Original Article

Financial Development, Institutional Quality and Inclusive Growth in Africa

Global Business Review
23(3) 584–607, 2022

DOI: 10.1177/0972150919875367
journals.sagepub.com/home/gbr

Matthew Ntow-Gyamfi[1]
Godfred A. Bokpin[2]
Anthony Q. Q. Aboagye[2]
Charles Godfred Ackah[3]

Abstract

We investigate the relationship between Financial Development (FD) and Inclusive Growth (IG) unlike extant literature whose concentration has been on economic growth, which we refer to as wholesale growth. While we examine the effect of FD on IG, we investigate the moderating role played by institutions and the regulatory ambience in conveying the strides of FD towards the poor. We measure IG through a social mobility function approach and also construct an IG Index using Asian Development Bank's framework of IG for robustness. We employ a 27-year panel data collected from across 48 African countries in our dynamic estimations of the FD-IG nexus. We find a non-linear relationship between finance and IG. Our results show that for FD to lead to IG, there is the need to have an effective institutional setup that regulates financial market participants to be inclusive in their operations. With weak institutions, FD's effect on IG is negative. Our study does not just investigate how FD explains how much money there is overall, but how the money is shared across societies as well. This study is the first to examine the finance-growth nexus from the perspective of inclusivity. Practical policy implications are also discussed.

Keywords

Inclusive growth, financial development, institutions, Africa

Introduction

Widely in literature, the relationship between financial development (FD) and economic growth has been explored. Using different empirical settings and estimation techniques, various views have been expressed by various researchers as to what the relationship between FD and economic growth is. Some earlier studies such as Schumpeter (1911) documented that through the banking sector, FD proxied by

[1] Department of Finance, University of Ghana Business School, Bank of Ghana, Accra, Ghana.
[2] Department of Finance, University of Ghana Business School, Ghana.
[3] ISSER, University of Ghana, Accra, Ghana.

Corresponding author:
Matthew Ntow-Gyamfi, Department of Finance, University of Ghana Business School, Bank of Ghana, Accra 00233, Ghana.
E-mail: matthewntow-gyamfi@gmail.com

financial intermediation plays a central role in economic development. This is because, it affects the allocation of savings, thereby improving productivity, technical change and economic growth. Years after, Levine (1997) explained the modern financial theory stating that the intermediation role performed by financial institutions in bridging the information asymmetries between borrowers and savers resulted in savings mobilization and capital fund allocation. Coupled with the monitoring of the use of funds and the management of risk, the economic growth process is perpetuated. In contrast, Lucas (1988) emphasizes that the role of the financial sector in economic growth is 'over-stressed'. In a much more recent time, a third view has emerged that both financial development and economic growth Granger-cause each other and that there is a bi-directional causality between financial development and economic growth (Al-Yousif, 2002; Calderón & Liu, 2003; Odhiambo, 2008). Others studies have explored the effects of various concepts that denote FD on economic growth. Siddik (2019), for instance, found various proxies of financial permeation to have significant positive impacts on economic growth.

In all these arguments, the value relevance of FD has been debated from the perspective of economic growth. While we do not seek to discount the benefits of overall economic growth, we are of the view that inclusive growth (IG) has a much better meaning to our development agenda than mere economic growth. Prasanna (2016) defines IG as 'the process and the outcome where all groups of people have participated in the organization of growth and have benefited equitably from it'. The use of the word 'equitably' suggests that the distribution of the benefit of the growth is not shared equally but equitably; with the poor having to benefit the most since they have the most need. Such growth is referred to as pro-poor growth. Growth is said to be pro-poor if in absolute terms, the poor benefit the most; thus, the incomes of poor people grow faster than those of the population as a whole (see Anand, Mishra, & Peiris, 2013; Dollar & Kraay, 2002; Ravallion & Chen, 2003). For Suryanarayana (2008), an IG process must be one that even those sections of the society that are deprived of both physical and human asset endowments can benefit from.

The fascinating truth about growth in Africa is that, while increasing economic growth has been recorded, distributionally sensitive measures of inequality still remains high, a clear indication that the growth recorded has not benefited the poor that much. Ravallion (2014) documents that Growth has generally helped reduce the incidence of absolute poverty, but less so in more unequal countries. It is therefore imperative to investigate the correlates of pro-poor growth; an understanding of which will go a long way to improving the living conditions the citizenry.

We take particular interest in FD in that while Adu, Marbuah, and Mensah (2013) find that FD measures such as credit to the private sector and total domestic credit are conducive for growth, new evidence provided by Law and Singh (2014) indicates that too much FD may pose some potential harm to economic growth. This shows that the debate on the ability of FD to induce growth is still persistent in the literature. We make a novel contribution to the debate by way of focussing attention on IG, the benefits of which over wholesale economic growth is unequivocal in the literature. Our use of the term 'wholesale economic growth' is in reference to the traditional economic growth measures mainly based on just GDP growth. In this study, we refer to it as wholesale growth to distinguish it from IG.

Again, we are aware that the finance-growth nexus has gained some serious attention in the literature yet the debate in respect of the nature of the relationship is far from being over. Adu et al. (2013) maintain that notwithstanding what we know in the literature regarding the finance-growth nexus, the evidence is inconclusive and the debate on whether financial development is the cause or the effect of the growth process is still on-going. The authors maintain that in empirical research, not much evidence has been found to support the crucial role played by FD in eliciting growth; governance and institutional variables such as political freedoms, rule of law and property rights play important roles in helping to understand how FD affects growth.

Bittencourt (2012) tested the Schumpeterian prediction and found that FD and access to finance for that matter authorize entrepreneurs to invest in productive activities, and therefore to promote economic growth. Zhang, Wang, and Wang (2012) also report that many of the traditional indicators of FD are positively associated with economic growth. In these and many other similar studies, the focus has been on aggregate social welfare (economic growth). It is worth noting that economic growth per se may not translate into better lives for the people; in that, for growth to be of sustainable benefit to the entire citizenry, that is rich and poor, such growth should be inclusive.

An even more important reason for which there is the need to refocus the debate towards IG is that in recent times, many of African countries have been marked with increasing levels of inequality amidst increasing economic growth (Greenwald & Stiglitz, 2013). It is interesting to note that recent growth trends have not been matched by falling poverty, a phenomenon that could be attributable to inequality. Perhaps, wholesale economic growth studies believed in the trickling down effect of economic growth. In the words of Greenwald and Stiglitz (2013), *little attention was paid to the distribution of income, perhaps because of an implicit belief in trickledown economics—somehow, if the economic pie grew, all would benefit.* Having come to the realization of the fact that the economic interpretation of economic growth is different from IG, there is the need to examine the link between FD and IG while exploring the moderation role played by institutional quality in this nexus. The rational for our investigation of the moderating role of institutions is that the relationship between FD and economic growth cannot be generalized across countries because economic policies and their success may depend on, among others things, the efficiency of the institutions implementing them (see Al-Yousif, 2002). By extension, we expect the quality of institutions to moderate the FD–IG nexus. Whether or not this argument can hold is an empirical question that needs to be answered.

The rest of the article is presented as follows: The second section reviews the existing evidence of the subject. The third section presents the objectives of the study. The fourth section which is the theoretical framework discusses the conceptualization of IG. The fifth section presents the methodology and details the model construction and data collection. The sixth section presents the analysis and discussion of the empirical findings. The seventh section presents the conclusion while the eighth section discusses the managerial implications of the study. The ninth section which is the final section discusses the limitations and areas for future research.

Review of Literature

According to Alexander and Baden (2000), the financial sector consist of the institutions, instruments and regulatory framework that make it possible for financial transactions such as incurring and settling debts to be made within an economy. FD makes it possible for surplus units to make capital available to deficit units within the economic space. Therefore, FD refers to any action or group of actions that promotes the effectiveness and efficiency of the financial sector. Prasanna (2016) explain IG to mean the type of growth process and outcome in which all groups of people (rich and poor) have participated. It is that growth from which everyone benefits equitably thereby reducing inequality. This suggests that the relative benefit of such growth to the poor is higher than the rich hence, a pro-poor growth.

