

Idun, Anthony Adu Asare; Aboagye, Anthony Q. Q.; Bokpin, Godfred A.

Article

The effect of bank market power on economic growth in Africa: The role of institutions

Cogent Economics & Finance

Provided in Cooperation with:

Taylor & Francis Group

Suggested Citation: Idun, Anthony Adu Asare; Aboagye, Anthony Q. Q.; Bokpin, Godfred A. (2020) : The effect of bank market power on economic growth in Africa: The role of institutions, Cogent Economics & Finance, ISSN 2332-2039, Taylor & Francis, Abingdon, Vol. 8, Iss. 1, pp. 1-30,
<https://doi.org/10.1080/23322039.2020.1799481>

This Version is available at:

<https://hdl.handle.net/10419/269947>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by/4.0/>

The effect of bank market power on economic growth in Africa: The role of institutions

Anthony Adu-Asare Idun, Anthony Q. Q. Aboagye & Godfred Alufar Bokpin |

To cite this article: Anthony Adu-Asare Idun, Anthony Q. Q. Aboagye & Godfred Alufar Bokpin | (2020) The effect of bank market power on economic growth in Africa: The role of institutions, Cogent Economics & Finance, 8:1, 1799481, DOI: [10.1080/23322039.2020.1799481](https://doi.org/10.1080/23322039.2020.1799481)

To link to this article: <https://doi.org/10.1080/23322039.2020.1799481>



© 2020 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY) 4.0 license.



Published online: 06 Aug 2020.



Submit your article to this journal [↗](#)



Article views: 1374



View related articles [↗](#)



View Crossmark data [↗](#)



Citing articles: 1 View citing articles [↗](#)



Received: 19 December 2019
Accepted: 19 July 2020

*Corresponding author: Anthony Adu-Asare Idun, Department of Finance, University of Cape Coast, Cape Coast, Ghana
E-mail: aidun@ucc.edu.gh

Reviewing editor:
Christian Nsiah, School of Business,
Baldwin Wallace University, USA

Additional information is available at
the end of the article

GENERAL & APPLIED ECONOMICS | RESEARCH ARTICLE

The effect of bank market power on economic growth in Africa: The role of institutions

Anthony Adu-Asare Idun^{1*}, Anthony Q. Q. Aboagye² and Godfred Alufar Bokpin²

Abstract: We provide empirical investigations into the role of political institutions in the bank market power-economic growth nexus using country-level data from 44 African countries from 2002 to 2015. We employed a dynamic GMM model to achieve the above objective. The results show that banks with market power in Africa induce economic growth. Also, institutional quality improvement causes positive economic growth and improves the degree with which banks with market power influence economic growth. The influence of institutional quality on economic growth, however, varies depending on specific institutional factors even when we differentiated the effect of the level of bank market power. In West Africa, banks with market power induce economic growth, but the less competitive nature in the banking environment of the other sub-regions discourages economic growth. The results call for policy directions that improve economic and political institutions towards improving effective intermediation in Africa. In West Africa, the Central Banks should come up with regulations targeting large banks with market power to channel funds into productive sectors. In other sub-regions, more competitive banking environments can harness financial resources into productivity growth. The implication is that, regulators and policymakers should implement sound institutional structures that would ensure tailor-made banking system structure to stimulate sustainable economic growth in Africa.

Subjects: Economic Theory & Philosophy; Industrial Economics; Econometrics; Development Economics; Credit & Credit Institutions



Anthony Adu-Asare Idun

ABOUT THE AUTHOR

Anthony Adu-Asare Idun holds Bachelor of Management Studies from the University of Cape Coast, and Master of Philosophy and Doctor of Philosophy in Finance from the University of Ghana. He is a lecturer in Finance at the Department of Finance, University of Cape Coast. He has been researching issues patterning to the sustainable development of the African continent, helping to pinpoint areas that financial intermediation should focus on to minimize systemic risk and promote sustainable development. He has been a reviewer for some Journals notably, the *Journal of Developing Areas* and *Journal of Financial Economic Policy*. The author is also a member of Chartered Global Investment Analysts (CGIA).

PUBLIC INTEREST STATEMENT

The African continent, despite its challenges, has one of the highest economic growth potentials if the continent can leverage industrialization and quality institutions to achieve sustainable economic development. The financial systems in the continent can provide financial resources for sustainable growth if they are responsive to the efficient allocation of resources into productivity growth. This study provides information that the level of banking system competitiveness can stimulate productivity growth if political institutions provide the framework that supports banking structure to induce the growth or ameliorate the inefficiencies of the banking systems to induce growth. Thus, the paper shows that improvements in institutional quality are beneficial for the banking system's conduct toward sustainable development.

