Summer 2023

Excess Capacity in the Banking Sector and Its Effects on the Sub-Saharan Economy

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Abstract

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This research employed a mixed methods approach that combines both quantitative and qualitative analyses. Firstly, a review of existing literature on excess capacity in the banking sector and its impact on economies is conducted to provide a comprehensive background for the study. Next, quantitative data is collected from macroeconomic indicators, to assess the extent of excess capacity present in the Sub-Saharan banking sector.

Degree Type

Dissertation/Thesis

Degree Name

Master of Arts (MA)

Department

Economics

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Keywords

Excess Capacity, Banking Sector, Sub-Saharan Economy, Economic Growth, Financial Stability, Banking Crises

Subject Categories

Economics | Finance

EXCESS CAPACITY IN THE BANKING SECTOR AND ITS EFFECTS ON THE SUB-SAHARAN ECONOMY.

By

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A thesis

Submitted the Requirements for the Degree of

Master of Arts in Economics

Department of Economics

Eastern Illinois University

2023

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ABSTRACT

The banking sector plays a critical role in driving economic growth and financial stability in any region. However, the issue of excess capacity within this sector can have a profound effect on the overall health of the economy. This study investigates the excess capacity in the banking sector within the context of the Sub-Saharan region and explores its implications on the economic performance of countries within this area.

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Keywords: Excess Capacity, Banking Sector, Sub-Saharan Economy, Economic Growth, Financial Stability, Banking Crises, Regulatory Policies, Market Structure, Macroeconomic Conditions, Sustainable Development.

ACKNOWLEDGEMENT

First, I would like to thank Dr. Teshome Abebe for guiding me with his support and ideas in the process of writing this thesis. I am expressing my gratitude for the time spent reviewing drafts and providing insights aimed at improving the quality of my thesis. His expertise, encouragement, and feedback have been instrumental in shaping the direction of my research. His mentorship has left an indelible mark on my academic and personal growth. I would also like to thank Dr. Linda Ghent, Dr. Michael Cornebise, and Dr. Jim Bruehler for their support and help in making my academic journey a successful one.

I am profoundly grateful to Dr Ali Mustapha, for facilitating my successful completion of the master's degree program. His belief in my potential by recommending me for the LENIHAN fellowship enabled me to pursue my academic aspirations. I am honored to acknowledge his impact on my academic and personal growth.

Finally, I would like to thank my family including my Mother Jemilatu Alhassan, and my Father Alhassan Mahama for all of their emotional support and encouragement. Their sacrifice, encouragement, and love have been the source of my accomplishments.

Table Of Contents

List Of Figures.

Introduction

The banking industry is one of the most important parts of any region's economic growth and development. In Sub-Saharan Africa, where the economy is always changing and the need for financial services is growing, the banking industry has grown and expanded considerably over the years. This growth has brought up a serious problem that needs to be looked at more closely: the challenge of excess capacity.

During the turbulent years of the global financial crisis, Sub-Saharan Africa (SSA's) comparatively limited integration into global financial markets served as a shield, providing some degree of protection from the effects of the crisis. This fact is notable. Nevertheless, and despite this resiliency, the banking sector across the area continues to be in a condition of underdevelopment, which limits its capacity to significantly push overall economic growth. The banking industry needs to demonstrate proactive involvement and undergo change if it is to play a crucial role in both harnessing the full potential of the private sector and driving growth that is both inclusive and long-lasting.

The frequent presence of excess liquidity is a feature that is distinctive of SSA's financial institutions, particularly its banking systems. This liquidity overhang shows the difficulty of finding creditworthy borrowers and the necessity of developing novel solutions to successfully channel these funds. This gives a one-of-a-kind chance to investigate different methods for boosting lending activity, which will ultimately increase broader monetary aggregates. When this is done, the banking sector will be able to exert a more powerful influence on economic activity and reduce the level of inflationary pressure.

The purpose of this thesis is to shed light on the phenomena of excess capacity in the banking sector in Sub-Saharan Africa. Specifically, the thesis will investigate the underlying reasons for this phenomenon as well as its implications and will also evaluate the possibility of correction and improvement. This research aims to give significant insights to policymakers, industry practitioners, and academicians who are concerned with the region's financial sector by conducting an exhaustive examination of relevant literature, statistical data, and case studies. This investigation's objective is to analyze and evaluate the current operating efficiency of banks in Sub-Saharan Africa, both in the short term and the long term, as well as the influence of this efficiency

on the economy. The purpose of the study is to ascertain the extent to which surplus capacity in the banking industry has an impact on overall economic expansion as well as the nature of the connection between excess capacity and the availability of credit.

The financial landscape in Sub-Saharan Africa (SSA) is largely defined by its banking systems, which account for a significant share of the financial sector's assets and activity. SSA is also known as the "African continent with the lowest per capita income." Even though the region's financial systems have a long history of being underdeveloped, significant advancements in both the depth and breadth of these systems have been made over the course of the past decade. This favorable trend can be linked to several reform initiatives (Careened, 2010) that were designed at improving the inclusiveness of financial systems and the soundness of those systems. The fact that most total assets are held by only a few of the region's main companies, most notably Ecobank, Stanbic, and the United Bank of Africa, is a fascinating facet of the African Sub-Saharan banking environment. This concentration almost always results in reduced levels of competition, which is a clear indication that oligopolistic market conditions are prevalent. This dynamic has repercussions for how the market behaves as well as the outcomes for consumers.

The dependence of African banking systems on the domestic economy as their principal source of finance, with contributions from non-residents being relatively modest, is one of the characteristics that set them apart from other banking systems throughout the world. These systems have a particular humility, both in absolute and relative terms, which is exhibited throughout. When considering loan-to-deposit ratios, taking a cautious approach will result in significant holdings of highly liquid assets and government securities. Notably, a sizeable percentage of loans, over sixty percent, have a maturity length of less than one year, which is reflective of the widespread practice of lending for shorter terms.

This study takes a holistic approach to the problem at hand by considering both necessary factors and those that are sufficient to address the complex nature of determining excess capacity within the dynamic banking sector. A crucial idea known as excess capacity can be described as having been attained when a particular bank simultaneously satisfies the following three criteria:

(a) The persistent manifestation of loan demand that is below the average, as measured by the loans-to-total-assets ratio.

(b) The evidence of below-average profitability over an extended period.

(c) The ongoing pattern of increased per-unit expenses in comparison to the averages for the industry.