There is overwhelming evidence in the finance literature that points to FD exerting positive influence on growth. This evidence is solid across time periods, estimation techniques, empirical settings and nature of data (see Beck & Levine, 2004; Beck, Demirgüç-Kunt, & Maksimovic, 2005; Levine, 2003; Law & Singh, 2014). Admittedly, many of the studies have confirmed the ‘more finance–more growth’ argument. However, some interesting emerging trends have been seen. Law and Singh (2014), for instance,

investigated the extent to which we could stretch the 'more finance–more growth' argument and found that there exists a certain threshold effect in the finance–growth nexus. They documented that financial development is beneficial to growth only up to a certain threshold. Further increase in FD beyond that threshold tends to adversely affect growth. Thus, 'more finance-more growth; too much finance, less growth'. Cecchetti and Kharroubi (2012) in particular found that the turning point of private sector credit extended by banks beyond which its impact will be negative on growth is close to 90 per cent of GDP.

Using data spanning from 1960 to 2010, Arcand, Berkes, and Panizza (2015) documented a 'vanishing effect' of FD. Rousseau and Wachtel (2011) finds the influence of finance to considerably weaken over time. Similarly, de la Torre, Ize, and Schmukler (2011) documents that the impact of FD on GDP is subject to decreasing marginal returns, thereby leading to some disappearance of growth benefits of finance during the development process of financial systems. For Arcand et al. (2015), once credit to private sector reaches 100 per cent of GDP, the 'vanishing effect' of finance emerges.

The finance–growth relationship has also been found to be affected by the nature of economies around the world. Rioja and Valev (2004) document that the relationship between finance and growth is positive and significant but only for middle-income countries. They found the relationship to be weakly significant in high-income countries while no relationship at all is found between the variables in low-income countries. Huang and Lin (2009) contradicts this finding and record that the positive effect of financial development on economic growth is even much more significant in low-income and middle-income countries than in high-income countries.

The relationship between FD and growth as discussed in the literature continues also in a bidirectional manner. Prah and Quartey (2008) is one of such studies that investigates bivariate causal linkage between financial development and economic growth. Tangential to the relationship between finance and growth is the argument of an appropriate single measure for FD. While Prah and Quartey (2008) use broad money-to-GDP ratio, domestic credit-to-GDP ratio, private credit-to-GDP and private credit-to-domestic credit ratio as alternative measures to ensure robustness of results, Esso (2010) solely rely on the ratio of credit to private sector to GDP. We do not plunge into this debate since the contribution we seek to make to the literature is different.

In a study by Beck, Maimbo, Faye, and Triki (2011), lack of financial development is reported to be among the prominent factors that could have contributed to Africa's poor economic performance. That notwithstanding, the empirical literature on the relationship between FD and IG is in dearth. The theoretical foundation of this relationship is derived from the old age finance-growth nexus only that the focus of growth is turned on IG whose benefits outweigh wholesale economic growth (growth in per capita GDP). Menyah, Nazlioglu, and Wolde-Rufael (2014) in their empirical results show limited support for the finance-led growth hypothesis, which posits that FD leads to economic growth. It is important to note that the type of growth talked about in their study is wholesale economic growth and not IG.

The role of quality of institutions may go a very long way to moderating the relationship between FD and IG. According to Menyah et al. (2014), *even after recent policy changes including financial liberalization and development and further attempts at integration into the world market, many African countries are still showing only limited economic progress.* It is for this reason that this study investigate whether the current institution structures (quality) may have moderate gains of FD on growth, but this time, the focus is on IG.

Objectives

The objectives of this study are: first, to investigate the relationship between FD and IG unlike extant literature that have concentrated on FD and economic growth. Second, this study uses two approaches to measuring IG as a way dealing with the subjectivity of IG findings due to measurement variances.

Theoretical Framework

In this section, we discuss the conceptualization of IG. Owing to the fact that increased growth has existed in parts of the world especially in African countries and yet less has been seen in poverty reduction, the debate in trying to address the correlates of growth in the post 2000 era began to shift from a wholesale economic growth to growth that results in poverty reduction—IG (pro-poor growth). In the immediate years after 2000, IG was argued from the perspective of pro-poor growth (Kakwani & Pernia, 2000). Notwithstanding the nascent nature of the concept, the conceptualization of IG has now advanced beyond just 'pro-poor' in its original state. Simply put, one could say that pro-poor growth is the immediate predecessor of IG (Ngepah, 2017).

There are two main sub concepts of pro-poor growth-relative pro-poor growth and absolute pro-poor growth. Relative pro-poor growth is espoused by Kakwani and Pernia (2000) as that kind of growth process in which incomes of the poor are expected to grow faster than those of the non-poor, or of average income. Ravallion (2004) in explaining the absolute form of pro-poor growth indicated that pro-poor growth is that growth that leads to improvement in the absolute incomes of the poor irrespective of changes in income levels of the non-poor (irrespective of inequality). From the perspective of both absolute and relative pro-poor growth, it is clear that pro-poor growth concerns itself with what happens to those below the poverty line. However, IG in its current state encompasses everyone in the entire welfare distribution (see Klasen, 2010). In fact, Klasen (2010) defined IG as a nondiscriminatory and disadvantage-reducing growth. There is the temptation of seeing the nature of IG in its current state as the relative pro-poor growth. However, a slight difference exists between them. That is, relative pro-poor growth focusses on the relative growth and inequality of the poor versus the non-poor, while IG considers changes in inequality more generally (Klasen, 2010).

Adding to the argument, it is worth noting that there could be a possible situation where growth is relatively pro-poor but that growth may still not be inclusive as explained in current form. If it is the case that the income growth of the poorer non-poor is smaller than the income growth of the rich, overall inequality may increase. One may argue that this scenario may be rare in reality, and that the explanation of IG in practice may not generate outcomes significantly different from the relative form of pro-poor growth. We are of the belief that having an apt conceptualization is a good starting point for any empirical analysis.

It is interesting to note that other contributors to the IG argument have argued other forms of equality beyond income distribution. The inclusion of the poor in the process and outcome of growth in areas such as education, health and employment, among others, has been centred in their debate. Development agencies across the globe have contributed so much in this regard. Ngepah (2017) in particular documents a comprehensive review of the perspectives of the various development agencies while outlining their components of IG. For the Asian Development Bank (ADB), besides ensuring broad participation and contribution to the growth process, IG should encompass issues of gender, ethnicity, race and even environmental sustainability. According to the World Bank, IG should ensure equality of opportunity, social protection and productive employment as opposed to short-term income redistribution. According to the OECD approach to IG, we are to move beyond GDP-based measures of growth to associated welfare measures. The African Development Bank also looks at IG as economic growth that results in a wider access to sustainable socio-economic opportunities for a broader number of people.

While we acknowledge all these to be good additions to the debate, measurement of IG from those perspectives have usually proved to be a challenge. In this article, we construct our IG measure using income distribution (reduction in inequality) as a construct of inclusiveness. We are of the belief that a strong and positive relationship exists between household income levels and these other indicators of welfare. Hence our measure of IG is well encompassing. Albeit, to provide robustness to our findings,

we adopt the Asian Development framework to measuring IG by constructing an IG index. Mitra and Das (2018) also used an index based on 24 developmental indicator variables categorized into expansion, sustainability, equity in access and efficiency of economic activities and institutions to proxy IG. Although they did not rely on ADB's Framework of IG Indicator (FIGI) framework, their construct was as encompassing as the ADB's FIGI framework. We subsequently use the IG index constructed as our dependent variable in estimations (11). Suryanarayana (2008) maintains that many of the diverging views on the conceptualization of 'pro-poor growth' is due to statistical misinterpretation. Suryanarayana (2015) even goes ahead to discuss sustainable IG and non-sustainable IG which he refers to as pseudo-IG. The study argues that for growth to be truly inclusive and not just pseudo-inclusive, such growth process must follow some four fundamental dimensions. Clearly, literature still has the IG conceptualization ongoing. For that matter, considering IG from a multiple approach is apt.

