Impact of financial inclusion on economic growth: review of existing literature and directions for future research

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Abstract

The impact of financial inclusion on economic growth is a topic that is generating widespread interest among researchers and practitioners. We review the existing literature to highlight the state of research in the literature and identify new opportunities for innovative research. We used a thematic literature review methodology which involves dividing the review along relevant themes. We find that significant research on the topic emerged in the post-2016 years. Most of the existing studies are from developing countries and from the Asian and African regions. Existing studies have not utilized relevant theories in explaining the impact of financial inclusion on economic growth. Most studies report a positive impact of financial inclusion on economic growth while very few studies show a negative impact. The most common channel through which financial inclusion affects economic growth is through greater access to financial products and services offered by financial institutions that increases financial intermediation and translates to positive economic growth. The common empirical methodology used in the literature are causality tests, cointegration and regression methods. Multiple proxies of financial inclusion and economic growth were used in the literature which partly explains the conflicting result among existing studies. The review paper concludes by identifying some directions for future research.

Keywords: financial inclusion, economic growth, literature review, access to finance, GDP, GDP per capita, causality tests, regression, cointegration, Africa, Europe, Asia, financial inclusion, index, theory.

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1. Introduction

This paper reviews the existing studies on the impact of financial inclusion on economic growth.

Financial inclusion is the process of bringing unbanked adults into the formal financial sector so that they can have access to basic formal financial services (Dev, 2006; Ozili, 2021a). Over the years, financial inclusion has been a top policy priority in many developing countries such as India, the Philippines, Rwanda, Brazil, Argentina, Nigeria and Cambodia. Financial inclusion is desirable because higher levels of financial inclusion in an economy means greater access to finance and higher level of business activities for everyone which leads to increase in people's income and makes it possible for more people to live better lives. The financial inclusion literature has shown that financial inclusion can be increased through microfinance institutions, FinTech providers, digital financial services, government policies and bank branch expansion (Naseer and Azam, 2019; Ozili, 2018; Silue, 2021). Financial inclusion has also been linked to better welfare outcomes and social inclusion (Nanziri, 2016; Ozili, 2020b). Development enthusiasts promote financial inclusion as a development intervention to reduce extreme poverty and generate shared prosperity for people in poor and developing countries (Demirgüç-Kunt and Klapper, 2012). But the development enthusiasts have not considered how financial inclusion affects macroeconomic variables. In the mid-2000s, economists became interested in understanding how financial inclusion interventions affect macroeconomic variables. Since then, there has been an increase in the number of research studies investigating the potential effect of financial inclusion on economic growth.

Economic growth refers to the change in economic output or the change in real gross domestic product over time (Roser, 2013). Economic growth, itself, is a highly contested topic in the economic literature. There are debates about how best to measure economic growth (Daly, 1987). Should it be measured as the change in nominal gross domestic product (GDP) or the change in real GDP? Is gross national product (GNP) a better measure of economic growth than GDP? There are also debates about the determinants of economic growth (Henderson et al, 2011). Such debates have led to questions about whether the activities of financial sector agents have a stronger and lasting impact on economic growth than the activities of real sector agents. These debates in the economic literature become more interesting when financial inclusion is introduced as another determinant of economic growth. This is because it then raises new questions, such as: what are the channels through which financial inclusion affects growth? Is there causality between financial inclusion and economic growth? Is there a long-run or short-run relationship between them? Interestingly, these questions have formed the basis of recent research on the effect of financial inclusion on economic growth.

Academic research about the effect of financial inclusion on economic growth has increased over the years. While there were only 20 papers on the effect of financial inclusion on economic growth between 2000 to 2016, research articles about the effect of financial inclusion on economic growth exceeded 50 articles between 2017 and 2021. Yet none of these research articles have been published in the top-tier finance or economics journals (i.e. *Journal of Finance*, *Journal of Financial Economics*, *American Economic Review* and *Econometrica*). This creates an opportunity for economists to conduct and publish high quality research on the effect of financial inclusion on economic growth. Regarding the state of existing research, we note that recent research has increasingly focused not only on how financial inclusion affects economic growth but also on how several factors moderate the impact of financial inclusion on economic growth. Some of the moderating factors include income inequality (Kim, 2016); ICT development (Pradhan et al, 2021) and governance factors (Emara and El Said, 2021).

Despite the growing research interest about the effect of financial inclusion on economic growth, to the best of our knowledge, no review paper exists that thoroughly reviews the existing literature on the topic. Given the benefits of a literature review study, this paper provides a much needed review of existing research on the topic. Our review focuses on six major questions: 1) what is the quantity of research in the literature? 2) What has been the geographical focus of existing studies? 3) What are the theoretical foundations that explain the effect of financial inclusion on economic growth? 4) What are the documented direction of the relationship between financial inclusion and economic growth? 5) What are the common research methods used in the literature? And 6) what are the pertinent areas or directions for future research to advance the literature?

Our paper is related to Sulong and Bakar (2018)'s study. Sulong and Bakar (2018)'s paper focused only on the positive and negative effects of financial inclusion on economic growth. The study did not conduct an in-depth review, and it did not suggest areas for future research on the topic. Also, Sulong and Bakar (2018)'s review study did not examine the geographical focus of existing research. In this review paper, we assess the geographical focus of existing research, we identify the theoretical foundations that explain the effect of financial inclusion on economic growth, we identify the geographical focus of existing research, and we suggest some important directions for future research.

Our review paper contributes to the literature in the following ways. First, our paper contributes to the economic literature by providing a recent review of existing research about how access to finance affects macroeconomic aggregates, particularly, economic growth. Our review paper can help the reader understand the state of research in this area. Second, our review paper adds to the economic literature that analyse the determinants of economic growth. The paper adds to this literature by analyzing existing studies that consider financial inclusion to be a determinant of economic growth, and drawing implications from the findings of such studies. Third, our paper contributes to the financial inclusion literature by showing that financial inclusion may have an effect on economic growth. Lastly, our study contributes to policy discussions about the role of development interventions (e.g. a national financial inclusion strategy) in improving macroeconomic outcomes. Furthermore, we did not extensively delve into specific issues such as the methodological mistakes and inaccuracies we found in existing empirical studies due to ethical research issues. Therefore, our remarks in this review article are limited to issues in the literature that we find to be particularly significant.