Keywords: Africa; bank market power; economic growth; institutional quality; regional integration

1. Introduction

The activities and behavior of banks with market power can be opposed to firms' ability to access to finance, firm performance and economic growth. This is because banks with market power can charge higher loan rates or reduce the amount of credit available to firms that depend on external finance. If firms are not able to obtain enough funds, they will face challenges in implementing their high-quality projects. This situation can have unfavourable impact on industrial productivity and, therefore, economic growth. Also, the 2007–2009 global financial crisis has cemented the belief that the failure of a large financial institution can harm the growth of economies. This study contends that banks with market power, if they can create a relationship with a well-managed firm that depends on external finance, can also help stimulate growth in the real sector. Banks with market power can promote economic growth through their efficient and effective distribution of credits to small and viable firms (Cetorelli, 2001; Cetorelli & Peretto, 2012; Dell'Ariccia, 2000; Kim et al., 2016; Petersen & Rajan, 1994, 1995). The study also relies on the perspective that the prevalence of inclusive institutions can serve as stimulants for productivity growth even when inefficient banks characterize financial markets (Acemoglu et al., 2002; Acemoglu & Robinson, 2012). Therefore, we also examine how political institutions in Africa can complement the conduct of banks with market power to induce economic growth after the countries reorganized into the Africa Union in 2002.

Various studies have emerged on the development of the banking system and its effect on economic growth. Some earlier studies analyzed and compared the measurements of the level of bank market power across regions (Anzoategui et al., 2010; Clerides et al., 2015; Fosu, 2013). Generally, these studies found that bank market power is higher in Africa than in other regions. According to Leon (2016), the level of bank market power in Africa is higher because of cross-border banking which allows large pan-African banks exhibit less-competitive behaviour such as charging high loan rates and lower deposit rates in their host countries. Entry barriers are also more prevalent in the African financial system, which makes existing banks to leverage early-entry advantages and gain more rent. Also, because of the limited level of financial literacy, the banks leverage information asymmetry to extract more rent from the customers, which gives them more bargaining power. Also, in a dusty informational environment like the African banking system, new entrants (banks) can benefit from the incumbent's information advantage by mimicking the incumbent's strategy (Diallo, 2015), thereby internalizing the less competitive situation.

Other studies examined how the level of banking system competition affects access to external finance by firms. These studies found that a less competitive banking environment restricts access to finance by firms that heavily depend on external funds. By limiting access to finance, banks with market power can inhibit the growth of firms and therefore economic growth (Beck et al., 2004; Fernández de Guevara & Maudos, 2007; Fernandez de Guevara & Maudos, 2011; Mitchener & Wheelock, 2013; Fernandez et al., 2013; Liu et al., 2014; Love & Martínez Pería, 2015). The studies were, however, conducted at the micro-level to examine the impact of bank competition on industrial productivity growth. The existing studies did not directly examine how a less competitive banking environment induces economic growth at the country-level.

Moreover, existing studies have not yet exploited the impact of institutional quality on the mechanisms through which the conduct of banks with market power induce economic growth in developing countries, mainly Africa. This paper is different from the existing ones because it contends that the level of institutional quality in Africa can catalyse the intermediation process, thereby inducing the effect of the level of bank market power on economic growth. This assertion depends on the propositions that inclusive institutions can improve bank-market-power and industrial growth transmission while extractive institutions can lead to leakages in the intermediation process, which can be detrimental to the growth of the real sector of economies (Acemoglu & Robinson, 2012; Pagano, 1993).

The paper applies the second-order dynamic generalized method of moment (GMM) procedure proposed by Arellano and Bond (1991) to achieve the above objectives. The GMM technique is efficient when estimating panel data with a large number of cross-sections and smaller time-series dimension and also when the lagged dependent variable is likely to correlate with the residuals. The GMM procedure includes the lagged dependent variable and transforms all other variables into their first differences to eliminate the individual country-specific differences. The model is also efficient in eradicating the possible endogeneity issues among the variables and it provides consistent estimates. We used the first differences of both dependent and independent variables as instruments.

Furthermore, we constructed dummies for the official languages in Africa (Arab, English French and Portuguese). We used them as instruments since official languages in Africa are strongly associated with the legal origin of the respective countries. For example, the Anglophone states have mostly adopted the Common Law legal system, while the Francophone countries implement the Civil Law system. Therefore, by using the official languages, we are as well emphasizing that the legal origin correlates with the level of economic growth. We evaluate the consistency of the estimates on the assumption that the instruments do not associate with the error term. To verify this assumption, we performed Sargan's J test to ensure the validity of the device. The results are contrary to the null hypothesis that the instruments correlate with the error term. We also perform the Arellano and Bond's serial correlation (AR (2)) test to meet the requirement of the absence of serial correlation. However, since the first difference GMM procedure uses the first differences of all the variables, there were losses in the degree of freedom, especially since our data set is unbalanced.