The simultaneous occurrence of these three situations is an unmistakable indication that a bank is making use of more of its available resources than it needs to. It is essential to highlight, however, that situations in which a bank satisfies most of these criteria establish a required condition for excess capacity, but it is not the only condition that is sufficient. Even if not all the criteria are satisfied, an excess capacity will be formed if the operational output of a bank falls short of the capacity that has been authorized for it. This enhanced viewpoint provides a more sophisticated understanding of the dynamics of excess capacity within the modern banking sector.

A wide range of interested parties, such as regulatory organizations, central banks, and the banking industry itself, have begun to focus their attention on the problem of excess capacity in the banking sector. Recent discourse has cast light on a potential link between the proliferation of surplus capacity and the rapid development of banking activities in an environment that is becoming increasingly open and globally unregulated. This environment is being impaired by the quick speed of technological advancements. The complex interaction between these two factors highlights the multidimensional nature of the repercussions of having excess capacity.

In addition, the possibility of reducing or removing excess capacity brings forth an important investigation into the potential effects that this may have on market concentration and competition. It brings up an important question: may the process of decreasing excess capacity accidentally lead to the consolidation of market dominance within several strong competitors, thus permitting anti-competitive conduct and limiting a fair playing field?

This complex interaction of elements serves to highlight the complex nature of the difficulty that is faced by regulators, central banks, and industry participants. A strategic and all-encompassing approach is required if one is to successfully pursue the goal of achieving an optimal balance in the capacity of the banking sector. The pursuit of this balance requires a careful balancing act, as well as an in-depth analysis of the rewards and hazards that are involved in the process of reducing excess capacity. This equilibrium holds the key to nurturing financial stability, encouraging healthy competition, and

maintaining the sector's resilience in an ever-evolving global financial landscape. It will also help shape the trajectory of the banking industry, which will shape the trajectory of the banking industry.

Over the course of the past 15 years, the banking industries of several countries in sub-Saharan Africa have seen significant expansions in terms of the number of branches they operate. This problem has been partly affected by the trend of globalization, as well as the growth of less controlled marketplaces in the region. Nevertheless, the idea of excess capacity in this setting presents several challenges, and there is cause for concern that it could have a negative effect on the stability of the financial system. The banking industry has been linked to several problems, some of which include greater volatility, decreased profitability, and an increased risk of future breakdowns as a result of overcapacity difficulties.

Chapter Two

Literature review

A linkage between financial reforms and banking sector competition in Sub-Saharan Africa.

Policy discussions about the market structure of the banking industry have traditionally centered on three primary themes: the effectiveness of an economy, the profitability of banks, and the vitally important intermediary role that banks play in the economy. These issues have been at the center of these conversations for a long time. Because of the far-reaching implications that these characteristics have for financial stability at the national, regional, and even global levels, they have gained a great amount of attention over the course of the years. The potential benefits of bank concentration have been continuously brought to light in the current discussion, with a particular emphasis placed on the positive effects that bank concentration has on overall financial stability.

This renewed interest in bank concentration and the benefits that come with it is not a recent phenomenon. The idea has been the focus of discussion for a good number of years. Notably, during the formative years that stretched from the early to the middle decades of the 1980s, a stunning wave of bank consolidation swept across the financial systems of several developed nations. This period saw a rise in the number of mergers and acquisitions that took place in the banking business. As a result, the landscape of the industry was altered, and this sparked conversations about the industry's potential long-term effects.

The trend toward the consolidation of banking institutions has been driven by several different factors, with the perceived advantages of increased efficiency and profitability taking center stage. It is generally accepted that increased concentration in the banking industry will result in streamlined operations, a reduction in expenses associated with duplicate activities, and the promotion of economies of scale. When compared to smaller banks, larger banks are typically able to use their resources more effectively, make investments in more cutting-edge technologies, and offer a wider variety of services

to their respective consumers. Additionally, the consolidation of resources has the potential to result in enhanced risk management procedures and a more robust financial infrastructure, both of which contribute to increased financial stability.

The pursuit of concentration, on the other hand, is not without its critics or its worries. Some people believe that an excessive amount of consolidation would result in less competition, which may stifle innovation and diminish the number of options available to consumers. In addition, the interconnectivity of large financial institutions could create systemic risks, in which the failure of one institution has the potential to spark a cascading effect throughout the whole financial system. The decision-makers in charge of policy need to strike a difficult balance between promoting consolidation for reasons related to financial stability and ensuring that the banking landscape is both competitive and dynamic.

The research that Claessens et. al (2004) carried out represented a pivotal moment in the ongoing dialogue regarding the potential reverberations that increased bank concentration could have on the overall stability of the financial landscape. Their ground-breaking analysis sparked an avalanche of in-depth discussions and significant insights into the complex and diverse interplay between banking competition and the likelihood of an increase in bank failures.

The important work carried out by Keeley (1990), which painstakingly probed the subtle relationship between the level of banking competition and the considerable increase in bank failures during the early 1980s in the United States, was of the utmost importance to these deliberations. Keeley's research was at the center of this discussion. The meticulous study carried out by Keeley acted as a dynamic catalyst, sparking an intellectual firestorm that shed light on the intricate links that exist between banking competitiveness, the larger fabric of financial stability, and the impending prospect of insolvency.

Keeley's investigation unearthed a wealth of compelling insights into how increased competition within the banking sector, which may appear to be advantageous in terms of operational efficiency and expanded consumer options, may inadvertently foster an environment that is conducive to a higher incidence of bank failures. Keeley's investigation unearthed a wealth of compelling insights into how increased competition within the banking sector. The research shed light on how fierce competition may unwittingly encourage businesses, such as banks, to take more risks as they compete with one

another to achieve higher levels of success and secure a larger portion of the market. This, in turn, might lead to an increase in hazardous lending practices and a potential disdain for sound risk management standards, which, in turn, would accentuate the inherent susceptibility of individual banks and throw a shadow over the stability of the larger financial system.

The long-term ramifications of the research that Claessens et al. carried out reverberated throughout the academic community as well as the policy and regulatory communities. Not only did these key studies further our comprehension of the intricate dynamics at play, but they also sparked a paradigm change in the banking industry regarding how competition and stability are viewed by those working in the sector.

The findings that were gleaned from these studies shed light on how important it is for the banking industry to achieve a delicate balance between a competitive environment and stringent risk management. This was brought to light by the findings. Policymakers and regulators have realized that sustaining a competitive landscape requires a robust framework of oversight and prudential regulations to offset the possible risks that are inherent in increased competition. This realization was reached as a result of the realization that cultivating a competitive landscape is a need.