The rest of this review paper is structured as follows. Section 2 introduces the methodology used to select the articles included in this research. We present a bibliometric analysis of existing studies in section 3. Section 4 reports the theoretical foundations, the existing empirical research and a discussion of the methodological design used in existing studies. Section 5 offers some areas for future research. Section 6 concludes the paper.

2. Methodology

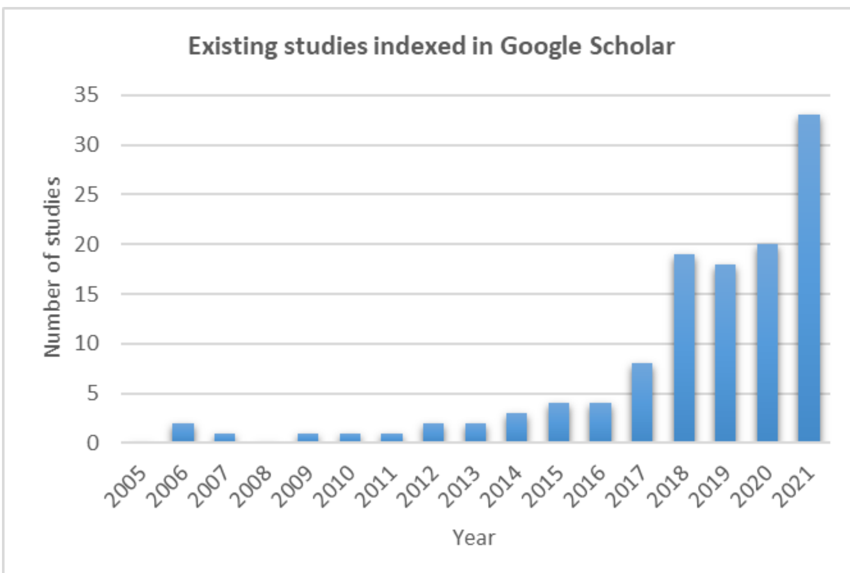
This paper used a thematic literature review methodology to conduct the review. Google Scholar search engine was used to identify the relevant research articles on the effect of financial inclusion on economic growth. We relied on Google Scholar as the main source or database of scholarly research on the topic. The reason for relying on Google Scholar database is because Google Scholar is the world's largest search engine that indexes the full text or metadata of scholarly research across many disciplines. We conducted the research article search on Google Scholar from 2000 to 2022 which means that the sample period for the research articles selected in this review paper is from 2000 to 2022. The keywords "financial inclusion'' and "economic growth" were inserted into Google Scholar search engine at the same time, and the resulting articles were used to conduct the literature review. We excluded all policy articles, dissertation papers and theses that were found in the Google Scholar search results. We also excluded all non-English articles that were found in the Google Scholar search results. We included journal articles, working papers and academic conference papers in order to increase the sample size and to ensure that we take into account all the research that exists in published and non-published formats. After sorting, the final sample of research articles used to conduct the review was less than 100 articles. In the next section, we conduct a bibliometric analysis to show the patterns in the literature such as the number of existing research, and the geographical focus on existing studies.

3. Bibliometric analysis

In this section, we conducted a bibliometric analysis to analyze patterns in the existing literature that are indexed in the Google Scholar database.

3.1. Quantity of research: We analyzed the quantity of existing research that investigates the impact of financial inclusion on economic growth. We focused only on studies indexed by Google Scholar. This allowed us to focus strictly on academic research papers and avoid counting media articles and policy documents about the effect of financial inclusion on economic growth. Our search in Google Scholar revealed that significant research on the effect of financial inclusion on economic growth began to emerge in 2017 which we also refer to as the post-2016 years. The growing interest in the topic among academic researchers was due to curiosity about the impact of various financial inclusion interventions on the economy. Prior to 2017, there was very little research on the effect of financial inclusion on economic growth as shown in figure 1 below.

Figure 1: Existing studies indexed in Google Scholar



3.2. Geographical focus of existing studies: We also analyzed the geographical focus of existing studies on the impact of financial inclusion on economic growth. After sorting the articles obtained from Google Scholar from 2000 to 2022, we made some notable observations (see table 1 and table 2). First, we observed that there were many cross-regional studies, and the countries in the cross-regional sample were mostly developing countries. There were at least 11 cross-regional studies on the impact of financial inclusion on economic growth. In contrast, there were few studies focusing on a single region. In the single region category, we observed that most of the studies were focused on the African region while there was very little focus on the Asian and European regions. No studies were found that focused on the North American and South

American regions. Also, in the context of single-country studies, we observed that more studies have been published focusing on India relative to other countries.

Table 1. Geographical focus of existing research: By Region

Regional studies	Number of studies	Studies & Publisher[1]
Asia	2	Ratnawati (2020); Naseer and Azam (2019)
Europe	2	Bayar and Gavriletea (2018)
Africa	4	Adedokun and Ağa (2021, Wiley); Andrianaivo and Kpodar (2011, IMF); Chinoda and Kwenda (2019, Taylor & Francis); Chinoda and Akande (2019)
Cross-regional studies: studies that analyze multiple countries from different regions	9	Silue (2021); Van et al (2021, Taylor & Francis); Emara and El Said (2021, Elsevier); Usman et al (2021, Elsevier); Chatterjee (2020, Taylor & Francis); Younas et al (2022, Elsevier); Kim et al (2018, Elsevier); Lenka and Sharma (2017, JSTOR)

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Table 2. Geographical focus of existing research: By Country

