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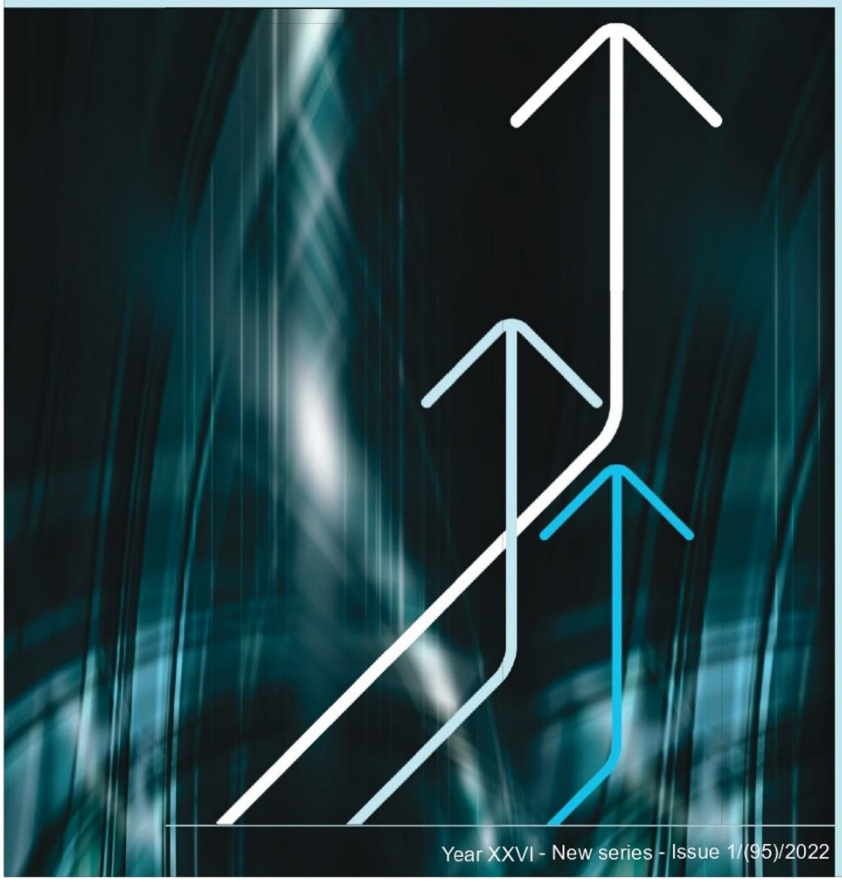

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“VICTOR SLĂVESCU” CENTRE FOR FINANCIAL
AND MONETARY RESEARCH

FINANCIAL STUDIES

ROMANIAN ACADEMY
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Contents

A CRITICAL REVIEW OF NEOCLASSICAL AND BEHAVIOURAL THEORIES OF MERGER WAVES[1]

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Abstract

This paper aims to identify and critically evaluate the theoretical explanations of mergers happening in clusters. We identified two streams of theories: neoclassical and behavioural explanations of merger waves. Neoclassical theories include q theory and industry shock hypothesis. Behavioural theories studied incorporate share mis-valuation theory, managerial hubris hypothesis, and managerial discretion theory. Q theory states that efficient firms take over inefficient firms during market expansions. Industry shock hypothesis views resource reallocation requirements due to economic, technological, or regulatory shocks as causes of merger waves. Neoclassical theories, hypothesizing gain from mergers, assumes that markets are efficient, and managers maximize shareholder wealth. Share mis-valuation theory suggests that mergers waves occur when managers of overvalued firms use overvalued stocks to takeover undervalued targets in inefficient markets. Managerial hubris hypothesis, assuming of strong market efficiency, attributes merger waves to overconfidence of irrational managers about estimated gain from acquisition. Managerial discretion theory, more relevant for conglomerate merger, attributes merger waves as results of managerial empire building. We conclude that both the streams of

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theories should co-exist unless a new theory incorporating the strengths of the two has emerged.

Keywords: mergers and acquisitions, restructuring, economic theories of finance, behavioural finance theories

JEL Classification: G34; G40

1. Introduction

Mergers refer to amalgamating two organizations into a single entity while acquisitions involve purchase by one entity who gains subsequent control over the organization acquired (Schraeder and Self, 2003). Mergers and acquisitions have long been used for reallocation of resources within and among industries. It is an interesting phenomenon that mergers occur in waves (Neuhauser, 2007; Brealey and Myers, 2003). Such waves occurred in 1900, 1920's, 1960's,1980's, and 1990's (Jovanovic and Rousseau, 2002). Neuhauser (2007) identified six merger waves in the twentieth century while Harford (2005) identified 35 merger waves between 1981 and 2000 with average 34 mergers occurring during each wave. Hsu et al. (2017) identified a merger wave in the U.S. upstream oil and gas industry in the second decade of the twenty-first century. Research indicate that such waves are not merely impressions but can be proven through analysis of pertinent data (Golbe and White, 1993). Quite surprisingly, the six major merger waves mentioned by Neuhauser (2007) coincided with stock market booms though the share prices stumbled as soon as the waves were over. Though firms have been exercising M&As for centuries, and academicians are researching on factors affecting mergers for long, considerable debate remain on whether economic or behavioural considerations cause the merger waves. This paper aims to identify through an extensive review of literature the theoretical explanations of mergers happening in waves. Moreover, we aim to present critical analysis of the limitations of each of the identified theories of merger waves.

Proponents of neoclassical and behavioural theories of mergers attribute different reasons for mergers coming in waves. Neoclassical theorists, who believe markets to be efficient, managers to be working for wealth maximization of firms, and mergers to create positive abnormal returns, proposed and supported q theory of merger (Jovanovic and Rousseau, 2002) and industry shock hypothesis

(Harford, 2005; Mitchell and Mulherin,1996). Researchers supporting behavioural theories suggest waves to be created due to mis-valuation of firms (e.g., Shleifer and Vishny, 2003; Rhodes-Kropf and Viswanathan, 2004), or managerial overconfidence in their capacity to predict gains from mergers (Roll, 1986), or managerial empire building (Jensen, 1986; Gugler et al., 2012).

Neoclassical theories make some significant assumptions which are not unanimously accepted. According to Jovanovic and Rousseau (2002), q theory predicts that managers of high q firms (firms with high market to book value ratio) acquire low q firms instead of purchasing used capital assets to create positive return when dispersion of q of firms increases after any shock. Industry shocks require reallocation of resources and according to industry shock hypothesis, such reallocation occur through merger waves if shocks coincide with higher liquidity (Harford, 2005). Q theory is criticized for not considering option to acquire new capital asset, and not being able to explain conglomerate mergers. Industry shock hypothesis might not be quite pragmatic due to high reliance on rare coincidence. Under this hypothesis, merger waves are explained more by liquidity than by industry shocks.

Some behavioural theorists rule out market efficiency. Mis-valuation hypothesis proposes that managers of overvalued firms want to use stocks to acquire undervalued firms (Shleifer and Vishny, 2003; Rhodes-Kropf and Viswanathan, 2004). Managerial hubris hypothesis (Roll, 1986) on the other hand assumes market are efficient; but they assume managers to be overconfident about their estimation of positive return from mergers. Managerial discretion theory (Jensen, 1986; Gugler et al., 2012) assumes that merger waves are caused due to intent of top management to build empires and get higher compensation. But in the significant presence of compensation plans tied to long run performance of corporations, and existence of strong corporate governance mechanisms, we think that merger waves are unlikely to occur solely for agency-related issues.

As existence of over and undervaluation is not sufficient to disprove Efficient Market Hypothesis (Fama, 1998), and latest empirical studies (e.g., Sonenshine, 2019; Hsu et al., 2017) report co-existing significance of both neoclassical and behavioural aspects in merger waves, we think that neither the neoclassical explanation nor the behavioural explanation of merger waves can be ruled out. Neoclassical theories are good starting points for analysis of merger

waves but as decisions in financial markets are taken by homo-sapiens, some behavioural aspects have significant influence as well.

To the best of our knowledge, this is one of the very pioneering attempts to encapsulate and more importantly critically evaluate the theories of merger waves. This paper draws attention to the scientific world and the practitioners that both the streams of explanations of merger waves, one attempting to establish economic relevance and rationale merger waves and the other claiming behavioural aspects of homo-sapiens managing firms to trigger merger waves, have their strengths and limitations. We try to show that none of the theories discussed are alone sufficient to explain all the mergers or all the merger waves. We also draw attention of the academic arena to the need for developing a theory of merger wave that can explain both the behavioural and economic aspects of mergers.

Rest of the paper has been arranged as follows: section two outlines the research method, section three reviews the neoclassical and behavioural theories; section four critically analyses the presumptions of the two streams of theories with the help of extant literature and empirical evidence; and finally, section five concludes the paper.

2. Research Methodology

This study adopts a research method like literature reviews. 31 research articles, 2 book chapters, and 1 conference proceeding published between 1969 and 2021 were reviewed for identifying and critically analyzing the theories of merger waves. At the first phase, keywords were identified to help find relevant research items. Literature identification process comprised of two phases. The first search was made in “Google Scholar” using the keywords “Theories of Merger Waves” and “Merger Wave”. In the first phase, 20 papers, 1 conference proceeding, and 1 book chapter were identified for final review. After reviewing the papers identified in the first phase, the second phase of the article identification was initiated. At this phase, deep searches were conducted in JSTOR and EBSCO alongside Google scholar using keywords specific to different theories of merger waves. Searches were conducted through permutation of the keywords using Boolean algebra. The keywords “Neoclassical Theories” OR “Behavioral Theories” OR “Q Theory” OR “Industry Shock Theory” OR “Mis-valuation Theory” OR “Managerial Hubris Theory” OR

"Managerial Discretion Theory" were used to identify the specific theories or stream of theories while another keyword "Merger Wave" was added using the Boolean operator AND to make the searches more specific. At this stage, 11 research papers and 1 book chapter was identified for inclusion. The papers or book chapters had to be published in English to be considered for inclusion. Number of citations of the research item along with the quality of the journal has been considered while selecting research papers. All the journals are double blind peer reviewed while all the book chapters are highly cited in the google scholar. Most of the journals belong to the first quartile (Q1) in SCIMAGO journal ranking. Considering the maturity of the topic, we acknowledge that most of the research works were published quite early. Only 13 of the 35 research items were published after 2010.

3. Economic and behavioural explanation of merger waves

Considerable debate remains as of whether merger waves emanate from neoclassical economic precedents or from behavioural aspects in stock markets or of managers (Gugler et al., 2012). Neoclassical school of thought has been supported by Gort (1969), Mitcell and Mulherin (1996), Jovanovic and Rousseau (2002), Harford (2005) etc. while Shleifer and Vishny (2003), Rhodes-Kropf and Viswanathan (2004), Komlenovic et al. (2011), Malmendier and Tate (2015), Mueller (1969), etc. can be named as research supporting behavioural school of thought. The two schools differ significantly in opinion regarding cause of waves, methods of payment in mergers, and impact of merger on performance (Harford, 2005).

Gugler et al. (2012) identified Industry Shock Hypothesis and the q-Theory of Merger as two dominant neoclassical theories used to identify merger waves. While the q-theory was used by Jovanovic and Rousseau (2002) to explain merger waves, Harford (2005) can be identified as making the strongest claim in favour of the statement that several industries experiencing technological, or regulatory shock at a time lead to waves of merger when there is high liquidity. Overvalued Share Hypothesis (Shleifer and Vishny, 2003) has been traced as a major theory explaining impact of behavioural issues on creating merger waves.

3.1. The Neoclassical School of Thought

The neoclassical theories of mergers, as stated by Gugler et al. (2012), are based on three assumptions, namely i) mergers have positive synergy effect; ii) managers focus on maximizing wealth of shareholders; and iii) market efficiency holds. This stream of research, according to Xu (2017), started with Gort (1969), who developed a model to find impact of technological change on frequency of merger incidences. Sonenshine (2019) termed the neoclassical stream of theories as structural hypothesis.

3.1.1. The q-theory of merger: q being the market value over the replacement cost, the q-theory of investment states that expansion of capital investment occurs when return on capital employed exceeds the cost of capital (Gugler et al., 2012). This hypothesis is concerned more about how resource is redistributed through takeovers (Dong et al., 2006). Jovanovic and Rousseau (2002) uses the theory to explain merger waves. They treat technological efficiency as the main driving factor behind higher q of entities and state that entities with high technological capacities invest more in the form of buying bundled and unbundled capital assets when there is boom in stock market. While the companies with highest technological abilities (z), i.e., companies with higher q, acquire other firms, those with little lower z buys capital assets. The firms with lowest technological efficiency having lowest q exit or get acquired by high q firms. Managers find acquiring other firms more lucrative than buying capital assets even when they are concerned of empire building. Cash surplus makes manager invest even more in acquiring other firms. Jovanovic and Rousseau (2002) termed all the major merger waves except the wave of 1960 as reallocation waves and concluded that merger waves occurred due to high dispersion in q emanating from difference in technological efficiency (z).

3.1.2. Industry Shock Hypothesis*:* Harford (2005), based on analysis of mergers between 1981 and 2000, identifies 35 merger waves in 28 industries. He finds that merger waves occur when large scale reallocation of resources is required. Such requirement is normally caused by economic, technological, or regulatory shocks (Gort, 1969; Mitchell and Mulherin, 1996; Jovanovic and Rousseau, 2002). Ovtchinnikov (2013) states that deregulation gives struggling firms an exit by being acquired as deregulation typically relaxes exit barriers. Changing price of materials and products has been attributed by many researchers (e.g., Sonenshine, 2019; Hsu et al., 2017) as an

economic shock triggering merger wave. Sonenshine (2019) states that regulatory shocks may trigger economic shocks by affecting price and thereafter stimulating merger waves. Harford (2005) finds that shocks result it reallocation only if they are accompanied by lower transaction cost, and higher liquidity. Unlike behavioural theorist, he finds that use of cash in acquisition increases during merger waves. Though behavioural theorists find pre-wave dispersion of returns to firms to be high, Harford (2005) does not find so. He also finds that operating performance of merged entities stays like those of the unmerged ones in worst cases and improves on an average.

3.1.3. Tobin's q and Gain from Mergers*:* While behavioural theories believes that mergers are not value creating, neoclassical theories thinks that mergers create value and improve operating performance if executed properly (Lang et al., 1989; Servaes, 1991; Harford, 2005). Both Lang et al. (1989) and Servaes (1991) finds that Tobin's q ratios of bidder and targets largely determine the gain from the merger. Where higher q has been used as proxy for managerial performance, if bidders with higher q acquires a lower q target, the merger results in gain. Negative abnormal return can result if bidders have a lower q while the target has a higher q. Servaes (1991) in fact tested the claims of Lang et al. (1989) using data about 704 takeovers between 1972 and 1987. His study, even being more robust, supports the claim by Lang et al. (1989) that dispersion of q is a significant factor determining gain from mergers.

3.2. The Behavioural Finance School of Thought

The behavioural theories on mergers and acquisitions suggest mis-valuation of companies within a market to be a driver of merger waves (Shleifer and Vishny, 2003; Rhodes-Kropf and Viswanathan, 2004). Roll (1986) discuss mergers decisions made by manager's overconfidence. Agency theory-based perception of merger waves, motivated by the phenomenal work of Jensen (1986) conclude mergers to be stimulated by empire-building motive of managers.