Hoggarth et al (1998), investigated and concluded that due to increased risk-taking behavior that is associated with heightened competitive behavior among banks shows that when competition in the banking market develops, risk-taking by banks also increases and becomes contagious by employing a model of risk-taking by banks that contain two periods and two states. This finding is supported by Allen and Gale (2000), who constructed a model of competition and risk-taking to illustrate the agency problem. They pointed out that when firms are debt-financed. For example, deposits for bank managers acting in the interest of the shareholders have an incentive to take excessive risk because the manager's performance is adjudicated based on quarterly returns, and debt holders bear the downside risk while shareholders benefit from the upside potential return. In other words, managers have an incentive to take excessive risk when firms are debt-financed.

Building upon these ideas, the research conducted by Hellman et al. (2000) presents a convincing corollary perspective that looks deeper into the effects of increasing rivalry within the sphere of finance. Their research sheds light on a phenomenon, which is that when financial institutions are engaged in

cutthroat competition, the desire to increase their profits frequently compels them to make investments that carry a higher degree of risk. An intricate dynamic is set in action as a result of these strategic maneuvers, the goals of which are to maximize shareholder returns or retain competitive market positions. This escalation of competition might, paradoxically, have an unexpectedly good effect, which is to say that it can strengthen financial stability through the processes of bank runs induced by contagion. This complicated relationship sheds light on the delicate balancing act that must be performed between the dynamic of competition and the possibility of stability in the financial system.

When seen from a broader perspective, the seminal study that was carried out by Beck et al. (2006) acts as a compass, navigating the complex terrain of financial stability across 69 countries throughout the period from 1980 to 1997. This in-depth investigation aims to disentangle the complex web that links the possibility of a financial crisis to a variety of other factors, such as the characteristics of banking systems, regulatory frameworks, and broader national contexts. Their findings challenge the prevalent concept that increased concentration within the banking sector necessarily enhances fragility. This represents a shift from the conventional understanding that has been prevalent up until now.

Beck et al. (2006) shed light on a different storyline, which is an intriguing development. They show that countries that nurture increased financial stability have regulatory frameworks that not only make it easier to enter the banking industry but also encourage a wide variety of banking operations. This is one of the factors that contribute to increased financial stability. In addition, an institutional environment that encourages healthy competition can serve as a pivotal factor in the development of greater financial resilience. These findings highlight the many different factors that influence the delicate balance that exists between the stability and fragility of the financial system. The proponents of this viewpoint argue for an all-encompassing comprehension of the complex processes that shape the delicate balance that exists between competitiveness and stability.

In addition to this, their research reveals an important new perspective that applies to the field of monetary policy. During times of banking crises, the role of the monetary policy regime emerges as a significant aspect that plays a vital role in influencing the consequences. This study deepens our comprehension

of the complex interplay that exists between macroeconomic policies and regulatory frameworks, thereby highlighting the aggregate impact that these factors have on the outcomes of financial transactions.

In their research, Boyd et al. (2004) found that monopolistic banking systems tend to be vulnerable when the inflation rate is below a particular threshold, while competitive markets tend to be vulnerable when the inflation rate is beyond a given threshold. In particular, Staikouras and Wood (2000), Allen and Gale (2004), and Schaeck et al. (2009) demonstrate that competition in the banking business is not damaging to the stability of the financial system. Therefore, as Beck (2008) and Northcott (2004) have suggested, any signals of instability can primarily be traced to weak regulatory regimes. Furthermore, any signs of instability are likely to be a short-term occurrence that can be addressed by improving regulatory systems. Caminal and Matutes (2002) discover ambiguous evidence between the strength of the market and the stability of banks in their research. Evidence of the competitive consequences of changes that is inconclusive probably reflects the method of financial liberalization conducted by individual nations, as well as the strength of complementary institutions.

According to Lensink et al (2008), for reforms to be successful, there must first be high-quality institutions in place, particularly before the changes themselves. Even though financial restrictions implemented by governments in SSA before the 1990s had the effect of restricting competition, the authorities in these countries tended to argue that at least the banking system was protected from the risks that are associated with a liberalized financial sector.

Mlachila et al (2013), concluded that the risks include the removal of controls on interest rates and the relaxation of restrictions on foreign entry. However, even though these may be legitimate arguments, it has been demonstrated via the preceding discussion that there is no direct correlation between competition stability and competition fragility. This is because this could vary depending on the conditions imposed by institutions and markets. In the following sections, we examine these facets in further depth within the context of the banking systems in SSA countries.

Countries that have had the least advanced level of the financial sector are also those with the lowest levels of efficiency, particularly Malawi and Tanzania. Countries that have had the lowest levels of sophistication in the financial sector are also those with the lowest levels of efficiency. Oligopolistic market structures are prevalent in many countries in sub-Saharan Africa with medium incomes, including Kenya, Mauritius, Tanzania, Uganda, and Zambia. This may be a contributing factor to the high spread as well as the inefficiency that exists in these markets.

Kasekende, (2010), reports that nations that underwent rapid financial reforms suffered enormous amounts of volatility in their economies. This was due to the predominance of banks in the financial operations of SSA. For instance, in Zambia, when financial liberalization was hastily adopted in the context of severe macroeconomic imbalances, the result was substantially elevated nominal interest rates as a direct result of the liberalization of interest rates. This resulted in a decrease in the quality of the banks' existing loans, which further exacerbated their precarious financial position. As a direct consequence of this, nearly six financial institutions went bankrupt and ceased operations between the years 1995 and 1998. Reforms were carried out in stages in several other nations, including Ethiopia and Ghana. The strategy was implemented by reorganizing banks that were part of the public sector to make them more financially viable before their privatization.

Worku, (2011), on the other hand, raises concerns about the timing and sequencing of the reforms that were implemented in Ethiopia. He also contends that the benefits of financial liberalization have been limited. When viewed through the lens of competitive behavior, the regulatory restriction placed on the admission of international banks has shown to be very destructive to the Ethiopian banking system; as a result, the policy in question ought to be re-examined. The financial crisis in the banking sector was itself a forerunner to the changes that were implemented in Cameroon, Senegal, and Uganda, and the reforms included improvements in operating procedures as well as a strengthening of the regulatory and supervisory framework (Fowowe, 2013).

According to research conducted and published by the World Bank (World Bank, 2013), more than 10% on average of the loan portfolios held by SSA banks are in an impaired state. Most banks in countries of sub-Saharan Africa tend to avoid taking risks and instead choose to invest in government treasury securities, which are regarded as being substantially more appealing. For example, in Zambia, banks have earned up to a third of their entire interest

income from investments in government securities since 2005, which has brought the country's overall asset level to an average of roughly 20% of total assets. Between the years 2002 and 2003, the share of total assets that was comprised of treasury bills in Uganda was higher than the share that was comprised of loans. Even though lending rates have been falling over the past several years, they are still rather high, and default rates on loans are fairly typical in most of the nations that are located in sub-Saharan Africa.

