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Comparative analysis of financial inclusion in Nigeria, sub-Saharan Africa and the World

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Abstract

Using six widely accepted indicators, this study compares the progress made in financial inclusion in Nigeria, Sub-Saharan Africa and the rest of the World, with a view to deducing lessons that each entity can improve upon. We find that Nigeria outperformed sub-Saharan Africa in three indicators of financial inclusion while sub-Saharan Africa did better than Nigeria in one metric. Nigeria and sub-Saharan Africa exceeded the World average in informal borrowings. We also constructed an index of financial inclusion and found that financial institution account ownership, formal borrowing, informal borrowing and debit or card ownership are significant positive determinants of the financial inclusion index. These findings indicate that policymakers in Nigeria and sub-Saharan Africa have significant room for improving their financial inclusion standings towards the global average. We make recommendations on the aspects where policymakers can place their focus in pursuit of this goal.

Keywords: financial inclusion, Nigeria, Sub-Saharan Africa.

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1. Introduction

Financial inclusion is a development policy agenda that ensures easy access and use of affordable financial services both for first-time users and existing users of financial services and without price and non-price barriers (Demirgüç-Kunt and Klapper, 2012). Attaining high levels of financial inclusion is vital for poverty reduction and positive economic growth because inclusive financial systems would give people access to low-cost formal credit and savings products which they can use to pursue promising growth opportunities (Park and Mercado, 2015; Ratnawati, 2020).

While much progress has been made in advancing financial inclusion in developed countries, many developing countries still lag behind in attaining high levels of financial inclusion due to high levels of poverty, financial illiteracy, high trust in informal finance systems, and distrust in the formal financial system (Diniz et al, 2012; Demirgüç-Kunt and Klapper, 2012; Ozili, 2018). In sub-Saharan Africa, significant progress has been made to increase the level of financial inclusion by using financial literacy programs, Fintech and digital financial services (Yermack, 2018; Banna, Mia, Nourani and Yarovaya, 2022). However, these efforts are being hindered by high reliance on informal finance, gender discrimination in access and use of financial services, rising poverty levels, limited number of financial access points, among others (Chamboko, Heitmann and Van Der Westhuizen, 2018).

In Nigeria, much progress has also been made to advance financial inclusion by increasing the number of financial access points in the country through the massive deployment of bank agent networks, the introduction of the eNaira central bank digital currency, increasing the number of microfinance banks, and granting licenses to payment service banks and payment service providers to deepen financial inclusion throughout Nigeria (David-West, 2016; Obiora, 2022; Wayne, Soetan, Bajepade and Mogaji, 2020). These efforts, although significant, have also been affected by the high cost of internet broadband, rising poverty gap, and lack of awareness about digital financial services by some segments of the population. These challenges affecting financial inclusion in Sub-Saharan Africa and in Nigeria are reflected in the recent World Bank global findex database that collects information about the progress made in financial inclusion in countries around the world.

Existing studies have examined financial inclusion in different contexts such as in Nigeria (e.g. Abdu, Buba, Adamu and Muhammad, 2015; Ibor, Offiong and Mendie, 2017; Ozili, 2023), sub-Saharan Africa (e.g. Zins and Weill, 2016; Beck, Senbet and Simbanegavi, 2015; Chikalipah, 2017; Akudugu, 2013; Tinta, Ouédraogo and Al-Hassan, 2022) and in the world (e.g. Jukan and Softic, 2016; Cicchiello, Kazemikhasragh, Monferrá and Girón, 2021; Ozili, 2021a; Antonijević, Ljumović and Ivanović, 2022). But these studies have not presented an overview of the status of financial inclusion in Nigeria and in comparison to sub-Saharan Africa and the world, and to suggest ways to increase the level of financial inclusion in Nigeria up to the world level. Therefore, this paper

fills this gap in the literature by undertaking a comparative analysis of the progress made in financial inclusion in Nigeria, sub-Saharan Africa and the World using the World Bank's global findex data.

There is a need to present an overview of the status of financial inclusion in Nigeria and compare it with that of sub-Saharan Africa and the world, to determine where Nigeria stands in comparison to sub-Saharan Africa and the world, and to suggest ways to increase the level of financial inclusion in Nigeria up to the world level. Therefore, in this paper, we undertake a comparative analysis of the progress in financial inclusion in Nigeria, sub-Saharan Africa and the World using the World Bank's global findex data. We focus our comparative analysis on six widely accepted indicators of financial inclusion, and we draw inferences based on our observations from the data. In the analysis, we observe that most of the financial inclusion indicators for Nigeria fell below the World average during the period except for informal borrowings. On the positive side, Nigeria outperformed sub-Saharan Africa in three indicators of financial inclusion, namely, financial institution account ownership, formal savings, and debit or credit card ownership, while sub-Saharan Africa outperformed Nigeria in the level of formal borrowings. Meanwhile, Nigeria and sub-Saharan Africa exceeded the World average in informal borrowings.

This study contributes to the literature in two ways. The study contributes to the financial inclusion literature by assessing the status of financial inclusion in Nigeria, sub-Saharan Africa and the World, to identify the areas where significant improvements are needed to advance financial inclusion in Nigeria and sub-Saharan Africa. This study also contributes to the literature that use the global findex data to (i) assess the status of financial inclusion, and (ii) draw inference on what countries need to do attain high levels of financial inclusion.

The rest of this study is structured in the following way. Section 2 presents the review of existing literature. Section 3 presents some descriptions and stylized facts on financial inclusion indicators for Nigeria, sub-Saharan Africa and the World. Section 4 develops a financial inclusion index and investigates its determinants. Section 5 presents the conclusion of the study.

2. Literature review

In this section, we organize the literature review according to studies done in Nigeria, sub-Saharan Africa and the world.

Several studies examined the state of financial inclusion in Nigeria. Early studies such as Abdu, Buba, Adamu and Muhammad (2015) analysed the drivers of financial inclusion and its gender gap in Nigeria using the global findex data for the year 2011. They found that youthful age, better education and high income are associated with greater financial inclusion. In a related study, Ibor, Offiong and Mendie (2017) examined financial inclusion in the context of firms in Nigeria. Ibor, Offiong and Mendie (2017) showed that financial inclusion positively affects the operations and growth of medium, small and micro enterprises (MSMEs), and improves the distance to financial services access points in Nigeria.

Ozili (2021b) analysed several indicators of financial inclusion in Nigeria using the global findex data from 2011, 2014 and 2017, and found that people with at least a secondary education and unemployed people had higher levels of debit card ownership, higher levels of account ownership of any type, and higher levels of account ownership in a financial institution. Also, people with at least a secondary education had higher levels of borrowings from a bank or another type of financial institution and had lower levels of savings at a financial institution. Furthermore, there were fewer credit card ownership by unemployed people while credit card ownership increased among employed people, the richest people and among people with at least a secondary education. Finally, borrowings from family or friends decreased for most categories in 2014 and 2017. Ozili (2023) also argued that central bank digital currencies could increase financial inclusion in Nigeria.