3.2.1. Mis-valuation in inefficient markets*:* Shleifer and Vishny (2003) discusses market mis-valuations of merging firms. Their theory suggests that when firms are valued incorrectly, rational managers will be able to take advantage of the inefficient market and potentially use mergers as arbitrage opportunities. Shleifer and Vishny (2003) assume that managers are well informed and will have knowledge of any incorrect valuations made on either company's

stocks. When a company's shares are overvalued, this will put them in a position to acquire an undervalued company, and use the assets gained here to prevent their shareholders from losing equity once the market discovers that the shares have been overvalued and these prices adjust accordingly. They believe that this contributes to mergers waves when a market has many overvalued and undervalued companies as undervalued companies will become targets for the overvalued firms to level out mispricing.

Rhodes-Kropf and Viswanathan (2004) show from their discussion that merger waves can result from mis-valuation problems alone. However, they do also recognise that there are other reasons which could explain these waves. They investigate why a target company might agree to mergers if they know the acquiring company's stock is overvalued. They believe that managers, even when behaving rationally, can make errors due to the market mispricing they are presented with. As a result of the overvaluation in the market, target companies overestimate the synergies expected from the merger, and despite knowing of their own mis-valuation, agree to merge based on these perceived synergies. They believe that target managers would not agree to a stock merger if it were not expected to benefit from an increase in value.

3.2.2. Management overconfidence in decision making*:* Roll (1986) proposes the 'hubris hypothesis' which suggests that when making takeover bids, managers can be overconfident when it comes to trusting their own valuation of potential benefits. He considers managers to behave irrationally when making bids, ignoring any likely errors in their valuations. Hubris is given as an explanation as to why managers do not abandon takeover bids where no gain is likely to be made. The hubris hypothesis is based on the expectation of markets being strong-form efficient, where the asset prices are fully reflecting of all available information regarding the companies involved in the takeovers. This is the opposite of what other authors including Shleifer and Vishny (2003) and Rhodes-Kropf and Viswanathan (2004) have argued when they consider markets to be inefficient.

3.2.3. Managerial Empire Building*:* This stream of research claims that merger waves occur due to malalignment of interest between the principals and the agents, i.e., the owners and managers. Based on the significant work of Jensen (1986), and propagated by Gugler et al. (2012), and Tosi et al. (2000), this agency theory aligned hypothesis states that managers may enlarge the business by taking

over value-destructive firms without regard to shareholder benefits when managers have significantly high cash available in hand. This theory has also been termed by researchers as managerial discretion theory (Gugler el al., 2012) or agency theory (Xu, 2017) of merger. Mueller (2018), based on prior literature attributed conglomerate merger wave of 1960 to managerial empire building without concern to profit or value generation. This type of enlargement of business may be driven by the motive of managers to manage large organizations (Xu, 2017; Goel and Thakor, 2010) or to reduce likelihood of being acquired (Gorton et al., 2009), or to get higher compensation compared to other managers in the market (Goel and Thakor, 2010). As no consideration is given by managers to shareholder value under this hypothesis, mergers are generally value destructive and post-merger performance of firms decline (Xu, 2017). Duchin and Schmidt (2012), an empirical study based on around ten thousand mergers between 1980 and 2009 finds that mergers during waves are indirectly more "agency-driven". They find managers to be less likely to be removed if they undertake bad takeovers during waves. Moreover, low corporate governance during waves along with milder consequences of bad mergers on managers after wave make them conclude that managers may get involved in more empire building during waves.

3.3. Key Differences between Neoclassical and Behavioural theories of merger waves

A summary of differences between neoclassical and behavioral schools of thoughts regarding merger waves has been presented by Harford (2005, p.536). Firstly, accroding to neoclassical researchers, industry shocks along with liquidity causes industry waves while mis-valuation of shares cause such waves according to behavioral researchers. Aggregate merger waves also have similar difference in cause of happening. Secondly, according to neoclassical researchers, cash acquisitions of targers increase during waves while behavioral theorists predict acquisitions to occur in exchange of overvalued stocks. Thirdly, neoclassical studies do not make any prediction about dispersion of return before and after the wave. Behavioral theorists on the other hand predict high dispersion of stock return before wave while such return according to them reduces after the wave. Fourthly, while neoclassical theorise improvement in operating performance after the wave, behavioral theories predict decline in post-wave performance.

The only similarity between the theories is that both the theories predict high return and market to book value of shares before waves.

4. Critical Analysis of the Theories and Their Underlying Assumptions

The neoclassical theories of merger are based on three assumptions about impact of mergers on performance, market efficiency, and intention of managers which in our opinion are quite strong assumptions to make. Though there is strong debate for and against the assumptions, we think, in the face of historical evidence, it might be difficult to believe that the assumptions always hold.

There is plethora of cases where management was not working to maximize wealth of shareholders. Though in many instances, the ex-ante motives of managers might be to maximize wealth of shareholders, the ex-post actions did not conform to their prior motives. For example, in 1990's managers of Olympus Corporation, shifting focus from their core operation, invested in secondary stock market expecting subsequent boom in the market. Unfortunately, they accrued a loss of ¥117.7 billion from such investment and decided to hide the loss. The management went for multiple suspicious acquisitions at higher premiums. Acquisition at premium helped them recognize goodwill to hide their loss. But change in accounting regulation about disclosure of goodwill made them disclose the loss in 2011 and such disclosure resulted in ¥376 billion loss in assets of the shareholders. Though investment in secondary stock market might be driven by intention to maximize shareholder wealth, the motives of the acquisitions can easily be questioned. But we should also recognize that neoclassical school of thought does keep scope for some deviation from assumptions.

The subprime financial crisis is a recent example which proves that market might not be efficient enough to analyse even publicly available information. Investors were caught unaware about the risks associated with CDOs and MBS during the subprime crisis. Many scholars blame reliance on EMH to be responsible for the subprime crisis though such claim has mostly been refuted by academicians (Siegel, 2009). As decisions in financial markets are made by homo-sapiens but not homo-economicus, we think, EMH can thus just be a starting point for understanding financial market, but not the ultimate theory to rely on. Overreliance on EMH is an intellectual sink which

prevents from accommodating social, behavioural aspects of financial decision making (Dymski, 2011).

4.1. Suboptimality of q Theory of Merger and Industry Shock Hypothesis

Q theory of merger suffers from a few suboptimalities. Firstly, Q theory of merger cannot account for conglomerate mergers. Jovanovic and Rousseau (2002) states that the q theory of merger they proposed can explain all merger waves till 1990s' except for the conglomerate merger wave of 1960s'. They state the merger wave of 1960's to be caused by 'something else'. Unfortunately, horizontal mergers account for less than fifty percent of total mergers today (Gugler et al., 2012). This limitation of the theory has been reflected in academic empirical literatures as well. For example, Dong et al. (2006) found Q theory to be more precise in explaining pre-1990 waves than the later ones. Secondly, the q theory of merger considers acquisition of used capital asset and acquiring other entities to be similar. The theory fails to recognize that acquirer could buy new capital assets which could be more optimal (Gugler et al. 2012). Thirdly, Q theory assumes that when there is excessive free cash flow to a bidder, managers can go for suboptimal takeovers. This indicates to agency problem between managers and owners. Agency problem is a deviation from a fundamental neoclassical assumption than managers will always maximize shareholder wealth.

The industry shock hypothesis assumes that several industries need to experience shock and such shock needs to be supported by high liquidity to create a merger wave. Behavioural researchers of finance (e.g., Gugler et al., 2012) find it implausible that such several incidences can occur at the same time. If we analyse critically the claim of the hypothesis, we think that a macroeconomic factor (i.e., liquidity) but not the industry shock itself can explain merger wave. Besides, though industry shocks are normally assumed to be externally created, some shocks like deregulation can be endogenous (Ovtchinnikov, 2013). The industry shock hypothesis thus may be wrongly substantiated in instances of change in regulatory, or technological restructuring if such change is negotiated by some players within industry.

4.2. How Valid is Behavioural Schools Claim of Market Inefficiency?

Most arguments for behavioural factors driving mergers waves relies on the assumption that markets are inefficient and therefore, companies are valued incorrectly. If this is the case them the efficient market hypothesis (EMH) would not hold. However, it should also be said that although many researchers have investigated, no one has found any behavioural theory that could replace EMH or prove it to be incorrect.

Both Rhodes-Kropf and Viswanathan (2004) and Shleifer and Vishny (2003) could be used to argue that market efficiency does not hold as these degrees of mispricing should not be occurring in a market where all participants are fully informed and there is no information asymmetry that can lead to overvalued stock. However, Fama (1998) discusses that over and underreactions to information are as common as each other and balance each other out, which suggests there must be some degree of market efficiency therein. Although much of the behavioural finance literature can make reason to suggest that markets are not efficient, there have been no theories that have been able to provide an alternative explanation to how market prices are determined by considering behavioural aspects or rationality of managers and/or investors. It is even acknowledged by Shleifer and Vishny (2003) that the companies mis-valuation will eventually be realised once the market catches up with the necessary information. If this happens then it could be considered proof that EMH still holds with the firm's information still finding its way into the market, just later than expected.

4.3. Management overconfidence in decision making

Much of the conversation around behavioural theories seem to differ in terms of whether managers are rational doing their best in an inefficient market, or whether managers are irrational, making decisions based on overoptimistic views or being overconfident in their own abilities to spot valuable opportunities.

Hajbaba and Donnelly (2013) recognise how previous 'evidence' of mispricing, such as long running underperformance, could be explained by other factors and might not actually be proof that the company is overvalued. They believe that earnings disappointments following an acquisition are a sign of over-optimism which can be used as an alternative way to evidence the overvaluation of the acquiring firm. The assumption here that managers expect

biggest benefits from acquisitions, leaving them disappointed when this does not happen, might explain the situation of some M&A deals. However, if merger waves are triggered by markets with a high volume of over/undervalued companies, then this is unlikely because this would suggest that a large amount of managers out there have trouble viewing a realistic benefit to their investment decisions and are all overoptimistic about the synergies out there. You would also expect at some point that the failure of these acquisitions to provide high returns would be a learning opportunity for other managers considering similar decisions.

Rhodes-Kropf and Viswanathan (2004) and Roll (1986) both view managers to make errors in valuating perceived synergies even when they either know that their own company is mis-valued or know that they have made errors in their previous investment decisions. This contradicts the discussion by Shleifer and Vishny (2003) who believe that rational managers know exactly what they are doing and are exploiting opportunities. Whether or not manager's decisions would be considered rational, it is hard to believe that people in the position to make these decisions would not be aware of what they are doing and if they had a history of misjudging investment potential, it would be expected that shareholders would have something to say about them being given the opportunity to undertake a risky acquisition.

4.4. Managerial Compensation Planning and Managerial Empire Building

Though the conglomerate merger wave of 1960s' is attributed to be driven by managerial discretion (Mueller, 2018), the current state of compensation planning poses doubt about possibility of new merger waves driven solely by empire building motives of managers. There has been significant rise in the compensation of top management in the last few decades (Moore, 2015). Moreover, many researchers (e.g., Hall, 2005) report dramatic increase in share-based compensation to managers with more emphasis on performance based long-run stock options given to top executives. With the rise of such equity-based stock options entitled to be executed in the long run, along with spur of other corporate governance mechanisms globally in the last few decades, we suspect that though there may be scattered incidence of managerial empire building, occurrence of new merger waves due to managerial discretion is unlikely.

5. Conclusion

Our study makes a considerable contribution by critically examining the two main streams of theories explaining merger waves. Neoclassical theorists believe markets to be efficient, managers to be working for wealth maximization of firms, and mergers to create positive abnormal returns, proposed and supported q theory of merger and industry shock hypothesis. Among the behavioural theorists, theorists supporting aggregate level market mis-valuation as the reason for merger waves assume market to be inefficient and managers to be rational. However, the managerial hubris hypothesis assumes market to be strongly efficient while managers can be overconfident. Claims of both market efficiency and market inefficiency has its supports, but no single theory so far could replace the EMH. Moreover, as the theories deal with behaviour of homo-sapiens, the irrationality of actions of managers driven by agency problems can neither be ruled out. Empirical studies ensure possibility of coexistence of behavioural and neoclassical theories. Sonenshine (2019) found that merger waves over last two decades were triggered by regulatory and economic shocks while merger premiums were determined by the behavioural aspect of mispricing. Hsu et al. (2017) finds mergers in oil and gas industry to be driven by price shock and production change. This according to them indicates recent merger wave in oil and gas sector to be explainable using both neoclassical and behavioural theories. Andriuškevičius and Štreimikienė (2021) finds in a review of literature on merger waves that all the components of PESTLE, some of them related to neoclassical theories and others to behavioural theory of merger, had significant impact on merger waves in energy sector between 1995 and 2020. We, therefore based on latest literature, conclude that both neoclassical and behavioural theories have provided interesting insight into the possible reasons behind merger waves. There is a lot to both discussions that could be interpreted to fit either side of the debate. Evidence does not disprove either argument, so it would be wrong to disregard any of the hypothesis discussed without further research. Neoclassical theories are good starting points for analysis of merger waves but as decisions in financial markets are taken by homo-sapiens, some behavioural aspects have significant influence as well. Researchers of the discipline should attempt to develop theories that incorporate both economic and behavioural aspects of merger waves.

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THE EFFECT OF BANKING COMPETITION ON FINANCIAL STABILITY IN CENTRAL AFRICAN ECONOMIC AND MONETARY COMMUNITY ZONE

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Abstract

The study investigates the effect of banking competition on financial stability in Central African Economic and Monetary Community. Financial stability is measured by bank Z-score and non-performing loans ratio. The Herfindahl Hirschman Index is used as a proxy of banking competition in both the loan and the deposit market. The study adopted the OLS, the Driscol/Kraay and the Newey-West Standard errors techniques. The results obtained in these techniques have provided a positive effect of banking competition on financial stability in the Central African Economic and Monetary Community zone. The findings of the study show that the banking sector in this region is more financially stable in competitive conditions than in highly concentrated conditions.

Keywords: banking industry; financial system; non-performing loans ratio; bank Z-score

JEL Classification: D41; E44; E51; G21; G24

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1. Introduction

Financial stability is increasingly an important goal for policymakers. The efficiency of the financial system is governed by the coherence and integrity of its core component in which the disruption of one will weaken its stability (Al Salamat and Al-Kharouf, 2021). It traces the importance of restructuring the global financial system by supporting its elements and strengthening precautionary measures at the macro and micro levels. The increasing number of financial institutions and the degree of banking competition in the Central African Economic and Monetary Community (CEMAC) zone banking sector has been a call for concern in recent years, following the 2007-2008 global financial crisis. This crisis reignited the interest of policymakers and financial analysts in examining the competition-stability nexus to set policies that could help to enhance financial stability and limit bank risk-taking (Batila Ngouala Kombo et al., 2021). It is set as a goal to avoid situations of any forms of financial crisis likely to arise from the non-abidance of prudential norms established by the banking commission of the Central African state, following uneven trends in financial sustainability and recent dynamisms in the financial market. The CEMAC banking sector has registered episodes of growth and at the same time episodes of fragilities coupled with high bank risk-taking in recent decades (Fiess et al., 2018, Batila Ngouala Kombo et al., 2021). This is interpreted to result from the non-abidance of the prudential standards put in place by the regulatory organ - Central African Banking Commission (COBAC).