Methodology: Data Source, Sample Frame and Empirical Model

Measuring Inclusive Growth Through a Social Mobility Function Approach

Due to the emerging nature of the concept of IG, there seems not to be a convergence in the literature as to the appropriate measure of IG. A working definition of IG is therefore a good starting point for the operationalization of the concept. In this article, we argue that IG is a two-dimensional variable. Similar to the work of Anand, Mishra, and Peiris (2013), we posit that IG is a function of income growth and income distribution. Consistent with Ali and Son (2007) and Anand, Mishra, and Peiris (2013), our measure of IG is based on the theoretical underpinnings of concentration curves (see Kakwani, 1980). Accordingly, we define a generalized concentration curve, which Anand, Mishra, and Peiris (2013) refer to as a social mobility curve, K^c, such that:

$$K^c \approx \left(y_1, \frac{y_1 + y_2}{2}, \ldots\ldots\ldots\ldots \frac{y_1 + y_{2+\ldots} + y_n}{n} \right) \tag{1}$$

where n is the number of persons in the population with income $y_1, y_2, \supset, \supset \supset \ldots, y_n$, such that y_1 the poorest and y_n is the richest among the population. According to Anand, Mishra, and Peiris (2013), this generalized concentration curve is basically a cumulative distribution of a social mobility vector $K \approx \left(y_1, y_2, y_3, \ldots,\ldots,\ldots, y_n\right)$ with an underlining function $w = w\left(y_1, y_2, y_3, \ldots,\ldots,\ldots, y_n\right)$ satisfying two properties of social welfare function. That is, it is increasing in its argument (to capture growth dimension) and it satisfies the transfer property—any transfer of income from a poor person to a richer person reduces the value of the function (to capture distributional dimension). Since the social mobility curve is increasing in its argument, higher income will imply a higher generalized concentration curve. Therefore, two curves could be ranked based on which a higher social benefit is offered. This could be done by considering the area under the curves. In Anand, Mishra, and Peiris (2013), they illustrate the social mobility curves to further their arguments. However, we believe such illustration is superfluous.

To capture the magnitude of the change in income distribution, Anand, Mishra, and Peiris (2013) use a simple form of the social mobility function by calculating a social mobility index from the area under the social mobility curve:

$$\bar{y}^* = \int_0^{100} \bar{y}_i di \tag{2}$$

The greater the $\bar{y}^*$, the greater is the income. If the income of everyone in the population is the same (i.e., if income distribution is completely equal), then $\bar{y}^*$ will be equal to $\bar{y}_i$. If $\bar{y}^*$ is lower than $\bar{y}_i$, it implies that the distribution of income is unequal. So, the deviation of $\bar{y}^*$ from $\bar{y}_i$ is an indication of inequality in income distribution.

Ali and Son (2007) use this feature of $\bar{y}^*$ and propose an income equity index (IEI) as:

$$\omega = \frac{\bar{y}^*}{\bar{y}_i} \tag{3}$$

For a completely equitable society, $\omega = 1$. Thus, a higher value of ω (closer to one) represents higher income equality. Rearranging Equation (3),

$$\bar{y}^* = \omega * \bar{y}_i \tag{4}$$

IG requires increasing $\bar{y}^*$ which could be achieved by (a) increasing $\bar{y}_i$, that is, increasing average income through growth; (b) increasing the equity index of income, ω, hrough increasing equity; or (c) a combination of (a) and (b). Differentiating Equation (4):

$$d\bar{y}^* = \omega * d\,\bar{y}_i + d\omega * \bar{y}_i \tag{5}$$

where $d\bar{y}^*$ is the change in the degree of IG. A positive change in the social mobility index, $d\bar{y}^*$, indicates that growth is inclusive. Therefore, IG is dependent on both the sign and magnitude of the two right-hand terms (RHT). It is important to note that different weights could be applied to changes in growth and changes in equality depending on which one is of more concern to a particular setting. However, in Anand, Mishra, and Peiris (2013), sensitivity analysis was conducted and the results indicate that moderate changes to the weighting of growth and equity dimensions do not significantly alter the ranking of countries or dynamics of IG across the globe.

Our measure of IG is therefore a latent variable constructed from Equation (5) while using per capita GDP and GINI coefficient as measures of income and equality, respectively. The GINI coefficient is a ratio that lies within a range of 0 and 1, where 0 represents a perfect equality and 1 represents perfect inequality. Since we require a measure of equality in our model, we reconstruct the inequality measure into an equality measure as follows:

$$Q = \left(1 - GINI\right) \tag{6}$$

where Q is our measure of equality and *GINI* is inequality data provided by World Bank in their World Development Indicators (WDI).

Using social mobility function approach to measure IG is limited in the number of growth outcomes that can be captured in the conceptualization of IG. For this reason, we have also used the ADB's framework of IG, which allows for the use of more growth outcome variables that generally measure the ability of all groups of people to benefit from the growth process. For example, the social mobility function approach does not consider growth outcomes such as employment, access to social amenities, health care, etc. The ADB approach, however, considers all these growth outcomes.

Constructing an Inclusive Growth Index

In this section, we construct an IG measure underpinned by the ADB's framework of IG. As part of their strategy 2020, the ADB seeks to ensure that its conceptualization of IG as being that economic growth with equality of opportunity is achieved (see ADB, 2013). To this regard, the ADB has put together a FIGI. This is a 35-dimensional framework that provides 35 quantitative indicators of income and non-income poverty. These indicators are drawn to ensure that the three policy pillars of ADB being (a) sustained economic growth and development of productive jobs and economic opportunities, (b) social inclusion to ensure equal access to economic opportunity by expanding human capacities and (c) social safety nets to protect the chronically poor and to address the risks, are achieved. These indicators are drawn from across income and non-income poverty and inequality measures, economic growth and employment variables, infrastructure endowment variables, access and inputs to education and health, access to basic infrastructure utilities and services, gender equality and opportunities, social protection and governance measures. In Appendix A, we provide a list of ADB's FIGI indicators. It is important to note, however, that data availability makes it very difficult for one to be able to measure IG to encompass all the indicators listed in Appendix A. In fact, in their own study after the conceptualization, only about 57 per cent of the variables on their list were they able to utilize in computing IG in the Asian region. Data availability and measurement were cited as the reason for their inability to utilize all the indicators as conceptualized. In this study, we adopt the FIGI and Kakwani (1993) methodology in constructing an index for IG. We then use this new IG index to provide robustness check for our IG measure obtained from the social mobility curve approach. We use Kakwani's (1993) methodology because the variables listed on the FIGI have varying measurement methods. In some cases, lower values are more preferable than higher value; the reverse is also the case. Again, while others are continuous scale variables, others are discrete and ordinal variables. Using Kakwani (1993) methodology allows us to reconstruct all the variables into unit-free measures analysis on which therefore becomes easier. Another advantage of this methodology is that it adjusts for the uneven efforts needed to improve the performance of indicators, given the level of its initial state. For instance, it is far easier to reduce maternal mortality from 99 to 91 than to reduce it form 10 to 2. The implication is that as an indicator approaches its maximum possible value, it is difficult to improve such indicator than improving one which is at it minimum possible value. To construct the index for IG, we follow these steps. First, an achievement index is constructed for each indicator as follows;

For indicators where higher values are preferable, for example employment-to-population ratio, the formula for achievement index for indicator x is:

$$f\left(x_{it},U,L\right)=\left(\left(Ln\left(U-L\right)-Ln\left(U-x_{it}\right)\right)/\,Ln\left(U-L\right)\right. \tag{7}$$

For indicators where lower values are preferable, for example poverty headcount ratio, the formula for achievement index for indicator x is:

$$f\left(x_{it},U,L\right)=\left(\left(Ln\left(U-L\right)-Ln\left(x_{it}-L\right)\right)/\,Ln\left(U-L\right)\right. \tag{8}$$

where U is the highest possible value and L is the lowest possible value of indicator x or country i at time i *a*nd Ln is the natural logarithm.

An improvement index for indicator x hich shall later feed into the IG index is therefore given as

$$f\left(x_{it},x_{it-1},U,L\right)=\,f\left(x_{it},U,L\right)-f\left(x_{it-1},U,L\right) \tag{9}$$

After obtaining the improvement index for all the indicators used, we then use a principal component analysis in reducing the dimension of the data. A latent variable proxing IG is therefore obtained and further used as an alternative IG measure in our empirical model estimation.

The limitations to this measure are that there were cases of incomplete data and disparities among countries as to which data were available at what time. This disparity may affect our index measure of IG. However, it is worth noting that the ADB that pioneered this approach faced similar challenges and ended up not using many of the indicators they listed. This challenge is therefore not peculiar to our study.