Some studies also examined the state of financial inclusion in sub-Saharan Africa. For example, Zins and Weill (2016) investigated the determinants of financial inclusion in 37 African countries using data from the World Bank's global findex database. They analysed the data using probit estimations and found that being a man, richer, more educated and older favor financial inclusion with a higher influence of education and income. They also found that the determinants of informal finance differ from those of formal finance. Beck, Senbet and Simbanegavi (2015) argued that, although Africa’s banking systems are still shallow relative to other regions, substantial progress has been made both in terms of financial inclusion and financial innovation.

Chikalipah (2017) investigated the determinants of financial inclusion in 20 sub-Saharan African countries using World Bank country-level data for the year 2014. They found that illiteracy is the major hindrance to financial inclusion in sub-Saharan Africa. Evans (2018) examined the relationship and causality between internet, mobile phones and financial inclusion in African

countries from 2000 to 2016. The author found that the internet and mobile phones have a significant positive relationship with financial inclusion, meaning that rising levels of internet usage and mobile phones are associated with increased financial inclusion. The author also found a uni-directional causality from internet usage and mobile phones to financial inclusion, implying that internet usage and mobile phones cause financial inclusion. Soumare, Tchana Tchana and Kengne (2016) also analyzed the determinants of financial inclusion. They focused on Central and West Africa, which are the two least financial inclusive regions of the African continent. They used data from the global financial inclusion database (global findex) of the World Bank and found that access to formal finance in the two regions is driven by individual characteristics such as gender, education, age, income, residence area, employment status, marital status, household size and degree of trust in financial institutions. They also found that being male and/or married are positive determinants of financial inclusion for Central Africa and Africa, whereas household size has a negative impact on account ownership in West Africa and not in Central Africa.

Akudugu (2013) examined the determinants of financial inclusion in Western Africa with specific focus on Ghana. They used data from 1000 individual adults across Ghana and estimate the data using logit estimation. They found that only two in five adults are included in the formal financial sector of Ghana. They also found that the age of individuals, literacy levels, wealth class, distance to financial institutions, lack of documentation, lack of trust for formal financial institutions, money poverty and social networks are the significant determinants of financial inclusion in Ghana. The authors called on the governments of Western African countries, particularly Ghana, to formulate a holistic financial framework to mitigate the negative determinants of financial inclusion and sustain the positive determinants.

Matsebula and Yu (2020) examined the usage of financial services and products in south Africa, and found that households headed by more educated, older individuals enjoyed higher financial inclusion, whereas households residing in rural areas, mostly constituted by black people, in Eastern Cape, KwaZulu-Natal and Limpopo, with low real per capita income and fewer employed members, were associated with a significantly greater likelihood of financial exclusion. The authors found that poverty was associated with financial exclusion, including discrimination by banks against the poor.

Tinta, Ouédraogo and Al-Hassan (2022) analyzed the factors influencing financial inclusion and financial resilience in Africa using national surveys of 40 African countries and the doing business database. They found that individual characteristics, barriers to formal accounting, financial literacy and innovation affect the level of financial inclusion. They found that informal savings are common among women, youth and in rural areas, while formal savings are common among men, the elderly and in urban areas. They also found that, when people have employment, high income or education, they turn more to formal credit to preserve their reputation because of the respect

and popularity they enjoy in their community. Kouladoum, Wirajing and Nchofoung (2022) investigated the digital technology-financial inclusion nexus in 43 Sub-Saharan African countries between 2004 and 2019. They found that internet usage and digitalization have a positive significant effect on financial inclusion.

Other studies examined the state of financial inclusion around the world using a diverse international sample that includes both African and non-African countries. For example, Demirgüç-Kunt, Klapper, Singer and Van Oudheusden (2015) analysed the 2014 global financial inclusion (global findex) data and found that 62 percent of adults worldwide have an account at a bank or another type of financial institution or with a mobile money provider. They also found that 700 million adults became account holders, while the number of unbanked adults dropped by 20 percent to 2 billion between 2011 to 2014. Jukan and Softic (2016) examined the level of financial inclusion in developing regions (Eastern, South and Central Asia, Latin America, sub-Saharan Africa, and the Western Balkans), and found a low level of financial inclusion in developing regions.

Cicchiello, Kazemikhasragh, Monferrá and Girón (2021) investigate the relationship between the financial inclusion index and development variables in 42 least developed countries in Asia and Africa from 2000 to 2019. They found that economic growth leads to financial inclusion, while unemployment and literacy rates are factors contributing to financial inclusion. They also found that women are more vulnerable and more likely to be financially excluded than men. Ozili (2021a) reviewed the state of financial inclusion around the World, and found that financial inclusion affects, and is influenced by, the level of financial innovation, poverty levels, the stability of the financial sector, the state of the economy, financial literacy, and regulatory frameworks which differ across countries. Antonijević, Ljumović and Ivanović (2022) examined the differences between men and women in 7 indicators of financial inclusion: 1) owning an account with a financial institution; 2) savings at a financial institution; 3) borrowing from a financial institution; 4) owning a credit card, 5) using a mobile phone or the Internet to access an account; 6) using the Internet to pay bills or to buy something online; 7) making or receiving digital payments. They analysed the global findex data of 2017 among 144 countries and found some significant differences between men and women in all segments related to financial inclusion.

While the above studies have examined financial inclusion in different contexts, these studies have not presented an overview of the status of financial inclusion in Nigeria and in comparison to sub-Saharan Africa and the world, and to suggest ways to increase the level of financial inclusion in Nigeria up to the world level. Therefore, this paper fills this gap in the literature by undertaking a comparative analysis of the progress made in financial inclusion in Nigeria, sub-Saharan Africa and the World using the World Bank's global findex data.

3. Descriptions and Stylized Facts on Financial Inclusion Indicators

This section compares six widely accepted indicators of financial inclusion namely account ownership of any type, account ownership in financial institutions, informal borrowing, formal borrowing, formal savings, and debit or credit card ownership. The six financial inclusion indicators were compared for Nigeria, sub-Saharan Africa and World using data from the Global Findex database from 2011, 2014, 2017 and 2021.

