid proxies (TA, TDA & NTDA) failed to enhance aid effectiveness towards supporting growth in African LICs, with the impact of aid on growth appearing to be negative for TA and TDA, while it is zero for NTDA. The finding for TA proxy mimics the finding for TDA proxy because TDA constitutes the dominant share (94.8 percent) of total net aid disbursement to LICs. The study suggests that the shift of more share of TDA away from the productive sectors towards non-productive sectors such as humanitarian aid and debt relief may explain part of the reason why there is a strong negative impact of TDA on growth in LICs. This result has serious policy implications as several LICs continue to heavily rely on foreign aid to finance their development programmes. Therefore, the main recommendation of this study is that both the governments in LICs and donors should design more effective strategies to re-direct substantial aid flows from TDs towards the growth-enhancing productive sectors to finance physical investment and foster growth. Doing so would have the possibility of reversing the significant negative impact of aid on growth among these economies.

7.5 Limitations of the Study and Suggestions for Further Research

Notwithstanding that all efforts were made to make this study analytically defensible, it encounters a few limitations, as is a common challenge with several other scientific research studies. First, most of the DPD studies on the aid-growth nexus have been criticised for failing to effectively address the aid endogeneity problem due to the difficulty of finding a powerful instrumental variable. However, to the best understanding of this author, a system GMM is the most efficient empirical approach in the case of highly persistent dependent variable and short panel (N>T).

Second, the study also suffers from data availability problem for nine NTDs (Brazil, Chile, Colombia, Costa Rica, India, Indonesia, Mexico, Qatar, and South Africa), out of 30 NTDs. At the time of this study, it was hardly possible to obtain data from these nine NTDs, as they didn't report their annual aid flows either to OECD DAC system or any other publicly credible databases. Thus, these nine NTDs were excluded from the study.

Therefore, in the light of the current changing global aid landscape in the 2000s with increasing partnership among all bilateral donors, this study suggests that future researchers should explore

the best means to incorporate aid flows from all NTDs including those nine NTDs. Although these NTDs are from developing countries and still receiving aid themselves from TDs, using data from all NTDs may offer a more comprehensive picture regarding their relative growing influence in the global aid system alongside the TDs. Doing so would also provide the possibility to better understand how far the coordination among all donors is achieved to ensure harmonisation and alignment of aid flows as stipulated in the Paris Declaration for Aid Effectiveness.

Another research area could be to examine the underlying factors that may explain the differing impact of aid on growth in MICs when the aid sources are traditional aid and non-traditional aid. Moreover, future studies could further explore the aid allocation decisions by TDs and NTDs according to country income groups.

Furthermore, future research could examine how aid sources (TDs and NTDs) could affect economic growth according to aid types (grants & loans) and sectoral aid allocations across country income groups.

By and large, although the aforementioned limitations could have affected the empirical results and analysis, it is assumed that their overall influences are minimal, and they have not significantly affected the theoretical and empirical findings of this study.

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APPENDICES

Appendix A: DAC List of foreign aid or ODA Recipient developing countries: Effective for reporting on 2017 flows

Least Developed Countries	Other Low Income Countries (per capita GNI <= $1 045 in 2013)	Lower Middle Income Countries and Territories (per capita GNI $1 046-$4 125 in 2013)	Upper Middle Income Countries and Territories (per capita GNI $4 126-$12 745 in 2013)
Afghanistan	Democratic people's Republic of Korea	Armenia	Albania
Angola[1]	Kenya	Bolivia	Algeria
Bangladesh	Tajikistan	Cabo Verde	Antigua and Barbuda[3]
Benin	Zimbabwe	Cameroon	Argentina
Bhutan		Congo	Azerbaijan
Burkina Faso		Côte d'Ivoire	Belarus
Burundi		Egypt	Belize
Cambodia		El Salvador	Bosnia and Herzegovina
Central African Republic		Georgia	Botswana
Chad		Ghana	Brazil
Comoros		Guatemala	Chile[2]
Congo, DR		Guyana	China
Djibouti		Honduras	Colombia
Equatorial Guinea[1]		India	Cook Islands[4]
Eritrea		Indonesia	Cuba
Ethiopia		Kosovo	Dominica
Gambia		Kyrgyzstan	Dominican Republic
Guinea		Micronesia	Ecuador
Guinea-Bissau		Moldova	Fiji
Haiti		Mongolia	Former Yugoslav Republic of Macedonia
Kiribati		Mongolia	
Lao People's Democratic Republic		Morocco	Gabon
Lesotho		Nicaragua	Grenada
Liberia		Nigeria	Iran
Madagascar		Pakistan	Iraq
Malawi		Papua New Guinea	Jamaica
Mali		Paraguay	Jordan

Mauritania **Mozambique** **Myanmar** **Nepal** **Niger** **Rwanda** **Sao Tome and Principe** **Senegal** **Sierra Leone** **Solomon Islands** **Somalia** **South Sudan** **Tanzania** **Timor-Leste** **Togo** **Tuvalu** **Uganda** **Vanuatu**[1] **Yemen** **Zambia**		Philippines Samoa Sri Lanka Swaziland Syrian Arab Republic Tokelau Ukraine Uzbekistan Viet Nam West Bank and Gaza Strip	Kazakhstan Lebanon Libya Malaysia Maldives Marshall Islands Mauritius Mexico Montenegro Montserrat Namibia Nauru Niue Palau[3] Peru Saint Helena Saint Lucia Saint Vincent and the Grenadines Serbia Seychelles[2] South Africa Suriname Thailand Tonga Tunisia Turkey Turkmenistan Uruguay[2] Venezuela Wallis and Futuna