Following the new reforms of the Central Bank of Central African States (BEAC) drafted in its 2017 strategic plans, the CEMAC banking commission (COBAC) aimed to establish strategic measures that could foster financial development while ensuring adequate oversight of risk factors. In this reform, COBAC (2017) highlighted the importance of maintaining an efficient risk management system that could ensure stability, following the rapid changes in the banking sectors' structure. The institutional framework for the macroprudential policy was set up in the CEMAC zone to promote financial stability following subsequent financial crises and the increase in the percentage of non-performing bank loans (Batila Ngouala Kombo et al., 2021). The establishment of the Financial Stability Committee of Central African States (CSF-AC) in 2012 was aimed at enhancing financial stability and preventing systemic risks and financial crises

(Fiess et al., 2018). This was followed by the adoption of the Rules and Procedures to run the committee of financial stability on the 17th of December 2014 in Douala. However, since 27 September 2018, these responsibilities have been transferred to the Directorate of Financial Stability, Banking Activities and Financial issues. The financial stability committee plays a regulatory and standard-setting role in the areas of public finance, credit, insurance, social welfare, capital markets and accounting. In addition, the Committee meets at least twice a year in ordinary sessions to discuss issues related to financial stability. The CEMAC banking sector has increased its bank risk, amplified by recent structural changes and a weak sectorial credit diversification. Only 18% of banks complied with the solvency ratio installed by the COBAC regulations (IMF, 2021) which act as a threat to the system's stability. The vulnerability to credit risk has been on a rise in the last two decades following an increase in unpaid debt throughout the region. The non-performing loans ratio increased from 9.1% in 2014 to 21.3% in June 2020 which it is expected to continue rising given the financial and economic challenges caused by the COVID-19 pandemic (BEAC, 2020).

Increasing non-performing loans ratio signifies high risk-taking and financial instability. Non-performing loans ratio in the assets portfolio of banks operating in the CEMAC banking sector has increased over the last two decades (Fiess et al., 2018). Following the COBAC implementation of solvency and liquidity prudential ratios as a measure of protecting the sector from crisis and instability, many banks have been reported to not abiding by the standards set by COBAC (IMF, 2017). Similarly, the CEMAC banking system has witnessed a decrease in its banks' loan portfolio quality. The sector has registered a great gap of deterioration in the quality of banks' loan portfolios, which was escalated by 189.7 billion FCFA an increase of 12.8% of outstanding receivables from 2015 to 2020 which was spurred by a rise in the rate of bad debts of 2% increase amounting to 150 billion FCFA (BEAC, 2020). Meanwhile, they registered an increase in long-term receivables by 21.1% or 69.7 billion FCFA. The CEMAC's banking sector has been struggling to a great effect with poor asset quality since the global decline of oil prices in its region in 2014 (World Bank, 2018).

The CEMAC banking sector is exposed significantly to systemic risk, both directly through banks' exposure to sovereign debt, reported having amounted to about 15% of total banking assets as of September 2020 and indirectly through government ownership of

banks (state-own banks) within the CEMAC zone which represents about 16% of total bank assets as of September 2020 (IMF, 2021). The CEMAC banking system faces an intensification of risk exposure factors related to political tensions and the fall in commodity prices due to the weak policy transmission channels in the system (Fiess et al., 2018). As part of the propositions made in the BEACs 2017-2021 strategic plan, measures have been taken to enhance risk-orientate supervision and address several banks in difficulty to ensure financial stability (Calderon et al., 2019). The CEMAC member countries have registered an unwanted debt over the years. Debt vulnerabilities have increased given the weakening of the system's fiscal position relative to the other banking sectors. The region's total public debt increased to an estimated 57% of GDP as of December 2020 from 52% in 2019 with a rise in its external debt to about 38% of GDP, from 32% in 2019. It has been forecasted by the international monetary fund that the CEMAC region's debt to GDP ratio will remain elevated at above 50% through 2024 due to the sector's financial difficulties. According to an IMF report (IMF, 2018), there are enormous disparities across the CEMAC banking sector on meeting the COBACs prudential ratios of which 4 banks in Cameroon with about 13% of their total bank assets are in distress and 3 of those banks have a negative capital.

The inefficiency in bank assets and liquidity management from individual banks has exacerbated bank risk due to the climate change of businesses, information asymmetry, and the lack of collateral which has contributed largely to the high lending rates and thus leads to financial instability in the system (Calderon et al., 2019). As a consequence, banks' inability to efficiently manage and access customers' default risk and the viability of the private-sector project before financing, has created a doubtful business environment in the CEMAC banking sector. The state’s medium and long-term debt sustainability requires a strong commitment to fiscal consolidation, effective resource allocation and mobilization, transparent debt management and good governance which is not the case with the CEMAC institution as they are reported not to be working in correspondence with the COBAC and the region’s policy objectives. COBAC (2017) reported that the irregularities in the financial sector are a result of fewer entry restrictions in the banking sector which has raised the level of competition and affected the quality of financial services offered. Therefore, the study has drawn inspiration from the structural changes in the CEMAC banking sector since the creation of

the regulatory body in 1992 to determine the effect of banking competition on financial stability.

This paper contributes to the field of research in the following ways: Firstly, to the best of our knowledge, this is the first research work to investigate precisely the effects of banking competition on financial stability in the CEMAC zone. Secondly, this study has taken a different dimension of measuring banking competition, which is done by computing the HHI in both the loan and the deposit market to have a proper measure of market concentration which is rare in literature as it is not the case in some studies (e.g., Moudud-Ul-huq et al., 2020 and Petria et al. 2015). Thirdly, the study has taken into account a historical dimension of the CEMAC member states by creating a dummy variable representing the different colonial masters that colonized the different states in the CEMAC zone to determine how colonization affects finances, which has not been seen in past studies. Lastly, the study has taken into account five dimensions of variables (System specific, Bank specific, Macroeconomic, Institutional variables and a Historical dimension) measuring their effects on financial stability unlike the three dimensions taken in most studies like that of Shair et al. (2019), Moudud-Ul-huq et al. (2020) and Jiménez et al. (2013).

The rest of the paper is organized as follows: Section 2 reviews the relevant theoretical literature and empirical findings on the relationship between banking competition and financial stability, Section 3 presents research methodology, Section 4 presents the study results and discussion, and Section 5 presents the conclusion and policy recommendations.

2. Literature review

Several works on banking competition have focused on both the structural measures used in the traditional industrial theories of market power and competition and the non-structural approaches of the New Industrial Organization framework to assess the relationship between banking competition and financial stability. Following the opposing results obtained from different research works, the relationship between banking competition and financial stability remains unclear and inconclusive according to Boyd and De Nicolo (2005). They also developed a model challenging the previous researchers on the franchise paradigm value. According to Boyd and De Nicolo (2005), the degree of banking competition ramifications on

financial stability depends on different bank-specific and system-specific factors which can either have a positive or a negative relationship on bank risk-taking and financial stability.

Primarily, the structure of the banking system determines banking concentration and competition which in turn tends to determine banks' performance and bank risk-taking as viewed in the works of Boyd et al. (2009) integrating the SCP paradigm into the study of banking competition and its impact on bank risk-taking. Due to the differences in the banking industry market structures, banking sectors in the developing countries have seen the level of their banking competition change as a result of increased financial innovation and market structural changes which has had a great impact on bank risk-taking (Gonzalez et al., 2017). From the inconclusive theoretical review on banking competition, it can be viewed that structural changes have different effects on developing countries' banking sectors as compared to the developed economies since they differ in terms of competition and concentration. According to the SCP paradigm, bank risk-taking behaviour is influenced by its conduct, since the bank's conduct is highly determined by its structure and its performance. According to Pricillia (2015) the relationship between market structure, banks conduct and performance led to the conclusion that bank risk-taking behaviour is determined by its structure and performance which to a greater extent determines banking competition and financial stability.

Some substantial empirical works emerged in recent decades examining the relationship between competition and financial stability across countries but still with the volume of studies carried out, there is still no consensus on the nature of the relationship between competition and financial stability. The main idea in the competition-stability paradigm or hypothesis is that banking competition could enhance financial stability and reduce bank risk-taking while competition-fragility is the contrary which signifies that competition increases bank risk-taking and renders the system unstable.

Bașar et al. (2021) conducted a study on the impact of competition on financial stability by assessing bank risk-taking in 10 Latin American countries between 2003 and 2008. The authors adopted the Boone indicator (Boone, 2008) as a measure of competition and concluded that there is a linear relationship between competition and financial stability. Maji and Hazarika (2018) in a study conducted in the Indian banking sector for 15 years used secondary data from banks' "Capitaline Plus" corporate database collected on 39

listed Indian commercial banks and found out that there is a linear relationship between banking competition and financial stability.

Alhassan and Biekpe (2018) employed annual bank-specific data for 79 banking firms to estimate the Lerner index as a measure of competition, whereas the bank z-score is employed as a proxy for financial stability and obtained results showing a positive relationship between competition and financial stability. Similarly, Kasman and Kasman (2015) analyzed the impact of banking competition on financial stability in the Turkish banking industry over the period 2002-to 2012. They obtained results showing a positive relationship between banking competition and financial stability. Schaeck and Cihák (2014) conducted a study on banking competition and its effect on financial stability and risk-taking in the Eurozone from 1995 to 2005 and obtained a positive relationship between competition and financial stability. They also argued that banking competition and financial innovation improve the efficiency of customer screening and monitoring which enhances financial stability.

Contrary to studies in support of the competition-stability paradigm, some researchers have obtained results supporting the SCP paradigm. Among such studies is the study carried out by Tongurai and Vithessonthi (2020) in the Japanese banking system from 1993−to 2016 with a case study on 1461 financial institutions where they obtained results showing that higher levels of competition in the Japanese banking system are associated with bank loan growth and increase bank risk. Similarly, Turusbekova et al. (2020) examine the relationship between competition and stability in the Kazakh banking sector using quarterly bank-level data of private commercial banks from 2007-to 2013 and found that competition between Kazakh banks deteriorates banks stability. Likewise, Albaity et al. (2019) in a study carried out on 276 banks in the Middle East countries from 2006 to 2015, showed that there is a negative relationship between competition and financial stability. According to the findings of Moudud-Ul-Huq et al. (2020), in a study carried out on several banks in newly industrialized countries precisely BRICS banks, banking competition in BRICS countries (Brazil, Russia, India, China and South Africa) decreases banks' profit margin and erodes bank’s franchise value which is an obvious indication of risk exposure. Similarly, Li et al. (2019) in a study carried out in 118 countries between 2001 and 2016 utilizing financial information of 7620 banks, find that banks exhibit lower risk-taking as a result of high market power (low level of

competition) which increases financial stability. According to Degl'Innocenti et al. (2019) in a study conducted on 116 investment banking firms operating in five developed countries including France, Germany, Italy, Switzerland, England, Japan and US, investment banks in these countries are faced with higher risk exposures when the banking sector is more competitive, and which leads to instability.

3. Research methodology

3.1. Model specification

The study assesses the effect of banking competition on financial stability in the CEMAC zone. The study employs panel data for a period of 11 years and a linear econometrics model. Four categories of independent variables are employed which are the banking competition, bank-specific, macroeconomic, and institutional variables with a dummy variable of colonization. The dimension of institutional and a dummy variable of colonization are added to the three dimensions of variables used in the works of Jiménez et al. (2013).

$$\begin{aligned} &Stability_{it} \\ &= f(Competition_{it}, Bank\ specific\ variables_{it}, Macroeconomic\ variables_{it} \\ &+ institutional\ variables_{it}, dummy_{it}\ variables) \end{aligned} \quad (1)$$

The variables of these dimensions are presented in equation 2.

$$\begin{aligned} FS_{it} = \beta_0 &+ \beta_1 HHI_{it} + \beta_2 Size_{it} + \beta_3 ROA_{it} + \beta_4 Loan_{it} + \beta_5 Cap_{it} \\ &+ \beta_6 GDPPC_{it} + \beta_7 INF_{it} + \beta_8 CCR_{it} + \beta_9 CDM1_{it} \\ &+ \beta_{10} CDM2_{it} + V_{it} \end{aligned} \quad (2)$$

Where: i and t - individual countries and time, respectively; FS - financial stability measured by bank z-score and non-performing loans ratio; *HHI* - Herfindahl index, *Size* - bank size; *ROA* - return on assets, *Loan* - loans ratio; *INF* – inflation rate; *GDPPC* - gross domestic product per capita; *CCR* - control of corruption; *CDM1* and *CDM2* - the French and the Portuguese colonization dummy variables, respectively; *V* - the error term.

3.2. The choice and justification of variables

The selected variables used in this study are inspired from the available empirical works carried on the relationship between competition and financial stability. Different indicators have been used to measure banking competition and financial stability depending on the banks specific and the banking sector features.

Dependent variable

- ***Bank z-score*** measures financial stability and is computed as (Return on asset + Return on equity) / (Standard deviation of return on assets). A higher Z-score implies a lower probability of insolvency and high stability. Bank Z-score is widely used in literature to measure financial stability. The measure of financial stability used here is inspired from the works of Fang et al. (2014), Boyd and De Nicolo (2005) and the works of Jiménez et al. (2013).
- ***Non-performing loans ratio*** is the ratio of non-performing loans to gross loans. It is a loan that is subjected to late repayment or is unlikely to be repaid due to customers default either partly or in full. Non-performing loans is mostly used in literature as an indirect measure of financial stability and a direct measure of risk-taking. The inspirations of adopting non-performing loans ration as an indicator of financial stability are from the works of Schaeck and Cihák (2014), Kasman and Kasman (2015).

Independent variables reflect the different variables that can have an influence on banks financial stability which will be divided into banking competition, bank specific, macroeconomic, institutional variables and a dummy variable of colonization.

- ***Banking competition*** is the main independent variable which the study is aimed at determining its effects on financial stability. The study employs the measure of competition both in the loan and the deposit market inspired from the works of Tan et al. (2017) and Akins et al. (2016) by employing the Hirschman Herfindahl index (HHI); it is a direct measure of market concentration and an inverse measure of banking competition. It is calculated as the square root of the market share of all banks in the banking industry or the ratio of the highest market share in an industry to the total market share (Akins et al., 2016). Market share in the banking industry is either calculated by using bank loans or deposit. The study applies bank deposit to measure market share in the deposit market inspired from the works of Bahri and Hamza (2020), Akins et al. (2016), Adjei-Frimpong et al. (2016) and Petria et al. (2015) and loans in the loan market inspired from the works of Tan et al. (2017).

35. $HHIdeposit = \sum_{j=1}^{J} \frac{Deposit_{z,j}}{Deposit_z}$ (3)

36. $HHIloans = \sum_{j=1}^{J} \frac{Loans_{z,j}}{Loans_z}$ (4)

Where: *HHIdeposit* is the Herfindahl index in the deposit market and *HHIloans,* in the loan market; $Deposit_{z,j}$ - the highest deposit of a bank in the deposit market (z) by an individual bank *j*; $Deposit_z$ - the total deposit of all the banks; $Loans_{z,j}$ - the highest loan of a bank in the loan market (z) by an individual bank *j*; $Loans_z$ - the total loans of all the banks in market z.

- ***Banks specific variables*** are banks' control variables that might affect financial stability and since a bank business model may influence the banking sector stability. We included a number of bank-level variables which are widely used in literature.

Bank Size is measured as the natural logarithm of the value of total assets. Bank size can either have a positive or negative relationship on financial stability. It has been used by Tongurai and Vithessonthi (2020) to measure its effects on financial stability.

Return on assets (ROA) shows the percentage of how profitable bank's assets are in generating revenue. ROA is computed as: ROA= (Net Income)/ (Average Total Assets). It is inspired from the works of Tongurai and Vithessonthi (2020).

Loans ratio is measured by the ratio of total loans to total assets. The loan ratio measures total loans outstanding as a percentage of total assets. The coefficient of this factor is expected to be either negative or positive. It is inspired from the works Athari and Bahreini (2021).

Capitalization. The ratio of shareholders' equity to total assets is considered as a proxy of capitalization. It is also calculated as banks capital divided by the current market value of banks asset. There are no exact prior expectations regarding the sign of the capitalization coefficient. Its inspirations are drawn from the works of Tan et al. (2017), Athari and Bahreini (2021).

