On the Link between Foreign Aid and Growth in Developing Countries

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Abstract: Objectives: This study aims to highlight some of the main debates on the aid-growth nexus from theoretical and empirical perspectives. **Prior Work:** Despite the intense debate on whether aid works for growth, the increasing trends of aid flows to developing countries motivates this study to revisit these debates. **Approach:** This study uses a detailed survey of theoretical and empirical literature on the aid-growth nexus. **Results:** This review finds that the aid-growth nexus is the most empirically researched area, and yet evidence remains inconsistent and controversial. Two lines of debate are identified, namely aid effectiveness (aid proponents) and aid ineffectiveness (aid opponents). While aid proponents argue that aid positively affects growth, aid opponents find that aid either has a negative or null impact on growth. **Implications:** Contrary to scholarly debates, the common belief among donors is that the effect of aid on growth is positive and aid flows to the productive/economic sectors are more growth-enhancing. Thus, aid-financing decisions by donors and policymakers should take this aspect into account. **Value:** Besides exploring the debates, this review discusses the reasons behind the inconsistent evidence on the aid-growth nexus and further highlights the relevant methodological approaches to address this problem, which is mostly aid endogeneity.

Keywords: Foreign aid; aid effectiveness; aid ineffectiveness; aid-growth nexus; developing countries

JEL Classification: O190; F350; O410; O500

1. Introduction

The theoretical foundation that identifies foreign aid as a key development tool for filling resource gaps and stimulating growth in developing countries can be traced back to the 1960s, and one of them includes the 'aid-financed investment' theory of the Two-Gap Model (Chenery & Strout, 1966). In view of this, in real terms (2017 constant $), foreign aid flows to developing countries have increased five-fold -

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from $33.2 billion in 1960 to $163.1 billion in 2017. According to the Organization for Economic Cooperation and Development (OECD, 2017, p. 138), aid also 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 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 foreign aid flows will stimulate economic growth and consequently reduce the dependence of poor African countries on foreign aid (UNAIDS, 2005). 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 polarizing debates on whether or not aid works for growth in developing countries. 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.

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 the 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 advocate for an increasing flow of aids to developing countries. Among others, for instance, Chenery and Strout (1966) claim that aid augments domestic savings and substantially increases investment, which further boosts growth. On the contrary, aid opponents argue that aid is ineffective as the impact of aid on growth appears to be either negative or null. For instance, Easterly (1999, 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, p. 32).

Therefore, the main objective of this study is to highlight some of the main debates on the link between foreign aid and economic growth in developing countries (i.e., aid effectiveness) from theoretical and empirical perspectives. Moreover, this review attempts to present the underlying reasons behind the inconsistent evidence, as well as the potential alternative strategies, to minimize this problem. In doing so, this study adopts a desk review methodology, which entails a critical review of

most influential scholarly studies on the aid-growth nexus. Given the immense literature on aid-growth nexus, a comprehensive review of all previous studies is hardly possible. Hence, this study focuses on the most commonly cited papers in the aid-growth empirical literature that have economic growth as a primary outcome variable. Based on the results on aid-effectiveness, the literature was organized into two groups. The first group consists of literature on aid-effectiveness involving studies that have reported a positive impact of aid on growth, both unconditionally and conditionally. The second group includes studies on aid-ineffectiveness where the effect of aid on growth appears to be either negative or null.

The paper is organized under 5 sections including the introduction. Section 2 presents the main theoretical literature that offers the underlying theses of promoting aid for growth. Section 3 discusses the main debates on whether or not aid works for growth from the empirical literature. Section 4 explores the main reasons behind the inconclusive empirical evidence as well as identifying alternative methodological approaches to minimize these contradictions. Section 5 concludes the paper by summarizing the main findings and highlighting some directions for further study.

2. 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 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 program 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). This section provides a brief review of the main economic argument these theoretical models have promoted in support of foreign aid for developing countries.

2.1. Linear Growth Models

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 stacked 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 set 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 mobilization 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, 1997). This implies that foreign aid was considered a key resource in generating investment and increase 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).