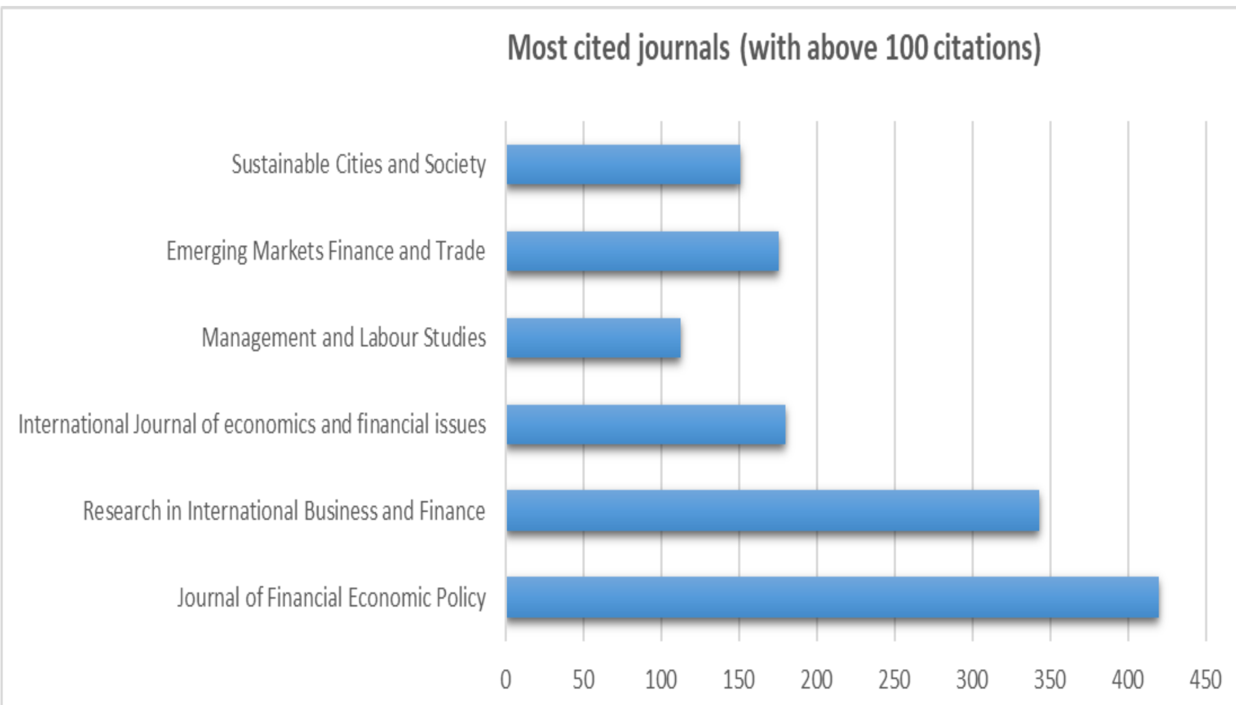
Country	Number of studies	Studies
India	6	Dahiya and (2020, Sage); Singh et al (2021, Wiley); Sharma (2016, Emerald); Sethi and Sethy (2018, Emerald); Vivekanandan (2013); Sofi and Zamir (2019)
Indonesia	1	Erlando et al (2020, Elsevier)
Nigeria	5	Iorember et al (2022, Wiley); Nwafor (2018); Nkwede (2015); Wakdok (2018); Adeoye and Alenoghena (2019)
Bangladesh	1	Datta (2021)
Rwanda	1	Bigirimana and Hongyi (2018)
Pakistan	1	Ali et al (2019)
Zimbabwe	1	Maune et al (2020)

[1] Only reputable publishers are mentioned

3.3. Type of research documents: We used Google Scholar database to identify the most widely used means of disseminating scientific information about the relationship between financial inclusion and economic growth. Among the documents that were found to contain phrases "financial inclusion" and "economic growth" in their title or abstract, we found that 60 percent are "articles", followed by 17 conference papers (24 percent) and 11 book chapters (9.4 percent).

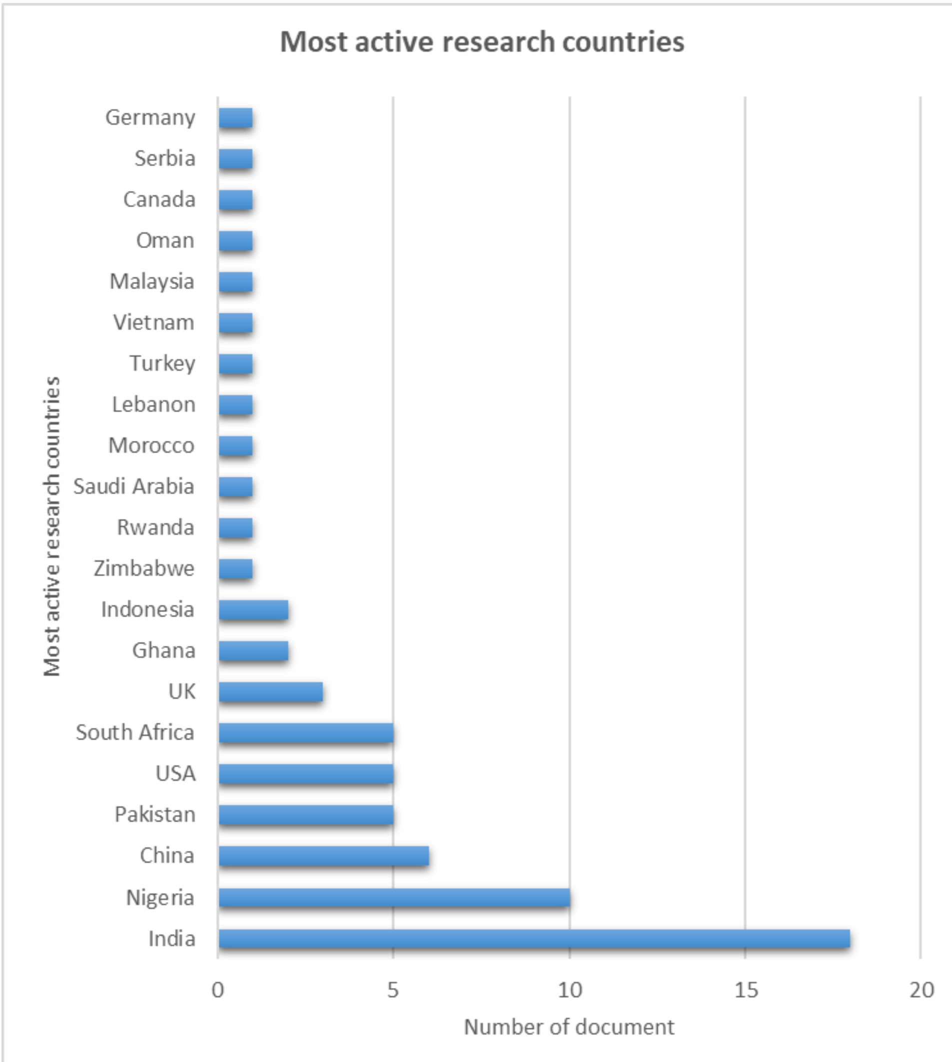
3.4. Journal citations: The top most cited journals (with over 100 citations) indicative of the quality of journal in the field are shown in figure 2. The "*Journal of Financial Economic Policy*" has the maximum citations, followed by "*Research in International Business and Finance*" Journal.