- ***Macroeconomic variables.*** To control for business cycle variables that can have an influence on financial stability, we include two variables which are gross domestic product per capita and inflation.

Gross domestic product per capita (GDPPC) is used to capture income levels and economic growth of an economy. It can influence financial stability depending on the economy in which the banking

sector belongs. According to Liu et al. (2011), GDPPC is employed to capture movements in business cycle.

Inflation is used as a macroeconomic variable to capture the effects of macroeconomic shocks on financial stability and banks' balance sheets. Inflation is measured as the percentage change in consumer prices and also as GDP deflator. The study employs GDP deflator as a measure of inflation inspired from the works Petria et al. (2015).

- ***Institutional variables***

***Corruption*.** Control of corruption is a governance indicator which captures the perception of the extent to which public power is being exercised for private gain, including all petty and grand forms of corruption. It also captures the state of elites and private interests, irregular payments in public utilities, tax collection in public contracts, corruption between administrations and businesses. Its inspiration is drawn from Yin and Zhang (2019).

Historical dimension

A dummy variable of colonization. All countries in the CEMAC zone were colonized by France except for Equatorial Guinea that was colonized by Portugal and Cameroon jointly colonized by the French and the British. All former French colonies take the value 1 while the Portuguese territory takes the value 0 for the first dummy variable of the study. The second dummy variable of colonization is that of the Portuguese colony where Equatorial Guinea takes the value 1 and the French colonies take the value. The inspirations to determine the effect of colonization on financial stability is drawn from the work of EbereNwazonobi et al. (2020).

3.3. The nature and source of data

The study employs secondary data obtained from IMF database, World Development Indicators (WDI), Worldwide Governance Indicators (WGI) and BEAC data on bank's financial statement. The study is carried out in the CEMAC zone. The data collected on variables used in the study is consistent from 2010 to 2020. A dummy variable of colonization is added to the secondary data collected. The dummy values are 1 for the required character and 0 if not. The study is limited to the specified period due to the unavailability of data.

Table1

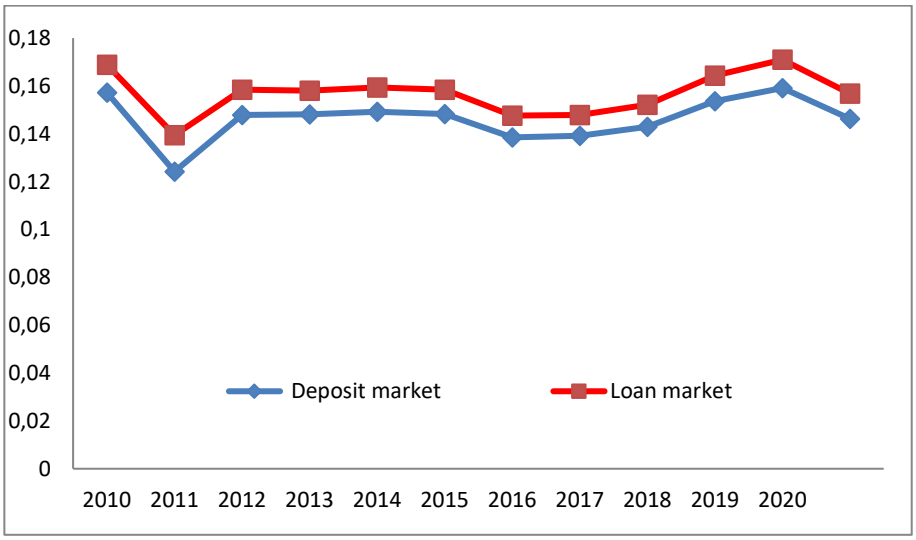
Descriptive statistics

Variable	Obs	Mean	Std.Dev.	Min	Max
Z-score	66	6.261	2.861	0.658	15.256
NPL	66	0.165	0.098	0.015	0.465
HHIloans	66	0.228	0.101	0.032	0.456
HHIdeposit	66	0.15	0.097	0.028	0.364
ROA	66	0.019	0.01	-0.013	0.05
size	66	14.166	1.016	11.951	15.623
Loan	66	0.671	0.157	0.4	1.4
Cap	66	0.175	0.098	-0.028	0.422
CCR	66	-1.233	0.279	-01.83	-0.66
GDP	66	-1.635	6.873	-36.557	9.826
INF	66	142.337	22.271	108.438	193.364
CDM	66	0.54	3.56	0	1

Source: Analysed using STATA (14)

Bank Z-score that measures financial stability ranges between 0.658 and 15.256. The highest Z-scores values belong to countries that are more competitive while the highest NPL ratio whose values ranges between 16% and 9% belong to the countries whose markets are less competitive. The Herfindahl index is a direct measure of market concentration. Low values of the Herfindahl index signify high levels of competition and higher values signify low levels of competition. The average evolution of the Herfindahl index (HHI) in both the loan and the deposit market in the CEMAC zone has shown an averagely decreasing trend from 2010 to 2011, 2013 to 2016 and 2019 to 2020 (see Figure 1). The decreasing HHI shows that banking competition is rising in the CEMAC region within the observed period from 17% averagely in 2010 to below 15% in 2020 in the loan market and 15.8% to 14.2% in the deposit market. This has been confirmed with the statistics provided by the regulatory body COBAC in 2017 with an increasing number of banking firms from 30 in 1999 to 48 in 2012 and to 53 in 2017 which is an obvious indicator of an increased banking competition. The CEMAC banking sector has realized an increase in its banking firms from 30 in 1999 to 53 in 2017 (COBAC, 2017 report).

Figure 1
The evolution of banking competition in the CEMAC zone measured by the HHI[1]



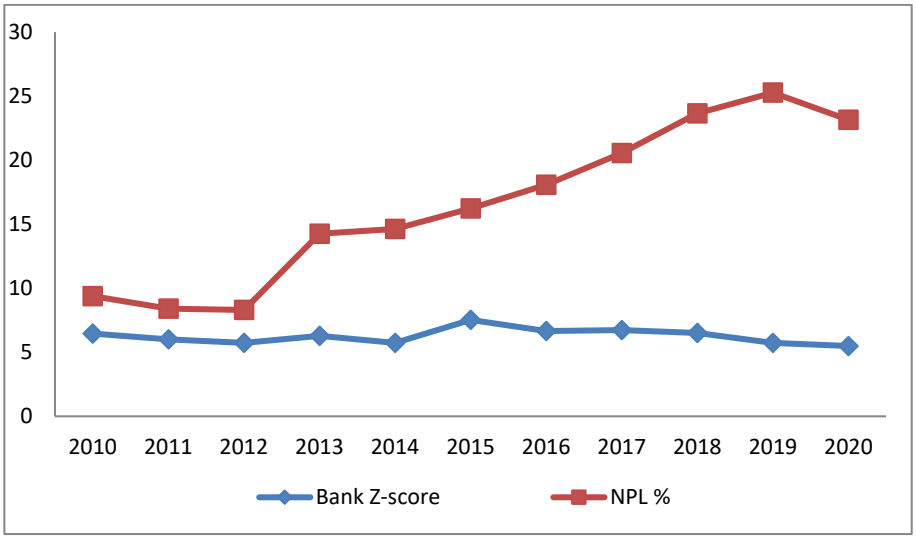
Source: Authors' compilation from BEAC data, 2021

The evolution of financial stability measured by bank Z-score and the non-performing loans is shown in Figure 2. Figure 1 also depicts similar trends of the Herfindahl concentration index in both the loan and the deposit market. The statistics provided by BEAC database shows fluctuations in the Herfindahl index. The HHI of the loan market decreases from 0.1689 in 2010 to 0.1565 in 2020. Similarly, the concentration ratio of the deposit market decreases from 0.1572 in 2010 to 0.1461 in 2020. According to the BEAC Report (BEAC, 2020), the CEMAC banking sector has become less concentrated in recent years due to the increasing number of financial institutions in the financial sector. According to this same report, CEMAC countries whose markets are less concentrated (e.g. Cameroon, Gabon and Congo) are more financially stable than countries whose markets are highly concentrated (e.g. Central African Republic and Equatorial Guinea).

[1] *The study employs data collected from the Central Bank of Central African States to compute the Herfindahl index both in the loan and the deposit market as seen in the works of Bahri and Hamza (2020) and Akins et al. (2016).*

Figure 2

The evolution of financial stability[2] in the CEMAC zone



Source: Authors' compilation from BEAC and IMF (2021) data

3.4. Estimation technique

This section presents the method and the techniques of analysis. The econometric model is estimated using the ordinary least square (OLS). Due to the limitations of the OLS not addressing the concern of causality, cross-sectional dependence and the problems related to the error term, the Driscoll/Kraay is adopted to address the potential problem of cross-sectional dependence identified by the Frees test presented in Table 2. The Newey-west standard errors (NWSE) technique accounts for autocorrelation of errors and heteroscedasticity (Bertrand et al., 2004, Kolokotrones and Stock, 2019). The autocorrelation of errors and heteroscedasticiy are identified by the Wooldridge and Breusch-Pagan test presented in Table 3. For the robustness analysis, the sample size is reduced by selecting the countries belonging to the lower-income distribution group as classified by the World Bank in 2020: Cameroon, Chad, Central African Republic and Congo while excluding Gabon and

[2] *Financial stability is measured by Bank Z-score as its direct measure and the Non-performing loans as its inverse measure. Financial stability increases with an increasing Z-score and a decreasing NPL ratio.*

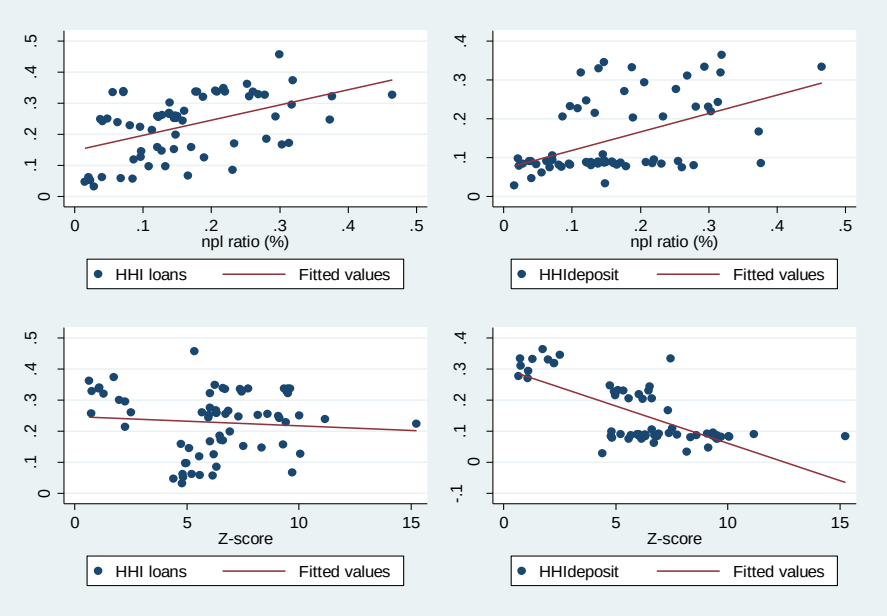
Equatorial Guinea who belong to the high income and middle-income countries respectively. The OLS and the 2SLS techniques are applied with the latter aimed to address the potential endogeneity problem that may arise as a result of the correlation between bank-specific and industry variables. It also takes into account a potential correlation between the error term and the study variables.

4. Results and Discussion

The Herfindahl index (HHI) is employed as an inverse proxy of banking competition in both the loan and the deposit market. Financial stability is measured by the bank's Z-score and the NPL ratio. Bank Z-score has a negative relationship with HHI in both the loan and the deposit market, while HHI has a positive relationship with the NPL ratio in both markets as presented on the scatter plot below**.**

Figure 3

The relationship between financial stability and banking competition in the CEMAC zone (graphical presentation)



Source: Author's compilation from BEAC's and IMF (2021) data

This negative relationship shows that banks in the CEMAC zone within the study period are more financially stable when the banking sector is less concentrated**.** This signifies that financial stability increases with an increasing banking competition and decreases with an increasing market concentration. NPL is an indirect measure of financial stability. It is computed as the ratio of non-performing loans to total loans. This relationship has given a hint on a positive effect of competition on financial stability in the CEMAC banking sector but will be confirmed as well in the estimated results.

The Wooldridge test of autocorrelation shows that errors are correlated in both equations of the bank's Z-score and NPL. The result of the test is presented in Table 3. The null hypothesis of no autocorrelation is rejected which signifies the existence of autocorrelation of errors. The result obtained after carrying out the Breusch-Pagan test shows that there is the presence of heteroskedasticity in all the equations of Z-score except for NPL equations. The presence of autocorrelation and heteroskedasticity justifies the adoption of the Newey-West Standard errors technique to address the error term related problems. The result of the heteroskedasticity test is presented in Table 3. Multicollinearity is examined using the Variance inflation factor (VIF) which measures the degree of multicollinearity in a set of multiple variables. There is evidence of the multicollinearity problem if the average VIF for all variables is greater than 6 and the largest individual VIF is greater than 10 (Saadi, 2020). Determining the problem of multicollinearity of the whole model, we can conclude that there is no multicollinearity since all the mean VIF values are less than 6 as recommended by Saadi (2020). Based on the Frees (1995) cross-sectional dependence test, reported in Table 2, we reject beyond the critical value (1%) with the assumptions of cross-sectional independence. From the results obtained after carrying out the Frees test of cross-sectional dependence, we reject the null hypothesis of cross-sectional independence. Based on the Frees (1995) cross-sectional dependence judgment, it, therefore, implies that there is the presence of cross-sectional dependence in the model which can be addressed by the Driscoll/Kraay estimator.