Empirical Model

This study is conducted from a purely positivist perspective. The study uses a purely quantitative approach in investigating the relationship between FD, institutional Quality and IG. The study relies on secondary data collected from 48 African countries from 1990 to 2016. Due to issues of missing data points, unbalanced panel data are used in the analysis. Data are collected from World Bank's WDI. Since our study is an extension of the finance growth debate, we ensure that our estimation is situated within the growth literature; we therefore include variables exogenous to the growth process. These serve as control variables in our estimation. The variables include population, savings, trade openness, education and infrastructure. While we admit that our list is not exhaustive of the exogenous variables in the growth process, we are guided in our selection by Agbloyor, Abor, Adjasi, and Yawson (2014) who studied growth under the same African setting.

Following the works of Adams and Opoku (2015), Adjasi, Abor, Osei, and Nyavor-Foli (2012), Agbloyor, Gyeke-Dako, Kuipo, and Abor (2016) and Ibrahim and Alagidede (2018), who studied economic growth also under sub-Saharan African setting, we estimate the following dynamic panel model.

$$\begin{aligned} IG_{it} &= \lambda_1 IG_{it-1} + \lambda_2 FD_{it} + \lambda_3 INST_{it} + \lambda_4 FD^2_{it\,it} + \lambda_5 \\ &\left(FD_{it} * INST_{it}\right) + \lambda_6 Z_{it} + \varphi_t + \eta_i + \mu_{it} \end{aligned} \tag{10}$$

In Equation (10), we estimate the IG–FD relationship using a dynamic model as done by growth studies. With dynamic models, however, the inclusion of the lagged term of dependent variable could overshadow the explanatory power of the other explanatory variables. In order not to create any ambiguity in the finance–IG nexus, we estimate Equation (11) using the panel corrected standard errors (PCSE) and fixed effect OLS estimation methods. This we believe provides robustness to our findings.

$$IG_{it} = \lambda_1 FD_{it} + \lambda_2 INST_{it} + \lambda_3 FD^2_{it\,it} + \lambda_4 Z_{it} + \varphi_t + \eta_i + \mu_{it} \tag{11}$$

where subscript it refers country i in time t. IG represents inclusive growth, FD represents financial development, INST represents institutional quality. Z is a vector of the control variables drawn from the growth literature as fundamental determinants of growth. Since IG is a critical part of the contribution of this article, we dedicate some attention on its conceptualization. Our definition of IG is that economic growth coupled with the reduction of inequality. We follow the works of Ali and Son (2007) and Anand et al. (2013) to make a conceptual argument that IG is a two-dimensional variable of equality and economic growth. In our estimations, we test the vanishing effect of finance on IG by including the squared term of FD in the explanatory variables.

Data Source

In Table 1 we present a list of variables used on our estimation and their measurements. Our variables are carefully selected based on their usage in the literature to provide robustness to our findings. In estimating IG measures for the various countries, we rely on WDI for growth measurements and the World Bank's Poverty and Equity Database for inequality measure. All other variables are sourced from the WDI.

Estimation Technique

Growth literature abounds and so are its estimation techniques. Similar to what previous studies have employed within the empirical setting of this study (see Adjasi et al., 2012; Agbloyor et al., 2016), we use systems generalized method of moments (GMM) to estimate our dynamic model. There are various classes of GMM estimators whose development has been led by Arellano and Bond (1991), Arellano and Bover (1995), Blundell and Bond (1998) and Holtz-Eakin, Newey, and Rosen (1988). Within the GMM class, two main types of estimators exist: difference GMM and system GMM. The difference GMM, however, has been shown in the literature to have some biases. It uses the lagged levels of the explanatory variables as instruments for the regression equation in differences which has been found to be inappropriate. The problem is even escalated when the explanatory variables are persistent over time (Agbloyor et al., 2016). The difference GMM also nullifies the country-specific effect in the estimation. The system GMM has been found to overcome these challenges with the difference GMM. In Agbloyor et al. (2016), a strong case was made in favour of GMM in that the approach helps in treating growth as a dynamic process, thus accounting explicitly for the possibility that previous growth may influence future growth. Also, that the GMM approach allows for the endogeneity of the explanatory variables to be controlled for. We, however, acknowledge the possibility of the inclusion of the lagged term of the dependent variable in the explanatory variables could over shadow the influence of our variables of concern. To circumvent this, we estimate the FD–IG nexus using other non-dynamic models to provide robustness to the findings obtained from the GMM estimation.

Table 1. Variables and Measurement

Variables	Measurement
FD1	Domestic credit to private sector (% of GDP)
FD2	Domestic credit provided by financial sector (% of GDP)
REGQ	Ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development
INF	Inflation, consumer prices (annual %)
EDU	School enrolment, secondary (% gross)
GEXP	General government final consumption expenditure (annual % growth)
INFRA	Telephone subscriptions (per 100 people)
INV	Gross capital formation (% of GDP)
POP	Population growth (annual %)
TRADE	Imports and Exports (% of GDP)

Source: The authors.

Analysis and Discussion

Table 2 shows the descriptive statistics of the variables employed in the study. The descriptive statistics provide a distribution of the data applied in the analysis. The distribution of such data is necessary in providing understanding and insight into the nature and sort of data based on which the conclusions in this study are made. The descriptive statistics shows no peculiar pattern in any of the variables used such that a special kind of treatment is required. The mean values of FD, however, indicate low levels of FD across the region. The mean value of trade indicates a high level of trade openness across the various sub Saharan countries mainly driven by imports. Given that the skewness and kurtosis of a normal distribution curve are 0 and 3, respectively, the descriptive statistics show that almost all our variables are not normally distributed. However, our use of GMM and PCSE estimators are robust to non-normality. Table 3 which shows the correlation matrix of the variables used also show no incident of multicolinearity for which treatment is required.

Figure 1 presents the trend in FD across the region over the study period. While the patterns are not entirely the same, there are very significant similarities in their slope especially in the post 2006 era. Though the FD trend is positively sloped, this has been a fairly gentle slope indicating the positive gains being made in respect of financial development in the sub-region are at a very slow pace. African leaders would therefore have to look at implementing policies targeted at financial sector development. Financial inclusion and deepening should be the concern of all policymakers.

It is important to note that much of the debate on 'pro-poor growth' has been as a result of a misunderstanding of fundamentals of some statistical concepts. For instance, mean-based measure of economic growth would capture changes at the lower end only when the distribution is normal. For this reason, we provide a scatter plot that correlates GDP per capita growth rate and Gini coefficient to understand how inequality has fared in the light of increasing GDP per capita.

Table 2. Descriptive Statistics

Variables	Obs.	Mean	Std. Dev.	Min.	Max.	Skewness	Kurtosis
IG	1296	0.0166	0.0916	−0.6222	1.4050	−1.2358	6.5801
FD1	1296	0.1980	0.2304	0.0001	0.9012	2.9897	9.2389
FD2	1295	0.3070	0.3908	−1.1469	0.8431	2.3676	8.8835
REGQ	864	−0.6687	0.6183	−2.4127	1.1273	−0.0731	3.1352
INF	1286	0.1318	0.3946	−0.3584	0.9191	5.8352	9.4477
EDU	1296	0.2184	0.2640	0.0001	1.0827	−0.5262	2.0169
GEXP	1295	0.0488	0.2413	−0.7146	0.9554	1.0089	7.3916
INFRA	1296	0.0274	0.0471	0.0001	0.3150	1.5661	4.6698
INV	1296	0.1989	0.1651	−0.0242	2.1907	5.5227	6.0841
POP	1291	0.0245	0.0104	−0.0618	0.0791	−0.9905	11.0808
TRADE	1296	0.6767	0.4521	0.0001	0.9317	3.4074	7.5665

Source: The authors.