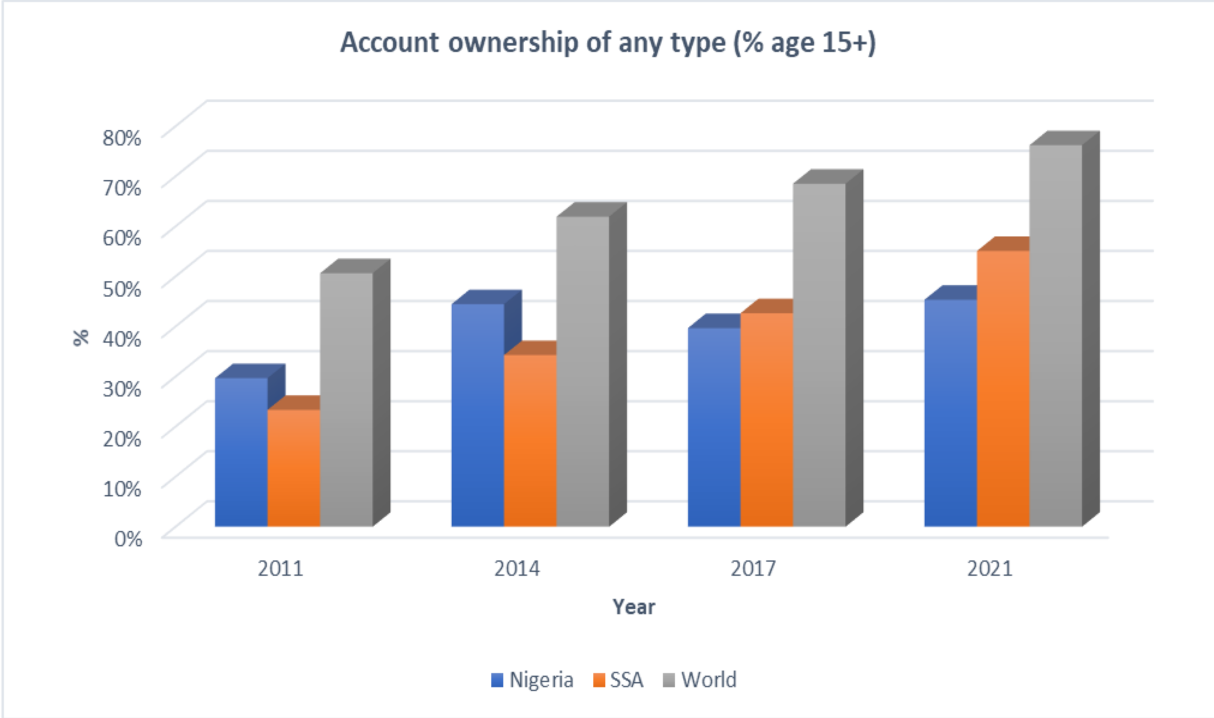
These six indicators are a good representation of financial inclusion because they are the traditional (and early) measures of financial inclusion that capture people's direct interaction with/without formal financial institutions who are the primary agents of financial inclusion, and they are widely used in the literature (e.g., Fungáčová and Weill, 2015; Zins and Weill, 2016; Ozili, 2021b). We dropped other indicators of financial inclusion because they do not measure financial inclusion in relation to formal financial institutions, rather they focus more on payments and mobile money.

3.1. Account ownership of any type: comparing Nigeria, sub-Saharan Africa (excluding high income) and the World

Account ownership of any type refers to owning or having any account that can be used to receive funds and to make payments. Account ownership of any type includes an account at a bank or another type of financial institution or an account with a mobile money provider. Owning an account of any type indicates access to the financial system which indicates greater financial inclusion. The data in figure 1 shows that the level of account ownership of any type in Nigeria was higher than the average level of account ownership of any type in sub-Saharan Africa in 2011 and 2014 but not in 2017 and 2021. The observed high level of account ownership of any type in Nigeria relative to sub-Saharan Africa in 2011 and 2014 was partly due to the fact that majority of Nigerians had access to the accounts offered by mobile services providers in 2011 to 2014. Other reasons for the high level of account ownership of any type include the high penetration of mobile apps that offer financial services, payment service banks, payment service providers, bank agent networks and point-of-sale operators who offer account services to customers in urban and rural areas of Nigeria. However, the level of account ownership of any type decreased in 2017 and 2021 compared to 2014. This was due to a number of factors such as (i) the clampdown of unregistered online apps that offer financial services to many people, (ii) the rising cost of data which made it difficult for people to access mobile accounts that require internet connectivity, and (iii) the adverse effect of the COVID-19 pandemic which reduced the patronage of many Fintech apps. Furthermore, the data in figure 1 shows that the level of account ownership of any type in the sub-Saharan Africa region was significantly lower than that of Nigeria and the World average in 2011 and 2014. This was due to the low penetration of Fintech and online financial services providers in sub-Saharan Africa. Finally, figure 1 shows that the level

of account ownership of any type in Nigeria was lower than the World average in 2011, 2014, 2017 and 2021. This indicates that Nigeria needs to do more to increase account ownership of any type in Nigeria.

Figure 3.1. Account ownership of any type: comparing Nigeria, sub-Saharan Africa (excluding high income) and the World



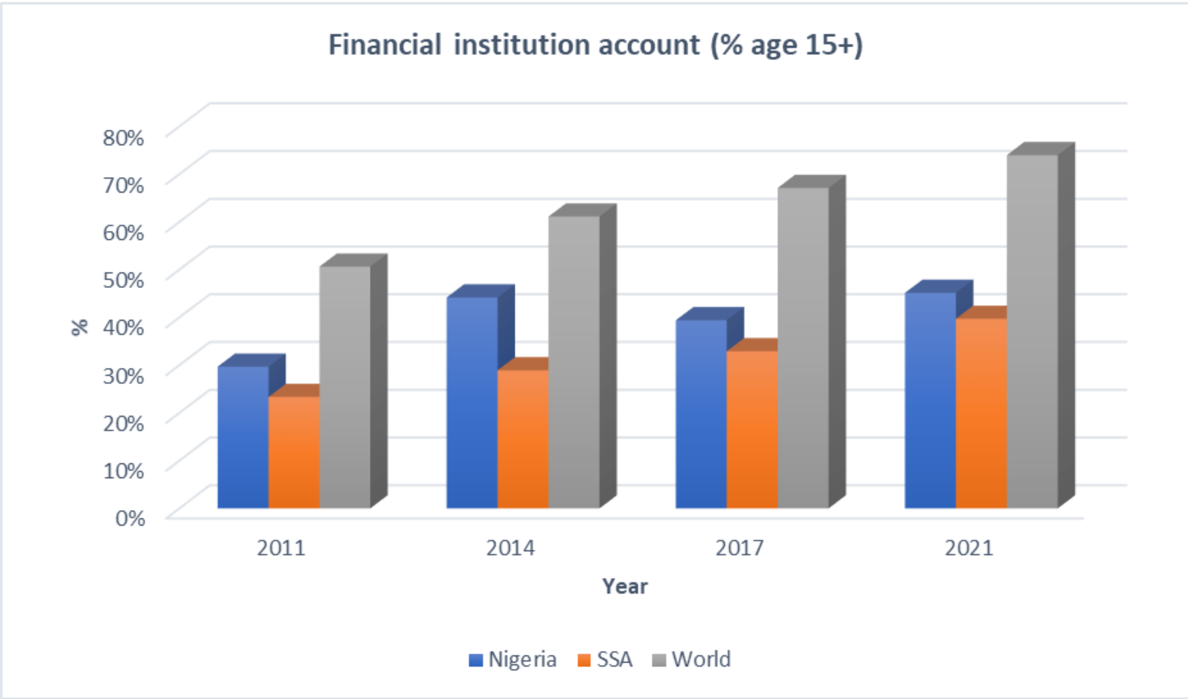
Source: Global Findex database

3.2. Account ownership in financial institutions: comparing Nigeria, sub-Saharan Africa (excluding high income) and the World