Figure 2: Most cited journals



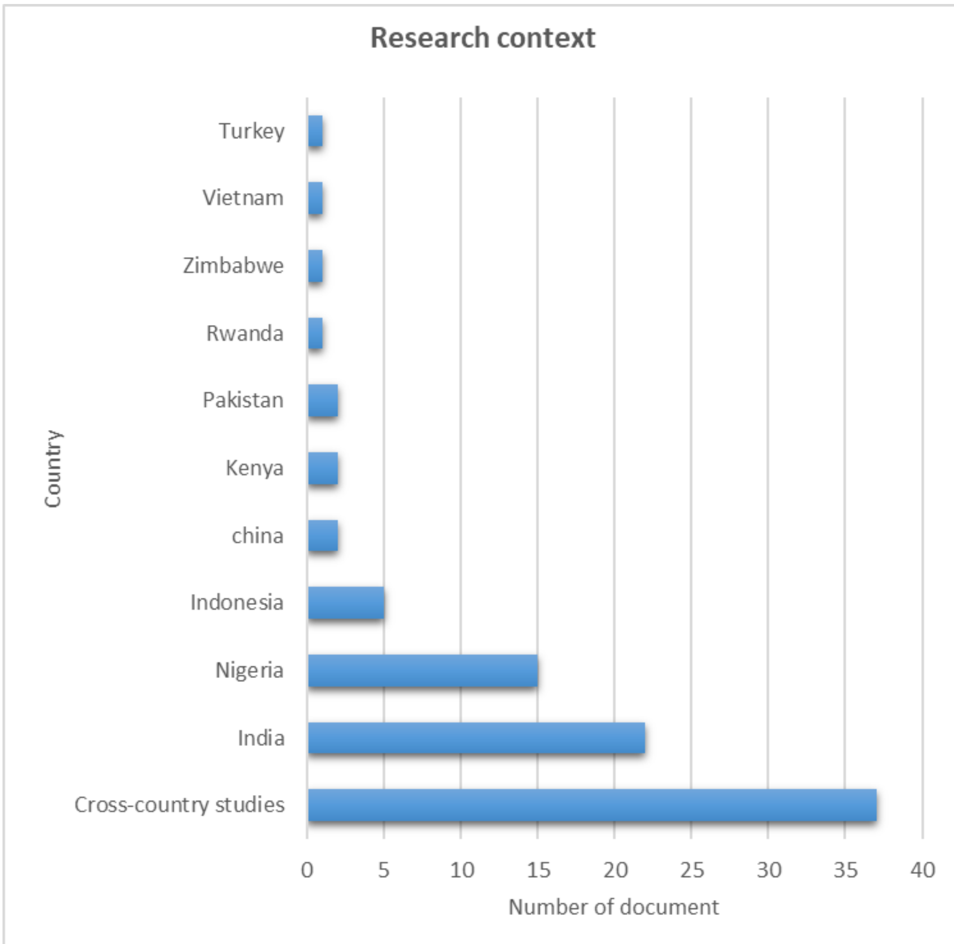
3.5. Most active research countries: The countries that have the most active researchers exploring the impact of financial inclusion on economic growth are India (18 documents) followed by Nigeria (10 documents) and China (6 documents).

Figure 3: Most active research countries



3.6. Research context: More studies have been done in cross-country context (37 documents), India (22 documents) and Nigeria (15 documents). Fewer studies have been done in Rwanda, Zimbabwe, Vietnam and Turkey.

Figure 4: Research context



Overall, the observations above imply that much of the existing studies are developing countries. The increase in research interest from developing countries is due to the fact that financial inclusion is a major development policy objective in many developing countries, and there are expectations that financial inclusion can increase economic growth. These expectations led to increased interest to investigate the effect of financial inclusion on economic growth in developing countries. Meanwhile, financial inclusion is not considered to be a major factor affecting economic growth in developed countries, and this explains the low level of interest in research about the effect of financial inclusion on economic growth in developed countries. Much journal citations have been recorded in finance and economic journals, and scholars from India, China and Nigeria have been prominent in exploring the relationship between financial inclusion and economic growth.

4. Theory and empirical review

This section presents the theoretical foundations. It also reviews the existing empirical research, the channel through which financial inclusion affects economic growth as well as the methodological design used in the existing literature.