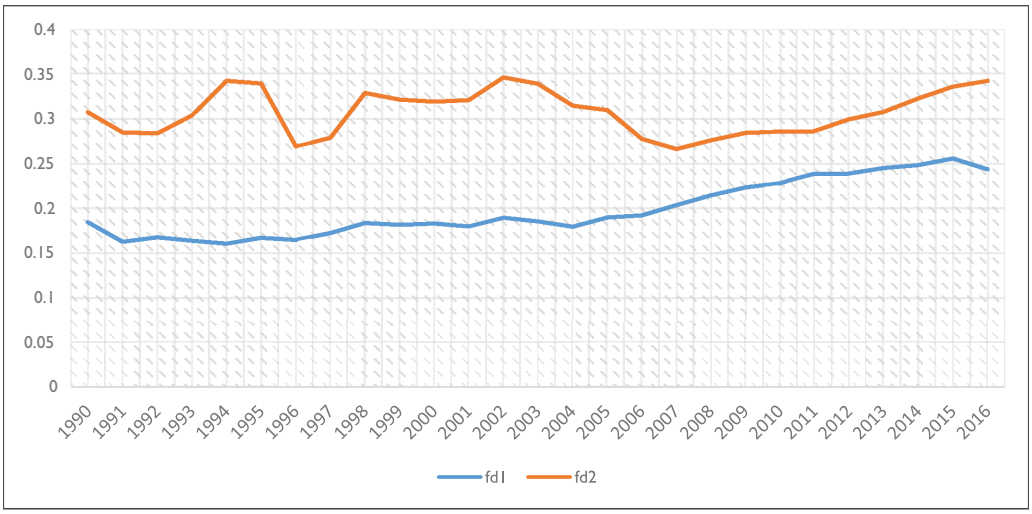

Figure 1. Trend in Financial Development in Africa

Source: The authors.

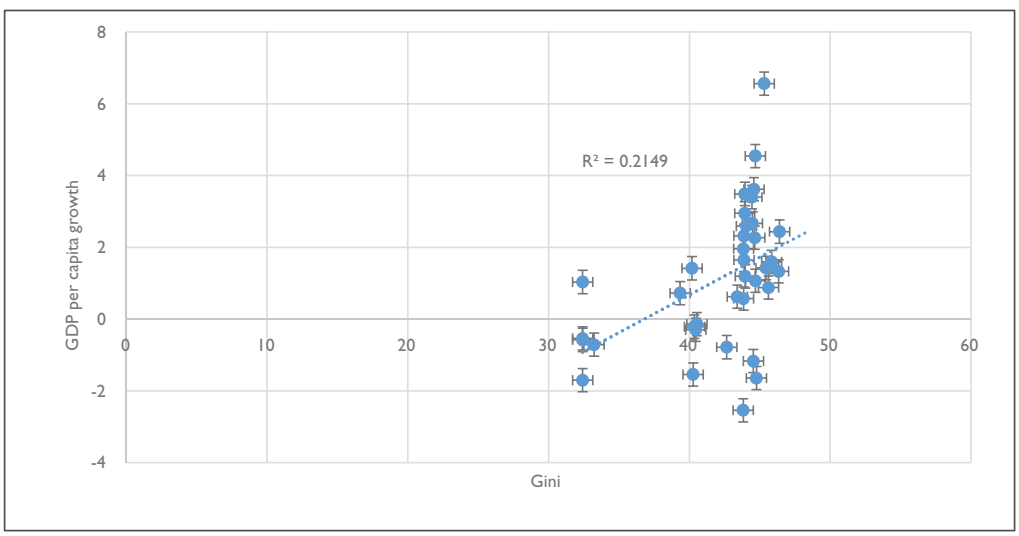

Figure 2. Scatter Plot Correlating GDP Per Capita Growth and Gini

Source: The authors.

Figure 2 shows a scatter plot with error bars and a linear trend line correlating means of GDP per capita growth and Gini coefficient. The R^2 of the relationship shows that less than 22 per cent of the changes in inequality are explained by changes in GDP per capita. This finding goes to suggest that the argument of trickledown economics may not hold, in which increasing growth per se does not improve the inequality situation in Africa. Perhaps this is the main reason that a refocus towards IG is vital.

Table 3. Correlation Matrix

	FD1	*FD2*	*REGQ*	*INF*	*EDU*	*GEXP*	*INFRA*	*INV*	*POP*	*TRADE*
FD1	1.00									
FD2	0.38***	1.00								
REGQ	0.53***	0.04	1.00							
INF	−0.04*	−0.02	−0.09***	1.00						
EDU1	0.17***	−0.02	0.34***	−0.04*	1.00					
GEXP	0.20***	0.01	0.15***	−0.02	0.04	1.00				
INFRA	0.32***	0.04	0.25	−0.03	−0.01	0.04	1.00			
INV	0.05**	−0.04	0.12	−0.03	0.07***	0.29	0.13	1.00		
POP	−0.33***	−0.05*	−0.26	0.02	−0.01	−0.01	−0.14***	0.13**	1.00	
TRADE	0.09**	−0.01	0.01	−0.01	0.05**	0.31***	0.13	0.72	0.08	1.00

Source: The authors.

Note: ***, ** and * significant at 1%, 5% and 10% level, respectively.

In our regression results as shown in tables 4, 5 and 6, we find IG to persist positively since the lag of the dependent variable was found to be statistically significant in explaining the dependent variable. This means that previous levels of IG were found to be positive and significant drivers of present levels of IG. This finding implies that the benefits of IG go beyond its current year. Having achieved IG, subsequent years' attainment of IG is easier. We find a non-linear relationship between finance and IG. This is because, we find the FD in levels to contribute significantly and negatively to IG. However, the squared term of FD was found to be positive and significant. We interpret our results to mean that, in the beginning stages of FD, there is less attention on inclusiveness but as and when a decent level of FD (which level we do not attempt to estimate in this study) is attained, inclusion is sought such that FD impacts positively on IG. This finding is robust across all our estimations. These findings do not support the 'vanishing effect of finance' argument. We admit, however, that studies that have supported the vanishing effect of finance argument have concentrated on economic growth and not IG as used in this study.

Institutional Quality measured by regulatory quality on its own was found not to be statistically significant in explaining IG. However, when institutional quality interacted with FD, we found the interactive term to be positive in explaining IG.

Table 4. Regression Results: GMM Estimation

	1	2	3	4
L.DEP	0.6090***	0.6959***	0.7254***	0.7226***
	(0.0863)	(0.0865)	(0.0520)	(0.0526)
FD1			−0.1473**	−0.1138*
			(0.0586)	(0.0584)
FD1SQ.			0.0448*	0.0679***
			(0.0270)	(0.0257)
FD2	−0.0324**	−0.0437*		
	(0.0158)	(0.0264)		

(Table 4 Continued)

(Table 4 Continued)

	1	2	3	4
FD2SQ.	0.0179**	0.0444***		
	(0.0073)	(0.0112)		
REGQ	−0.0001	−0.0050	−0.0062	−0.0115
	(0.0147)	(0.0139)	(0.0113)	(0.0128)
FD2 x REGQ		0.0250**		
		(0.0120)		
FD1 x REGQ				0.0312*
				(0.0181)
INF	−0.0093*	−0.0091	−0.0072**	−0.0063**
	(0.0054)	(0.0067)	(0.0034)	(0.0032)
EDU	0.0068	0.0052	0.0040	0.0044
	(0.0081)	(0.0080)	(0.0084)	(0.0083)
GEXP	0.0327	0.0637***	0.0473**	0.0454**
	(0.0434)	(0.0196)	(0.0207)	(0.0199)
INFRA	−0.2329**	−0.0651	−0.2458	−0.3091*
	(0.1142)	(0.0940)	(0.1666)	(0.1785)
INV	−0.0219	−0.0475	−0.0277	−0.0294
	(0.0363)	(0.0389)	(0.0437)	(0.0434)
POP	−0.0045	−0.0080	−0.0092	−0.0091
	(0.0057)	(0.0063)	(0.0068)	(0.0067)
TRADE	0.0078	0.0093	−0.0033	−0.0025
	(0.0243)	(0.0283)	(0.0275)	(0.0274)
Country effect	YES	YES	YES	YES
Year effect	YES	YES	YES	YES
No. of Obs.	854	854	855	855
No. of countries incl.	48	48	48	48
AR(2): *p*-value	0.218	0.229	0.23	0.228
Hansen J: *p*-value	0.984	0.962	0.819	0.87

Source: The authors.

Note: ***, ** and * significant at 1%, 5% and 10% level, respectively.