Table 2

The effect of banking competition on financial stability in the CEMAC zone (Driscoll/Kraay)

Variables	(1) LnZscore	(2) LnZscore	(3) LnNPL	(4) LnNPL	(5) LnZscore	(6) LnZscore	(7) LnNPL	(8) LnNPL
LnHHIloan	-0.222**		0.657***		-0.226**		0.482***	
	(0.0995)		(0.118)		(0.0898)		(0.117)	
LnHHIdep		-0.385***		0.653***		-0.369***		0.688***
		(0.0926)		(0.123)		(0.0936)		(0.117)
LnROA	-0.166	-0.124	-0.158	-0.324***	-0.190*	-0.119	-0.200	-0.356***
	(0.103)	(0.0893)	(0.123)	(0.118)	(0.104)	(0.0903)	(0.135)	(0.113)
Lnloan	0.493*	0.763***	1.090***	0.709**	0.455*	0.727***	1.081***	0.589*
	(0.271)	(0.258)	(0.321)	(0.341)	(0.268)	(0.263)	(0.349)	(0.328)
Size	-0.712***	-0.738***	0.0243	0.184	-0.703***	-0.702***	0.215*	0.230**
	(0.108)	(0.0922)	(0.128)	(0.122)	(0.0987)	(0.0902)	(0.128)	(0.113)
Lncapit	0.0872***	0.0590***	-0.00634	0.0442***	0.0878***	0.0590***	-0.00826	0.0463***
	(0.0108)	(0.0117)	(0.0129)	(0.0154)	(0.0107)	(0.0118)	(0.0139)	(0.0147)
CCR	2.650***	1.942***	-1.815***	-0.673	2.719***	1.983***	-1.844***	-0.474
	(0.291)	(0.321)	(0.346)	(0.425)	(0.290)	(0.330)	(0.377)	(0.413)
GDPPC	-0.0153	-0.0111	-0.0363***	-0.0354***	-0.0188*	-0.00914	-0.0227*	-0.0400***
	(0.0113)	(0.0103)	(0.0135)	(0.0137)	(0.0105)	(0.0102)	(0.0137)	(0.0128)
inflation	-0.0855***	-0.0764***	-0.000552	-0.0217	-0.0825***	-0.0795***	-0.0140	-0.0198
	(0.0186)	(0.0168)	(0.0220)	(0.0223)	(0.0179)	(0.0167)	(0.0233)	(0.0209)
CDM1	-0.322	0.194	0.946***	-0.364				
	(0.254)	(0.188)	(0.301)	(0.249)				
CDM2					0.397*	-0.0420	-0.248	0.645***
					(0.221)	(0.183)	(0.288)	(0.229)
Constant	12.68***	11.68***	-3.667**	-3.445*	12.31***	11.50***	-5.348***	-4.142**
	(1.460)	(1.346)	(1.733)	(1.782)	(1.451)	(1.376)	(1.886)	(1.719)
Obs	64	64	64	64	64	64	64	64
R-squared	0.770	0.810	0.725	0.716	0.776	0.806	0.679	0.742
Number of ID	6	6	6	6	6	6	6	6
Frees test	0.077	0.187	0.293	0.074	0.041	0.632	0.032	0.716
thta_95	0	0	0	0	0	0	0	0

*Notes: Standard errors in parentheses; ***, ** and * Denote significance level at 1%, 5% and 10%. Zscore= Bank z-score, NPL= non-performing loans ratio, HHIloan and HHIdep represent the Herfindahl Index in the loan and the deposit markets respectively, SIZE= bank size measured by banks' assets, ROA= return on assets, Loan= loans ratio, INF- the rate of inflation, GDP= gross domestic product per capita, CCR= control of corruption, CDM1 and CDM2: represents the French and the Portuguese colonization dummy variables respectively.*

The results presented in Table 2 are that of the Driscoll/Kraay estimator which takes into consideration the potential cross-sectional dependence problem indicated by the Frees (1995) test presented in Table 2. From the Frees test of cross-sectional dependence, we reject the null hypothesis of cross-sectional independence. The problems of

heteroscedasticity and autocorrelation of errors tested by the Wooldridge and Breusch-Pagan tests led to the application of the Newey-West Standard Errors (NWSE, Table 3 results) technique which addresses problems related the error term (Bertrand et al., 2004, Kolokotrones and Stock, 2019). The techniques of estimation applied in the study addressed the different related estimation issues that could cause the biasness of the results.

Table 3

The effect of banking competition on financial stability in the CEMAC zone (NWSE)

Variables	(1) Ln Z-score	(2) Ln Zscore	(3) LnNPL	(4) LnNPL	(5) Ln Zscore	(6) Ln Zscore	(7) LnNPL	(8) LnNPL
LnHHIloan	-0.222*		0.657***		-0.226**		0.482**	
	(0.121)		(0.135)		(0.0997)		(0.188)	
LnHHIdep		-0.385***		0.653***		-0.369***		0.688***
		(0.0833)		(0.157)		(0.0815)		(0.164)
LnROA	-0.166	-0.124	-0.158	-0.324***	-0.190	-0.119	-0.200*	-0.356***
	(0.119)	(0.108)	(0.103)	(0.0906)	(0.121)	(0.108)	(0.102)	(0.0999)
Lnloan	0.493*	0.763***	1.090***	0.709**	0.455*	0.727***	1.081**	0.589**
	(0.280)	(0.257)	(0.310)	(0.283)	(0.265)	(0.250)	(0.425)	(0.281)
Size	-0.712***	-0.738***	0.0243	0.184	-0.703***	-0.702***	0.215	0.230*
	(0.175)	(0.152)	(0.137)	(0.133)	(0.146)	(0.146)	(0.212)	(0.127)
Lncapit	0.0872***	0.0590***	-0.00634	0.0442**	0.0878***	0.0590***	-0.00826	0.0463**
	(0.0135)	(0.0136)	(0.00995)	(0.0181)	(0.0133)	(0.0132)	(0.0108)	(0.0183)
CCR	2.650***	1.942***	-1.815***	-0.673	2.719***	1.983***	-1.844***	-0.474
	(0.363)	(0.389)	(0.505)	(0.544)	(0.348)	(0.376)	(0.516)	(0.551)
GDP	-0.0153	-0.0111	-0.0363***	-0.0354***	-0.0188	-0.00914	-0.0227*	-0.0400***
	(0.0127)	(0.0127)	(0.0112)	(0.0116)	(0.0127)	(0.0113)	(0.0129)	(0.0107)
inflation	-0.0855***	-0.0764***	-0.000552	-0.0217	-0.0825***	-0.0795***	-0.0140	-0.0198
	(0.0138)	(0.0119)	(0.0234)	(0.0226)	(0.0129)	(0.0118)	(0.0287)	(0.0176)
CDM1	-0.322	0.194	0.946***	-0.364				
	(0.382)	(0.230)	(0.300)	(0.306)				
CDM2					0.397	-0.0420	-0.248	0.645**
					(0.304)	(0.203)	(0.468)	(0.285)
Constant	12.68***	11.68***	-3.667*	-3.445*	12.31***	11.50***	-5.348*	-4.142**
	(2.046)	(1.946)	(2.098)	(2.051)	(1.919)	(1.977)	(3.086)	(2.024)
Observations	64	64	64	64	64	64	64	64
Wooldridge	0.0092	0.0029	0.0005	0.0050	0.0071	0.0020	0.0005	0.0051
Breusch-Pagan test	0.0125	0.0024	0.3383	0.2050	0.0127	0.0021	0.569	0.0574
Rank	10	10	10	10	10	10	10	10

*Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.10. CDM1 and CDM2 signify the dummy variable of the French and the Portuguese former colonies respectively. The first four equations contain the French former colonies while the last four represents that which takes into account the Portuguese former colony.*

The result presented in Table 3 according to Kolokotrones and Stock (2019) is one of the best techniques to address the error term related problems like autocorrelation and heteroscedasticity.

The application of the Dricoll/Kraay and the Newey-West Standard errors as techniques of estimations is guided after carrying out Frees tests of cross sectional dependence in Table 2, realizing that there exist a cross sectional dependence, Breusch-Pagan test for heteroskedasticity (Table 3), the multi-colinearity test in appendix 5 and the Wooldridge autocorrelation tests presented in Table 2 whose results indicated some problems related to the error term. The various coefficients of determination of the model in appendix 1 as well as in Table 2 are between 68% and 81% suggesting a good quality adjustment of the model. The Probability associated with the values of Fisher for both equations are significant at 1% which shows that the model is well estimated and globally significant.

The Herfindahl index is a direct measure of market concentration and an inverse measure of banking competition. It is statistically significant at 1% and 5% levels and affects financial stability negatively in both the loan and the deposit markets. From the results obtained above, the bank z-score decreases with an increasing HHI in both equations of Z-score in the loans and the deposit market, and NPL increases with an increasing HHI in both equations of NPL. It signifies that financial stability in the CEMAC zone decreases with an increasing market concentration and a decreasing banking competition. The negative relationship between the Herfindahl index and financial stability measured by the bank Z-score indicates that banking competition is positively related to financial stability which is accredited to the recent financial development in the CEMAC zone. The result is in conformity with the findings of Akins et al. (2016), and Turk-Ariss (2010) and contradicts that of Fang et al. (2014). The HHI has a positive and a statistically significant effect on non-performing loans at a 1% significance level. It is employed in literature as an inverse measure of financial stability. This signifies that the ratio of non-performing loans increases with an increasing market concentration and a decreasing banking competition which renders the CEMAC banking sector unstable. It, therefore, signifies that banking competition is preferable in the CEMAC zone since an increased market power increases the ratio of non-performing loans. This result is in conformity with the results of Akins et al. (2016) and contradicts that of Fang et al. (2014). The positive relationship between banking

competition and financial stability is in conformity with the results obtained in some studies such as in the works of Kasman and Kasman (2015), Fiordelisi and Mare (2014) Turusbekova et al. (2020) and Başar et al. (2021). These results support the competition-stability view of Boyd and De Nicoló (2005). The finding of the study shows that financial stability in the CEMAC zone increases with an increasing degree of competition. The result contradicts the findings of Fang et al. (2014) and Hope et al. (2013).

Bank return on assets is used in literature as a measure of a bank's profitability. It has a positive and statistically significant effect on financial stability at a 1% level for equations 5 and 6 of the bank Z-score. This finding is consistent and in line with the literature and the argument behind the negative relationship between return on assets and financial stability is based on the fact that a bank's profitability leads to individual bank stability which brings about financial stability to the banking sector. There is a negative relationship between non-performing loans and return on assets at a 1% significance level for both equations on non-performing loans. It implies that the ratio of non-performing loans to total loans of banks in the CEMAC zone falls as their returns on assets increase. Bank size is measured by the natural logarithm of total assets. Bank size has a negative and statistically significant effect at 1% as seen in Equations 1 and 2 of bank Z-score but appeared to be insignificant on other equations of Z-score. According to the competition-stability advocates, bank size decreases in competitive markets which are likely to be more financially stable than in the less competitive market. Banks increase their risk-taking when they grow large in size seeking high profit which can lead them to engage in risky activities and thus putting the aspects of the sector stability into perspective. The coefficient of bank size is statistically significant at 1% and positively affects non-performing loans which imply that the non-performing loan ratio in the CEMAC zone increases with increasing bank assets. This result is consistent with the findings in the literature and is in conformity with the findings of Yin (2019), Hope et al. (2013), Kasman and Kasman (2015).

The rate of inflation harms financial stability at 1% significance level for bank Z-score and non-performing loans equations. The negative effects of inflation on financial stability is justifiable in literature based on the stand that an increase in lending rate leads to a reduction in the value of money as it increases the cost of capital which may lead to a decrease in the demand for money bringing about financial panic

to banks mostly depending on interest paid on loans to finance their activities. The result of Doan et al. (2020) and Fang et al. (2014) supports the findings of the study. Conversely, inflation has a negative and significant effect on the ratio of non-performing loans which signifies that the ratio of non-performing loans increases with an increasing rate of inflation and thus renders the economy unstable if measures are not taken to resolve its effects. The negative relationship between non-performing loans and the inflation rate is supported with the findings of Fang et al. (2014). Economic growth measured by gross domestic product per capita has a negative and statistically significant effect at a 1% for equation 5 of bank Z-score. This signifies that the CEMAC zone becomes more financially stable when gross domestic product decreases and less stable when it increases. Conversely, there is also a negative effect of GDPPC on non-performing loans at 1% significance for all its equations except equation 8, which shows that non-performing loans increases with a decrease in gross domestic product per capita. This contradicts the results of the first equation but is justifiable if banks charge higher rates in periods of economic boom that could cause customers inability to refund their loans at the maturity date and otherwise if bank customers fulfill their commitments during or before the maturity date. This result conforms to the findings of Fang (2014), Kasman and Kasman (2015).

The findings on the positive effects of corruption control on financial stability shows that the CEMAC banking system becomes more stable when the anti-laws of corruptions are implemented and put into practice. Control of corruption shows a 1% significant effect on bank Z-score and a negative statistically significant effect at 1% level for both equations of NPL ratio. The findings are supported by the works of Yin (2019) and Yin and Zhang (2019) whose findings reveal a positive relationship between control of corruption and financial stability. The dummy variable of French colonization (CDM1) is negatively related to financial stability measured by bank-score, but appeared to be insignificant and has a statistically significant positive effect on non-performing loans at a 1% in equation 3. Relatively, the dummy variable of the Portuguese colonization affects financial stability negatively as shown by its positive and significant effect on NPL at 1%. The CEMAC countries that were colonized by the French are more financially stable than Equatorial Guinea colonized by the Portuguese as shown by the Z-score values provided by the World Bank Z-score which presents Cameroon and Gabon with the highest

score. It shows that the colonial rule in the CEMAC zone has brought about stability in the French colonies than in the Portuguese colony. The finding of the positive effect of colonization is supported with the works of EbereNwazonobi et al. (2020) who argued that colonialism was a mix blessing to the African economy and is the reason behind African financial development and integration to the world financial system.

Robustness analysis of the study is done by using the recent World Bank classification of countries (in 2021) into different income groups. The CEMAC states that belong to the high and the middle-income groups are Gabon and Equatorial Guinea respectively. Cameroon, Congo, Chad and the Central African Republic belong to the low-income groups. The robustness analysis is conducted in the low-income countries by applying the ordinary least square (OLS) and the 2SLS to take into consideration the potential problem of endogeneity which may occur as a result of the correlation between the predictor and bank specific variables. The result of the robustness analysis is presented in Table 4.

From observations, the signs of the explanatory variables remained consistent with the two techniques of estimation (OLS in appendix 2 and the 2SLS in Table 3). The only change is the significance level. There still remained a negative effect of HHI on Z-score in both the loan and the deposit market, and a positive effect between the HHI and the NPL ratio in both the two markets. It therefore confirms the findings of the previous results with the full sample of six countries and 66 observations (Table 2 and Table 3) that banking competition has a positive effect on financial stability since the HHI is an inverse measure of banking competition.

Table 4

The effect of banking competition on financial stability in the CEMAC zone (2SLS)

Variables	(1) LnZscore	(2) LnZscore	(3) LnNPL	(4) LnNPL
LnHHIloans	-0.0788		0.563***	
	(0.0913)		(0.134)	
LnHHIdeposit		-0.148		0.637***
		(0.114)		(0.207)
LnROA	-0.123	-0.0758	-0.0209	-0.295***
	(0.102)	(0.0849)	(0.103)	(0.0830)
LnLoan	-0.369	-0.0924	2.033***	1.168*
	(0.321)	(0.443)	(0.368)	(0.621)
Size	-0.935***	-0.955***	0.225	0.522***
	(0.135)	(0.119)	(0.159)	(0.133)
Cap-ratio	0.106***	0.0920***	-0.0155*	0.0411*
	(0.00847)	(0.0140)	(0.00835)	(0.0208)
CCR	2.479***	2.214***	-2.994***	-2.390***
	(0.573)	(0.603)	(0.631)	(0.846)
GDPPC	-0.000844	0.00190	-0.0276**	-0.0380***
	(0.00891)	(0.00906)	(0.0104)	(0.00939)
INF	-0.0588***	-0.0565***	-0.00356	-0.0252
	(0.0149)	(0.0135)	(0.0191)	(0.0179)
Constant	14.32***	14.36***	-6.332**	-9.859***
	(2.143)	(1.965)	(2.537)	(2.428)
Observations	42	42	42	42
R-squared	0.877	0.879	0.869	0.841
r2_a	0.847	0.850	0.838	0.803
df_m	8	8	8	8

*Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.10 ***, ** and * denote significance level at 1%, 5% and 10% respectively.*

Also addressing the problems related to the error term as depicted in Table 3 result of the NWSE and that of the cross-sectional dependence problem as in Table 2 (Driscoll/Kraay estimated results), the findings remained consistent.

5. Conclusion and policy recommendations

The study assesses the effect of banking competition on financial stability in the CEMAC banking sector over the period 2010 to 2020. The data on different variables were collected from IMF (2021), WGI (2021), World Development Indicators (2021) and BEAC (2021)

data on banks financial statement. Empirical evidence in support of the competition-fragility and competition-stability views is rather mixed in literature. Supporting the arguments of Boyd and De Nicolo (2005), the study findings reveal a positive effect of competition on financial stability and are in line with the competition-stability paradigm. The study employs the Drsicoll/Kraay and the Newey-West standard errors (NWSE) techniques of estimation and the 2SLS of selected lower income countries analysis with the 2SLS for robustness analysis. The main idea in the competition-stability hypothesis supported by the results obtained in the study is that less competition leads to higher lending rate, which could increase the possibility of customers default due to borrowers' moral hazard and the inability to withstand high cost of funds. Hence, banks end up dealing with increased non-performing loans as shown by a positive relationship between market power, concentration and non-performing loans.