4.1. Theoretical Foundations

The contribution of financial inclusion to economic growth can be explained by the theory of finance and growth proposed by Gurley and Shaw (1955), McKinnon (1973) and Levine (2005). The theory argues that the activities of financial institutions can influence financing conditions which in turn can influence the level of investment, production and consumption decisions, and subsequently affect economic output and growth. The theory emphasizes that developing the financial sector will help to ease financing conditions, and increase lending to deficit units which in turn will stimulate growth in the economy since financial intermediaries do a better job in allocating credit toward productivity and output growth (Levine, 2005). The theory of finance and growth also explains the effect of financial inclusion on economic growth because greater financial inclusion will bring in more people and businesses into the formal financial system. Financial institutions can use the new deposits they receive from banked customers to create new loans that will be issued to deficit units which in turn will stimulate production, investment and consumption in the economy and lead to increase in economic output and growth. Recent theoretical studies such as Ozili (2020a) proposed another theory – the system theory of financial inclusion – which argued that financial inclusion outcomes can be achieved through various segments (or sub-systems) of the economic system, e.g. through formal financial institutions. As a result, financial inclusion outcomes will have a positive effect on the segments (or sub-systems) it relies on. This means that financial inclusion outcomes will have a positive effect on the economic system it relies on (Ozili, 2020a). The implication of the theory is that improvements in the indicators of financial inclusion will improve the performance of formal financial institutions which in turn will improve the level of financial intermediation and ultimately lead to improvements in the economic system through higher economic growth (Ozili, 2020a). These two theories lay a good theoretical foundation to understand the effect of financial inclusion on economic growth. However, our review of existing studies that investigate the effect of financial inclusion on economic growth shows that most studies did not utilize theories to explain the effect of financial inclusion on economic growth.

4.2. Studies showing a positive relationship between financial inclusion and economic growth

A number of studies report a positive effect of financial inclusion on economic growth. Cross-country studies show a positive effect of financial inclusion on economic growth. Van et al (2021) investigate the relationship between financial inclusion and economic growth in emerging markets. They construct a multidimensional index of financial inclusion which consists of the number of commercial bank branches per 100,000 adults, the number of ATMs per 100,000 adults, and the ratio of bank credit to the private sector to GDP. They assess the effect of the financial inclusion index on real GDP per capita using a dynamic panel generalized method of moments (GMM) regression model. Their findings show a positive relationship between financial inclusion and economic growth, and the effect is stronger in countries with low income and in countries where the level of financial inclusion is low. Ain, Sabir and Asghar (2020) analyze the effect of financial inclusion on economic growth in developing countries. They analyze 33 developing countries from 2004 to 2016. Financial inclusion was measured using commercial bank branch per 100,000 adults and automated teller machine per 100,000 adults, and the data were analyzed using the GMM regression methodology. They find that financial inclusion has a significant positive effect on economic growth. Sethi and Acharya (2018) investigate the impact of financial inclusion on economic growth in 31 developed and developing countries from 2004 to 2010. Their result shows a long-run relationship between financial inclusion and economic growth, and a bi-directional causality between financial inclusion and economic growth. They find that the financial inclusion index has a significant and positive impact on economic growth. Kim et al (2018) examined the relationship between financial inclusion and economic growth in the Organization of Islamic Cooperation (OIC) countries. Financial inclusion was measured as the diffusion of Islamic finance products in the OIC countries. They find that financial inclusion has a positive effect on economic growth. They also find evidence of mutual causality between financial inclusion and economic growth based on Granger causality tests. Sahay et al (2015) show that financial inclusion increases economic growth up to a point after which financial inclusion lowers economic growth as financial development increases.

Some regional studies show a positive effect of financial inclusion on economic growth. For instance, Emara and El Said (2021) examine Middle East and North African (MENA) countries. They examine the relationship between financial inclusion and economic growth and the moderating role of good governance. They analyze 44 MENA countries from 1990 to 2018. Financial inclusion was measured by households' financial access index. They find that financial inclusion has a significant positive effect on GDP per capita growth in countries that have strong institutions. A related study, Ifediora et al. (2022) examine the effect of financial inclusion on economic growth using panel data of 22 sub-Sahara African countries from 2012 to 2018. They use the system GMM method to analyse the effect of financial inclusion on economic growth. Financial inclusion was measured using a composite index of financial inclusion and individual financial inclusion indicators. They find that financial inclusion, in terms of increase in the number of bank branches and ATMs, have positive and significant impact on economic growth. Ali et al (2021) examine the effect of financial inclusion on economic growth in 45 member countries of the Islamic Development Bank (IsDB) from 2000 to 2016. The study used a financial inclusion index, and the data were estimated using the generalized method of moments (GMM), two-stage least squares (2SLS), panel vector autoregressive (VAR) and panel Granger causality tests. The findings reveal a bi-directional causality between financial inclusion indicators and economic growth.

Country-specific studies also show a positive effect of financial inclusion on economic growth. For instance, Lenka and Sharma (2017) investigate the effect of financial inclusion on economic growth in India from 1980 to 2014. Principal component analysis (PCA) was used to construct a financial inclusion index which consists of the number of deposit and credit accounts in commercial banks per 1,000 adults, the number of bank branches per 1,000 adults, the number of bank employees per bank branches, the amount of deposit and credit as a ratio of GDP. The result of the auto regressive distributive lag (ARDL) and error correction model (ECM) models show that financial inclusion has a positive impact on economic growth both in the long-run and short-run in India. Bigirimana and Hongyi (2018) examine the relationship between financial inclusion and economic growth in Rwanda from 2004 to 2016. Financial inclusion was measured using its access, penetration and usage dimensions. Using the ARDL method, the results show a long-run relationship between GDP and financial inclusion. Obayori and George-Anokwuru (2020) used the ARDL model to assess the impact of financial inclusion on economic growth in Nigeria from 1981 to 2018. The study finds that access to and use of financial services leads to positive improvements in economic growth both in the short-run and long-run. Uruakpa, Kalu and Ufomadu (2019) found that financial inclusion had a significant impact on economic growth in Nigeria. The study investigated the impact of deposits of rural branches of commercial banks, loans of rural branches of commercial banks and ATM transactions on real GDP growth. There was a positive and significant relationship between deposits of rural branches of commercial banks and ATM transactions on real GDP growth, while loans of rural branches of commercial banks had a negative and insignificant relationship with GDP growth. Onaolapo (2015) investigates the effect of financial inclusion on economic growth in Nigeria. The study used financial deepening indicators (i.e. broad money to GDP ratio and credit to private sector to GDP ratio) as proxies for financial inclusion. Although the two financial inclusion indicators have a significant effect on economic growth, the broad money indicator has a positive effect on GDP growth rate, while the private sector credit to GDP ratio has a negative effect on GDP growth rate.