Account ownership in financial institutions, or financial institution account, refers to owning or having an account in a formal financial institution. Owning an account in a formal financial institution indicates access to formal financial services which indicates greater financial inclusion. The data in figure 2 shows that the level of account ownership in financial institutions in Nigeria was higher than the average level of account ownership in financial institutions in sub-Saharan Africa in 2011, 2014, 2017 and 2021. The observed high level of account ownership in financial institutions in Nigeria relative to sub-Saharan Africa was partly due to the fact that majority of Nigerians consider banks to be a safer place to keep their money. Other reasons for the high level of account ownership in financial institutions in Nigeria include the following (i) the high confidence that Nigerians have in licensed and regulated financial institutions, (ii) strong

consumer protection, and (iii) the stability of the banking system. In 2021, the level of account ownership in financial institutions in Nigeria also exceeded the sub-Saharan Africa average but was less than the World average during the COVID-19 pandemic due to the shutdown of financial institutions and the low patronage of financial institutions during the pandemic (Ozili, 2020). Furthermore, the data in figure 2 shows that the level of account ownership in financial institutions in the sub-Saharan Africa region was significantly lower than that of Nigeria and the World average in 2011, 2014, 2017 and 2021. This was due to the small number of financial institutions in many sub-Saharan African countries compared to the large number of financial institutions in other regions of the World. Except for Nigeria, South Africa, Ghana, Egypt, Morocco and Tunisia, other sub-Saharan African countries do not have many financial institutions and the existing financial institutions do not have many branches. Finally, figure 2 shows that the level of account ownership in financial institutions in Nigeria was lower than the World average in 2011, 2014, 2017 and 2021. This indicates that Nigeria needs to do more to increase account ownership in financial institutions in Nigeria.

Figure 3.2. Account ownership in financial institutions: comparing Nigeria, sub-Saharan Africa (excluding high income) and the World

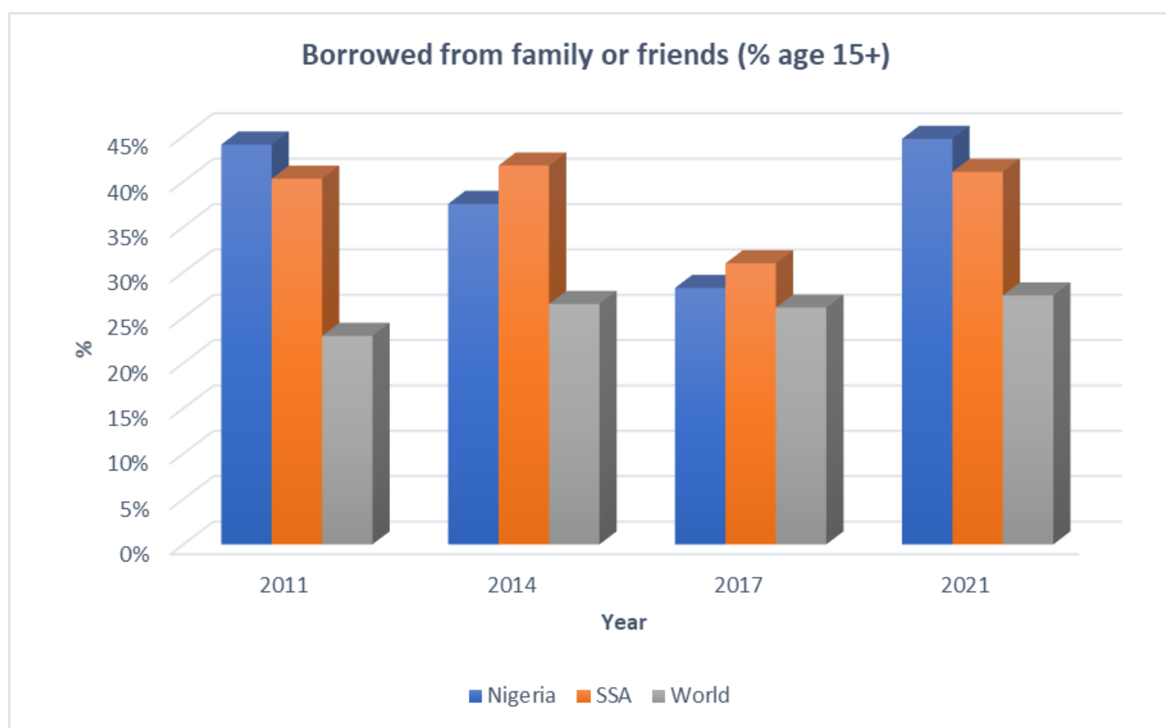


Source: Global Findex database

3.3. Informal borrowing: comparing Nigeria, sub-Saharan Africa (excluding high income) and the World

Informal borrowing refers to borrowing money from family and friends instead of borrowing from formal financial institutions. A high level of informal borrowings indicates lack of access to formal credit which indicates low level of financial inclusion. The data in figure 3 shows that the level of informal borrowing from friends and family in Nigeria was high compared to the average level of informal borrowing in the World. Informal borrowing in Nigeria exceeded the sub-Saharan Africa and World average in 2011. Informal borrowing in Nigeria decreased in 2014 and 2017 and exceeded the sub-Saharan Africa and World average during the COVID-19 pandemic in 2021. The observed increase in informal borrowing was explained by the fact that majority of Nigerians would rather borrow from family and friends as a first option (Ozili, 2022). If they are unable to obtain loans from family and friends, they would be forced to resort to banks as a last option. But, in most cases, many Nigerians can obtain the loans they need from family and friends. The reason for the surge in informal borrowing from family and friends in Nigeria is due to six factors – (i) the adherence to Nigerian cultural norms that emphasize seeking help from family first before seeking help from outside the family circle, (ii) the lack of trust in banks and other financial institutions, (iii) the burdensome documentation required to obtain a loan from formal financial institutions, (iv) the lack of trust in online loan apps and the perception that online lenders are predatory, (v) there is the belief that banks and online lenders use inhuman methods to recover loans if borrowers default, and (vi) the absence of a strong legal framework to protect borrowers rights in Nigeria. Also, in 2021, informal borrowings exceeded the sub-Saharan Africa and World average because the COVID-19 lockdown led to a surge in borrowing from family and friends. Friends and family in need of financial assistance borrowed money from each other through mobile payments and money transfers to the account of friends and family, rather than taking loans from banks or online lenders. Furthermore, the data in figure 3 shows that the level of informal borrowing from friends and family in the sub-Saharan Africa region was higher than the World average. This was due to the peculiar nature of the African society and its strong adherence to cultural norms that emphasize seeking help from family first before seeking help from outside the family circle. This explains why a very large number of the African population prefer informal borrowing than formal borrowing. This observation is further corroborated by the findings of Turvey, Kong and Huo (2010), Ojong (2019) and Ozili (2022).