In general, the banking system's reliance on government securities has been a barrier to efficient financial development as well as the depth of the capital and money markets. This is primarily because banks purchase and keep these securities until maturity without the need of exchanging them in the secondary market.

Ikhide (1998), observed that due to the preponderance of the primary market for government assets, a vibrant secondary market in Nigeria that was intended to encourage active participation was unable to flourish in the country's institutional environment. As a result of businesses with unclear credit records being rationed out of the credit market, the economic impact of bank lending in SSA has been restricted. Another failure of the financial reforms implemented in many SSA countries is that they did not adequately encourage the growth of alternate sources of funding. Most nations in SSA, with South Africa being the notable exception, have capital markets that are significantly underdeveloped compared to other parts of the world. In 2011, the overall value of the stock market was equivalent to 42% of GDP on average. If we were to take South Africa out of the equation, however, that number would drop to roughly 23%.

Chapter Three.

Introduction

This section presents the research methods employed for the study. It explains how the research is conducted, the types and sources of data, the methods employed, and the estimation techniques employed to achieve the objectives of the study and the justifications of the selected techniques.

Research Design

According to Sovacool, Axsen & Sorrell, (2018), a research design describes the coordination of the various aspects of a study to provide reliable answers to research issues. The three most existing types of research designs are descriptive, explanatory, and exploratory research designs. This study, however, adopts the explanatory research design. Explanatory research design permits the analysis of the effect of the changes in one variable on the changes in another variable, the explanatory research design resolves research questions by setting up hypotheses based on the instincts of the researcher or the literature.

This study employs an explanatory research design to examine how or why excess capacity in the banking sector affects the macroeconomic performance of Sub-Saharan Africa (SSA). In addition, the study examines both the direction and magnitude of the impact of excess capacity on the macroeconomic performance of SSA To examine the impact of a variable (independent variable) on another variable (dependent), quantitative analysis is the most appropriate method. In addition, it is the most suitable tool for gathering data for an empirical study. Moreover, researchers employ quantitative research methods to evaluate their hypotheses. However, results obtained from the quantitative research method are only numerical responses with little insight into the thoughts, emotions, motivations, and drivers of the group.

Types and Sources of Data

This study employs panel data covering 31 SSA countries and 21 annual time series ranging from 2000 to 2021. The study uses secondary sources of data to obtain the variables deemed necessary and appropriate for the study. Data for the study were obtained from the World Development Index database. The duration of the study of the data is adopted to include more observations to improve the fitness and efficiency of the estimations. In addition, to contribute to existing knowledge, the study extended the duration to assess and understand the current dynamic relationships that exist between excess capacity and. Moreover, the period was chosen based on the data availability. To reduce biasedness in the results, missing values and incompleteness in the data were minimized. The selected variables and their measurements have been presented in Table 1.

TABLE 1.

Variable	Proxy/Measurement	Notation	Expected Effect	Data Source
DEPENDENT VARIABLE				
Economic Growth	Growth rate of GDP	GDP		WDI
Credit Availability	The ratio of bank credit to deposits	CrA		
INDEPENDENT VARIABLES				
Return on Asset	Bank return on assets (%, after tax)	ROA	+ (GDP and CrA)	WDI
Non-performing loans	Bank non-performing loans to gross loans (%)	NPFL	-(GDP and CrA)	
Capital Adequacy	Bank regulatory capital to risk-weighted assets (%)	CA	+ (GDP and CrA)	
CONTROL VARIABLES				
Ratio of bank deposits to GDP	Bank deposits to GDP ratio	BD/GDP	+ (GDP and CrA)	WDI

Econometric Strategy

Panel Model

This study used a panel data framework for the analysis. Panel data framework is used for this study because of its numerous advantages. Some of the advantages are it gives more information, more variability, and more efficiency. Thus, panel data, where the same firms (n) are observed over several years (t) can give a more reliable picture than cross-section analyses that are based on only one year of observation (Smith et al., 2006). Since the increased number of observations based on (n x t), as already defined above, helps to improve the efficiency of the estimators because the larger the sample size the lower the bias found in the estimations. As well, the use of panel data helps to minimize the problem of multicollinearity faced by time series studies. Again, the panel provides data that are more informative, more variable, with less collinearity among the variables, more degrees of freedom, and more efficiency (Hsiao 2003). Moulton (1987) notes that time series and cross-section studies do not control for individual heterogeneity and run the risk of obtaining biased results. In this respect, the panel data analytical framework makes a distinction between residual heterogeneity related to changes over time (period effects) and across firms (group effects). The basic panel data model is of the form:

$$Y_{it} = \alpha + X_{it}\beta + \varepsilon_{it} \quad \text{.....(1)}$$

Where the α is constant, i represents the firm and t is the time dimension. represents an explanatory variable and ε_{it} is the error term. $\varepsilon_{it} = u_{it} + v_{it}$

Where μ_i is the firm's specific effect and v_{it} is a random term. The basic model of panel data could be estimated by several methods depending on the behavior of the error term. It also depends on whether; there is a

serial correlation between heteroscedasticity and multicollinearity in the estimated model in question. As already indicated, the study focuses on ordinary least squares that include pooled OLS, fixed effects, and random effects.

The model for the estimation is specified below.

$$GDP_{it} = \beta_{1i}+\beta_1 GDP_{it-1} + \beta_2 CA_{it} + \beta_3 NPFL_{it} + \beta_4 ROA_{it} + \beta_5 FI_{it} + \gamma_i + \delta_t + e_{it} \quad \ldots\ldots (2)$$

$$CrA_{it} = \beta_{1i} + \beta_1 CrA_{it-1}+\beta_2 CA_{it} + \beta_3 NPFL_{it} + \beta_4 ROA_{it} + \beta_5 D/GDP_{it} + \gamma_i + \delta_t + e_{it} \quad \ldots\ldots (3)$$

Where GDP denotes economic growth and denote credit availability which are the dependent variables. The excess capacity indicator variables include CA, NPFL, and ROA denoting capital adequacy, nonperforming loans, and Return on Asset respectively. I employ control variables including D/GDP denoting by the ratio of deposit to GDP growth y to minimize estimation biasedness. γ_i is the individual-specific effect, δ_t is the time-specific effect and e_{it} is the residual term.