Table 5. Regression Results: OLS–PCSE Estimation

	5	6	7	8
FD1			−0.1395***	−0.1053**
			(0.0429)	(0.0524)
FD1SQ.			0.0411	0.0235
			(0.0280)	(0.0342)
FD2	−0.0451*	0.0057		
	(0.0246)	(0.0220)		
FD2SQ.	0.0370***	0.0500***		
	(0.0143)	(0.0145)		
REGQ	0.0069	0.0240**	0.0105	0.0057
	(0.0099)	(0.0112)	(0.0102)	(0.0118)

(Table 5 Continued)

(Table 5 Continued)

	5	6	7	8
FD2 x REGQ		0.0447*** (0.0130)		
FD1 x REGQ				0.0271 (0.0231)
INF	−0.0600*** (0.0055)	−0.0165*** (0.0057)	−0.0146*** (0.0052)	−0.0139*** (0.0052)
EDU	0.0156 (0.0096)	0.0121 (0.0094)	0.0147 (0.0100)	0.0150 (0.0100)
GEXP	0.0469*** (0.0077)	0.0477*** (0.0077)	0.0468*** (0.0077)	0.0467*** (0.0077)
INFRA	−0.0997 (0.1656)	0.0841 (0.1708)	−0.0632 (0.1967)	−0.1270 (0.2156)
INV	0.0813** (0.0331)	0.07576** (0.0321)	0.1096*** (0.0331)	0.1070*** (0.0333)
POP	0.0233*** (0.0057)	0.0227*** (0.0055)	0.0205*** (0.0056)	0.0205*** (0.0056)
TRADE	0.0197 (0.0132)	0.0244* (0.0125)	0.0104 (0.0129)	0.0110 (0.0130)
Country effect	YES	YES	YES	YES
Year effect	YES	YES	YES	YES
No. of Obs.	854	854	855	855
No. of countries incl.	48	48	48	48
Adjusted R^2	0.3468	0.3577	0.3486	0.3496
Wald χ^2	704.66***	690.07***	742.27***	764.51***

Source: The authors.

Note: ***, ** and * significant at 1%, 5% and 10% level, respectively.

Table 6. Regression Results: FE Estimation

Variables	9	10	11	12
FD1			−0.1184*** (0.0400)	−0.0722 (0.0513)
FD1SQ.			0.0376 (0.0349)	0.0145 (0.0384)
FD2	−0.0510*** (0.0150)	0.0176 (0.0187)		
FD2SQ.	0.0396*** (0.0087)	0.0499*** (0.0093)		

(Table 6 Continued)

(Table 6 Continued)

Variables	9	10	11	12
REGQ	0.0039 (0.0090)	0.0185* (0.0102)	0.0084 (0.0091)	0.0019 (0.0101)
FD2 x REGQ		0.0368*** (0.0123)		
FD1 x REGQ				0.0350 (0.0244)
INF	−0.0204*** (0.0063)	−0.0201*** (0.0062)	−0.0175*** (0.0063)	−0.0168*** (0.0063)
EDU	0.0152* (0.0092)	0.0124 (0.0092)	0.0144 (0.0092)	0.0148 (0.0092)
GEXP	0.0457*** (0.0080)	0.0466*** (0.0080)	0.0463*** (0.0080)	0.0462*** (0.0232)
INFRA	0.0478 (0.1699)	0.1745 (0.1743)	−0.0033 (0.1695)	−0.0797 (0.1776)
INV	0.0981*** (0.0234)	0.0908*** (0.0234)	0.1175*** (0.0232)	0.1148*** (0.0232)
POP	0.0223*** (0.0044)	0.0219*** (0.0044)	0.0198*** (0.0043)	0.0198*** (0.0043)
TRADE	0.0138 (0.0097)	0.0187* (0.0097)	0.0074 (0.0094)	0.0079 (0.0094)
Country effect	NO	NO	NO	NO
Year effect	YES	YES	YES	YES
No. of Obs.	854	854	855	855
No. of countries incl.	48	48	48	48
Adjusted R.sq.	0.1857	0.1947	0.1773	0.1794
F stats	16.48***	16.00***	15.60***	14.49***

Source: The authors.

Note: ***, ** and * significant at 1%, 5% and 10% level, respectively.

This suggests that although the general institutional framework on their own may not necessarily increase IG, their existence is needed to channel the strides of FD into positively influencing IG. We find no statistically significant relationship between inflation and IG within our sample. A similar finding was made in respect of infrastructure. These are all found to be consistent across the various estimations.

We find government expenditure proxied by General government final consumption expenditure (% of GDP) to have a significant positive relationship with our dependent variable. Government spending especially those spent on socially desirable goods are likely to help bridge the gap between the rich and

the poor, thereby making the nature of growth emanating from government spending inclusive. Unlike private investments that are likely to allocate resources to areas where there is demand (which usually is influenced by the rich), government spending seeks to provide the needs of the marginalized and neglected within the society. Many of government investments are in public goods, a situation that leads to life improvement for all and particularly for the poor and minority groups.

Consistent with the growth literature, we find a positive relationship between investment (gross fixed capital formation [% of GDP]) and IG. Also, the population growth rate was found to be a positive determinant of IG. Trade, however, was found to be non-significant. This means that how open an economy is does nothing in ensuring that the nature of growth experienced within such economy is inclusive. Consistent with our a priori expectation that education leads to more inclusiveness, we document a positive relationship between education and IG. However, this relationship is not statistically significant.

Robustness Checks

We follow ADB's FIGI approach to construct an index for IG which we later use as our dependent variable. We do this to provide robustness to the results from the model where the social mobility function is used in estimating IG. With no convergence in the literature on the appropriateness of a methodology in estimating IG, having estimated IG first from a social mobility function and second by constructing an index following the ADB's FIGI approach makes this study a novelty. Due to data constraints, we use nine indicators drawn from across the original FIGI. The indicators used though not exhaustive, are representative of the entire FIGI. As discussed earlier, not even the ADB used all the indicators on its FIGI in constructing an index for IG. In Table 7, we list the variables we used in constructing our index for IG.

Figure 3 shows the scree plot from the principal component analysis. The scree plot shows three eigenvalues being greater than one with principal component one's eigenvalue being significantly higher than the rest of the eigenvalues. From Table 8, it is clear that the first three principal components cumulatively account for about 82.84 per cent variation in the data. Using an orthogonal varimax rotation coefficients scoring method, we proceed by computing an IG index from the first three principal components.

Table 7. Variables Used in Constructing IG Index

	Variables Extracted from WDI and WGI
1	Government effectiveness: Estimate (ranging from approximately −2.5 to 2.5)
2	GDP per capita growth (annual %)
3	Employment to population ratio, ages 15–24, total (%) (modelled ILO estimate)
4	Access to electricity (% of population)
5	Ratio of female to male labour force participation rate (%) (modelled ILO estimate)
6	Poverty headcount ratio at US $1.90 a day (2011 PPP) (% of population)
7	Domestic general government health expenditure (% of general government expenditure)
8	CPIA social protection rating (1 = low to 6 = high)
9	Government expenditure on education, total (% of government expenditure)

Source: The authors.

Table 8. PCA Results

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	4.5491	2.8051	0.5055	0.5055
Comp2	1.7440	0.5811	0.1938	0.6992
Comp3	1.1628	0.2164	0.1292	0.8284
Comp4	0.9464	0.5508	0.1052	0.9336
Comp5	0.3956	0.2614	0.0440	0.9775
Comp6	0.1343	0.0872	0.0149	0.9925
Comp7	0.0471	0.0283	0.0052	0.9977
Comp8	0.0188	0.0169	0.0021	0.9998
Comp9	0.0019		0.0002	1.0000

Source: The authors.

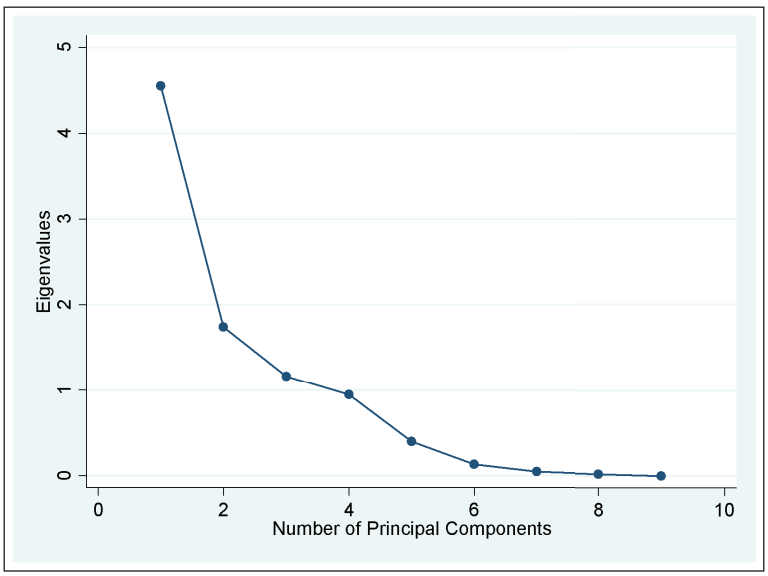

Figure 3. Scree Plot of Eigenvalues After PCA

Source: The authors.