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, 1997). 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 & Smith (2015, p. 121), a simple model of economic growth can be constructed as follows:

$$S = sY \tag{3.1}$$

Equation 3.1 implies that net saving (S) is some proportion (s) of national income (Y); s is saving ratio. New investment is then given as:

$$I = \Delta K \tag{3.2}$$

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:***

$$\frac{K}{Y} = k \quad or \quad \frac{\Delta K}{\Delta Y} = k \;\; or \;\; \Delta K = k\Delta Y \tag{3.3}$$

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

$$S = I \tag{3.4}$$

However, from Equations 3.1-33, it is known that

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

This implies that Equation 3.4 that equalizes saving and investment, can be rewritten

as:

$$S = sY = k\Delta Y = \Delta K = I \tag{3.5}$$

Or simply as

$$sY = k\Delta Y \tag{3.6}$$

Now, dividing both sides of Equation 3.6 first by Y and then by k gives the following:

$$\frac{\Delta Y}{Y} = \frac{s}{k} \tag{3.7}$$

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

Equation 3.7 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.

2.2. The Financing-Gap Models

The Harod-Domar Financing-Gap Approach

The 'financing gap' approach capitalized on the Harrod-Domar model presented in Equation 3.7 and it 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 3.7, can be extended to include foreign aid as follows (See Easterly, 2003, p. 31):

$$g = (I/Y)/\mu \tag{3.8}$$

$$I/Y = A/Y + S/Y \tag{3.9}$$

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 3.8 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 3.9 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.

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, p. 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 and it means 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 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. According to the model, the positive effect of aid on growth occurs in two steps. First, aid increases investment through augmenting domestic savings and secondly, the rise in investment increases growth.

3. The Link between Foreign Aid and 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 have turned out to be mixed and highly controversial. This section presents a critical review of these conflicting results among the most cited empirical studies on the link between foreign aid and growth in developing countries. For brevity, the review is organized along the two lines of debate in the aid-growth nexus, namely aid effectiveness (i.e., aid positively affects growth) and aid ineffectiveness (i.e., zero or null and negative effects of aid on growth). Finally, the review provides a brief note on the underlying reasons behind such inconclusive empirical evidence and the potential remedies to minimize these contradictions.

3.1. Aid is Effective for Growth: Aid Works for Growth in Recipient Countries

This section presents a review of empirical literature on aid effectiveness that reports a positive impact of aid on growth in the full sample (unconditional), disaggregated sample by regions and country groups, and under certain conditions (i.e., aid conditionality). 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 organizations to advocate for more aid flows in 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 into

developing countries over the past several decades (Doucouliagos & Paldam, 2010). 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. In essence, such positive impacts of aid on growth have been evident across recipients in developing countries in general (Clemens et al., 2012; Magesan, 2016; Galiani et al., 2017; Lof et al., 2015) and in 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, such as the inclusion of instrumental variables (Reidy, 2016; Arndt et al., 2015; Magesan, 2016; Galiani et al., 2017), dynamic panel estimators, such as General Methods of Moments (GMM) (Lof et al., 2015; Gillanders, 2016), a panel co-integration estimation technique (Juselius et al., 2013; Jones, 2013) and lagged values (Clemens et al., 2012) to capture the aid-growth nexus. 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). In addition to investment, some studies have also found that aid positively affects growth by increasing consumption (Juselius et al., 2013), human capital (Arndt et al., 2015), and *"inducing a structural change in household demand for services"* (Magesa, 2016, p. 1).

Apart from the positive relationship, some studies went further and evaluated the nature of such a relationship. Some similar 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), as well as 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 realize 50% of the total aid impact. Furthermore, such a positive effect 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 channeled 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 studies has also investigated whether aid works in the same way across all recipient countries. Indeed, evidence has shown that aid works differently across countries when aid heterogeneity is addressed by disaggregating the sample into different regions/subregions, income groups, as well as resource endowment (Ekanayake & Chatrna, 2010; Alemu & Lee, 2015; Eregha & Oziegbe, 2016; Rahnama et al., 2017). Ekanayake & 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 impacts. 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 impacts 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 impacts of aid on growth is fairly recognized, the contrasting view that the positive impacts of aid on growth depend 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 (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. Their study 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 & Doucouliasgos (2015) revisited the same data set in Burnside & 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.