β_{1i} is assumed to vary among the independent variables whereas β_2, β_3, β_4, β_5, β_6 andβ_7 are assumed to be fixed for all individuals. All changes in the behavior of the variables are assumed to be incorporated in β_{1i}, which is called individual heterogeneity. β_{1i} is also called the fixed effects indicating the variable is constant. These individual intercepts included are to control for features individual-specific and time-invariant which means the response of the system is not a function of time.

Dynamic Panel Data Model

A Dynamic Panel Model (DPM) is a statistical and econometric technique that is used to evaluate and estimate the relationships between variables across time, particularly in the presence of endogeneity and unobserved heterogeneity. This technique was developed in the 1970s and has since been increasingly

popular in the field of economics. The study of the behavior of individuals, firms, or other entities over several different time periods is a widespread practice in the fields of economics and social sciences.

The fact that a dynamic panel model incorporates aspects of both time series and cross-sectional data is the defining characteristic of this type of model. It concurrently considers both the temporal dimension, which refers to time-series variation, and the cross-sectional dimension, which refers to variation that is distinctive to individuals or entities. This is especially helpful when working with panel data, in which observations are collected on several different entities over the course of several different time periods.

When estimating dynamic panel models, it is necessary to consider a variety of concerns, including endogeneity, serial correlation, and unobserved heterogeneity. The Generalized Method of Moments (GMM) and its variants are examples of common estimation methods. These approaches assist in addressing these issues and give consistent and efficient parameter estimations.

Dynamic panel data incorporates a lagged dependent variable (with or without other exogenous variables), allowing for the modeling of a partial adjustment mechanism. The inclusion of exogenous variables only brings minor complications concerning the estimation of the parameters. These complications pertain to the number of instruments (in instrumental variable estimation) or the number of moment conditions (in GMM estimation).

There are also complications arising from the time dimensions of the panel datasets. Most of the panel estimation methods are designed for panel datasets with large N (the cross-section dimension) and large T (the time dimension). Panel datasets with small N and large T may require more specialized techniques (e.g., SUR) for estimation. (Efron and Morris, 1973).

For simplicity, let us consider a one-way error component model:

$$yit = \gamma yi,-1 + \beta' xit + \alpha i + \varepsilon_{it} \quad \text{.....(4)}$$

for i = 1,.., n and t = 1, .., T . αi and λt are the (unobserved) individual and time-specific effects, and εit the error (idiosyncratic) term with E(εit) = 0, and E($\varepsilon it \varepsilon js$) = $\sigma t2$ if j = i and t = s, and

E($\varepsilon it \varepsilon js$) = 0, otherwise.

The decision between a fixed-effects formulation and a random-effects formulation in a dynamic panel model has implications for estimation that are distinct from those connected to the static model. (Sammons et al. 1993; Nuttall et al. 1989)

First, differencing's capacity to eliminate unobserved heterogeneity also serves as the foundation for the family of estimators created for dynamic panel data (DPD) models. These models incorporate one or more lag dependent variables that make it possible to model a partial adjustment mechanism (Christopher, 2013).

A serious difficulty arises with the one-way fixed effects model in the context of a dynamic panel data (DPD) model particularly in the “small T, large N" context. As Nickell (Econometrica, 1981) shows, this arises because the demeaning process which subtracts the individual’s mean value of y and each X from the respective variable creates a correlation between regressor and error.

The mean of the lagged dependent variable contains observations 0 through (T − 1) on y, and the mean error—which is being conceptually subtracted from each subscript—contains contemporaneous values of the ∈ for t = 1 . . . T. The resulting correlation creates a bias in the estimate of the coefficient of the lagged dependent variables which is not mitigated by increasing N, the number of individual units.

The changing operation creates a regressor that cannot be distributed independently of the error term. Nickell demonstrates that the inconsistency of $\hat{\rho}$ as N → ∞ is of order 1/T, which may be quite sizable in a “small T" context. If ρ > 0, the bias is invariably negative, so that the persistence of y will be underestimated.

For reasonably large values of T, the limit of ($\hat{\rho}-\rho$) as $N \to \infty$ will be approximately $-(1+\rho)/(T-1)$: a sizable value, even if T = 10. With $\rho = 0.5$, the bias will be -0.167, or about 1/3 of the true value. The inclusion of additional regressors does not remove this bias. Indeed, if the regressors are correlated with the lagged dependent variable to some degree, their coefficients may be seriously biased as well.

Note also that this bias is not caused by an autocorrelated error process $\in$. The bias arises even if the error process is i.i.d. If the error process is autocorrelated, the problem is even more severe given the difficulty of deriving a consistent estimate of the AR parameters in that context.

The same problem affects the one-way random effects model. The UI error component enters every value of yit by assumption so that the lagged dependent variable cannot be independent of the composite error process.

One solution to this problem involves taking the first differences of the original model. The first difference transformation removes both the constant term and the individual effect:

$\Delta yit = \rho\Delta\, \gamma yi{-}1 + \Delta Xit\beta 2 + \Delta\varepsilon_{it}$ ..... (5)

There is still a correlation between the differenced lagged dependent variable and the disturbance process (which is now a first-order moving average process, or MA (1)): the former contains yi, (t−1) and the latter contains $\varepsilon_{i,t-1}$.

But with the individual fixed effects swept out, a straightforward instrumental variables estimator is available. We may construct instruments for the lagged dependent variable from the second and third lags of y, either in the form of differences or lagged levels. If is i.i.d., those lags of y will be highly correlated with the lagged dependent variable (and its difference) but uncorrelated with the composite error process. Even if we had reason to believe that $\in$ might be following an Autoregressive order (AR1) process, we could still follow this strategy, “backing off” one period and using the third and fourth lags of y (presuming that the time series for each unit is long enough to do so). This approach is the Anderson–Hsiao (AH) estimator.

The DPD (Dynamic Panel Data) approach is usually considered the work of Arellano and Bond (AB) (Rev. Ec. Stud., 1991), but they popularized the work of Holtz-Eakin, Newey, and Rosen (Econometrica, 1988). It is based on the notion that the instrumental variables approach noted above does not exploit all of the information available in the sample. By doing so in a Generalized Method of Moments (GMM) context, we may construct more efficient estimates of the dynamic panel data model.

Arellano and Bond argue that the Anderson–Hsiao estimator, while consistent, fails to take all of the potential orthogonality conditions into account. A key aspect of the AB strategy, echoing that of AH, is the assumption that the necessary instruments are 'internal': that is, based on lagged values of the instrumented variable(s). The estimators allow the inclusion of external instruments as well.

Consider the equations.