The result of the study is in support of the competition-stability relationship consistent in literature. There is a significant and a negative relationship between market concentration and financial stability in the CEMAC zone measured by the Herfindahl index in both the loan and the deposit market. The finding of the study shows that the CEMAC banking system is more financially stable in competitive conditions showed by the negative relationship between the Herfindahl index (HHI) and bank Z-score. The CEMAC banking system is financially stable when banks have less market power and operating in a competitive system. This result is in line with the findings of many prior studies, such as the works of Maji and Hazarika (2018), Alhassan and Biekpe (2018), Kasman and Kasman (2015), Schaeck and Cihák (2014) and Jiménez et al. (2013). The result confirms the competition-stability hypothesis.

The findings of this study have broader implications to policymakers in the CEMAC member states whose targets are aimed at ensuring competition that ensures financial stability, helping them devise appropriate regulations, particularly on private monitoring and setting efficient risk management systems that would spawn a righteous cycle that enhances financial stability of the banking sector. The study recommends the committee of financial stability to work in collaboration with COBAC to ensure the internal control of banks and the follow-up of prudential ratios established to ensure the system stability. The financial stability committee of Central African states (CSF-AC) is recommended to optimize competition intensity and

embrace a relatively cautious strategy for assessing and approving mergers and acquisitions at an indigenous level. The government of the various six member states should work in collaboration with the CEMAC regulatory body and the central bank to ensure stability at individual bank level and the sectorial level, and also to ensure competition that brings about financial stability. The government is recommended to focus on integrating the banking sector to the economic sector to contribute enormously to economic, financial and political stability of the CEMAC zone and to improve the state of development in the region.

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Appendix 1

The effect of banking competition on financial stability in the CEMAC zone (OLS)

Variables	(1) LnZscore	(2) LnZscore	(3) LnNPL	(4) LnNPL	(5) LnZscore	(6) LnZscore	(7) LnNPL	(8) LnNPL
LnHHIloan	-0.222**	------	0.657***	-------	-0.226**	------	0.482***	------
	(0.0995)		(0.118)		(0.0898)		(0.117)	
LnHHIdep	------	-0.385***	-------	0.653***	-------	-0.369***	------	0.688***
		(0.0926)		(0.123)		(0.0936)		(0.117)
LnROA	-0.166	-0.124	-0.158	-0.324***	-0.190*	-0.119	-0.200	-0.356***
	(0.103)	(0.0893)	(0.123)	(0.118)	(0.104)	(0.0903)	(0.135)	(0.113)
Lnloan	0.493*	0.763***	1.090***	0.709**	0.455*	0.727***	1.081***	0.589*
	(0.271)	(0.258)	(0.321)	(0.341)	(0.268)	(0.263)	(0.349)	(0.328)
Size	-0.712***	-0.738***	0.0243	0.184	-0.703***	-0.702***	0.215*	0.230**
	(0.108)	(0.0922)	(0.128)	(0.122)	(0.0987)	(0.0902)	(0.128)	(0.113)
LnCap	0.0872***	0.0590***	-0.00634	0.0442***	0.0878***	0.0590***	-0.00826	0.0463***
	(0.0108)	(0.0117)	(0.0129)	(0.0154)	(0.0107)	(0.0118)	(0.0139)	(0.0147)
CCR	2.650***	1.942***	-1.815***	-0.673	2.719***	1.983***	-1.844***	-0.474
	(0.291)	(0.321)	(0.346)	(0.425)	(0.290)	(0.330)	(0.377)	(0.413)
GDP	-0.0153	-0.0111	-0.0363***	-0.0354**	-0.0188*	-0.00914	-0.0227	-0.0400***
	(0.0113)	(0.0103)	(0.0135)	(0.0137)	(0.0105)	(0.0102)	(0.0137)	(0.0128)
inflation	-0.0855***	-0.0764***	-0.000552	-0.0217	-0.0825***	-0.0795***	-0.0140	-0.0198
	(0.0186)	(0.0168)	(0.0220)	(0.0223)	(0.0179)	(0.0167)	(0.0233)	(0.0209)
CDM1	-0.322	0.194	0.946***	-0.364	-------	-------	-------	-------
	(0.254)	(0.188)	(0.301)	(0.249)				
CDM2	-------	-------	---------	--------	0.397*	-0.0420	-0.248	0.645***
					(0.221)	(0.183)	(0.288)	(0.229)
Constant	12.68***	11.68***	-3.667**	-3.445*	12.31***	11.50***	-5.348***	-4.142**
	(1.460)	(1.346)	(1.733)	(1.782)	(1.451)	(1.376)	(1.886)	(1.719)
Observations	64	64	64	64	64	64	64	64
R-squared	0.770	0.810	0.725	0.716	0.776	0.806	0.679	0.742
r2_a	0.732	0.778	0.679	0.669	0.739	0.774	0.625	0.699

*Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.10; ***, ** and * denote significance level at 1%, 5% and 10% respectively.*

Appendix 2

The effect of banking competition on financial stability in the CEMAC zone (OLS results of low income countries analysis)

Variables	(1) Ln1Zscore	(2) Ln1Zscore	(3) lnnNPL	(4) lnnNPL
LnHHIloans	-0.0788	--------	0.563***	--------
	(0.108)		(0.115)	
LnHHIdeposit	--------	-0.148	-------	0.637***
		(0.144)		(0.171)
LnROA	-0.123	-0.0758	-0.0209	-0.295**
	(0.102)	(0.0971)	(0.109)	(0.116)
LnLoan	-0.369	-0.0924	2.033***	1.168*
	(0.373)	(0.507)	(0.400)	(0.603)
LnAsset	-0.935***	-0.955***	0.225	0.522***
	(0.154)	(0.126)	(0.165)	(0.150)
LnCap	0.106***	0.0920***	-0.0155	0.0411**
	(0.00921)	(0.0164)	(0.00987)	(0.0195)
CCR	2.479***	2.214***	-2.994***	-2.390***
	(0.629)	(0.720)	(0.675)	(0.857)
GDP	-0.000844	0.00190	-0.0276**	-0.0380***
	(0.0101)	(0.0105)	(0.0108)	(0.0125)
inflation	-0.0588***	-0.0565***	-0.00356	-0.0252
	(0.0183)	(0.0174)	(0.0197)	(0.0207)
Constant	14.32***	14.36***	-6.332**	-9.859***
	(2.574)	(2.280)	(2.760)	(2.714)
Observations	42	42	42	42
R-squared	0.877	0.879	0.869	0.841
R2_adjusted	0.847	0.850	0.838	0.803

*Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10*

Appendix 3

Abbreviations of variables, measures, sources and their expected signs

Variables	Acronym	Measures	Source	Expected signs
Dependent variables				
Bank Z-score	Zscore	(ROA + capitalization ratio)/δ_{ROA}	Calculated from BEAC data on financial statement, 2021	
Independent variables				
Herfindahl index loan	HHI loans	The highest bank loan /Total loan		
Herfindahl index deposit	HHI deposit	The highest bank deposit/Total deposit	Calculated from BEAC data, 2021	-/+
Loan ratio	LOAN	Loan to asset ratio	Calculated from BEAC data, 2021	-/+
Capitalization ratio	Cap	Equity/ total asset	IMF data, 2021	+
Bank size	SIZE	Natural logarithm of total asset	IMF data, 2021	+
Returns on asset	ROA	Net income/ Total asset	IMF data, 2021	+
Inflation	INF	GDP deflator	IMF data, 2021	-
Gross domestic product per capita	GDPPC	GDP per capita (%)	WDI, 2021	-/+
Control of corruption	CCR	Corruption control index	WGI, 2021	-/+
Dummy variable of CEMAC colonization	CDM1, CDM2	1 if colonized by French and 0 if not (CDM1). 1 if colonized by the Portuguese and 0 if not (CDM2)		?

Source: Constructed by the author from literature

Appendix 4

Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) LnNPL	1.000												
(2) LnZscore	-0.195	1.000											
(3) LHHIloan	0.523	-0.215	1.000										
(4) LnHHidep	0.461	-0.746	0.237	1.000									
(5) LROA	-0.445	0.197	-0.363	-0.296	1.000								
(6) LLoan	-0.308	-0.018	0.101	-0.141	-0.022	1.000							
(7) Lnsize	-0.225	0.814	-0.208	-0.865	0.201	-0.075	1.000						
(8) Lncap	0.266	-0.561	0.303	0.391	-0.254	0.221	-0.637	1.000					
(9) LnCCR	-0.459	0.018	-0.255	-0.115	0.176	-0.322	0.091	-0.233	1.000				
(10) LnGDP	-0.389	-0.270	-0.079	0.140	0.297	0.156	-0.166	-0.128	0.416	1.000			
(11) LnINFL	-0.071	-0.265	0.113	0.007	-0.051	0.060	-0.119	0.232	0.056	-0.037	1.000		
(12) CDM1	-0.234	-0.283	-0.461	0.186	0.077	-0.400	-0.115	-0.146	0.641	0.451	-0.142	1.000	
(13) CDM2	0.259	0.273	0.402	-0.147	-0.011	0.371	0.114	0.096	-0.624	-0.363	0.103	-0.896	1.000

Appendix 5

Variance Inflation Factor (VIF)

1st equation	VIF	1/VIF	***2nd equation***	VIF	1/VIF	***3rd equation***	VIF	1/VIF	***4th equation***	VIF	1/VIF
Lnsize	6.078	0.165	Lnsize	5.354	0.187	Lnsize	6.078	0.165	Lnsize	5.354	0.187
CDM1	5.085	0.197	CCR	5.066	0.197	CDM1	5.085	0.197	CCR	5.066	0.197
CCR	3.462	0.289	CDM1	3.366	0.297	CCR	3.462	0.289	CDM1	3.366	0.297
LnHHIloans	1.904	0.525	LnHHIdeposit	1.937	0.516	LnHHIloans	1.904	0.525	LnHHIdeposit	1.937	0.516
LnGDP	1.882	0.531	LnCap	1.894	0.528	LnGDP	1.882	0.531	LnCap	1.894	0.528
Lnloan	1.461	0.684	LnGDP	1.877	0.533	Lnloan	1.461	0.684	LnGDP	1.877	0.533
LnCap	1.356	0.737	Lnloan	1.599	0.625	LnCap	1.356	0.737	Lnloan	1.599	0.625
LnROA	1.353	0.739	LnROA	1.219	0.821	LnROA	1.353	0.739	LnROA	1.219	0.821
LnINF	1.092	0.916	LnINF	1.084	0.923	LnINF	1.092	0.916	LnINF	1.084	0.923
Mean VIF	***2.63***	.	*Mean VIF*	***2.599***	.	*Mean VIF*	***2.63***	.	*Mean VIF*	***2.599***	.
5th equation	VIF	1/VIF	**6th equation**	VIF	1/VIF	**7th equation**	VIF	1/VIF	**8th equation**	VIF	1/VIF
Lnsize	5.216	0.192	CCR	5.277	0.189	Lnsize	5.216	0.192	CCR	5.277	0.189
CCR	3.536	0.283	Lnsize	5.023	0.199	CCR	3.536	0.283	Lnsize	5.023	0.199
CDM1	3.435	0.291	CDM2	2.722	0.367	CDM2	3.435	0.291	CDM2	2.722	0.367
LnGDP	1.669	0.599	LnHHideposit	1.942	0.515	LnGDP	1.669	0.599	LnHHIdeposit	1.942	0.515
LnHHIloans	1.594	0.627	LnCap	1.9	0.526	LnHHIloans	1.594	0.627	LnCap	1.9	0.526
LnLoan	1.476	0.677	LnGDP	1.818	0.55	Lnloan	1.476	0.677	LnGDP	1.818	0.55
LnROA	1.399	0.715	Lnloan	1.629	0.614	LnROA	1.399	0.715	Lnloan	1.629	0.614
LnCap	1.353	0.739	LnROA	1.226	0.816	LnCap	1.353	0.739	LnROA	1.226	0.816
LnINF	1.046	0.956	LnINF	1.048	0.954	LnINF	1.046	0.956	LnINF	1.048	0.954
Mean VIF	**2.303**	.	Mean VIF	**2.509**	.	Mean VIF	**2.303**	.	Mean VIF	**2.509**	.

FINANCIAL INCLUSION IN DEVELOPING COUNTRIES. A REVIEW OF THE LITERATURE ON THE COSTS AND IMPLICATIONS

Danstun NGONYANI, PhD*

Abstract

This article examines research reviews of financial inclusion comprehensively in terms of its nature, basic reasons behind financial exclusion, costs, and implications of financial exclusion in developing countries. Specifically, the study intends to analyze the extent to which the existing published academic papers have addressed the challenges associated with financial exclusion in these countries. A qualitative systematic literature review approach was employed in conducting this study. The study findings indicate that most developing countries and Tanzania in particular, still encounter challenges regarding effective financial inclusion, resulting in very slow improvement in this field. Therefore, measures are needed to curb existing bottlenecks, and the government and other stakeholders need to establish guiding policies to enhance financial inclusion efforts. Similarly, Policymakers and financial services providers need to initiate innovative infrastructure systems to enhance the extension of financial services to rural areas at affordable operating costs.

Keywords: access to finance, financial exclusion, borrowing cost, socio-economic development.

JEL Classification: G20; G21; G23

1. Introduction

Financial inclusion has been increasingly receiving great attention due to its potential in contributing to socio-economic and financial development. It also serves to broaden financial and non-

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financial resources' allocation while bringing up inclusive growth and greater income equality among underserved individuals (Yoshino and Morgan, 2016). In developing countries, a large segment of low-income people has little access to both formal and semi-formal financial services. Consequently, the majority are obliged to rely on self-financing including informal sources of finance available unreliably and at a significantly high cost. The existing inequitable and poor access to inclusive finance is worse among least developed countries which record more than 70 percent being excluded from the realm of the services of banking and non-banking financial institutions (Kumar, 2017).

The growth of the economy in any country is dependent among others prevalent of vibrant and effective financial services that are inclusive in the society. The existence of a monetary policy that encourages inclusive finance contributes to poverty reduction and the growth of various sectors of the economy. Tanzania being among developing countries needs to further invest and strengthen efforts of ensuring a wide range of financial services is made available to the majority of low-income individuals. Currently, evidence from Choudhury and Bagchi (2016); Isukul et al, (2019) indicates that poor people are the most disadvantaged category in accessing and use of financial services. As such, without effective strategies for promoting inclusive financial services, most people particularly small, medium, and large entrepreneurs are unlikely to build assets and cushion themselves from various shocks hence shrinking the growth of the economy (Ahmed and Wei, 2014).

There has been noticeable evidence of improved access to financial services among people in Tanzania and other developing countries. Alliance for Financial Inclusion - AFI (2016), and National Financial Inclusion Framework - NFIF (2017) point out that the provision of credit, insurance, and financial advisory services to individuals and firms has recently been increasing. The existence of new technology has enabled mobile money transfers, savings, and varied payment transactions to enhance the growth of businesses. However, the observable extent of widening financial inclusion is considered to have not been deeply rooted to influence positively disadvantaged groups such as the poor, women, and youth in their livelihood. This necessitates having more efforts of involving various stakeholders to encourage financial service providers to widen and

deepen the outreach of their services to the majority of the population financially excluded (Lotto, 2018; Demirgüç-Kunt and Klapper, 2012b).