We then use new IG index computed as our dependent variable in estimating Equation (11). The results which are presented in Table 9 indicate a high level of consistency with our initial results when IG was computed using the social mobility curve approach.

Consistent with our initial findings, we find our alternative measures of FD to be negatively influencing IG. However, the squared term of FD is seen to be positive though only seen to be significant in only one model. The influence of regulatory quality on our dependent variable is ambiguous. However, when interacted with FD, we see a consistently positive relationship with IG. All other controlled variables remain consistent with our initial estimation results with the exception of education which is now showing high level of significance in influencing IG positively when it had initially showed only a weak positive relationship with our dependent variable.

Table 9. Regression Result: Inclusive Growth Index

	OLS–PCSE				FE			
	13	14	15	16	17	18	19	20
FD1	−0.0602*** (0.0194)	−0.0422* (0.0249)			−0.0813*** (0.0253)	−0.0744** (0.0322)		
FD1SQ	0.0302** (0.0120)	0.0148 (0.0176)			0.0275 (0.0228)	0.0239 (0.0250)		
FD2			−0.0295* (0.0159)	−0.0428*** (0.0147)			−0.0228** (0.0098)	−0.0433*** (0.0120)
FD2SQ			0.0137 (0.0118)	0.0030 (0.0107)			0.0098* (0.0057)	0.0030 (0.0061)
REGQ	0.0094*** (0.0030)	0.0176 (0.0142)	0.0227*** (0.0065)	−0.0230** (0.0092)	0.0136** (0.0059)	0.0054 (0.0158)	0.0109* (0.0059)	−0.0233*** (0.0079)
FD2 × REGQ				0.0193** (0.0078)				0.0198*** (0.0066)
FD1 × REGQ		0.0064* (0.0038)				0.0127* (0.0065)		
INF	−0.0138*** (0.0042)	−0.0136*** (0.0042)	−0.0150*** (0.0040)	−0.0155*** (0.0040)	−0.0144** (0.0040)	−0.0143*** (0.0041)	−0.0151*** (0.0040)	−0.0154*** (0.0040)
EDU	0.0148** (0.0058)	0.0144** (0.0058)	0.0072 (0.0060)	0.0113* (0.0059)	0.0135** (0.0060)	0.0135** (0.0060)	0.0130** (0.0060)	0.0112* (0.0060)
GEXP	0.0332*** (0.0070)	0.0330*** (0.0070)	0.0304*** (0.0060)	0.0304*** (0.0059)	0.0292*** (0.0053)	0.0292*** (0.0053)	0.0300*** (0.0053)	0.0304*** (0.0052)
INFRA	0.0057 (0.0493)	−0.0244 (0.0601)	−0.3218*** (0.1046)	0.0787 (0.1068)	0.0519 (0.1089)	0.0391 (0.1152)	−0.0276 (0.1081)	0.0696 (0.1126)
INV	0.1075*** (0.0240)	0.1078*** (0.0250)	0.1276*** (0.0283)	0.1379*** (0.0282)	0.1372*** (0.0149)	0.1367*** (0.0150)	0.1399*** (0.0151)	0.1371*** (0.0151)
POP	0.0026 (0.0018)	0.0019 (0.0019)	0.0190*** (0.0040)	0.0237*** (0.0042)	0.0225*** (0.0028)	0.0225*** (0.0028)	0.0239*** (0.0029)	0.0236*** (0.0029)
TRADE	0.0084 (0.0074)	0.0079 (0.0075)	0.0095 (0.0118)	0.0110 (0.0110)	0.0130** (0.0061)	0.0131** (0.0061)	0.0088 (0.0063)	0.0112* (0.0063)

(Table 9 Continued)

(Table 9 Continued)

	OLS–PCSE				FE			
	13	14	15	16	17	18	19	20
Country effect	Yes	Yes	Yes	Yes	No	No	No	No
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of Obs.	855	855	854	854	855	855	854	854
No. of countries incl.	48	48	48	48	48	48	48	48
Adjusted R^2	0.4075	0.4087	0.5555	0.5722	0.2902	0.2894	0.2853	0.2921
Wald χ^2	558.00***	646.57***	1625.21***	1633.93***				
F-stats					40.62***	36.89***	39.76***	37.28***

Source: The authors.

Notes: ***, ** and * significant at 1%, 5% and 10% level, respectively.

Conclusion

The finance growth nexus has gained a lot of attention in the literature though its conclusion is yet to be seen. Unidirectional causality flowing from finance to growth as well as from growth to finance has been documented. Bi-directional causality has also been documented in the literature. Albeit, all these studies have looked at it from the perspective of wholesale economic growth. In this study, we have refocussed the argument on IG. We argue the superiority of IG to wholesale economic growth and further explore how FD relates to IG. We find that the financial market at initial stages of development impacts negatively on IG. However, after achieving some level of development, issues of inclusiveness become pertinent. We further document that for initial levels of FD to have a positive influence on IG, there needs to be effective institutions that will regulate the activities of financial market players in ensuring that they are inclusive in nature. We estimate this relationship while accounting for education, inflation, population growth, government expenditure, investment and infrastructure, all of which were drawn from the growth literature. Mindful of the fact that there is no convergence in the literature yet on the appropriateness of an IG measure, we use the approaches of two leading strands; the social mobility function approach and the IG index approach. Our results from the two approaches are highly consistent with each other. These findings have some compelling policy implications.

Managerial Implications

Results from our GMM estimation showed persistence of IG. Policymakers are therefore advised to up their efforts in engendering IG since IG in a year could drive more IG in subsequent years. We documented a U relationship between FD and IG. We recommend that policymakers concern themselves with translating initial levels of FD into growth and not IG per se. This is because, in the long term, a continuous increase in FD shall lead to IG. The desire to increase FD should supersede the desire for inclusion especially in the short run. Developing quality institution is necessary but not sufficient in creating IG. It must be done vis-à-vis increasing FD. Government spending programmes should be targeted at the excluded to help bridge the gap between the rich and the poor. This, however, should not be in the form of handouts which only implies pseudo-IG and not real IG as espoused by Suryanarayana (2015).

Limitations and Future Research

Although we document a non-linear relationship between finance and IG, we do not investigate that threshold beyond which the nature of the relationship changes. We recommend that future studies explore the threshold of FD beyond which its influence on IG begins to be positive.

Acknowledgements

The authors are grateful to the anonymous referees of the journal for their extremely useful suggestions to improve the quality of the article. Usual disclaimers apply.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The authors received no financial support for the research, authorship and/or publication of this article.

ORCID iD

Matthew Ntow-Gyamfi https://orcid.org/0000-0002-3545-8762

Appendix A

ADB's Framework for Inclusive Growth Indicators

1	Proportion of population living below the national poverty line
2	Proportion of population living below US$2 a day at 2005 PPPUS$
3	Ratio of income or consumption of the highest quintile to lowest quintile
4	Average years of total schooling (youth and adults)
5	Prevalence of underweight children under 5 years of age
6	Under-five mortality rate per 1,000 live births
7	Growth rate of GDP per capita at PPP (constant 2005 PPPUS$)
8	Growth rate of average per capita income or consumption 2005 PPPUS$ (lowest quintile, highest quintile and total)
9	Employment-to-population ratio
10	GDP per person engaged at constant 1990 PPPUS$
11	Number of own-account and contributing family workers per 100 wage and salaried workers
12	Per capita consumption of electricity
13	Percentage of paved roads
14	Number of cellular phone subscriptions per 100 people
15	Depositors with commercial banks per 1,000 adults
16	School life expectancy (primary to tertiary)
17	Pupil–teacher ratio (primary)
18	Diphtheria, tetanus toxoid and pertussis (DTP3) immunization coverage among 1-year-olds
19	Physicians, nurses and midwives per 10,000 population
20	Government expenditure on education as a percentage of total government expenditure
21	Government expenditure on health as a percentage of total government expenditure
22	Percentage of population with access to electricity
23	Share of population using solid fuels for cooking
24	Proportion of population using an improved drinking water source
25	Proportion of population using an improved sanitation facility
26	Gender parity in primary, secondary and tertiary education
27	Antenatal care coverage (at least one visit and at least four visits)
28	Gender parity in labour force participation
29	Percentage of seats held by women in national parliament
30	Social protection and labour rating
31	Social security expenditure on health as a percentage of expenditure on health government

32	Government expenditure on social security and welfare as a percentage of total government expenditure
33	Voice and accountability
34	Government effectiveness
35	Control of corruption

Source: Prepared by the authors from ADB's FIGI.