$yit = Xit\beta 1 + Wit\beta 2 + vit,$……..…(6)

where vit = uit + is the sum of the residuals

where Xit includes strictly exogenous regressors, Wit are predetermined regressors (which may include lags of y) and endogenous regressors, all of which may be correlated with ui, the unobserved individual effect. First-differencing the equation removes the ui and its associated omitted-variable bias.

The AB approach, and its extension to the 'System GMM' context, is an estimator designed for situations with: 'small T, large N' panel- few periods and many individual units; a linear functional relationship; one left-hand variable that is dynamic, depending on its past realizations; right-hand variables that are not strictly exogenous: correlated with past and possibly current realizations of the error; fixed individual effects, implying unobserved heterogeneity; and heteroskedasticity and autocorrelation within individual units' errors, but not across them. The Arellano–Bond estimator sets up a generalized method of moments (GMM) problem in which the model is specified as a system of equations, one per period, where the instruments applicable to each equation differ (for instance, in later periods, additional lagged values of the instruments are available). In this setup, we have different numbers of instruments

available for each period: one for t = 2, two for t = 3, and so on. As we move to the later periods in each panel's time series, additional orthogonality conditions become available, and taking these additional conditions into account improves the efficiency of the AB estimator. One disadvantage of this strategy should be apparent. The number of instruments produced will be quadratic in T, the length of the time series available. If T < 10, that may be a manageable number, but for a longer time series, it may be necessary to restrict the number of past lags used.

A potential weakness in the Arellano–Bond DPD estimator was revealed in later work by Arellano and Bover (1995) and Blundell and Bond (1998). The lagged levels are often rather poor instruments for first differenced variables, especially if the variables are close to a random walk. Their modification of the estimator includes lagged levels as well as lagged differences. The original estimator is often entitled to difference GMM, while the expanded estimator is commonly termed System GMM. The cost of the System GMM estimator involves a set of additional restrictions on the initial conditions of the process generating y.

Unit Root Tests

Data with features of time series follow a particular stochastic and stationarity process. This is because time series data establish historical relationships by using past data. In panel data model analysis, there are various methods for unit root tests. These methods include Levin, Lin, and Chu (2002), Augmented Dicky-Fuller Chi-Square, and Philips-Perron Fisher Chi-Square unit root tests. All these tests are employed in determining the stationarity of the variables. (Aitkin and Longford,1986; Goldstein,1997).

The hypotheses for the various unit root tests are stated as follows:

Null Hypothesis: Panel data has a unit root (non-stationary)

Alternate Hypothesis: Panel data has no unit root (stationary)

However, some selected methods can be used for the tests depending on their availability and their convenience. For all methods, the tests should be statistically significant at 1%, 5%, or 10% for the null hypothesis to be rejected. Nevertheless, when the probability value of the tests is greater than all the significance levels, then the null hypothesis cannot be rejected. Those methods with greater statistical significance should be used to make the decision.

Diagnostic tests

As the DPD estimators are instrumental variables methods, it is particularly important to evaluate the Sargan–Hansen test results when they are applied. In his routine, instruments can be either “GMM-style" or “IV-style". The former is constructed per the Arellano–Bond logic, making use of multiple lags; the latter is included as is in the instrument matrix. For the system GMM estimator instruments may be specified as applying to the differenced equations, the level equations, or both. Another important diagnostic in DPD estimation is the AR test for autocorrelation of the residuals. By construction, the residuals of the differenced equation should possess serial correlation, but if the assumption of serial independence in the original errors is warranted, the differenced residuals should not exhibit significant AR (2) behavior. If a significant AR(2) statistic is encountered, the second lags of endogenous variables will not be appropriate instruments for their current values. If T is fairly large an unrestricted set of lags will introduce a huge number of instruments, with a possible loss of efficiency. By using the lag limits options, you may specify, for instance, that only lags 2–5 will be used in constructing the GMM instruments.

Chapter Four

Introduction

This chapter presents the empirical results of the study. The results of the study are presented in sequential order. Firstly, I presented the summary statistics followed by unit root tests to assess the stationarity of the variables. In addition, I presented the empirical results from the dynamic panel data model of analysis and the associated diagnostic tests.

Descriptive Statistics

Table 2 below presents the summary statistics of the variables employed in the study. The total number of observations for deriving the descriptive analysis is 320. From the results in Table 2, the credit availability (CrA) has the highest mean value of 79.859, CrA has the highest maximum value of 140.069, CrA has the highest minimum value of 17.996, CrA has the highest standard deviation of 24.513 whereas Return on Asset (ROA) has the lowest mean value of 2.126 and has the lowest minimum value of 5.51, ROA also has the lowest minimum value of -23.257 and ROA has the lowest standard deviation of 1.777.

Table 2: Descriptive statistics						
Variables	Observations	Mean	Median	Std. Dev.	Minimum	Maximum
GDP	320	4.683	5.085	4.064	-8.726	33.629
CrA	320	79.859	79.112	24.513	17.998	140.069
CA	320	18.517	18.121	5.438	1.755	32.400
NPFL	320	10.467	8.851	7.612	1.100	57.000
ROA	320	2.126	2.130	1.777	-23.257	5.513
D/GDP	320	26.938	20.345	20.484	2.663	134.264

Note: GDP denotes economic growth, CrA denotes credit availability, CA denotes capital adequacy, NPFL denotes nonperforming loan, ROA denotes Return-On-Asset and D/GDP denotes deposit-to-GDP ratio. Source: Author's estimate

Panel Unit Root Tests

To conduct efficient, consistent, and reliable econometric estimation and analysis, the stationarity of the variables employed in the study must be established. That is, stationary variables avoid spurious regression in econometric estimation. Therefore, unit root tests are applied to the variables to examine their stationarity. For a panel data model, the Levin, Lin, and Chu t, ADF-Fisher Chi-square, and PP-Fisher Chi-square tests were employed for the tests. From Table 3, it is evident that at least two of the tests confirm the stationarity of all the variables. Hence, all the variables are stationary at the levels [I (0)].

Table 3: Stationarity test			
LEVELS			
Variables	Levin, Lin &Chu t	ADF-Fisher Chi-square	PP-Fisher Chi-square
GDP	-6.183***	142.106***	133.379***
CrA	-2.387***	82.147**	86.805**
CA	-2.133**	35.328	40.997**
NPFL	13.682	64.255**	56.712***
ROA	-0.03193	123.613***	114.411***
D/GDP	-3.354***	77.228*	87.191**

Note:*p<.0.1, **p<.0.05 and ***p<.0.01

Correlation

Table 4 presents the correlation coefficient between the variables. The results indicate that there is a negative relationship (r = -0.048) between deposits-to-GDP ratio and economic growth. This implies that if the deposits-to-GDP ratio increases, economic growth falls this is because the deposits made are used by banks to give loans and make investments. The profits made from these investments are channeled into the banks and not transferred into the economy. In addition, economic growth is positively correlated with some of the independent variables (CA, NPFL, and ROA). This implies that there are dynamic effects of the excess capacity variables on economic growth.