Figure 3.3. Informal borrowing: comparing Nigeria, SSA (excluding high income) and the World



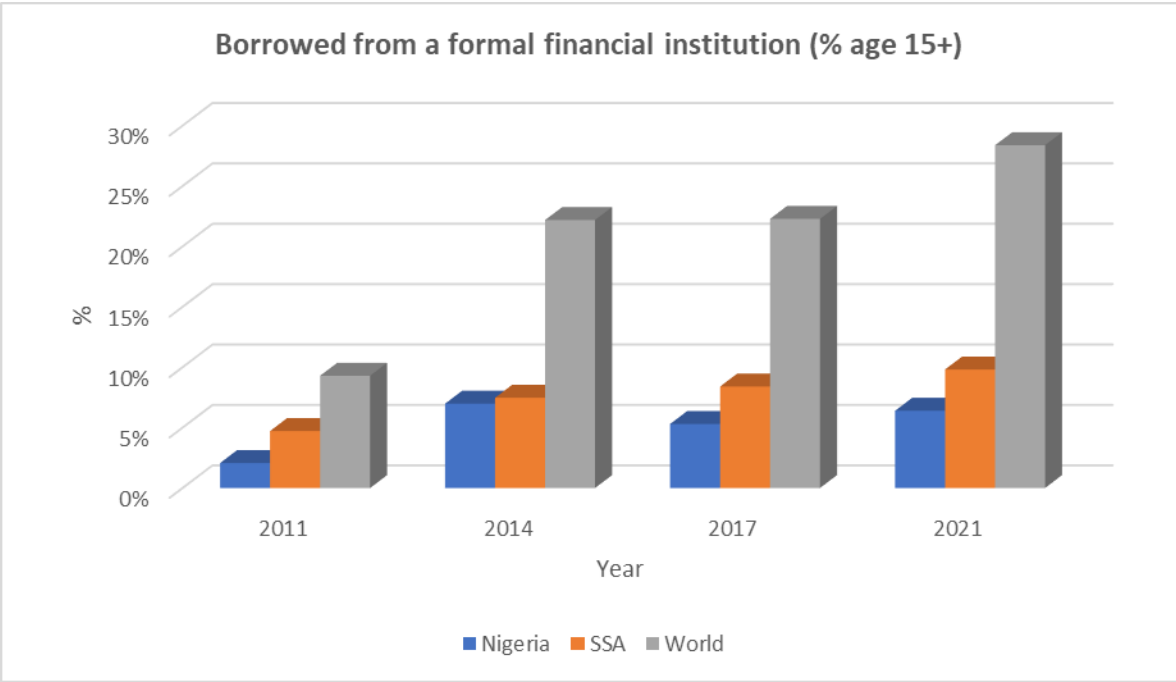
Source: Global Findex database

3.4. Formal borrowing: comparing Nigeria, sub-Saharan Africa (excluding high income) and the World.

Formal borrowing refers to borrowing money from formal financial institutions. A high level of formal borrowing indicates greater access to formal credit which indicates high levels of financial inclusion. The data in figure 4 shows that the level of formal borrowing from financial institutions in Nigeria was low compared to the average level of formal borrowing in sub-Saharan Africa and the World. Formal borrowing in Nigeria fell below the sub-Saharan Africa and World average in 2011, 2014, 2017 and 2021. The observed low level of formal borrowing is explained by the fact that majority of Nigerians still prefer to borrow from family and friends as a first option and would only consider borrowing from formal financial institutions as a last option if they are unable to obtain loans from family and friends (Ozili, 2022). The reason for the low level of formal borrowing in Nigeria is due to several factors such as (i) the stringent regulation of bank retail lending in Nigeria to mitigate nonperforming loans, (ii) the high double-digit market interest rates, (iii) the lengthy time it takes for banks to process loan applications, (iv) the adherence to Nigerian cultural norms that teach seeking help from family first before seeking help from outside the family circle, (v) lack of trust in banks and other financial institutions, (vi) the burdensome

documentation required to obtain a loan from formal financial institutions, (vii) lack of trust in online loan apps and the perception that online lenders are predatory, (viii) there is the belief that banks and online lenders use inhuman methods to recover loans if borrowers default, and (ix) the absence of a legal framework to protect borrowers rights in Nigeria. In 2021, the level of formal borrowings also fell below the sub-Saharan Africa and World average during the COVID-19 pandemic due to the shutdown of financial institutions (Ozili, 2020), which made it difficult for Nigerians to access loans from formal financial institutions and led to a surge in informal borrowing from family and friends through mobile payments and money transfers to the account of friends and family. Furthermore, the data in figure 4 shows that the level of formal borrowing from financial institutions in the sub-Saharan Africa region was lower than the World average. This is due to the peculiar nature of the African society and its strong adherence to cultural norms that emphasize seeking help from family first before seeking help from outside the family circle. This partly explains why a very large number of the African population do not borrow from formal financial institutions. This observation is corroborated by the findings of Demirgüç-Kunt and Klapper (2012), Beck, Senbet and Simbanegavi (2015), Zins and Weill (2016) and Ozili (2021b).

Figure 3.4. Formal borrowing: comparing Nigeria, SSA (excluding high income) and the World