(1) The United Nations General Assembly resolution A/RES/70/253 adopted on 12 February 2016 decided that Angola will graduate five years after the adoption of the resolution, i.e. on 12 February 2021. General Assembly resolution 68/L.20 adopted on 4 December 2013 decided that Equatorial Guinea will graduate from the least developed country category three and a half years after the adoption of the resolution. General Assembly resolution A/RES/68/18 adopted on 4 December 2013, decided that Vanuatu will graduate four years after the adoption of the resolution on 4 December 2017. General Assembly resolution A/RES/70/78 adopted on 9 December 2015, decided to extend the

preparatory period before graduation for Vanuatu by three years, until 4 December 2020, due to the unique disruption caused to the economic and social progress of Vanuatu by Cyclone Pam.

(2) At the time of the 2017 review of this List, the DAC agreed on the graduation of Chile, Seychelles and Uruguay as from 1 January 2018. DAC List of ODA Recipients Effective for reporting on 2014, 2015, 2016 and 2017 flows

(3) Antigua and Barbuda exceeded the high-income threshold in 2015 and 2016, and Palau exceeded the high-income threshold in 2016. In accordance with the DAC rules for revision of this List, if they remain high income countries until 2019, they will be proposed for graduation from the List in the 2020 review.

(4) The DAC agreed to defer decision on graduation of Cook Islands until more accurate GNI estimations are available. A review of Cook Islands will take place in the first quarter of 2019.

Appendix B: List of sample countries by income classification, based on World Bank Income classification, 2000-17

World Bank Analytical classification, GNI per capita in US$ (Atlas methodology)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Low income (L)	<= 755	<= 745	<= 735	<= 765	<= 825	<= 875	<= 905	<= 935	<= 975	<= 995	<= 1,005	<= 1,025	<= 1,035	<= 1,045	<= 1,045	<= 1,025	<= 1,005	<= 995
Lower middle income (LM)	756-2,995	746-2,975	736-2,935	766-3,035	826-3,255	876-3,465	906-3,595	936-3,705	976-3,855	996-3,945	1,006-3,975	1,026-4,035	1,036-4,085	1,046-4,125	1,046-4,125	1,026-4,035	1,006-3,955	996-3,895
Upper middle income (UM)	2,996-9,265	2,976-9,205	2,936-9,075	3,036-9,385	3,256-10,065	3,466-10,725	3,596-11,115	3,706-11,455	3,856-11,905	3,946-12,195	3,976-12,275	4,036-12,475	4,086-12,615	4,126-12,745	4,126-12,735	4,036-12,475	3,956-12,235	3,896-12,055
High income (H)	> 9,265	> 9,205	> 9,075	> 9,385	> 10,065	> 10,725	> 11,115	> 11,455	> 11,905	> 12,195	> 12,275	> 12,475	> 12,615	> 12,745	> 12,735	> 12,475	> 12,235	> 12,055

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Algeria	LM	LM	LM	LM	LM	LM	LM	LM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
Angola	L	L	L	L	LM	LM	LM	LM	LM	LM	LM	UM	UM	UM	UM	UM	LM	LM
Benin	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Botswana	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
Burkina Faso	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Burundi	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Cabo Verde	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM

Cameroon	L	L	L	L	L	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM
Central African Republic	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Chad	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Comoros	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Congo, Dem. Rep.	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Congo, Rep.	L	L	L	L	L	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM
Côte d'Ivoire	L	L	L	L	L	L	L	L	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM
Djibouti	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM
Egypt, Arab Rep.	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM
Equatorial Guinea	LM	L	L	L	UM	UM	UM	H	H	H	H	H	H	H	H	UM	UM	UM
Eritrea	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Ethiopia	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Gabon	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
Gambia, The	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Ghana	L	L	L	L	L	L	L	L	L	L	LM	LM	LM	LM	LM	LM	LM	LM
Guinea	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Guinea-Bissau	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Kenya	L	L	L	L	L	L	L	L	L	L	L	L	L	L	LM	LM	LM	LM
Lesotho	L	L	L	L	L	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM
Liberia	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Libya	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
Madagascar	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Malawi	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Mali	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Mauritania	L	L	L	L	L	L	L	L	L	L	LM	L	LM	LM	LM	LM	LM	LM
Mauritius	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
Morocco	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM
Mozambique	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Namibia	LM	LM	LM	LM	LM	LM	LM	LM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
Niger	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L

Nigeria	L	L	L	L	L	L	L	L	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM
Rwanda	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
São Tomé and Principe	L	L	L	L	L	L	L	L	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM
Senegal	L	L	L	L	L	L	L	L	L	LM	LM	LM	LM	LM	LM	L	L	L
Seychelles	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	H	H	H	H
Sierra Leone	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Somalia	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
South Africa	UM	LM	LM	LM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
South Sudan	..	..	..	..	..	..	..	..	..	..	..	LM	L	LM	L	L	L	L
Sudan	L	L	L	L	L	L	L	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM
Swaziland	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM
Tanzania	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Togo	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Tunisia	LM	LM	LM	LM	LM	LM	LM	LM	LM	LM	UM	UM	UM	UM	UM	LM	LM	LM
Uganda	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Zambia	L	L	L	L	L	L	L	L	L	L	LM	LM	LM	LM	LM	LM	LM	LM
Zimbabwe	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L

Source: World Bank, WDI online database, accessed on 23 May 2019

Note: Highlights show change in level of income by a country.