Table 4: Correlation Analysis					
Corr	D/GDP	CA	GDP	ROA	NPFL
D/GDP	1				
CA	0.315	1			
GDP	-0.048	0.221	1		
ROA	-0.023	0.058	0.005	1	
NPFL	-0.018	0.031	0.179	-0.326	1

Table 5 presents the correlation coefficient between the variables. The results indicate that there is a negative relationship (r = -0.301) between deposits-to-GDP ratio and economic growth. This implies that if the deposits-to-GDP ratio increases, economic growth falls, this is because if deposits are really high as compared to GDP, people are not spending much and thus will borrow less from banks, banks will have more resources than needed and thus affecting excess capacity. In addition, economic growth is positively correlated with CA (0.311) and NPFL (0.092) and negatively correlated with ROA (-0.138). This implies that there is a dynamic effect of the excess capacity variables on economic growth.

In both Tables 4 and 5, it is evident that none of the correlation coefficients is 8 or more. Specifically, none of the independent variables are highly correlated with each other in both equations. This is evident in the absence of multicollinearity among the variables in both equations. This improves the efficiency in estimating and interpreting the impact of the predictors on the dependent variables.

Table 5: Correlation Analysis					
Corr	D/GDP	CA	NPFL	ROA	CrA
D/GDP	1				
CA	0.224	1			
NPFL	-0.007	0.025	1		
ROA	-0.064	0.084	-0.322	1	
CrA	-0.301	0.311	0.092	-0.138	1

Empirical Results

Table 6 presents the estimated results of the dynamic panel model the table shows results for the economic growth (GDP) of Sub-Saharan Africa economies. Economic growth in the previous period [GDP(-1)] has a significant positive impact on current economic growth (GDP), all else equal. GDP in the previous year has a 0.489 impact on current GDP, all else equal. That is, an increase in the economic growth in the past year would provide more investment funds and, also, increase investment confidence in the economy. This would, as a result, increase investment in the economy which would spur economic growth in the current year.

Regarding the independent variables, CA and ROA have positive impacts on GDP, whereas NPFL has a negative impact on GDP in Sub-Sahran Africa. However, ROA and NPFL are statistically insignificant. If the capital adequacy ratio increases by 1%, the economic growth in Sub-Saharan Africa would increase by 0.176%. This implies that an improved capital adequacy ratio of the banks in Sub-Saharan Africa would improve economic growth. An improved CA implies a reduction in excess capacity of the banking sector in Sub-Saharan Africa. This further implies improved financial stability and resilience of the banks to perform their financial intermediation functions to the productive sectors of the economy. This would, as a result, increase access to credit facilities, increased investment, and economic growth in SSA countries. Similarly, an increase in NPFL by 1% would reduce economic growth by about 0.098%, holding all other variables constant. This implies that an increase in the amount of defaulted loans would reduce the economic growth of SSA countries. This could be due to the insufficient loan recovery by the banks which undermines their financial intermediation functions reducing investment and, hence, reducing economic growth.

Financial intermediation measured by the ratio of deposit to GDP has an insignificant positive impact on the economic growth of SSA countries. An increase in the amount of deposit-to-GDP ratio by 1% would cause economic growth to increase by 0.011%, all else equal.

Table 6: Dynamic Panel Model Estimation for Economic Growth (GDP)				
Variables	GDP	Std. Error	t-Statistic	P-Value
GDP(-1)	0.489	0.028	17.46	0.000
ROA	0.293	0.267	1.097	0.274
CA	0.176	0.046	3.826	0.000
NPFL	-0.098	0.023	4.260	0.000
D/GDP	0.011	0.026	0.423	0.678

Table 7 presents the estimable results of the dynamic panel model credit availability. Credit availability in the previous period [CrA (-1)] has a significant positive impact on current credit availability (CrA), all else equal. CrA in the previous year has a 0.839% impact on the current CrA, all else equal. The amount of credit made to the borrowers in the previous year when recovered plus interest payments would make more available credit in the current year.

Regarding the independent variables, both CA and ROA have positive impacts on credit availability (CrA) in SSA countries, whereas NPFL hurts CrA in SSA countries. However, only CA and NPFL have significant impacts on credit availability. If the capital adequacy ratio increases by 1%, the credit availability of SSA would increase by 0.136%. This implies that an improved capital adequacy ratio of the banks in SSA countries would improve credit availability. An improved CA implies a reduction in excess capacity of the banking sector in SSA. This further implies improved financial stability of the banks to increase their ability to provide more credit facilities. This would, as a result, increase access to credit facilities for onward investment projects and improve in the welfare of the people. Similarly, a reduction in NPFL would increase credit availability by about 0.101%, holding all other variables constant. This implies that a reduction in the amount of defaulted loans would increase the amount of credit or loans in SSA countries. That is, if the amount of defaulted loans of banks is reduced, it would increase the loan recovery, improve the availability of more loanable funds and, hence, incentivize the banks to provide more credit to investors.

Financial intermediation measured by the ratio of deposit to GDP has a significant positive impact on credit availability in SSA. Specifically, the number of available loans would increase by 0.038% if the ratio of deposits to GDP increases by 1%, all else equal. The increase in the number of deposits at the banks would make more funds available for providing loanable funds to investors. The financial intermediation function of banks is incomplete if the deposits are not sufficient to provide loan facilities to investors. Hence, a positive relationship between the deposit-to-GDP ratio and credit availability is an indication of the financial capabilities of the banks in SSA countries to adequately perform their financial intermediation functions.

Table 7: Dynamic Panel Model Estimation for Credit Availability (CrA)

Variables	CrA	Std. Error	t-Statistic	P-Value
CrA(-1)	0.839	0.039	21.565	0.000
ROA	0.136	0.121	1.130	0.260
CA	0.006	0.066	0.069	0.945
NPFL	-0.101	0.0353	-2.868	0.004
FI	0.038	0.018	2.119	0.035

Diagnostic Tests

Table 8 reports the diagnostic tests for the dynamic panel data model analysis. The results for both Autoregressive order at level 1 (AR 1) and Autoregressive order at level 2 (AR 2) are reported for economic growth and credit availability estimated equations. From the results, both AR (1) and AR (2) have p-values greater than 0.05 and 0.1 for both equations. This is an indication of the absence of serial correlation in residuals. This indicates that the results obtained by employing the dynamic panel data model are consistent and reliable.