The results suggest that various forms of institutions affect economic growth in Africa differently. Economic institutions complement the level of bank market power in stimulating economic growth. For governance institutions, the level of control of corruption, regulation quality and the rule of law interact positively with the level of bank market power to stimulate economic growth in Africa. However, the level of political stability and bank market power are substitutes in inducing economic growth. In terms of regional integration, the banking environment in ECOWAS promotes economic growth, while the banking systems in other sub-regions in Africa do not stimulate economic growth.

The organization of the rest of the paper is as follows: Section two discusses the existing literature. The next section discusses the empirical model specification and describes the data and their sources. Section four presents a discussion of the empirical results. Section five concludes and provides recommendations.

2. Literature review

2.1. Bank market power and economic growth

Market power refers to the ability of a firm either to vary the quantity of production or price but not both at a point in time (Hahn, 1984; Keeley, 1990). Banks with market power possess strong bargaining powers that assist them in changing deposit or lending rates in favour of their strategic options without loss of profit or customers. Banks and other creditors can also be more powerful when they have all material information about borrowers (Djankov et al., 2007). Researchers commonly measure bank market power by the Lerner Index (the difference between price and marginal cost as a ratio of price). If the Lerner Index is close to zero, it is an indication of a near-perfectly competitive banking system (less market power) and if the index is large, it implies the banking system is nearer to a monopoly (more market power). In recent times, the Boone Indicator has become a more reliable measure of bank market power because it incorporates the level of efficiency of the banking system in its estimates, but the Lerner Index sometimes over-states the level of market power (Boone, 2008; Stiglitz, 1989). The Boone Indicator is the coefficient of the relationship between profitability/market share and marginal cost. A high negative coefficient means the banking system can increase profitability at a lower marginal cost and vice versa. The coefficient of the Boone indicator usually is negative, which indicates that inefficient banks would not survive in a highly

competitive banking environment. Therefore, the higher the degree of the Boone indicator, the higher the degree of competition and the lower the level of banking system market power.

Typically, when few banks control the movement of loan rates, deposit rates and product offerings in a banking system, we say the level of bank market power is high. Bank market power also implies that banks operate in a less competitive banking environment (N. Cetorelli & Peretto, 2012). Thus, a banking system can exhibit high market power behavior if it is characterized by high lending rates to deposit rates, higher dependency on collaterals, high financial charges, and higher relationship building (Petersen & Rajan, 1995).

According to the literature, the level of bank market power in Africa is higher than any other region (Clerides et al., 2015; Mirzaei & Moore, 2014; Amidu et al., 2013). An analysis of data from the Global Financial Development Database (GFDD) (2017) shows that the Lerner Index averages around 30 percent over the past decade to 2013. For example, for a sample of 44 African countries, the Lerner Index was 30.5% in 2004. This figure increased marginally to 31.19 in 2013, showing a rising level of bargaining power of banks in Africa. Bempong and Sy (2015) estimated that in 2014, the Lerner Index for Africa was 30 percent of which North Africa, 35 percent; East Africa, 34 percent; West Africa 16 percent and Southern Africa 33 percent. Developments in North Africa drive the apparent less-competitive nature of the banking system. Bempong and Sy (2016) attributed this to higher foreign entry restrictions in the Middle-East. The figures show that the banking system in West Africa is more competitive than the system in other sub-regions and appears to drive the competitiveness of the banking environment in Africa. The deregulation processes in the sub-region allow pan- African banks to penetrate the West African sub-region. Other regions in the world appear more competitive than Africa. In their report, Bempong et al. (2016) also showed that the Lerner Index associated with the banking systems in Latin America and the Caribbean, High-Income Countries and Low-Income countries were 27 percent, 20 percent and 22 percent respectively.

Since the banking system is deeply involved in financial intermediation, the structure of a banking system can induce the growth of the real sector. Researchers have modelled the growth-inducing impact of bank market structures through the channels of capital accumulation, systemic stability, or financial innovation. Due to capital accumulation, the conduct of banks with market power can either induce or restrict access to finance by firms that depend on external finance to support positive net present value projects. The first strand of literature has with models that show that banks with market power can use their scale economy to employ cost-effective screening processes. Their screening processes, in turn, enable them to spot and allocate credit to firms with productive capacity, even in opaque financial markets and exorbitant lending rates regimes (Dell’Ariccia, 2000; Petersen & Rajan, 1994, 1995). The beneficial firms apply the funds into innovations that result in an improvement in systemic productivity. Bonaccorsi Di Patti and Dell’Ariccia (2004) found in Italy that a more concentrated banking system provides venture capital assistance to new industries with unknown credit credentials. Sengupta (2007) also posits that relationship banking undermines competition from foreign banks and restricts their ability to charge higher rates. This comment can be valid in an environment with the inadequate legal protection that prevents the new entrant from relying on screening to counter the incumbent’s information advantage. Under this situation, foreign banks may find it challenging to extend credits to small firms and that can have negative implications on industrial and economic growth. Fernández de Guevara and Maudos (2007) provided evidence that supports Petersen and Rajan (1995) proposition that banks with some market power have incentives to establish long-lasting relationships with the borrowers to overcome informational problems. The banks also facilitate access to credit, thereby reducing financial constraints. In their study, they used datasets on manufacturing industry-level growth rates and banking market concentration for the United States for the period 1899 to 1929. The authors found that bank market concentrations have a positive effect on the growth of the manufacturing sector in the early years of the twentieth century. Also, they found that increases in branch banking and more banks per capita improve the growth of industries that rely on banks for external finance. They stressed that bank entry regulations have independent effects on the growth of the manufacturing industries.