4.3. Studies showing a negative relationship between financial inclusion and economic growth

Few studies document a negative relationship between financial inclusion and economic growth. For example, Khan (2011) argued that efforts to increase financial inclusion may create new risks that could affect the stability of the financial system which in turn can negatively affect economic growth. Empirical studies such as Menyelim et al (2021) examined the effect of financial inclusion on economic growth in 48 countries in Sub-Saharan Africa from 1995 to 2017. They used financial access indicators as proxy for financial inclusion. They find a negative effect of financial inclusion on the relationship between income inequality and economic growth. Maune (2018) examined the moderating role of financial inclusion on the trade-growth nexus in Zimbabwe. The study examined whether financial inclusion is a passage through which trade openness affects economic growth in Zimbabwe. The study found a negative effect of financial inclusion and trade openness on economic growth in Zimbabwe. Nkwede (2015) examined whether financial inclusion promotes economic growth in Nigeria from 1981 to 2013. The study found that financial inclusion has a significant negative impact on economic growth in Nigeria.

Nwisienyi and Obi (2020) also investigate the relationship between financial inclusion and economic growth in Nigeria from 2004 to 2018. The study used the ARDL bounds test for cointegration and the ECM method. They find that financial inclusion, measured by the number of borrowers from commercial banks per 1000 adults, has a negative effect on economic growth. Chiwira (2021) investigates the relationship between financial inclusion and economic growth in Southern African Development Community (SADC) from 1995 to 2015. The study used the ARDL model to determine the co-integrating relationship and the direction of causality between financial inclusion and economic growth. The study finds that financial inclusion has a negative and long-run relationship with economic growth.

The above studies show that financial inclusion can have a negative effect on economic growth. Notwithstanding, the negative effect documented in the literature may be due to the type of variables used to measure financial inclusion and economic growth. The observed negative effect may also be due to model specification problems in the empirical modeling in these studies.

4.4. The channel linking financial inclusion to economic growth

In the literature, there is no consensus or agreement about the channel or mechanism through which financial inclusion affects economic growth. Academic economists hold different views about how financial inclusion affects economic growth. These views are reflected in the findings of the existing research. For instance, Bayar and Gavriletea (2018) showed that financial inclusion positively affects economic growth through greater access to financial institutions and financial markets. The implication of the findings is that greater financial inclusion will give people greater access to the financial products, services and securities offered by formal financial institutions and in financial markets. People can then use these financial products and services to start a business or engage in economic activities that contribute to economic growth. Emara and El Said (2021) examined the relationship between financial inclusion, governance and economic growth in 44 countries from 1990 to 2018. They find that financial inclusion increases GDP per capita growth through better supervisory and regulatory regimes such as better rule of law, judicial independence, contract enforcement, control of corruption and political stability. The implication of Emara and El Said (2021)'s study is that financial inclusion leads to economic growth through better institutions. Pradhan and Sahoo (2021) examined the relationship between financial inclusion, mobile telephony and economic growth in India from 1991 to 2018. They find a unidirectional causality from financial inclusion to mobile telephony and economic growth. The author argued that financial inclusion leads to positive economic growth through the provision of basic financial services offered on mobile phones, which can increase the level of financial intermediation and then contribute to economic growth. Menyelim et al (2021) examined the role of financial inclusion in moderating the effect of income inequality on economic growth in 48 countries in Sub-Saharan Africa from 1995 to 2017. They find that financial inclusion moderates the impact of income inequality on economic growth. The implication of the findings is that greater financial inclusion, through greater access to formal financial services, reduces income inequality which then contributes to economic growth. Rahman and Khaniya (2020) showed that financial inclusion improves economic growth in India through increase in credit-to-deposit ratio and number of bank branches. Silue (2021) examined the relationship between economic growth and financial inclusion in 57 developing countries from 2007 to 2017, and find that financial inclusion leads to positive economic growth through increase in financial system deposits. Overall, these studies confirm that there are multiple channels or mechanisms through which financial inclusion may affect economic growth.

4.5. Review of methodological design in the literature

Next, we look into the common research methodology used by researchers to assess the impact of financial inclusion on economic growth, as well as other methodology design issues in the literature. During the methodological review (see table 3), we observed that existing studies used robust causality tests (e.g., Sethi and Sethy, 2018; Bayar and Gavriletea, 2018; Sethi and Acharya, 2018; Kim et al, 2018), cointegration tests (e.g., Lenka and Sharma, 2017; Sethi and Acharya, 2018; Sethi and Sethy, 2018; Bigirimana and Hongyi, 2018) and regression estimation methodology (e.g., Gul et al, 2018; Makina and Walle, 2019; Van et al, 2021; Emara and El Said, 2021; Chatterjee, 2020; Younas et al, 2022). The results derived from these research methodologies have been largely similar. For instance, much of the regression results showed a positive effect of financial inclusion on economic growth while the causality studies report evidence of causality between financial inclusion and economic growth. Most of these studies report either a unidirectional or bi-directional causality between financial inclusion and economic growth. Also, most of the co-integration studies show evidence of a long-run relationship between financial inclusion and economic growth. Regarding the variables used to measure financial inclusion and economic growth, we observed that many studies have used several constructed financial inclusion index to measure financial inclusion rather than a common financial inclusion index (see table 4). The reason for the multiplicity of financial inclusion index is because there is no single universally accepted financial inclusion index, and there is no agreement in the literature about which financial inclusion index is better or superior than other financial inclusion indexes. Notwithstanding, some studies have consistently used the financial index developed by Sharma (2008). Other variables that have been used extensively to measure financial inclusion, when assessing the effect of financial inclusion on economic growth, are the number of bank branches per 100,000 adults and the number of automated teller machines (ATM) per 100,000 adults (see table 4). Regarding economic growth, the most common dependent variables used to measure economic growth, when assessing the effect of financial inclusion on economic growth, are GDP growth rate, the growth in GDP per capita, real GDP per capita or actual GDP (see table 4). Generally, the literature shows that numerous variables and methodologies have been used to investigate the impact of financial inclusion on economic growth.