Inclusive financial development has been a concern of various stakeholders both nationally and internationally. In Tanzania, the Banking and Financial Institutions Act, 2006 (BAFIA 2006) provided the foundations for licensing, regulation, and supervision by the Bank of Tanzania to different deposit and non-deposit-taking institutions such as banks, microfinance entities, and other financial institutions. BAFIA 2006 integrated microfinance companies into the entire system of national financial institutions. Moreover, BAFIA 2006, provides recognition to non-bank formal financial institutions hence the microfinance institution, Insurance companies, and Social security institutions. Microfinance institutions for example were recognized as legal businesses and an integral part of the national financial system in Tanzania. This intends to hasten the spread and use of financial services for the majority of the needy individuals (Rubambey, 2005; Nyamsogoro, 2010; NMP, 2000; NMP, 2017).

The deepening and intermediation of the financial sector in Tanzania have been growing gradually to reach individuals interested in accessing financial services. The slow-growing demand in up taking financial services to people retards the initiative towards broader efforts of ensuring that services reach both center and peripheral dwellers (Demirgüç-Kunt and Klapper, 2012a). FinScope (2017), has reported a low level of growth in financial inclusion in Tanzania. This report reveals only 16.7 percent of individuals engaged with the services of the banking sector in Tanzania. This was an increase of only 2.7 percent from the study findings as observed by FinScope (2013). Furthermore, FinScope (2017) indicates individuals engaged and used financial services from other formal financial providers than banking institutions constituted 48.6 percent. This meant a significant increase of only 5 percent from the previous report released via the same source. On the other hand, NFIF (2017); FinScope (2017) have recorded that about 28% of adult Tanzanian are completely excluded from accessing financial services. The existence of such escalating figure has raised concern which calls for necessary strategies of encouraging individuals to access and use financial services.

Sinclair, (2001); Oshora, et al (2021) added that if the majority of productive age are financially excluded from using financial services, it may result in a considerable negative impact on the growth of the economy. In addition, Were, et al, (2021) pointed out that when a

country does not have implementable policies of inclusive finance, there is a danger that most business and productive sectors are being financed by informal practices hence lowering the output of the economy. Turvey, (2017) noted when people avoid using formal financial institutions it indicates there is more saving in informal ways such as keeping cash at home or buying illiquid assets, which may be costly, risky, or inconvenient.

Individuals have been taking up existing financial institution services quite gradually. Singh, (2017); Clamara et al. (2014) considered that to be a drawback to efforts to promote financial inclusion. It is also argued that most banking institutions exhibit some conditions including the presence of minimum account and loan balances and account fees including the presence of difficult documentation requirements for their customers. Such conditions negatively influence towards outreach mission of financial service providers. Consequently, eligible clients for using financial products and services ignore financial institutions' financial and non-financial services. Their decision to decline using formal financial services may result in relying on informal financial service providers including self-financing which bears higher costs and is unreliable. This challenge has been prevailing across many developing countries including Tanzania. On the other hand, Atkinson and Messy (2013) add that the quality of services has a significant contribution to customer satisfaction because it is affected by various factors such as human interaction, physical environment, value, price, performance, etc.

The need for developing an inclusive financial sector has been a concern of many stakeholders such as policymakers, academicians, and practitioners. This has raised the need for devising various strategies in addressing observed barriers impeding far-flung rendering, and uptake of conventional financial services in most developing countries. Tanzania has recognized the role of inclusive finance in empowering individuals economically and socially, by embracing various regulations and policies encouraging the proliferation of the financial sector in the country. The existence of the National Microfinance Policy - NMP, 2000 and 2017, respectively, and the National Financial Inclusion Framework - NFIF, 2017, among others, have contributed to the growth and outreach of the financial sector in Tanzania. There has been an increasing demand for using non-bank financial institutions such as microfinance services, insurance, and social security institutions in Tanzania. The growth of

microfinance, for example, is attributed to its existence in semi-urban and some peripheral areas with easy access to credit services contrary to the spreading of banking services.

On the other hand, Beck, (2007); Beck, & Demirguc-Kunt, (2006) state that the problem of financial exclusion is more prone to the poor than the non-poor individuals. While most low-income individuals are detached from the financial system, those few accessing financial services are being charged very costly. Consequently, they have been discouraged from further access since these institutions have been deepening their poverty than assisting them. However, most financial institutions explain high-interest rates charged to their clients for several arguments – including a high risk of microcredit, high fixed costs associated with small loans, financial institutions' operating expenses, and the need for profits to enhance sustainability than depending on donors Isukul and Tantua, (2021). In so doing, the poverty penalty is a relatively higher cost shouldered by the poor compared to the non-poor while accessing financial markets and services (Brown, et al, 2015).

Most practitioners and various stakeholders are in favor of the strong financial sustainability of banking and non-banking financial institutions for enhanced outreach of services. Conversely, it is noted that most deprived people fail to benefit from available financial services and remain excluded. Accordingly, in order to invite the majority of low-income people into up taking various financial products, financial institutions must design products and services that meet clients' demand at bearable rates. On the other hand, semi-formal financial institutions should not follow the example of commercial enterprises whose main objective is to earn large profits (Triki and Faye, 2013). Instead, to moderately package their financial products in a manner that can be accessible in an affordable way to individuals excluded from financial service. Therefore, concerted efforts must be devised to address the barriers hindering widespread supply and uptake of formal financial services in most developing countries. This will contribute to the reduction of poverty as the majority would have the capital for initiating business and entrepreneurship projects to improve their incomes and growth of the country's economy for sustainable development (Beck, et al, 2007).

2. Literature review

Inclusive finance facilitates socio-economic development and the reduction of poverty among individuals and the country at large. It also guides to enhance the effectiveness of monetary policy transmission and stabilizes the financial sector in the country. Tanzania being among developing countries, realized the role of financial services as explained in its national development vision and poverty reduction strategies for 2020 - 2025. The need for financial services especially for the poor and underserved cannot be overemphasized, since they are highly unreached by formal financial institutions. As a result, they are unable to capitalize on their meagre resources on investment opportunities to unchain from poverty circles (Mandell, and Klein, 2009).

Atkinson and Messy (2013) defined financial inclusion as the process of promoting affordable, timely, and adequate access to a wide range of regulated financial products and services and broadening their use by all segments of society, through the implementation of tailored existing and innovative approaches including financial awareness and education to promote financial well-being as well as economic and social inclusion. Similarly, financial inclusion involves the degree of access of households and firms, especially poorer households, and small and medium-sized enterprises (SMEs), to financial services (Yoshino and Morgan, 2016).

The existence, availability, and measurement of financial inclusion have been an issue of concern to most academicians, policymakers, and interested parties. However, the agreeable measurement for financial inclusion involves the percentage of adults 15 years old and above, who reported having at least one account in their name with an institution that provides financial services and emanates under some form of government regulation (UNCTAD, 2021)

On the other hand, financial exclusion refers to the inability to access necessary financial services in an appropriate form due to problems associated with access, conditions, prices, marketing, or self-exclusion in response to discouraging experiences or perceptions of individuals/entities (Sinclair, 2001). Similarly, Chant Link & Associates, (2004) explains financial exclusion as a lack of access by certain consumers to appropriate low-cost, fair, and safe financial products and services from mainstream providers. Financial exclusion has been an issue of concern in the community since it applies to lower-income

consumers and/or those in financial hardship. Financially excluded people typically exhibit some characteristics including – a lack of a bank account and the financial services associated with it. Similarly, reliance on alternative forms of credit such as doorstep lenders including pawnbrokers. In addition, lack of other key financial products such as insurance, savings products, and pensions. Therefore, individuals who are unable to access basic financial services are likely to pay more for managing their money. At times, they find it cumbersome to plan for the future while also becoming over-indebted and being financially stranded (Llanto, 2015).

Tanzania has been setting up a stage to deal with the existing gap in accessing financial services since the commencement of financial sector reforms in the early 1990s. The presence of these reforms enabled private players in the financial sector that increased competition in banking and non-banking financial institutions. Villarreal, (2017) posits that the existence of vibrant Micro, Small, and Medium Enterprises (MSMEs) is the engine of economic growth in any developing country with high unemployment rates. When these people are capacitated through accessing financial services, they are likely to contribute to individual's income and the country at large (NFIF, 2017). The role of financial institutions in enhancing effective financial inclusion is obviously very significant. The presence of a well-functioning financial sector will ensure financial products offered are linked to the demand of the customers to be served so that individuals excluded benefits from financial services (Sigalla, and Carney, (2012.

Empirical studies by Brown, et al, (2015); Oshora, et al, (2021) revealed there is a relationship between financial inclusion and economic growth having impacts on individuals and the country respectively. The existing positive influence indicates there is the potential growth of financial development, level of economic growth, and reduction of income inequality in the society. When a country has well-rooted and equally involving financial services for all people, that would likely fasten socio-economic development by encouraging wider business investment opportunities. In addition, when individuals are involved with basic financial transactions, they increase households' abilities to accommodate themselves to a variety of challenges and enhance consumer confidence. More importantly, financial inclusion widens access to financial services and distributes economic opportunities, particularly among poorer households and businesses. (Ahmed and Wei, 2014).

Moreover, Gutierrez-Nieto et al. (2017) found that among the factors influencing financial inclusion were high-quality institutions, efficient legal rules, strong contract enforcement, and political stability contribute more to financial inclusion. The presence of these characteristics guides positively influences individuals to engage in using financial services. On the other hand, studies identified some other parameters which induce challenges in up-taking and use of financial products and services, including high costs of opening and using bank accounts, high distance to reach financial institutions, and in-existence of trust in the banking sector to have negatively influencing access and use of financial services.

The influence of financial inclusion on economic development in developing countries has equally been observed in Demirguc-Kunt and Levine (2007) that gender issues existing in a society strongly and positively influence financial inclusion. It is argued that there is a substantial difference between men and women regarding borrowing and savings services offered. It is known that men do formally borrow and are likely to save more than women due to factors related to income and asset ownership. As such women have consistently been neglected because of their inferior level of income, lower financial literacy, and less business experience, hence relying more on informal financial services. These informal financial services hardly do have a variety of products, offered in a sustainable manner, and usually charge very high costs. Consequently, they have been unfriendly to individuals excluded from financial products and services to ease their economic hardships.

Krumer-Nevo et al. (2017) observed that most rural communities have been excluded from services offered by financial institutions such as credits, savings, and payment services among others. These services could have acted as catalysts to enhancing various businesses leading to economic development. The existence and outreach of financial services to the majority of needy individuals helps widen operations in the financial system by developing saving culture among the rural population. According to Beck (2007) when low-income groups are brought nearly within the perimeter of formal financial institutions such as the banking sector. It guarantees they get protected of their financial wealth and other resources from underutilization and mismanagement. Furthermore, financial inclusion helps individuals to easily access a variety of credit products related to their needs and requirements. This helps mitigate the exploitation by

various moneylenders whose credits are more of a burden to low-income individuals.

3. Materials and methods

This study focuses on reviewing and analysing various studies related to financial inclusion in developing countries. It intends to further shed light on the extent to which existing academic articles addressing issues of financial inclusion have contributed. In this qualitative systematic literature review, an emphasis was to employ a specified approach that would aid to minimize bias and omission of relevant studies. In this case, a survey of databases with relevant literature using specified keywords and subheadings was considered. In addition, an author-driven review approach was accordingly applied. This implies that appropriate relevant literature was reviewed from the author's interpretation than from the point of the concepts of view. The method is considered relevant since issues regarding financial inclusion, cost and implication have been challenging while influencing varying practitioners and policymakers in most developing countries.

In this process, the researcher re-examined published academic articles in the area regardless of their years of publications. Four main database search engines such as Lycos.Com; Science direct; Google scholar and Z-library were used to download the reviewed articles. These databases were selected because they are among the largest and most popular online search engine databases used in financial inclusion and exclusion studies respectively. The initial search contributed to 79 articles, but after reading all the articles twice. Finally, the search ended up with 27 relevant articles in this study used in the analysis, where published articles in the area of financial inclusion and exclusion in Tanzania and other developing countries were included in the study. The decision to include an article in the analysis was based on the relevance of the articles to the themes of the study. This intensive desk review of existing literature involved full-length published papers in peer-reviewed academic journals mainly in financial inclusion. Thus, conference papers, book reviews, abstracts, and editor prefaces including conference proceedings were not included in the analysis since were considered to have limited contributions to the available existing knowledge. Moreover, references cited in the published articles were traced to evaluate their relevance in the study.

After getting the final list of articles, analyses were done using content analysis. The content analysis tool was selected because it is a flexible method for analysing text data (Cavanagh, 1997). The method was used for replicable and valid inferences from the collected data to provide knowledge, new insights, representation of facts, and a practical action guide. The approach is considered relevant and a common data analysis method in social science (Berg, 2009). It entails a careful, detailed, systematic assessment and interpretation of specific body material to enable identify patterns, themes, biases, and meanings. As such this technique helps identify available meaning in the text while maintaining a qualitative textual approach (Elo and Kyngäs, 2008). The use of this approach when it is carefully undertaken offers replication of outcomes, and also this method is analytically flexible (Duriau et al., 2007). In addition, this technique can be applied for inductive and deductive research (Elo and Kyngäs, 2008) including the ability to allow varied analyses to be executed by using qualitative or quantitative methods ((Duriau et al., 2007).

4. Discussion of the study findings

4.1 Obstacles to financial inclusion

Literature on financial inclusion and economic growth reveals that enhancing financial inclusion at micro, macro, and institutional level contributes to economic growth. Isukul and Tantua (2021) maintain that the availability of affordable financial services to people has a positive influence on their living standards. Traditional banks and other formal financial institutions facilitate transactions that help the underserved to smoothen consumption and build their financial base. Unfortunately, the majority of Small and Medium Entrepreneurs (SMEs) including other low-income individuals have not been capacitated to access financial services such as mortgages, insurance, and pensions to enhance their livelihood. The existing increasing rate of individuals that are being financially excluded has worried various stakeholders in developing countries. Krumer-Nevo et al. (2017) indicate outreach of financial services is limited to urban dwellers, but even the majority of the urban area are unable to access such services due to various reasons. On the other hand, the situation is worse for individuals living in suburban and rural areas. The development of the financial sector has not been inclusive to enable them to enjoy the services effectively. The widening gap between individuals using

financial services and those excluded, has been an issue of concern among policymakers, practitioners, and other stakeholders in developing countries. In developing countries, for instance, the traditional banking business tends to be out of reach for the rural poor as operating functional bank business offices is not a profitable and viable option (Visconti, 2016).

There are various factors influencing the supply and demand of financial services for low-income earners and firms. Low bank branch penetration in rural areas is mentioned among factors retarding financial inclusion efforts. Banking institutions being the main financial intermediaries have not invested much into the provision of financial literacy to enable underserved communities to engage with banking services. In addition, the traditional banking system tends to be unfriendly to individuals who are poor and do not own any resources that could guarantee loans in most developing countries. Consequently, the rural and semi-urban poor people find themselves excluded from the realm of accessing financial services (Allen et al., 2014).

Furthermore, the existence of stringent laws, regulations, and policies introduced by the government is considered to adversely influence efforts instead of encouraging financial inclusion. In Tanzania for example, there have been appreciable efforts to enhance financial inclusion through mobile financial transactions. The existence of such services has encouraged the majority of rural and urban people to engage with various financial services. However, recently the government of Tanzania in its 2021/2022 budget has introduced taxes on mobile money transactions aiming at widening and increasing revenues. These efforts are intended to enable the government to increase financial resources for various services to its citizens. However, such a government decision has been perceived negatively by various stakeholders in a view that it is likely to decelerate efforts of increasing the breadth and depth of financial inclusion for the majority of low-income and disadvantaged individuals. Consequently, many operators of mobile money transactions have unexpectedly experienced a reduction of users in this type of service delivery. Currently, evidence still shows most low-income people both in rural and urban are continually in a view of disengaging from using mobile financial transactions. Therefore, this may result in deteriorating efforts already in place to the widening provision of financial services among individuals in the country (Maurer, 2012).