Nguyen et al. (2012) also found that, by specializing in relationship lending, a bank with market power can leverage their information advantage and reduce intermediation inefficiency that increases profits. The relationship serves as an entry barrier for incumbent banks and thus gives the incumbent a competitive advantage over potential entrants. Because of access to information about borrowers, banks with market power do not have to engage in extensive screening processes. The result is a decrease in screening costs and improvement in the efficiency levels of the banks. Therefore, relationship-banking can make incumbent banks more efficient and profitable.

However, in an informationally opaque environment like the African banking system, new entrants can benefit from the incumbent's information advantage by mimicking the incumbent's strategy (Diallo, 2015). Similarly, Fernandez et al. (2013) found that, for a regular period (period without systemic crises), a bank with market power has a strong positive effect on economic growth suggesting that in crisis period banks with market power may not reduce the harmful effects of the crisis. The drawback is that, in less-competitive systems, banks with market power can restrict access to credit to firm that source finance externally by charging higher lending rates. They may also constrain savings by giving borrowers lower deposit rates (Pagano, 1993). These two channels can restrict an economy's ability to generate enough investment. By limiting capital accumulation, banks with market power can reduce economic growth. Banks may also decide to make credits available to firms that need credit for expansion at exorbitant loan rates. High loan rates may encourage high default rates that can lead to systemic failure.

Still, on the capital accumulation channel, another group of the studies suggests that banks with market power can increase the efficiency loss by restricting credit availability (Cetorelli, 2001; N. Cetorelli & Peretto, 2012; N. Cetorelli & Strahan, 2006; Guzman, 2000; Pagano, 1993). They argue that since banks with a monopoly can charge higher lending rates or reduce the quantity of credit availability to firms that depend heavily on external finance, they can as well inhibit growth in the real sector. Pagano (1993) modelled that banks with market power, so long as they charge higher lending rates and pay lower deposit rates, can promote credit constraints and discourage savings. The net effects are: (1) because of high lending rates, firms may not obtain enough funds to support their viable projects and (2) to the extent that deposit rates are lower, there would be no incentive for people to save. These can harm capital accumulation and, therefore, economic growth.

On the other hand, the author suggests that loan rates in more competitive environments are likely to be lower, which encourages firms to access enough external credits and invest. The author suggests that monopolistic banking systems help more leakages in financial intermediation because of higher efficiency loss. Pagano, therefore, suggests that banks with market power may not support economic growth because of their ability to restrict credits and charge higher loan rates. Similarly, Guzman (2000) posits that if two countries have identical economic circumstances except for their bank market structures—one being more competitive and the other being less competitive—the more competitive banking environment can enhance capital accumulation. The authors emphasized that excessive credit rationing and monitoring are the reasons for credit restriction in a monopolistic banking environment. Guzman also agrees with Pagano that loan rates are higher in a monopolistic banking system that influences the system's harmful effects on economic activities.

Furthermore, Cetorelli and Peretto (2012) showed that the link between a less competitive banking environment and capital accumulation is ambiguous. They stressed that where the idiosyncratic risk of entrepreneurs is high (mild), capital accumulation is higher (lower) under less (more) competitive banking system. They suggest that, in a less competitive banking environment, banks with market power provide services to smaller firms that help them to succeed in the face by diversifiable risk. However, in a more competitive banking environment, banks react to the loss of interest rates spread by increasing the number of credits. This increases capital accumulation but may not provide the guarantee that smaller firms would succeed. At the intermediate level of idiosyncratic risk, the authors prescribe an oligopolistic banking environment (a banking environment that is controlled by only

a fraction of large banks) as an environment that can allocate credit efficiently. Cetorelli and Peretto, therefore, suggest that only empirical investigations conducted across different settings can enable us to assess the effect of bank market structure on economic growth. In the same token, Liu et al. (2014) did not find enough evidence in the United States that the effect of concentration on economic growth may be higher for a higher level of competition. They further found that, given the level of financial dependence, an increase in bank concentration led to a 0.133% increase in real growth.

Also, Mitchener and Wheelock (2013) found in the U.S that bank concentration has a strong positive effect on output growth even though the growth effect of competition was weak for firms that depend on external finance. In a similar study, bank market power initially influences positively on industrial growth. After a certain point, the impact of bank market power becomes negative, the relationship depicting an inverted U-shaped (Fernandez de Guevara & Maudos, 2011). In the same token, Love and Martínez Pería (2015) found that more competitive banking restricts access to industrial finance, which in turn reduces industrial output.