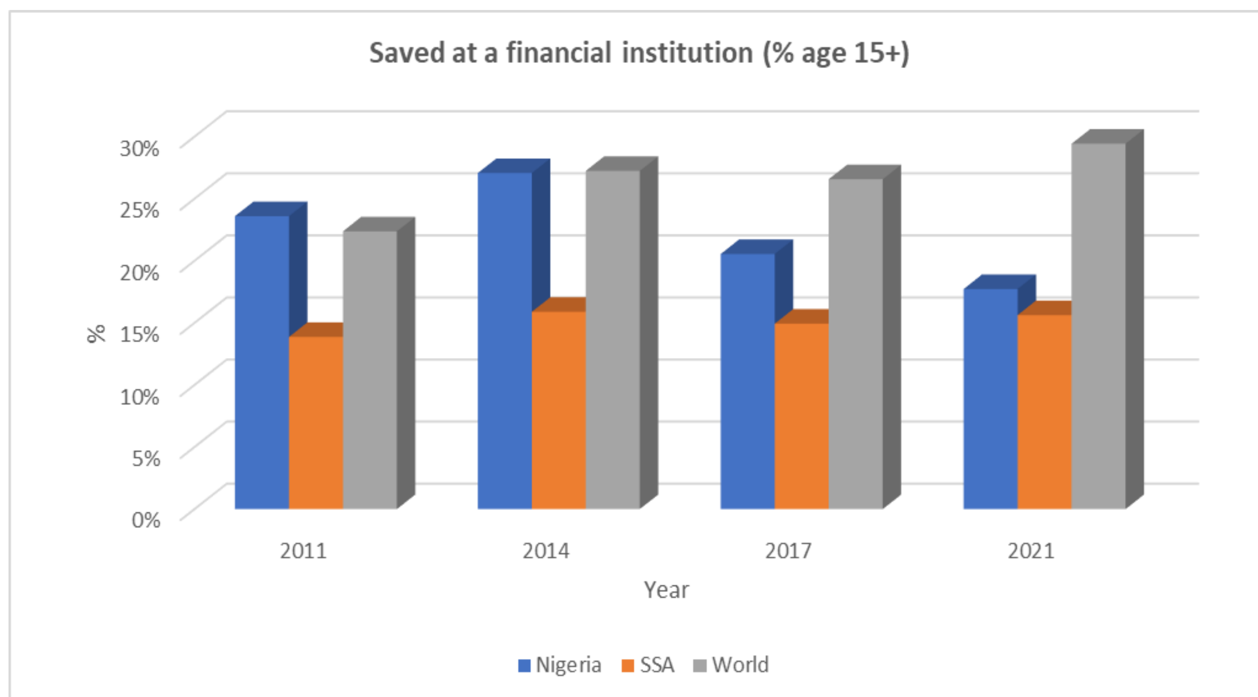


Source: Global Findex database

3.5. Formal savings: comparing Nigeria, sub-Saharan Africa (excluding high income) and the World

Formal savings refers to saving money in formal financial institutions. A high level of formal savings indicates greater access to formal financial services which indicates high levels of financial inclusion. The data in figure 5 shows that the level of formal savings in financial institutions in Nigeria was higher than the average level of formal savings in sub-Saharan Africa. Formal savings in Nigeria rose above the sub-Saharan Africa average in 2011, 2014, 2017 and 2021. The observed high level of formal savings is explained by the fact that majority of Nigerians consider banks to be a safer place to keep their money. Some reasons for the high level of formal savings in Nigeria include (i) the high confidence that Nigerians have in licensed and regulated financial institutions, (ii) the presence of deposit insurance that protects deposits and savings, (iii) the stability of the banking system, and (iv) the need to avoid armed robbery and money theft at homes. In 2021, the level of formal savings in financial institutions also exceeded the sub-Saharan Africa average during the COVID-19 pandemic due to the shutdown of financial institutions and the low level of aggregate consumption during the pandemic which led to increase in formal savings at banks (Ozili, 2020). Furthermore, the data in figure 5 shows that the level of formal savings in financial institutions in the sub-Saharan Africa region was significantly lower than the World average in 2011, 2014, 2017 and 2021. This was due to the small number of financial institutions in Sub Saharan African countries compared to the large number of financial institutions in other regions of the World. Except for Nigeria, South Africa, Ghana, Egypt, Morocco and Tunisia, many people in sub-Saharan African countries do not save their money in formal financial institutions for cultural reasons and due to the low number of bank branches in the country. Finally, figure 5 shows that the level of formal savings in financial institutions in Nigeria was almost equal to the average level of formal savings in the World in 2014. This is a significant improvement in formal savings in Nigeria compared to the level of formal savings in 2011. However, the level of formal savings decreased significantly in 2017 during the economic recession and in 2021 during the COVID-19 pandemic.

Figure 3.5. Formal savings: comparing Nigeria, SSA (excluding high income) and the World



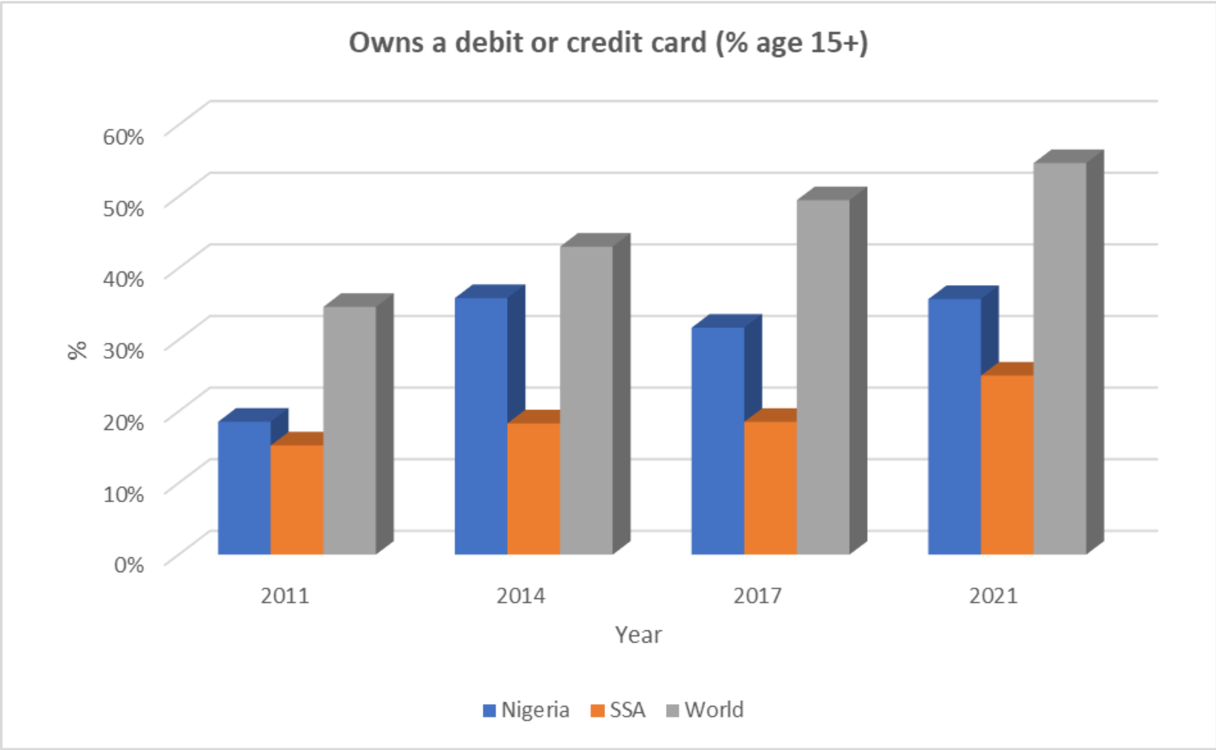
Source: Global Findex database

3.6. Debit or credit card ownership: comparing Nigeria, sub-Saharan Africa (excluding high income) and the World

Debit or credit card ownership refers to owning a debit card and/or credit card which would be used to access own funds or formal credit from financial institutions. Owning a debit card or credit card indicates access to finance which indicates greater financial inclusion. The data in figure 6 shows that the level of debit or credit card ownership in Nigeria was higher than the average level of debit or credit card ownership in sub-Saharan Africa in 2011, 2014, 2017 and 2021. The observed high level of debit or credit card ownership in Nigeria relative to sub-Saharan Africa was partly due to the deployment of a sophisticated payment system in Nigeria which was aided by the card services provided by Visa and MasterCard. Other reasons for the high level of debit or credit card ownership in Nigeria include (i) the presence of automated teller machines (ATM), (ii) the presence of point-of-sale (POS) devices, (iii) an enabling regulatory framework that supports card schemes and related card services, and (ii) strong consumer protection against online fraud. In 2021, the level of debit or credit card ownership in Nigeria also exceeded the sub-Saharan Africa average but was less than the World average during the COVID-19 lockdown which restricted the use of ATMs and POS devices during the pandemic. Furthermore, the data in figure 6 shows that the level of debit or credit card ownership in the sub-Saharan Africa region was

significantly lower than that of Nigeria and the World average in 2011, 2014, 2017 and 2021. This was due to the low penetration of card services providers in many sub-Saharan African countries during the period compared to the large penetration of card services providers in other regions of the World. Finally, figure 6 shows that the level of debit or credit card ownership in Nigeria was lower than the World average in 2011, 2014, 2017 and 2021. This indicates that Nigeria need to do more to increase debit or credit card ownership in Nigeria.