3.2. Aid Ineffectiveness Argument: Aid Doesn't Support Growth

Overall, as opposed to proponents of aid, this strand of literature argues that foreign aid does not promote economic growth in developing countries. In essence, a lack of evidence on aid effectiveness for stimulating growth implies that either aid harms growth (i.e., the negative impact of aid) or aid has a null or zero impact on growth.

Aid Affects Growth Negatively

Evidence from some studies tends to demonstrate that foreign aid harms, 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 Development Assistance Committee (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 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, 2017). Arawomo et al. (2015) employed GMM techniques to investigate if 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 (2017) found a negative, but insignificant relationship between aid and growth for the full sample 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 and 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 & 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, p. 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 fractionalization 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 his result, Phiri (2017) argued that aid is ineffective to support growth in sampled SSA countries. He 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 have 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 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.

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 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. This section presents the underlying reasons behind the inconclusive evidence about the aid-growth nexus. The theoretical drawbacks are 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 minimize the contradictions in empirical evidence on the nexus.

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 program 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 applying the economic theory of development which succeeded in modernizing economies in today's advanced world. This seemed to have convinced Boone (1996, p.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 programs of the 1960s as an *"unprecedented economic experiment"*. As Todaro & 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, 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 criticized 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, aid funds consumption rather than investment. Moreover, Todaro & Smith (2015, p. 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.

Although its theoretical and empirical validity is subjected to critics, most argue that the Two-Gap Model remains a standard theoretical model to analyze 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, p. 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 provides an easier and cheaper way of calculating aid requirements, as well as the rationalization of such aid requirements as 'necessary' for growth. Indeed, Dollar & Easterly (1999, p.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, p. 1475) recognize 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).

4.2. 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 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).

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, p. 6). After a careful review of three studies with divergent results (Boone, 1996; Burnside & Dollar, 2000; Rajan & Subramanian, 2008), Clemens et

al. (2012, p. 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, p. 27) argued that the single-equation approach pursued by 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 recognized problem of aid endogeneity and, therefore, inappropriate to capture the true effects of aid on growth (Juselius et al., 2013, Lof et al., 2015). Therefore, the difficulty of finding plausible instrumental variables to control the problem of endogeneity contributes to the inconsistent evidence on the aid-growth nexus.

4.3. 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) and a system of equations based on panel Vector Auto Regressive (VAR) models (Juselius et al., 2013, Lof et al., 2015). 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 & 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 address the underlying problem of aid endogeneity in the growth equation (Lof et al., 2015, Juselius et al., 2013). Overall, the above discussion shows that correcting the faulty estimation strategies pursued in past studies would greatly minimize the inconsistent empirical evidence on aid effectiveness.

5. Conclusion

This paper provides a critical review of the theoretical and empirical literature on the ongoing debates regarding the link between foreign aid and growth in developing countries. The study noted that the financing gap model, mostly the Two-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 foreign aid in spurring growth in developing countries, however, the idea of 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).

Proponents of aid argue that aid positively affects growth. Some of the recent studies also observed a similar positive impact under certain policy conditions. The widely held view is that aid positively affects growth mainly through increasing investment in recipient countries. Furthermore, some studies have also found that aid positively affects growth by increasing human capital and stimulating a structural change in the household demand for services. Others also reported that the positive impact of aid on growth exists in the short run, as well as in the long run, with aid exhibiting diminishing returns at a higher level. The positive impacts of aid on growth tend to vary across countries, as well as different country groupings, such as income groups and oil-exporting and non-exporting countries due to 'timing aid effect' (i.e., early impact, late impact and humanitarian aid) and types of aid. Not all types of foreign aid are growth-promoting and only the 'early impact aid', which is channeled into infrastructure and productive sectors, as well as government budget support, which is more effective to support growth. On the contrary, aid opponents argue that aid is ineffective for growth in developing countries. Empirical evidence has demonstrated that aid has either a negative or null impact on growth. They argue that aid finances consumption in poor countries, rather than financing investment. They also noted that pervasive corruption and poor institutional capacity in recipient countries were the main factors that hindered aid effectiveness.