The following empirical studies found strong positive evidence that more competitive banking systems can induce banks to reduce their lending rates and other operational charges and hence induce access to finance and lead to the growth of firms and economies (Beck et al., 2004; Liu et al., 2014). Similarly, Fernandez de Guevara and Maudos (2011), by using the Lerner Index and the Panzar-Rosse H-Statistic, found that a more concentrated banking system does not induce economic growth because the system constrains credit availability. Additionally, Leon (2015), using the Boone Indicator, Lerner Index and the H-statistic, found that bank competition facilitates access to credit in developing countries.

Other studies have produced results that favour a strong growth-effect of bank market power. Berger et al. (2004) employed data from both developed and developing countries and found that more significant market shares and efficiency ranks of small, private, domestically owned banks are associated with more excellent economic performance and that the marginal benefits of higher shares are enormous when these banks are more efficient. It follows that a less competitive banking system induces efficiency in financial intermediation, which can be more encouraging on economic development, should the necessary regulatory mechanisms put in place. However, to the best of our knowledge, empirical studies on the effect of bank market power on economic growth for Africa has been sparse.

The 2008/2009 financial crisis has also given credence to the perspective that the level of market structure can induce systemic risk that can inhibit the soundness of the financial system and, therefore, the robustness of the real sector. The ability of banks to withstand stress depends on the size of the bank (Lorenc & Zhang, 2018). According to Allen and Gale (2004), large banks are less susceptible to systemic shocks. They are less likely to transmit shocks into the system because of their ability to vary margins and utilize efficiency gained from economies of scale. Banks with market power can ensure the stability of the banking system by maintaining a lending rate buffer that assists them in supporting smaller banks, which are hard-hit by systemic shocks, thereby reducing the transmission of systemic risk. By ensuring the soundness of the banking system, banks with market power strengthen financial intermediation and stimulate the growth of the real sector.

On the other hand, because of their size, banks with market power can be hard-hit by stress leading to their failure. Large banks can exacerbate the risk of failure of smaller banks by charging lower loan rates or reducing their supports to these banks when they face liquidity challenges. By charging higher loan rates, banks with market power increase the risk of firm failure, non-performing loans and systemic failure. This assertion is more pronounced in the face of globalization when banks form networks across countries to the extent that failure of one big bank within the system can send shock waves across members in the network (Ghosh, 2016). Because the large banks under stress are more likely to induce systemic risk, some jurisdictions impose taxes on the risky conduct of large banks to internalize risk (Acharya, Pedersen, Philippon, & Richardson, 2017). By recognizing the critical roles of banks with market power in economic development, state

institutions come to resuscitate large banks under stress through stimulus packages. This implies that political institutions can play critical roles in the channels through which financial intermediation transmits into the growth of the real sector.

Bank market power encourages banks to allocate credit to productive firms and this, in turn, can enhance capital accumulation and economic growth.

2.2. Bank market power, institutions and economic growth

“Institutions encompass the set of political and legal arrangements that provide the environment in which economic activity takes place” (Jennings, 2013, p. 252). Apart from physical capital, human capital and technology as the proximate causes of cross-country differences in per capita income growth, institutions have become a dominant determinant of economic growth. According to Acemoglu et al. (2001), much of the differences in development across colonies can be due to the differences in institutional quality promoted by their Colonial masters. In Africa and elsewhere, the colonial masters instituted Extraction Institutions that created centralized regimes to facilitate the extraction of resources. The authors emphasized that, because the colonial masters did not have long term settlement plans in Africa, they established an oppressive system to put the people under constant fear to extract resources away to where they wanted to settle. In other places (like Australia, Canada, New Zealand and the United States of America) where the colonial masters found suitable for settlement, they put in place institutions that uphold the protection of property rights to the elites. These have accounted for the enormous differences in institutional quality among the two groups of colonies. By extension, we can say that differences in institutions among the two settlements have partly accounted for the differences in their economic development. It appears that even after independence, African leaders continue to pursue systems instituted by their colonial masters to the extent that most African countries still rely on the extraction of natural resources for development.

According to Acemoglu and Robinson (2012), countries that have achieved enormous successes in growth (like Botswana and South Korea) are those that promoted inclusive economic and political institutions. They state that inclusive economic institutions “must feature secure private property, an unbiased system of law, and a provision of public services that provides a level playing field in which people can exchange and contract; it also must permit the entry of new businesses and allow people to choose their careers” (Acemoglu & Robinson, 2012). These institutions, including ethnic tolerance, avoidance of divide and rule, protection of property rights, political stability, the rule of law, provision of public services, etc.) encouraged peace, democracy and stability in countries with high institutional quality. Other nations, like former Zaire, rely extensively on her extractive institutions (Haselip, 2014). Acemoglu and Robinson (2012) indeed emphasized that political institutions matter most when explaining the cross-country differences in economic growth than economic policies, culture and geography. However, not all economists agree that institutions can promote growth better. Sachs (2003) emphasized that ecology and geography are more critical for growth. Nunn and Puga (2012) also noted that geography influences institutions, which in turn explain the differences in standard of living across nations.