4.2 Barriers of financial inclusion to women

Existing research globally reveals that women have lowly been accessing formal financial services compared to men. The situation is the same in Africa in which available data shows that 4 out of 5 women are lacking access to financial services. The challenge to the use of financial services among individuals is more critical in rural than urban areas due to effective distance, making high cost in facilitating transportation infrastructure and low mobility of population Triki and Faye, (2013). The need to deal with the differences in the use of financial services between men and women is necessary to enhance inclusive development. On the other hand, full financial inclusion is unlikely to take its full effect without incorporating the existing diverse needs of consumers. Also, the presence of a gender gap in financial inclusion indicates that mainstreaming gender is hardly enough to build inequalities in women's financial inclusion (UNCDF, 2017).

The roadblocks to the effective execution of financial inclusion among low-income individuals particularly women and other disadvantaged groups can be classified into four aspects. These include the demand side, supply side, regulatory and infrastructure, and societal barriers.

The demand-side factors as a drawback to financial inclusion encompass limited financial capability of individuals, financial illiteracy (limited knowledge of existing financial products), lack of assets for collateral, remoteness to available financial institutions, inability to ownership of mobile phones, and lack of trust. It is argued that lack of trust is a substantial challenge to countries that do not exercise strong regulation (supervision) of banking and non-banking financial institutions. As a result, consumer protection and disclosure requirements are disregarded which deteriorates the public's confidence in using various financial products (Kempson, et al, 2004). Moreover, Triki and Faye, (2013) revealed that the majority of women are engaged in the informal sector for over 90 percent making them unqualified for formal credit services from formal financial institutions. In addition, most of them do not have ownership titles to enable them to access, use and benefit from various financial products and services.

On the other hand, the supply side drivers as a constriction to inclusive financial services among women and other disadvantaged groups include banks' risk aversion, high operational costs related to maintenance of small deposits or loans, high costs to extending

financial services in small towns or rural areas, absence of convenient access points and presence of bank charges. The presence of such factors is considered to pose an unbearable bottleneck to enhancing financial inclusion. Banking institutions for example have been nailing higher charges as operation costs to their clients, rendering them to be reluctant to engage in using such services (Yoshino and Morgan, 2016). Therefore, these factors contribute significantly towards impinging widespread access to financial services to the needy population.

Similarly, Allen, et al, (2014) identified existing regulations and infrastructure to be among the obstacles undermining effective financial inclusion. The drawbacks are inadequacy of secure and dependable defrayals and settlement systems, unavailability of satisfactory bank branches, and lack of online financial services due to poor internet infrastructures. In addition, some of the regulatory factors impinging financial access involve posing stringent requirements to opening branches in rural areas. Moreover, the presence of capital adequacy and supervisory rules limits the introduction of a broad range of products such as small deposits, loans, and other financial products. On the other hand, other banking and nonbanking institutions have been reluctant of introducing regulations allowing for alternative collateral for overcoming women's constraints of limited asset accumulation (Ikpefan, et al, 2016).

Furthermore, Demirgüç-Kunt and Klapper, (2012b) explained that societal factors as constraints to financial inclusion involve discrimination against women regarding access to financial services. It has been pointed out that most women in developing countries face legal restrictions on their ability to head households, work, and receive inheritance including the prohibition to own an account. In addition, Were, et al, (2021) maintains that men have been dominating in decision making at various levels from family, village, and community which triggers low consideration of women's participation in accessing financial services such as credit products. Besides, rural women have partially been informed about various banking and non-banking financial services available to them. Consequently, rural women business owners fail to benefit from existing financial services hence increasing rates of financial exclusion. On the other hand, some individuals decide not to use formal financial products and services since it is against their customs and traditions. Therefore, financial education is needed to help them realize the benefits of using financial

services from regulated institutions for building their financial base and economic development.

4.3 Costs and implications of financial exclusion

Effective utilization of financial services plays a significant role in people's lives. The majority depends on bank services such as bank accounts to facilitate payment of various bills, receive salaries, and run their businesses. In addition, financial institutions' services such as mortgages, insurance, and pensions have been helpful to users to purchase homes, and retirement services and protection from various risks (NFIF, 2017). However, there are individuals lacking access to financial products and services from banking and non-banking financial institutions. Those who are financially excluded have been facing difficulties to plan for the future, including incurring significant costs to manage their money in the long run. Financially excluded people for example cannot access affordable financial products and services that are accessible at their disposal. They face hurdles to obtain credit and other financial services since they lack operating accounts. Financial exclusion, therefore, adds costs on various services to individuals for being vulnerable to illegal and/or high lending costs together with encouraging socioeconomic exclusion (Choudhury and Bagchi, 2016).

Kumar (2017) considered two aspects of financial exclusion which are intricately interwoven. Firstly, financial exclusion introduces costs to individuals or companies in terms of missing available opportunities to excel without access to finance or credit. Secondly, from a community or national perspective, financial exclusion pulls in a combined loss of output or welfare in which the society or country is likely not to realize its full growth potential. On the other hand, further observable consequences of financial exclusion include cost and security-related issues in managing cash flow and defrayments and compromised living standards due to lack of access to short, medium, or long-term loans. Also, other effects include higher costs associated with using informal credit sources, hence escalated exposure to unethical, predatory, and uncontrolled providers.

In addition, financially excluded people are further vulnerable to uninsured risks, including long-term or prolonged dependence on informal sources of finances compared to regulated financial institutions offering an affordable and wide range of services (Anderloni et al, 2008). In developing countries, individuals most likely to be unleashed from not using financial services include the unemployed,

those incapable to perform through sickness/disability, and single pensioners. Generally, people who are prone to be unable to access financial services are the poor and low-income category in the community.

Financial exclusion and its dimensions

There are several dimensions of the impact of being financially excluded. The analysis in this study has identified three aspects of dimensions as discussed below.

The financial consequences dimension reflects financial access difficulties for individuals without operating bank accounts when processing cheques written in their name by a third party. It, therefore, requires them to pay extra costs to enable the process and effect payment to the beneficiary while incurring more time to complete transactions. Alternatively, the same people are prone to facing challenges in the payment of various bills particularly when cash settlements are out of reach. Conroy, (2005) posits that individuals without a stable relationship with financial institutions incur higher costs in performing occasional payments of taxes, utility bills, and bank transfers to third persons. Also, other costs include raising financial complications to day-to-day cash flow management and non-financial services provided by regulated financial institutions.

Secondly, the Social consequences dimension of financial exclusion includes the absence or reduced links that accelerate individuals feeling of togetherness in society. Being financially excluded creates a sense of being disjoined with other individuals or members of the group who realizes some privileges in using banking and non-banking services. Bayot (2018) reveals that lacking access to effective use of financial products may lead to self-isolation and deprivation from social connection and relationships with friends and family. Conversely, surviving without engaging with formal savings can be problematic in two observations. People who save via informal means hardly benefit from the rate of interest and tax advantages compared to ones saving from informal financial institutions. More importantly, informal savings are much less secure than formal saving facilities. The impact of lacking formal saving avenues means escalating to non-formal lenders, which results to adversely two consequences. Firstly, exposure to higher interest rates charged by informal lenders, and secondly, borrowed customers are likely to be

unable to manage regular repayment to their creditors (Krumer-Nevo et al., 2017).

Finally, the Socio-economic consequences dimension of financial exclusion. This has wider implications due to failure to access financial services. The consequences amount to being unable to fully utilize opportunities existing along with economic activities and social welfare for enhancing the distribution of incomes and wealth. Individuals who are credit excluded from banks or other mainstream financial providers for example face negative consequences when interacting with sub-prime lenders. These have higher charges and are likely to have unstable terms and conditions for their products and services (Barboni et al., 2017). Moreover, people who are not linked to financial institutions' services face difficulties to build saving capacity from their cash flows. When saving habit is not groomed via operating a bank account, the individual's ability to cope with small financial shocks does not exist. Consequently, a prolonged state of poverty and financial hardship is extended to not only an individual but the community at large, hence decelerating initiatives for socio-economic development. Also increased financial illiteracy and poor financial habits may be the cause of financial exclusion. This leads to poor financial planning coupled with underutilization of existing economic opportunities for healthier retirement in their old age (Choudhury and Bagchi, 2016).

4.4 Constraints to reduction of financial exclusion

The constraints in reducing the impacts of financial exclusion among people in developing countries are attributed to several factors. Akinlo & Egbetunde, (2010) reveal instability in income is considered one of the factors accelerating financial exclusion. Existing evidence from developing countries indicates that due to instability in income, most people are unable to afford open bank accounts or rather maintain the use of other financial instruments. In addition, unstable sources of income culminate in being unable to properly plan for their fewer cash flows or benefit from available financial and non-financial products and services (AFI, 2016).

Similarly, saving habit existing within the family positively influences financial exclusion. Existing literature indicates that usually, people inherit prevailing saving habits of various precious assets (especially cash) from their senior elders/members in the family or society. When such a saving culture is deeply rooted among members

it becomes a reason that triggers financial exclusion. As such the family and community find no motives to adapt new saving methods through opening bank accounts to enable benefit from other financial services and products. Therefore, lack of financial inclusion in the family makes individuals continually retain such custom of not using banking and nonbanking institutions to facilitate their transactions and other services (Zulfiqar, 2016).

Lack of financial literacy: it is argued that the financial education of an individual influences the usage of financial services. Dupas, et al, (2018) add that with a higher level of education/ financial literacy financial exclusion drops. People with low education are unlikely to get the confidence of interacting in the financial system, hence financially excluded. Therefore, the provision of financial education regarding the importance of financial and non-financial products and services raises awareness to participate in the financial markets. This in turn encourages them to participate and benefit from different financial instruments, thus increasing the financial inclusion level in the community.

Ikhide and Alawode, (2002); Ndanshau & Njau (2021) maintain that the location of an individual or financial institution influences the usage of financial services being offered. Consumers of financial products are in different localities – urban, semi-urban and rural areas. It is obvious that rural dwellers have less financial inclusion compared to urban and semi-urban dwellers. It is also known that opening more branches by financial institutions in rural areas is not profitable from a supply-side perspective. Consequently, this maximizes the rate of financial exclusion upon people living in peripherals compared to urban and semi-urban who are rated high in financial inclusion. Therefore, the existing low level of using financial services influences efforts in place to broaden financial inclusion. It also retards measures to minimize prevailing challenges of financial exclusion for sustained socio-economic development.

4.4.1 Best Practices to Curb Impacts of Financial Exclusion

The presence of individuals and communities that are financially excluded has attracted many practitioners, policymakers, and researchers. These stakeholders have been working jointly to come up with collective strategies to minimize the existing gap between beneficiaries and victims excluded from using financial products and services. An increase in policy interest in recent years has been

matched by an upsurge in financial inclusion initiatives, particularly among voluntary sector organizations, in support of the financial services industry Isukul and Dagogo (2018). Although there exist some efforts among developing countries that intend to control the challenges of financial exclusion to unbanked individuals. It is imperative for various stakeholders to consider the implementation of various preventive practices accelerating financial exclusion to the people concerned.

Therefore, the introduction of policies and regulations oriented toward encouraging wider yet inclusive finance by all regulated financial institutions and service providers seems necessary. The institutions such as microfinance and insurance companies, social security institutions, state-owned and private banks, post offices offering financial services, cooperative societies, and community organizations. Effective operationalization of such institutions could aid to reduce the impact and severity of financial exclusion, especially in rural and semi-urban communities. In addition, other strategies required for enhancing broader outreach of financial inclusion are briefly explained below.

4.4.1.1 Existence of innovative financial products and services

Efforts on designing innovative products and services including various micro products, such as microcredit and micro insurance, agent banking, and micro branches could aid to reduce financial exclusion. Llanto, (2015) maintains that insurance companies and mutual benefit associations help to provide micro-insurance and similar products to assist low-income sectors to deal with vulnerability risks and catastrophic events. Also, the use of agency or correspondents can help overcome problems of distance and shortages of branches. These services help promote business correspondents and provide connectivity for financial services in remote and underbanked locations (Demirgüç-Kunt and Klapper, 2012a).

4.4.1.2 Availability of innovative delivery technologies

The introduction of such technologies including electronic money transactions, internet banking, and mobile banking has significant contribution to bridging the distance while saving time in the provision of financial services to rural people. The existence of telephone banking has great potential due to the rapid diffusion of mobile phone ownership to the majority of people in developing countries (Clamara et al., 2014). In Tanzania for example, the

presence of mobile phones has positively facilitated access to banking services through payment of bills and credits to and from banking and nonbank financial institutions. On the other hand, FinScope, (2017); Lotto, (2018); Llanto, (2015) underscored that e-money accounts and e-money transactions have grown significantly in the past few years in most developing countries, in which active e-money agents facilitate cash-in/out transactions in urban, semi-urban and rural areas. This has been a necessary vehicle to widen financial inclusion to the majority of the underserved and disadvantaged groups.

4.4.1.3 Enhance credit access through an innovative system

The majority of financially excluded people are neglected from accessing credit services from formal financial institutions. The unbanked poor people lack basic accounting information, bankable collateral, and access to credit information. The existence of a credit innovative system would provide and encourage more information such as credit guarantee systems, rules to expand eligible collateral, and credit databases to ease informational asymmetries and increase banking and nonbanking institutions' willingness to lend. Similarly, the provision of financial education to micro-small and medium entrepreneurs (MSMEs) would encourage them to keep better records and enhance regular repayments after credit provision. Therefore, the presence of an innovative credit system would easily facilitate access to credit and other services for needy individuals while unlocking barriers to financial exclusion (Villarreal, 2017; Kar and Swain, 2013).

5. Conclusion and recommendations

This study focused on reviewing and analyzing various academic articles related to financial inclusion in Tanzania and other developing countries. The current study has contributed to the existing literature distinctly. The contribution revealed has enabled answering research questions such as "what various researchers have done regarding financial inclusion in Tanzania and other developing countries? Also, to what extent had the published academic articles helped in addressing the challenges associated with financial exclusion?" Practically, the analysis in this study concludes that to a minor extent published works have enlightened the existing challenges in the deficiencies of financial exclusion and its impacts on social-economic development in Tanzania. The lack of a clear and explicit policy guiding strategies to widen the scope of financial inclusion needs

to be considered collectively among stakeholders. Also, the existing gap between the supply and demand of financial services requires great attention, especially in rural and semi-urban areas due to low population density including challenging infrastructure development. Furthermore, the absence of explicit consumer protection regulation in Tanzania and other developing countries poses a significant challenge to consumers, from aggressive practices of financial service providers.

Following these observations, this paper put forth the following recommendations.

The government should provide a clear guiding policy to enhance financial inclusion efforts. Emphasis needs to be directed to all financial institutions extending financial and non-financial services on various products to underserved individuals and firms. Secondly, the policymakers and financial services providers have to initiate an innovative infrastructure system that would promote the extension of financial services to peripheral areas at affordable operating costs. This will facilitate more outreach of financial products to the majority of unreachable individuals and encourage income-generating activities. Thirdly, there is a need for establishing and operationalizing the consumer protection regulation among financial services providers. In so doing will urge them to ensure customers do not become a victim of their competitiveness in marketing and use of financial products and services. Finally, there is a need of establishing a variety of financial providers, products, and technologies that would be inclusive in accommodating various categories of individuals/firms excluded from the mainstream financial services regardless of geographical location.

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