By and large, a lack of compelling theoretical models and serious methodological problems were the main factors behind the puzzle for this inconclusive evidence on the aid-growth link. Despite critics, however, the Two-Gap model remains a

standard theoretical model to analyze the aid-growth nexus as no other models provide an easier and cheaper way of calculating aid requirements, as well as the rationalization of such aid requirements as 'necessary' for growth. In light of the difficulty to find powerful instrumental variables for aid, recent studies have proposed to use a system of equations and lagged aid to address the potential problems associated with endogeneity, on reverse, as well as simultaneous causation. The key implications of this study is that, contrary to scholarly debates, the common belief among donors is that the effect of aid on growth is positive and aid flows to the productive/economic sectors is more growth-enhancing. Therefore, aid-financing decisions by donors and policymakers should take this aspect into account.

Given the immense literature on aid-growth nexus, a comprehensive review of all this literature is hardly possible. In this study, therefore, we focus on the aggregate impacts of aid on growth and review only the most commonly cited body of literature on the aid-growth link and having economic growth as a primary outcome variable. Overall, the recent emerging trends shows that correcting the faulty estimation strategies (i.e., addressing endogeneity) pursued in past studies and taking note of the disaggregated impacts of aid on growth would greatly improve the elusive empirical evidence on the causal link between aid and growth. In view of this, it is suggested that further studies on the impacts of aid on growth should take two key issues into account. First, employing a better econometric approach to control for aid endogeneity (such as a dynamic panel model under system GMM), and secondly, accounting for the disaggregated impacts of aid on growth under different circumstances (such as income level, sectoral aid distributions and sources of aid).

References

Adedokun, Adeniyi, Jimmy & Folawewo, Abiodun O. (2017). Aid selectivity practice and aid effectiveness in Sub-Saharan Africa. *Review of innovation and competitiveness*, 3 (2), pp. 43-64.

Alemu, A.; Mengistu & Lee Jin-Sang. (2015). Foreign aid on economic growth in Africa: a comparison of low and middle-income countries. *SAJEMS NS*, 18 (4), pp. 449-462.

Alvi, Eskander; Mukherjee, Debasri & Shukralla, Elias K. (2008). Aid, policies, and growth in developing countries: a new look at the empirics. *Southern Economic Journal*, 74 (3), pp. 693-706.

Arawomo, D.F.; Badejo, A. A. & Oshota, O. S. (2017). Complementarity of foreign aid and domestic savings as drivers of economic growth: evidence from WAMZ countries. *Journal of Economics and Business Research*, 19 (2), pp. 159-171.

Arndt, Channing, Jones, Sam, and Tarp, Finn. (2015). Assessing foreign aid's long-run contribution to growth and development. *World Development*, 69: 6-18.

Askarov, Zohidjon & Doucouliagos, Chris (2015). Development aid and growth in transition countries. *World development*, vol. 66, pp. 383-399.

Boone, Peter. (1996). Politics and the effectiveness of foreign aid. *European Economic Review*, 40 (2), pp. 289-329.

Burnside, Craig & Dollar, David. (2000). Aid, policies, and growth. *American Economic Review*, 90 (4), September, pp. 847-868.

Chenery, Hollis, B. & Strout, Alan, M. (1966). Foreign assistance and economic development. *The American Economic Review*, Volume LVI, Number 4, Part 1.

Clemens, M. A.; Radelet, Steven; Bhavnani, R. R. & Bazzi, Samuel (2012). Counting Chickens when they hatch: timing and the effect of aid on growth. *The Economic Journal*, 122, June, pp. 590-617.

Dollar, David & Easterly, William. (1999). The search for the key: aid, investment and policies in Africa. *Journal of African Economics*, 8 (4), pp. 546-577.

Doucouliagos, H. & Paldam, M. (2010). The effectiveness of development aid on growth: an update. *European Journal of Political Economy*, Aarhus, November.

Dreher, Axel & Langlotz, Sarah. (2017). Aid and growth. New evidence using an excludable instrument. *Discussion Paper Series*, No. 65, June. Heidelberg University.