Table 3. Existing research methodology

Common methodology	Studies & Publisher	Effect of financial inclusion on economic growth
Granger causality tests	Sethi and Sethy (2018, Emerald); Bayar and Gavriletea (2018); Kim et al (2018, Elsevier)	Unidirectional causality
	Sethi and Acharya (2018, Emerald); Kim et al (2018, Elsevier)	Bi-directional causality
Vector autoregressive distributed lag (ARDL) model and vector error correlation (VEC) model	Lenka and Sharma (2017, JSTOR); Wakdok (2018)	Positive relationship in the short-run and long-run
	Sethi and Acharya (2018, Emerald); Iorember et al (2022, Wiley)	Positive and long-run relationship
Autoregressive distributed lag (ARDL) co-integration	Sethi and Sethy (2018, Emerald); Wakdok (2018)	No evidence of nonlinear co-integration
	Bigirimana and Hongyi (2018); Obayori & George-Anokwuru (2020)	Long-run relationship between

Regression models (i.e. OLS, 2SLS, GMM, panel fixed effect, etc.)	Gul et al (2018); Makina and Walle (2019, Elsevier); Van et al (2021, Taylor & Francis); Emara and El Said (2021, Elsevier); Chatterjee (2020, Taylor & Francis); Younas et al (2022, Elsevier); Ozili (2021b, Emerald); Ifediora et al (2022, Taylor & Francis); Ain et al (2020); Silue (2021)	Significant positive effect
	Adeoye and Alenoghena (2019); Nwafor (2018); Nkwede (2015)	Significant negative effect

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Table 4. Dependent and independent variables used in existing studies

Type	Variables	Existing studies & Publisher
Independent variables: *Financial inclusion*	Various financial inclusion indexes	Erlando et al (2020, Elsevier); Van et al (2021, Elsevier) Dahiya and Kumar (2020, Sage); Singh et al (2021, Wiley); Adedokun and Ağa (2021, Wiley); Lenka and Sharma (2017, JSTOR); Emara and El Said (2021, Elsevier)
	Bank branch and ATM supply	Ratnawati (2020); Emara and El Said (2021, Elsevier); Chatterjee (2020, Elsevier); Gul et al (2018); Ifediora et al (2022, Taylor & Francis); Van et al (2021, Elsevier); Ain et al (2020)
	Financial access survey indicators	Younas et al (2022, Elsevier)
Dependent variables: *Economic growth*	GDP growth	Erlando et al (2020, Elsevier) Ozili (2021b, Emerald), Singh et al (2021, Wiley); Onaolapo (2015)
	Growth in GDP per capita	Ratnawati (2020); Emara and El Said (2021, Elsevier); Chatterjee (2020, Elsevier); Gul et al (2018)
	Real GDP per capita	Nizam et al (2020); Lenka and Sharma (2017, JSTOR); Wakdok (2018); Van et al (2021, Elsevier)
	Gross domestic product	Sharma (2016, Emerald)
	Real GDP	Nkwede (2015)

5. Areas for future research

In this section, we identified seven directions for future research. The directions we offer in this section are limited to areas we find to be particularly significant in the literature. One, some models used to estimate the effect of financial inclusion on economic growth in the literature are not robust. By this, we mean that some of the models in the literature are very sensitive to small changes in model assumptions or sensitive to a change in one or more explanatory variables (e.g. Adeoye and Alenoghena (2019) Nwafor (2018), Nkwede (2015), etc.). The non-robustness of the models used in these papers is due to incorrect model specification. There are also outlier problems where the actual values of GDP are modeled against unit explanatory variables expressed in percentage. These issues need to be addressed by using accurate model identification, specification and robust estimation techniques that are insensitive to small changes in assumptions or variables. Future studies should correctly identify and specify the empirical model used, and adopt robust causality tests, cointegration and regression methods, to ensure that the research results generated are more accurate, precise and reliable. Such studies should also perform series of sensitivity and robustness tests to validate their findings. Two, the literature is silent about how cultural factors, such as religion, influence the relationship between financial inclusion and economic growth. Religion is an important moderating factor. Religious beliefs can discourage people from using formal financial services (Ji, 2020). This can lead to lower levels of financial inclusion that could affect economic growth. Considering the potential effect of religion on the use of formal financial services and financial inclusion, there is a need to empirically investigate the moderating influence of religion on the relationship between financial inclusion and economic growth. Future studies should investigate how religion affects the relationship between financial inclusion and economic growth. Three, the literature is also silent about how people's preference for cash over digital money can affect the relationship between financial inclusion and economic growth. People's preference to hold cash can reduce the level of financial inclusion which in turn can decrease the level of financial intermediation and lead to a decline in economic output and growth. Future studies should investigate how people's preference to hold cash affects the relationship between financial inclusion and economic growth. Four, there is need for more research on how varying degrees of financial stability risks in the financial sector can affect the relationship between financial inclusion and economic growth. In practice, we know that the need to increase financial inclusion can give providers of financial services an incentive to lower their risk management and loan screening criteria when extending new loans to customers. This behavior can increase financial stability risks and negatively affect economic growth. Future research can shed more light on this issue. Specifically, future studies can use available data to investigate whether financial inclusion increases or diminishes economic growth in countries where financial stability risks are significantly high or low. Five, there is need for more research on how institutional quality influences the relationship between financial inclusion and economic growth. It is important to understand whether good institutions, or bad institutions, influence the relationship between financial inclusion and economic growth. Good institutions provide the needed protection and accountability mechanisms that aids economic activities. Good institutions also protect customers from exploitation by providers of financial services and ensure that users of financial services are treated fairly in the formal financial sector. This will encourage more unbanked adults to join the formal financial sector, thereby increasing financial inclusion and subsequently leading to positive economic growth. Future studies should provide more empirical evidence on the role of institutional quality in moderating the relationship between financial inclusion and economic growth. Six, there is need for more research from developed countries. Presently, there are very few studies that examine the effect of financial inclusion on economic growth in developed countries. Although financial inclusion is not a major development issue in developed countries, it is important to understand how financial inclusion affects economic growth in developed countries. Such knowledge can help economists to compare the findings of such studies with the findings obtained from the studies on developing countries. Such comparison can provide a basis to determine whether there is a universal positive or negative effect of financial inclusion on economic growth in developed countries and developing countries. Future studies should investigate the effect of financial inclusion on economic growth in developed countries. Finally, there is need for more research from the Asian region, the European region and the region of the Americas. Presently, there is no study that examines the effect of financial inclusion on economic growth in the region of the Americas, and only few regional studies exist for Europe and Asia. It is important to understand how financial inclusion affects economic growth in these regions. Such knowledge can help economists to compare the findings of such studies with the findings obtained from African studies. Such comparison can provide a basis to determine whether regional characteristics affect the relationship between financial inclusion and economic growth. Future studies should investigate the effect of financial inclusion on economic growth in the European region, the Asian region and the region of the Americas.