We also examine how the level of institutional quality within Africa can serve as a substitute for the ability of a less competitive banking system to distribute external finance and promote economic growth. We set out to ascertain whether the level of bank market power in Africa can serve as placeholders for strong institutions in Africa to channel available credit into productive sectors. This is essential since there exists a consensus that the quality of institutions stimulates economic growth (Acemoglu & Robinson, 2012; Boubakri et al., 2015; Siddiqui & Ahmed, 2013). Institutional quality replaces bad governance with good governance, curbs corruption, promotes political stability, promote the rule of law and ensures quality regulations would enable individuals and businesses to flourish in their endeavour that can improve the prosperity of society. These measures help investor protection and provide an effective legal system (La Porta et al., 1998, 1997). However, in North Africa, the removal of supposedly bad governance in Egypt, Tunisia and Libya has not necessarily led to economic prosperity in those countries. We expect the findings from this study to enable African

countries to streamline regulations, political systems, governance and the role of law to be in line with a banking structure that can induce economic growth and sustainable development.

The relationship banking hypothesis (Petersen & Rajan, 1995) suggests that in a weak institutional environment, bank market power can create relationships that facilitate access to credit by industries that depend heavily on external finance. Banks with market power would have information to invigorate relationships with customers, notwithstanding the level of institutional quality in the system. Similarly, the law-finance hypothesis suggests that bank development can induce access to credit when a country's financial system is characterized by the robust legal and institutional system (La Porta et al., 1998, 1997). The authors suggest the differences in the legal system influences access to credit with a common law system facilitating greater access to finance than the civil law system. This is because the common law system gives shareholders and creditors more excellent protection than the civil law system.

The finance-growth literature also suggests that in an environment where financial development is imperfect, information asymmetry encourages banks and other financial institutions to insist on collateral and deposit insurance, thereby constraining access to credit to industries that depend on external finance (King & Levine, 1993). Similarly, environments characterized by efficient and robust legal systems are associated with greater access to external funding (Demirgüç-Kunt & Maksimovic, 1998). Mahoney (2001) also found that common law countries that offer more reliable protection of property and contract rights are in better positions to grow faster. Levine (1998) provides a complementary finding that protection of creditors' rights and swift enforcement of contracts promotes a well-functioning banking system, and this can induce high growth.

Deregulation also has a strong relation with economic growth, according to the existing literature. The literature suggests that an environment that promotes a less-restrictive financial system can induce economic growth. Some suggest that the geographical distribution of banks induces economic growth and thereby implying that bank branching restrictions can inhibit economic growth (Clarke, 2004; Jayaratne & Strahan, 1996). Therefore:

Institutions induce economic growth by facilitating the role of bank market power in channeling capital accumulation into growth in Africa.

2.3. Regional integration, finance and economic growth in Africa

One area that is essential for the promotion of the economic and monetary objectives of the African Union is financial integration. Researchers have conducted many studies on financial inclusion in Africa, but the majority of the reviews concentrated on the integration of the equity capital markets (e.g. Agyei-Ampomah, 2011; Lagoarde-Segot & Lucey, 2007) even though the banking system dominates the financial system in Africa. Also, the emergence of cross-border banking in Africa implies bank market integration. We also do not know whether the level of the banking system's competitiveness induces economic growth within the sub-regions in Africa. Information on this would help stakeholders to appreciate how the banking system is contributing to the realization of sustainable economic development across sub-region in the continent. The premise of regional integration is that countries by forming political and economic groups can mobilize human and financial resources toward developmental trajectory. For the past 60 years, regional integration has been on the list for most countries in Africa. African countries began this agenda when they established the Organization of African Unity (OAU) in 1963.

The countries reorganize the OAU into the African Union (A.U.) in July 2002. Among others, the objectives of the A.U. include the promotion of sustainable economic, social and cultural development. Within this developmental objective, the A.U. aims at creating a free trade area, a custom area, a single market, a central bank and a common currency. By achieving these objectives, the A.U. aims at establishing the Economic and Monetary Union with a single currency by 2023. The A.U. desire to use accomplish this and a host of other objectives, sub-regional bodies under her to

fast track her single-currency agenda. The sub-regions include African Economic Community (AEC), Community of Sahel-Saharan States (CEN-SAD), Common Market for Eastern and Southern Africa (COMESA), East African Community (EAC), and Economic Community of Central African States (ECCAS). The rest include the Economic Community of West African States (ECOWAS), Intergovernmental Authority on Development (IGAD), Southern African Development Community (SADC) and Arab Maghreb Union (AMU).