Figure 3.6. Debit or credit card ownership: comparing Nigeria, sub-Saharan Africa (excluding high income) and the World



Source: Global Findex database

3.7. Analysis of the deviation from the world average

Regarding the debit or credit card ownership category, the largest negative deviation from the World average was witnessed in the sub-Saharan Africa region in 2017 (-31%) and 2021 (-30%), implying that there was a wide gap in debit or credit card ownership in the sub-Saharan Africa region compared to the World average. This indicates debit or credit card ownership in the sub-Saharan Africa region significantly fell below the World average in 2017 and 2021. Nigeria had the lowest negative deviation in 2011 (-16%) and 2014 (-7%), implying that the level of debit or credit card ownership was closer to the World average in 2011 and 2014 than in 2017 and 2021. In contrast, there was no positive deviation in debit or credit card ownership between the Nigeria, sub-Saharan Africa and the World average, implying that the world average exceeded the Nigeria and sub-Saharan African average in 2011, 2014, 2017 and 2021.

Regarding ownership of financial institution account, the largest negative deviation from the World average was witnessed in the sub-Saharan Africa region in 2017 (-34%) and 2021 (-34%), implying that there was a wide gap in ownership of financial institution account in the sub-Saharan Africa region compared to the World average. This indicates that ownership of financial institution account in the sub-Saharan Africa region significantly fell below the World average in 2017 and 2021. Nigeria had the lowest negative deviation in 2011 (-21%) and 2014 (-17%), implying that the level of financial institution account ownership was closer to the World average in 2011 and 2014 than in 2017 and 2021. In contrast, there was no positive deviation in financial institution account ownership between the Nigeria, sub-Saharan Africa and the World average, implying that the World average exceeded the Nigeria and sub-Saharan African average in 2011, 2014, 2017 and 2021.

Regarding account ownership of any type, the largest negative deviation from the World average was witnessed in Nigeria in 2021 (-31%), implying that there was a wide gap in account ownership of any type in Nigeria compared to the World average in 2021. This indicates that account ownership of any type in the sub-Saharan Africa region significantly fell below the World average in 2021. Nigeria also had the lowest negative deviation in 2014 (-17%), implying that the level of account ownership of any type was closer to the World average in 2014 than in 2011, 2017 and 2021. In contrast, there was no positive deviation in account ownership of any type between Nigeria, the sub-Saharan Africa and the World average, implying that the World average exceeded the Nigeria and sub-Saharan African average in 2011, 2014, 2017 and 2021.

Regarding formal savings, the largest negative deviation from the World average was witnessed in sub-Saharan Africa in 2021 (-14%), implying that there was a wide gap in formal savings in sub-Saharan Africa compared to the World average in 2021. This indicates that formal savings in sub-Sub-Saharan Africa significantly fell below the World average in 2021. However, Nigeria recorded a positive deviation in formal savings in 2011 (1%), implying that the level of formal savings in

Nigeria exceeded the World average in 2011 and equaled the World average in 2014 than in 2017 and 2021.

Regarding formal borrowing, the largest negative deviation from the World average was witnessed in Nigeria in 2021 (-22%), implying that there was a wide gap in formal borrowing in Nigeria compared to the World average in 2021. This indicates that formal borrowing in Nigeria significantly fell below the World average in 2021. The sub-Saharan African region had the lowest negative deviation in 2011 (-5%), implying that the level of formal borrowing in the sub-Saharan African region was closer to the World average in 2011 than in 2014, 2017 and 2021. In contrast, there was no positive deviation between the Nigeria, sub-Saharan Africa and the World average, implying that the World average exceeded the Nigeria and sub-Saharan African average in 2011, 2014, 2017 and 2021.

Regarding informal borrowing from friends and family, the largest positive deviation from the World average was witnessed in Nigeria in 2011 (21%) and 2021 (17%), implying that informal borrowing from friends and family in Nigeria significantly surpassed the World average in 2011 and 2021. Nigeria also had the lowest positive deviation in 2017 (2%), implying that the level of informal borrowing in Nigeria was closer to the World average in 2017 than in 2011, 2014 and 2021. In contrast, there was no negative deviation in informal borrowing of Nigeria, sub-Saharan Africa and the World, implying that the World average was below the Nigeria and sub-Saharan African average in 2011, 2014, 2017 and 2021.

Table 1. Deviation analysis						
		Nigeria	**SSA (excluding high income)**	**World**	**Nigeria - world**	**SSA - World**
Account (% age 15+)	**2011**	**30%**	**23%**	**51%**	**-21%**	**-27%**
	2014	**44%**	**34%**	**62%**	**-17%**	**-28%**
	2017	**40%**	**43%**	**68%**	**-29%**	**-26%**
	2021	**45%**	**55%**	**76%**	**-31%**	**-21%**
Financial institution account (% age 15+)	**2011**	**30%**	**23%**	**51%**	**-21%**	**-27%**
	2014	**44%**	**29%**	**61%**	**-17%**	**-32%**
	2017	**39%**	**33%**	**67%**	**-28%**	**-34%**
	2021	**45%**	**40%**	**74%**	**-29%**	**-34%**
Owns a debit or credit card (% age 15+)	**2011**	**19%**	**15%**	**35%**	**-16%**	**-19%**
	2014	**36%**	**18%**	**43%**	**-7%**	**-25%**
	2017	**32%**	**19%**	**49%**	**-18%**	**-31%**
	2021	**36%**	**25%**	**55%**	**-19%**	**-30%**
Saved at a financial institution (% age 15+)	**2011**	**24%**	**14%**	**22%**	**1%**	**-9%**
	2014	**27%**	**16%**	**27%**	**0%**	**-11%**
	2017	**21%**	**15%**	**27%**	**-6%**	**-12%**
	2021	**18%**	**16%**	**29%**	**-12%**	**-14%**
Borrowed from a formal financial institution (% age 15+)	**2011**	**2%**	**5%**	**9%**	**-7%**	**-5%**
	2014	**7%**	**7%**	**22%**	**-15%**	**-15%**
	2017	**5%**	**8%**	**22%**	**-17%**	**-14%**
	2021	**6%**	**10%**	**28%**	**-22%**	**-19%**
Borrowed from family or friends (% age 15+)	**2011**	**44%**	**40%**	**23%**	**21%**	**17%**
	2014	**38%**	**42%**	**27%**	**11%**	**15%**
	2017	**28%**	**31%**	**26%**	**2%**	**5%**
	2021	**45%**	**41%**	**27%**	**17%**	**14%**

Source: Global Findex database and author computation

4. Results and Analysis

In this section, we construct two financial inclusion index (IFI). The first financial inclusion index (IFI) is derived from the simple average of the six financial inclusion indicators multiplied by the natural logarithm of the total population as shown in the function below.