Table 8: Diagnostic Tests				
Economic Growth(GDP growth rate)				
Test Order	m-Statistic	rho	SE(rho)	Prob.
AR(1)	-2.657244	5027.026002	1891.819433	0.0679
AR(2)	0.803205	759.203450	945.217174	0.4219
Credit Availability (CrA)				
AR(1)	-1.498195	-0.450856	0.300933	0.1341
AR(2)	-1.551995	-0.018440	0.011882	0.1207

Chapter Five.

Summary and Conclusion.

On one hand, Sub-Saharan Africa is a continent that has a considerable number of issues, and on the other, it has a significant amount of potential. It has had a challenging history, and enormous obstacles still stand in the way of its continued progress. Widespread poverty, inadequate human development, and exclusive economic expansion all characterize the current situation. The region is suffering from a severe lack of necessary infrastructure, and the atmosphere for investment and the regulatory environment is not very favorable. There are still deficiencies in both the governance and the institutional capabilities. At the same time, there is the possibility for a dramatic change in the landscape of banking in many of the nations in sub-Saharan Africa, such as the expansion of mobile banking and regional banking groupings. This bodes good for increased competition in national banking sectors and makes the dissemination of new technologies easier. However, it is important to highlight that these advancements have also brought up issues for the regulators and supervisors in the region.

The fast spread across borders of pan-African banking firms, the majority of which are in Nigeria and South Africa, the region's two largest economies, has been a remarkable characteristic of the financial advances that have taken place in sub-Saharan Africa (SSA) over the past several years. At this point in time, at least nine financial groups that are domiciled in SSA operate banks in seven or more other SSA countries. Ecobank, which is headquartered in Togo but derives close to half of its business from Nigeria, has the widest footprint in the region, with a presence in approximately 33 of the 45 countries and a ranking as one of the five largest banks in 18 of those countries.

Standard Bank/Stanbic (South Africa) and United Bank for Africa (Nigeria) are only two examples of the many South African and Nigerian banking organizations that have aggressively expanded their operations in the region. The Bank of Africa group is currently present in 11 countries in sub-Saharan

Africa, where it had its beginnings in the country of Mali. These four banking conglomerates collectively manage more than thirty percent of the deposits in at least thirteen SSA countries.

There are several economies in SSA that are characterized by having an abundance of liquid assets. The purpose of this study was to provide evidence of the phenomena of excess liquidity and to investigate the effect that phenomenon has on the mechanism of economic growth. In doing so, it has been argued that it was vital to differentiate between excess money maintained for precautionary purposes and excess liquidity in excess of that amount. We decided to refer to excess liquidity that exceeds that amount as involuntary excess liquidity. We claimed that because of the underdeveloped structure of financial markets in SSA, commercial banks may choose to maintain such involuntary excess liquidity even if interest rates and bond yields are positive. This is because the underdeveloped character of financial markets in SSA makes it more likely that banks will default on their obligations.

The distinction between these various ideas of excess liquidity has crucial policy repercussions to consider. Because the surplus money that banks maintain for safety reasons does not have an inflationary potential, there is no need to sterilize it if the banks hold large excess liquidity for safety reasons. However, it is essential to note that precautionary excess reserves reflect a structural problem that, even though it does not immediately offer a threat to inflation, results in an inefficient allocation of resources. This is despite the fact that the problem does not provide an immediate threat to inflation. Sacerdoti (2005) has provided a wealth of evidence to support the contention that there is a pressing requirement for adjustments to be made to the institutional framework that governs access to bank credit in SSA. In particular, he emphasizes the need for better information on borrowers, to update standards for accounting and auditing, and to restructure the judicial, legal, and regulatory framework that governs the enforceability of claims.

However, if banks keep considerable amounts of involuntary surplus liquidity, there is a real risk that whenever demand circumstances improve, lending will rapidly expand, bringing with it the risk of rising inflation. This risk is present only if banks hold significant amounts of involuntary excess liquidity. If the loan rate rises in response to an increase in demand, so elevating the opportunity cost of surplus liquidity, or if an improvement in the economic

outlook reduces the riskiness of new borrowers, such a result is likely to occur. Because of this, there is a need for serious consideration to be given to the idea of withdrawing liquidity from the system if there is involuntary excess liquidity in the system.

Policy recommendations.

To advance financial stability, spur economic growth, and improve access to financial services for the underserved population, it is critical to put into practice appropriate policy recommendations to deal with excess capacity in Sub-Saharan Africa's banking sector.

Mlachila et al. (2013) claim that a comprehensive approach is required to address the challenges of banking in sub-Saharan Africa. This suggests that decision-makers should take multiple factors into account rather than concentrating solely on one. They can do this by harnessing potential growth opportunities and fostering an environment that promotes financial stability.

In their comprehensive policy recommendations for dealing with excess capacity in sub-Saharan African banks, Berg et al. (2015) emphasize the significance of monetary aggregates as operational targets when formulating policies related to inflation targeting. To ensure that interest rates match desired results while taking important factors into account, like inflation control and sustainable economic growth, a balanced approach is required.

Policymakers should adopt an integrated approach incorporating a range of measures to successfully address excess capacity issues in the sub-Saharan African banking sector.

1. Fortify Governing Frameworks: By establishing precise guidelines for risk management, capital adequacy requirements, and moral behavior among banks operating in the region, regulatory frameworks can be strengthened to promote sound governance practices.

2. Foster Effective Competition: By encouraging healthy competition among market participants, one can foster innovation while reducing the risk of concentration that could result from a few large banks having an excessive amount of power. This can be accomplished by taking steps like encouraging newcomers, encouraging cooperation between smaller institutions, and making sure that fair trade practices are followed.

3. Advance Financial Inclusion: To meet the needs of the underserved population, it is necessary to increase access to financial services using creative strategies. Financial inclusion is made possible by digitization, which offers convenient and affordable channels for banking services, especially in remote locations where physical branch presence may be limited.

4. Develop Risk Management Structures: By strengthening risk management frameworks, potential vulnerabilities in the banking industry can be reduced. To reduce credit risks and ensure long-term viability, banks should implement strong internal controls, reliable monitoring systems, and responsible lending practices.

5. Improve Collaboration Between Governments and Stakeholders: Successful policy recommendations depend on close cooperation between national and international organizations, regulatory agencies, and industry stakeholders. Policymakers can effectively address excess capacity issues by leveraging collective expertise and aligning efforts by working together to achieve common goals.

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