6. Conclusion

In this paper, we reviewed the existing literature on the impact of financial inclusion on economic growth. More than 50 research contributions on the impact of financial inclusion on economic growth published between 2000 and 2022 were examined. The articles were analyzed based on the quantity of existing research, analysis of the research methods adopted, analysis of the directional relationship and the channel through which financial inclusion affects economic growth.

We draw the following conclusions from the review of the literature: 1) significant research on the topic emerged in the post-2016 years; 2) most of the existing studies are from developing countries and from the African region and the Asian region with no studies from the region of the Americas; 3) existing studies have not utilized relevant theories in explaining the impact of financial inclusion on economic growth; 4) most studies report a positive effect of financial inclusion on economic growth, while very few studies show a negative effect; 5) the most common channel through which financial inclusion affects economic growth is through increased access to financial products and services offered by financial institutions which increases financial intermediation and translates to positive economic growth; 6) the common empirical methodology used in the literature are causality tests, cointegration and regression methods, and there are multiple proxies of financial inclusion and economic growth which partly explains the conflicting result among existing studies.

The contribution of this review paper is twofold. First, it presents a structured review that provides a guide to both researchers and practitioners on the impact of financial inclusion on economic growth, and it highlights the main approach that researchers have taken on this topic. Secondly, it identifies some important research areas for future investigation.

The policy implication of the findings is that the findings of this review article confirm policymakers' intuition that financial inclusion matters for economic growth. We showed that the channel through which financial inclusion spurs economic growth is through increased access to financial products and services offered by financial institutions which increases financial intermediation and translates to positive economic growth. Consequently, policymakers should focus on formulating market-enabling financial regulations that encourage financial institutions to provide affordable financial products and services to underserved individuals, communities and sectors toward economic growth. With regard to policy relevance, the success of financial inclusion goals and its consequent effect on economic growth will depend largely on the presence of a supportive policy environment that is conducive to financial inclusion and economic growth. Policy makers should ensure that the policy environment is conducive for financial inclusion and economic growth. However, if there is to be a more informed debate about the implications of financial inclusion on growth in specific sectors of the economy, we will need additional evidence on the following questions: Which tools of financial inclusion are most effective to spur growth in different sectors of the economy? Does financial inclusion lead to short-term growth or long-term growth? Does economic growth, induced by financial inclusion, translate to economic development? What factors limit the pass-through from financial inclusion to economic growth? Answers to the above questions are difficult to infer from current studies for a number of reasons. First, most academic studies attempt to document financial inclusion from a positivist perspective instead of a critical realist perspective. Consequently, existing evidence does not help policymakers to assess whether financial inclusion will have a lasting impact on growth in specific sectors of the economy especially during fluctuating economic cycles.

The societal implication of the findings is that the linkage between financial inclusion and economic growth may have positive welfare spillovers because high levels of financial inclusion would make finance available to all members of society regardless of income level thereby giving people an opportunity to use available financial services to improve their welfare, thereby leading to greater social inclusion.

The research implication of the findings is that the research methods used to investigate the linkage between financial inclusion and growth matters. Researchers should give consideration to the extent to which methodological choices explain variations in this literature. The methodological variations have an important bearing on future research into the linkages between financial inclusion and economic growth. Researchers should give careful thought to the structure and scope of their data, the choice of estimation technique, the selection of control variables and the extent to which their results are sensitive to alternative assumptions and techniques. Finally, some findings on how financial inclusion affects economic growth are conflicting and inconclusive, suggesting the need for future empirical and theoretical research. One implication of this review for researchers is that the relationship between financial inclusion and economic growth remains a fertile ground for academic research. Future research in this area can provide new insights if it broadens the questions that have been addressed. Future contributions should come from more powerful tests of whether financial inclusion has a lasting impact on economic growth.

This study has one limitation. It is possible that we may have omitted some relevant research studies despite our effort to ensure that the review would be all-inclusive. However, we believe that this review is an accurate representation of the body of research on the impact of financial inclusion on economic growth published during the period examined. We hope that this review of literature will provide the reader with the big picture of the state of research in this field and can help researchers to initiate new and innovative research projects to extend the literature on the effect of financial inclusion on economic growth.

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