Dutta, N.; Mukherjee, D. & Roy, S. (2015). Re-examining the relationship between domestic investment and foreign aid: does political stability matter? *International Review of Applied Economics*, 29 (3), pp. 259-286.

Easterly, William; Levine, Ross & Roodman, David. (2004). Aid, policies, and growth: Comment. *The American Economic Review*, 94 (3), February, pp. 774-780.

Easterly, William. (1999). The ghost of financing gap: testing the growth model used in the international financial institutions. *Journal of Development Economics*, 60 (2), pp. 423-438.

***. (2003). Can foreign aid buy growth? *Journal of Economic Perspective*, 17 (3), Summer, pp. 23-48.

Ekanayake, E. M., & Chatrna, D. (2010). The effect of foreign aid on economic growth in developing countries. *Journal of International Business and Cultural Studies*, 3, pp. 1.

Eregha, P. B. & Oziegbe, T. R. (2016). Official development assistance, volatility and per capita real gdp growth in sub-Saharan African countries: a comparative regional analysis. *The Journal of Developing Areas*, 50(4), pp. 363-382.

Galiani, S., Knack, S., Xu, L. C. and Zou, Ben. (2016). The effect of aid on growth: evidence from quasi-experiment. *NBER Working Paper Series*, WP 22164, Massachusetts, Cambridge.

Gillander, Robert (2016). The effects of foreign aid in Sub Saharan Africa. *The Economic and Social Review*, 17 (7), pp. 339-360.

Jones, Yakama Manty. 2013. Testing the foreign aid-led growth hypothesis in West Africa. *Birkbeck Working Papers in Management*, BWPMA 1303, London.

Juselius, K.; Moller, N. F. & Tarp, F. (2013). The long run impacts of foreign aid in 36 African countries: insights from multivariate time series analysis. *Oxford Bulletin of Economics and Statistics*, 76 (2).

Lof, M.; Mekasha, T. J. & Tarp, F. (2015). Aid and income: another time series perspective. *World Development*, 69, pp. 19-30.

Magesan, Arvind (2016). Foreign and economic growth in developing countries: as instrumental variable approach.

Nermeen, Mohamed & Abdel Aziz Harb. (2016). *A study on the non-linearity hypothesis between various macroeconomic variables and economic growth in developing countries.* PhD Thesis, University of Leicester.

Nowak-Lehmann, F.; Dreher, A.; Herzer, D.; Klasen, S. & Martínez-Zarzoso, I. (2012). Does aid really raise per capita income? A time series perspective. *Canadian Journal of Economics*, 45(1), pp. 288-313.

OECD, Organization for Economic Cooperation and Development (2017). *Development Co-operation Report 2017: Data for Development*. OECD Publishing, Paris.

Phiri, Maurice W. (2017) The impact of aid on the economic growth of developing countries (LDCs) in Sub-Saharan Africa. *Gettysburg Economic Review*, 10 (4), pp. 28-48.

Rahnama, M.; Fawaz, F. & Gittings, K. (2017). The effects of foreign aid on growth in developing countries. *The Journal of Developing Areas,* 51 (3), Summer: pp. 153-171.

Rajan, R. G. & Subramanian. (2008). Aid and growth: What does cross-country evidence really show? *The Review of Economics and Statistics*, 90(4), November, pp. 643-665.

Reidy, Paul (2016). Aid and growth revisited: impact of foreign aid and growth in Sub-Saharan Africa. *The Student Economic Review*, 30, pp. 114-128, Dublin 2, Ireland.

Tait, L.; Siddique, A. & Chatterjee, I. (2015). Foreign aid and economic growth in Sub-Saharan Africa. *University Western Australia Working Papers*, No. 1-35, March.

Tang, K.-B. & Bundhoo, D. (2017). Foreign Aid and Economic Growth in Developing Countries: Evidence from Sub-Saharan Africa. *Theoretical Economics Letters*, 7, pp. 1473-1491. https://doi.org/10.4236/tel.2017.75099.

Todaro, Michael T. & Smith, Stephen C. (2015). *Economic Development*, 12th edition. Pearson.