References

Adams, S., & Opoku, E. E. O. (2015). Foreign direct investment, regulations and growth in sub-Saharan Africa. *Economic Analysis and Policy, 47,* 48–56.

ADB. (2013). *Framework of inclusive growth indicators: Key indicators for Asia and the Pacific*. Mandaluyong City, Philippines: Asian Development Bank.

Adjasi, C. K., Abor, J., Osei, K. A., & Nyavor-Foli, E. E. (2012). FDI and economic activity in Africa: The role of local financial markets. *Thunderbird International Business Review, 54*(4), 429–439.

Adu, G., Marbuah, G., & Mensah, J. T. (2013). Financial development and economic growth in Ghana: Does the measure of financial development matter? *Review of Development Finance, 3*(4), 192–203.

Agbloyor, E. K., Abor, J. Y., Adjasi, C. K. D., & Yawson, A. (2014). Private capital flows and economic growth in Africa: The role of domestic financial markets. *Journal of International Financial Markets, Institutions and Money, 30,* 137–152.

Agbloyor, E. K., Gyeke-Dako, A., Kuipo, R., & Abor, J. Y. (2016). Foreign direct investment and economic growth in SSA: The role of institutions. *Thunderbird International Business Review, 58*(5), 479–497.

Alexander, P., & Baden, S. (2000). *Glossary on macroeconomics from a gender perspective*. Brighton, UK: BRIDGE, Institute of Development Studies, University of Sussex.

Ali, I., & Son, H. H. (2007). Measuring inclusive growth. *Asian Development Review, 24*(1), 11.

Al-Yousif, Y. K. (2002). Financial development and economic growth: Another look at the evidence from developing countries. *Review of Financial Economics, 11*(2), 131–150.

Anand, R., Mishra, M. S., & Peiris, S. J. (2013). *Inclusive growth: Measurement and determinants* (International Monetary Fund No. 13–135). Washington, DC: IMF.

Arcand, J. L., Berkes, E., & Panizza, U. (2015). Too much finance? *Journal of Economic Growth, 20*(2), 105–148.

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies, 58*(2), 277–297.

Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics, 68*(1), 29–51.

Beck, T., & Levine, R. (2004). Stock markets, banks, and growth: Panel evidence. *Journal of Banking and Finance, 28*(3), 423–442.

Beck, T., Demirgüç-Kunt, A., & Maksimovic, V. (2005). Financial and legal constraints to firm growth: Does size matter? *Journal of Finance, 60*(1), 137–177.

Beck, T., Maimbo, S. M., Faye, I., & Triki, T. (2011). *Financing Africa: Through the crisis and beyond*. Washington, DC: World Bank.

Bittencourt, M. (2012). Financial development and economic growth in Latin America: Is Schumpeter right? *Journal of Policy Modeling, 34*(3), 341–355.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics, 87*(1), 115–143.

Calderón, C., & Liu, L. (2003). The direction of causality between financial development and economic growth. *Journal of Development Economics, 72*(1), 321–334.

Cecchetti, S. G., & Kharroubi, E. (2012). *Reassessing the impact of finance on growth* (BIS Working Paper No. 381). Basel, Switzerland: Bank for International Settlements.

De la Torre, A., Ize, A., & Schmukler, S. L. (2011). *Financial development in Latin America and the Caribbean: The road ahead*. Washington, DC: World Bank.

Dollar, D., & Kraay, A. (2002). Growth is good for the poor. *Journal of Economic Growth, 7*(3), 195–225.

Esso, L. J. (2010). Cointegrating and causal relationship between financial development and economic growth in ECOWAS countries. *Journal of Economics and International Finance, 2*(4), 036–048.

Greenwald, B., & Stiglitz, J. E. (2013). Learning and industrial policy: Implications for Africa. In J. E. Stiglitz, J. L. Yifu, & E. Patel (Eds.), *The industrial policy revolution II* (pp. 25–49). London, UK: Palgrave Macmillan.

Holtz-Eakin, D., Newey, W., & Rosen, H. S. (1988). Estimating vector autoregressions with panel data. *Econometrica: Journal of the Econometric Society, 56*(6), 1371–1395.

Huang, H. C., & Lin, S. C. (2009). Non-linear finance–growth nexus: A threshold with instrumental variable approach. *Economics of Transition, 17*(3), 439–466.

Ibrahim, M., & Alagidede, P. (2018). Effect of financial development on economic growth in sub-Saharan Africa. *Journal of Policy Modeling, 40*(6), 1104–1125.

Kakwani, N. (1993). Poverty and economic growth with application to Cote d'Ivoire. *Review of Income and Wealth, 39*(2), 121–139.

Kakwani, N. C. (1980). *Income inequality and poverty*. New York, NY: World Bank.

Kakwani, N., & Pernia, E. M. (2000). What is pro-poor growth? *Asian Development Review, 18*(1), 1–16.

Klasen, S. (2010). *Measuring and monitoring inclusive growth: Multiple definitions, open questions, and some constructive proposals*. Mandaluyong City, Philippines: Asian Development Bank.

Law, S. H., & Singh, N. (2014). Does too much finance harm economic growth? *Journal of Banking and Finance, 41*, 36–44.

Levine, R. (1997). Financial development and economic growth: Views and agenda. *Journal of Economic Literature, 35*(2), 688–726.

———. (2003). More on finance and growth: More finance, more growth? *Review Federal Reserve Bank of Saint Louis, 85*(4), 31–46.

Lucas, R. E., Jr. (1988). On the mechanics of economic development. *Journal of Monetary Economics, 22*(1), 3–42.

Menyah, K., Nazlioglu, S., & Wolde-Rufael, Y. (2014). Financial development, trade openness and economic growth in African countries: New insights from a panel causality approach. *Economic Modelling, 37*, 386–394.

Mitra, A., & Das, D. (2018). Inclusive growth: Economics as if people mattered. *Global Business Review, 19*(3), 756–770.

Ngepah, N. (2017). A review of theories and evidence of inclusive growth: An economic perspective for Africa. *Current Opinion in Environmental Sustainability, 24*, 52–57.

Odhiambo, N. M. (2008). Financial depth, savings and economic growth in Kenya: A dynamic causal linkage. *Economic Modelling, 25*(4), 704–713.

Prah, F., & Quartey, P. (2008). Financial development and economic growth in Ghana: Is there a causal link? *African Finance Journal, 10*(1), 28–54.

Prasanna, K. (2016). Inclusive growth-poverty reduction programmes in India. *Imperial Journal of Interdisciplinary Research, 2*(3), 17–21.

Ravallion, M. (2004). *Pro-poor growth: A primer* (World Bank Policy Research Working Paper No. 3242). Washington, DC: World Bank.

———. (2014). Income inequality in the developing world. *Science, 344*(6186), 851–855.

Ravallion, M., & Chen, S. (2003). Measuring pro-poor growth. *Economics Letters, 78*(1), 93–99.

Rioja, F., & Valev, N. (2004). Finance and the sources of growth at various stages of economic development. *Economic Inquiry, 42*(1), 127–140.

Rousseau, P. L., & Wachtel, P. (2011). What is happening to the impact of financial deepening on economic growth? *Economic Inquiry, 49*(1), 276–288.

Schumpeter, J. A. (1911). *The theory of economic development*. Cambridge, MA: Harvard University Press.

Siddik, M. N. A. (2019). Does financial permeation induce economic growth? Evidence from SAARC countries. *Global Business Review*. Retrieved from https://doi.org/10.1177/0972150918824951

Suryanarayana, M. H. (2015). Inclusive growth for the marginalized: Inclusion vs. pseudo-inclusion. *Journal of Social and Economic Development, 17*(1), 1–13.

———. (2008). What is exclusive about 'inclusive growth'? *Economic and Political Weekly, 43*(43), 93–101.

Zhang, J., Wang, L., & Wang, S. (2012). Financial development and economic growth: Recent evidence from China. *Journal of Comparative Economics, 40*(3), 393–412.