The objectives of the various sub-region are derived from the purposes of the A.U. The sub-regional groupings are supposed to pursue economic and monetary unions so as expedite the realization of economic and monetary union for the continent in 2023. Now, even though the A. U. has recorded some successes in the areas of trade and movement of goods, services and people, a lot still has to be done to realize the Economic and Monetary Union status at the stipulated date, 2023. The banking and other financial systems should be strategically restructured and positioned to be responsive to the financial needs of businesses to facilitate trade and movement of resources to support sustainable economic development.

According to the World Bank (2007), the financial system in Africa has not been able to induce economic growth and poverty reduction because of its limited scale of operation in the respective countries. Regional integration offers the financial sectors in the regions a broader market and facilitates cross-border banking (African Development Bank Group, 2010). The AfDB report stresses that African countries can enhance growth and poverty reduction if they maintain price stability, improve trading among themselves and maintain currency stability. This requires a very sound and responsive banking and other financial systems. This means that the development in the banking system is essential for the realization of African integration and regional integration that is also essential for financial development across Africa.

The interaction between the level of Bank Market Power and regional integration in Africa would induce higher economic growth.

2.3.1. Model specification

The endogenous growth model posits that economic growth depends on capital stock and human capital accumulation (Mankiw et al., 1992; Romer, 1990). Therefore, this study includes human capital as control variables. To achieve the above hypotheses, this study estimates the following general regression model:

$$G = f(BI, C, INST) \quad (1)$$

Where, in all our regressions,

- G is the growth rate of per capita GDP, a measure for economic growth for each African country i at time t;
- B.I. is an indicator used to measure bank market power within-country i, at the time, t;
- C is a set of control variables including, human capital (HC); government expenditure (GEX); inflation (INF); foreign direct investment (FDI); trade openness (TRADE) and technological innovation (MOB); and
- INST is institutions

The GMM representation of equation as follows:

$$G_{i,t} = \alpha_t + \beta_1 G_{i,t-j} + \beta_2 BI_{i,t-j} + \beta_3 C_{i,t-j} + \beta_4 INST_{i,t-j} + f_i + \varepsilon_{it} \quad (2)$$

where,

- f_i is a country-specific effect;
- represents the countries and t is the time-series dimension of the data;

- j is the lag length; and
- β_1, \dots, β_4 are the coefficients of the estimations.

To do away with the individual country heterogeneity, we transformed the model into the first differences as follows:

$$\Delta G_{i,t} = \beta_1 \Delta G_{i,t-j} + \beta_2 \Delta BI_{i,t-j} + \beta_3 \Delta C_{i,t-j} + \beta_4 \Delta INST_{i,t-j} + \Delta \varepsilon_{i,t}, t = 1, \dots, T, j = 1, \dots, \quad (3)$$

where, $\Delta G_{i,t} = G_{i,t} - G_{i,t-1}$ and this definition applies to all explanatory variables as well. Similarly, $\Delta \varepsilon_{i,t} = \varepsilon_{i,t} - \varepsilon_{i,t-1}$. The above equation (3) retains only time effect but eliminates the cross-sectional effect.

In the next dynamic GMM model, we introduced the interaction terms for the interaction between bank market power and institutional quality measures (the level of economic freedom (EFREE), control of corruption (COR), government effectiveness (G.E.), regulation quality (R.Q.) and political stability (P.S.)). To interpret the effect of the interaction between bank market power and institutional excellence, we differentiated Equation (4) to B.I. We then summed β_2 and the product of β_4 and the mean INST as the coefficient of the interaction effect. Except in cases where the interaction term has dummies, we interpreted all other interaction relationships by the above interpretation.

$$\Delta G_{i,t} = \beta_1 \Delta G_{i,t-j} + \beta_2 \Delta BI_{i,t-j} + \beta_3 \Delta C_{i,t-j} + \beta_4 \Delta BI * INST_{i,t-j} + \Delta \varepsilon_{i,t} \quad (4)$$

We also tested the hypothesis that the interaction between the level of bank market power and sub-regional integration would induce higher economic growth in Africa. To implement the hypothesis testing, we constructed six dummies for six sub-regions under the African Union and interacted with the dummies with the Boone Indicator. We interpreted the sum of the coefficient of the Boone Indicator and the coefficient of the interaction between the Boone Indicator and the regional dummies ($\beta_2 + \beta_4$ in equation (5)) as the magnitude and the direction of the interaction terms.

$$\Delta G_{i,t} = \beta_1 \Delta G_{i,t-j} + \beta_2 \Delta BI_{i,t-j} + \beta_3 \Delta C_{i,t-j} + \beta_4 \Delta BI * REG_{i,t-j} + \Delta \varepsilon_{i,t} \quad (5)$$