Financial inclusion index (IFI) = [Natural logarithm of total population x average (ACC, FAC, SAV, ODC, BORF and BORI)]

We also construct a second financial inclusion index (IFI) is derived from the weighted average of the six financial inclusion indicators multiplied by the natural logarithm of the total population. The following weights assigned to the six indicators are: 0.3(ACC), 0.3(FAC), 0.1(SAV), 0.1(ODC), 0.1(BORF) and O.1(BORI), as shown in the function below.

Financial inclusion index (IFI) = [Natural logarithm of total population x (w1(ACC) + w2(FAC), w3(SAV) + w4(ODC) + w5(BORF) + w6(BORI))]

We then investigate the determinants of the financial inclusion index using a pooled sample consisting of Nigeria, sub-Saharan Africa and the World and with data obtained from the global findex database from 2011, 2014, 2017 and 2021. We estimate the financial inclusion index (IFI) as a function of account ownership of any type (ACC), account ownership in financial institutions (FAC), informal borrowing (BORI), formal borrowing (BORF), formal savings (SAV), and debit or credit card ownership (ODC). The data were estimated using the ordinary least squares (OLS) regression estimation as well as the quantile regression estimation.

The OLS and quantile regression results based on the simple average of the IFI show that the FAC variable is a significant positive determinant of the financial inclusion index. This indicates that owning a financial institution account is a significant positive determinant of the financial inclusion index. The ODC variable is a significant positive determinant of the financial inclusion index. This indicates that debit or credit ownership is a significant positive determinant of the financial inclusion index. The BORF variable is a significant positive determinant of the financial inclusion index. This indicates that formal borrowing is a significant positive determinant of the financial inclusion index. Also, the BORI variable is a significant positive determinant of the financial inclusion index. This indicates that informal borrowing is a significant positive determinant of financial inclusion. In contrast, the ACC and SAV variables did not have a significant effect on financial inclusion index.

Meanwhile, the quantile regression result based on the weighted average of the IFI show that only the FAC variable is a significant positive determinant of the financial inclusion index. This indicates that owning a financial institution account is a significant positive determinant of the financial inclusion index. In contrast, the OLS regression result based on the weighted average of

the IFI show that the FAC, SAV and BORF variables are a significant positive determinant of the financial inclusion index. This indicates that financial institution account ownership, formal borrowing and debit or credit card ownership are significant positive determinant of the financial inclusion index.

Table 2. Determinants of the financial inclusion index (IFI)				
	IFI	IFI	IFI (weighted average)	IFI (weighted average)
	OLS regression estimation	Quantile regression estimation	OLS regression estimation	Quantile regression estimation
	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)
ACC	-0.033 (0.11)	-0.027 (0.36)	0.826 (0.61)	-0.742 (0.91)
FAC	0.195*** (0.00)	0.187** (0.02)	21.933*** (0.00)	25.91* (0.06)
SAV	0.024 (0.29)	0.025 (0.47)	-1.703 (0.38)	-6.621 (0.69)
ODC	-0.089** (0.01)	-0.085* (0.08)	-9.711** (0.01)	-9.942 (0.24)
BORF	0.093*** (0.00)	0.098** (0.02)	7.494*** (0.00)	5.822 (0.36)
BORI	0.022** (0.01)	0.019* (0.08)	0.572 (0.34)	1.556 (0.69)
R^2	99.59		99.80	
Adjusted R^2	99.25		99.64	
Pseudo R^2		94.39		95.64
Pseudo Adjusted R^2		89.71		92.01
P-value is in parenthesis. *, **, * represent statistical significance at the 1%, 5% and 10%**				

5. Conclusion

In this study, we compared the progress made in financial inclusion in Nigeria with that of sub-Saharan Africa and the World. The study compared six indicators of financial inclusion, namely, account ownership of any type, account ownership in financial institutions, informal borrowing, formal borrowing, formal savings, and debit or credit card ownership. The six financial inclusion indicators were compared for Nigeria, sub-Saharan Africa and the World using data obtained from the Global Findex database for the year 2011, 2014, 2017 and 2021.

It was found that all the financial inclusion indicators of Nigeria fell below the World average during the period except for informal borrowings in Nigeria which exceeded the sub-Saharan and World average. Nigeria outperformed sub-Saharan Africa in three indicators of financial inclusion, namely, account ownership in financial institutions, formal savings and debit or credit card ownership, while sub-Saharan Africa outperformed Nigeria in the level of formal borrowings. Meanwhile, Nigeria and sub-Saharan Africa exceeded the World average in informal borrowings. A financial inclusion index was developed, and it was found that financial institution account ownership, formal borrowing, informal borrowing and debit or card ownership are significant positive determinants of the financial inclusion index.

These findings have important implications. The findings show the areas where policymakers in Nigeria and sub-Saharan Africa need to do a lot more to increase the level of financial inclusion up to the World average, particularly, formal borrowing, formal savings, account ownership of any type, financial institution account ownership, and debit or credit card ownership. Policymakers should promote formal borrowings by introducing policies that remove the barriers that prevent people from obtaining loans from financial institutions such as the burdensome loan documentation requirement and the lengthy loan application process. Policymakers should promote formal savings by encouraging financial institutions to increase the interest rate on savings to attract formal savers. Policymakers should promote debit or credit card ownership by requiring financial institutions to reduce card fees. Policymakers should also support financial institutions in increasing the supply of ATMs, POS terminals and other financial access points. Policymakers should promote account ownership of any type by introducing financial literacy programs that teach people about the benefits of owning an account of any type. Policymakers should also use financial literacy programs to promote account ownership in financial institutions by teaching people about the benefits of owning an account in financial institutions.

This study has a few limitations. One, the study analyzed only the accessibility dimension of financial inclusion. It did not analyse other dimensions of financial inclusion. Two, the conclusion reached about the sub-Saharan Africa region cannot be generalized to each African country.

Finally, we suggest some areas for future research. Future studies can compare the level of financial inclusion in the sub-Saharan Africa with the level of financial inclusion in the Middle East and North Africa (MENA) region. Future research studies can also compare the level of financial inclusion in Europe with that of the World region.

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