In equation (5), REG is the placeholder for the sub-regional dummies. The sub-regional dummies include ECOWAS, which is a dummy that ascribes "1" if a country in African belongs to the Economic Community of the West African States and "0" otherwise. EAC is a dummy which ascribes "1" if a country in African belongs to the East African Countries and "0" otherwise. ECCAS is a dummy which attributes "1" if a country in African belongs to the Economic Community of the Central African States and "0" otherwise. COMESA is a dummy which ascribes "1" if a country in African belongs to the Economic Community of the West African States and "0" otherwise. ARABMAG is a dummy that ascribes "1" if a country in Africa belongs to the Arab Maghreb Union and "0" otherwise. SADC is a dummy which attributes "1" if a country in African belongs to the Southern African Development Community and "0" otherwise.

2.3.2. Data and data sources

We obtained data on GDP per capita growth rates, government expenditure, inflation, the share of foreign direct investment in GDP and trade openness from the World Development Indicators (World Bank, 2017b). We also obtained data on human capital (average year of schooling) from the Penn World Table Version 9. The Heritage Foundation (2018) provided data on Economic freedom indices. Also, the Global Financial Development Database (GFDD) (2017) supplied data on mobile cellular penetration, Boone Indicator and the Lerner Index. Finally, the study obtained the country-level governance indicators from World Bank (2017b).

We constructed a panel data structure for all variables from 2002 to 2015. This period is significant for two main reasons. First, the period allowed for the coverage of the majority of the countries in Africa since most of the series did not have observations before 2002. For instance, the World

Governance Indicators has an annual series only from 2002. This enabled us to reduce the gaps in the data structure. The second reason is that 2002 coincides with the establishment of the A.U. Therefore, the period offers a timely opportunity for the assessment of how the level of bank market power in Africa has contributed to the A.U.'s plan on the promotion of sustainable economic growth.

However, there were gaps in the data structure to the effect that our final dataset was unbalanced. This means that, given the uneven number of observations, each estimation utilized the optimal number of observations because of the number of variables included and their observation. Therefore, our GMM estimations eventually reported results for an average number of cross-sectional observations. The implication is that even though we gather observations from 44 African countries, the unbalanced nature of the dataset omitted some observations for some states in the estimations. Therefore, for each estimation reported in the columns in the empirical results tables, the number of observations included varied by the availability of data. Table 2 presents the descriptive statistics of the variables, while Table 10 reports on the descriptions and justifications of each variable.

2.3.3. *Dependent variable*

The dependent variable is the real GDP per capita growth rate. The WDI estimated the real per capita GDP at the 2010 U.S. dollar constant prices. The median economic growth rate of the 44 African countries is 2.36. The growth rate is as low as -36.83 percent in some countries and as high as 32.25 in other countries. This means that there is high variability in economic growth among countries in Africa. This reflects in the high standard deviation of growth rates at 4.53. This means that an improvement in growth drivers can have more than a proportionate increase in economic growth in Africa. Thus, if African countries can pay much more attention to the factors that have a positive effect on economic growth, they will experience stronger positive economic growth patterns. Table 3 shows that the dependent variable correlates weakly with all the independent variables. It has a positive association with human capital, inflation, foreign direct investment, Lerner Index, control of corruption, government effectiveness, political stability, the role of law, and voice and accountability. On the other hand, the dependent variable correlates negatively with government consumption expenditure, the Boone indicator, and the degree of economic freedom.

2.4. *Independent variables*

The mean level of bank market power (B.I.), as measured by the Boone Indicator, is -0.07. This ratio shows that bank market power increased over the period since the average Boone Indicator was as high as -0.11 in 2011. The implication is that the level of competition in the banking systems in Africa is decreasing. The Lerner Index also depicts a picture of higher market power in the banking system, indicating a wider divergence between price and marginal costs. However, whereas the number of observations for the Boone Indicator is 529, that of the Lerner Index is 388. We expect the difference in the number of observations to affect the econometrics estimates on each measure of bank market power so that the coefficient of the GMM estimates would differ. We used the two proxies to check the robustness of the practical explanation of the relationship between bank market power and economic growth. This study expects bank market power to have a positive effect on economic growth, by arguing that bank with market power can effectively channel credits to productive sectors than banks operating in a more competitive environment because of their size economy and information endowment that sustains a relationship with firms.

Human capital (H.C.) is key to the economic development of any nation. The level of the human capital of a nation shows the extent to which a society has developed an absorptive capacity to leverage the use of technology into economic growth. A country with a high level of human capital that harnesses investment, capital accumulation, foreign direct investment, and other growth drivers, is more likely to grow faster than a country with a level of human capital that does not magnify the growth drivers. According to the endogenous growth models, the level of knowledge, education, health, fertility, research and development can enhance the capability of capital to

accelerate growth beyond a country's long-term growth potential (Lucas, 1988; Mankiw et al., 1992). Developed countries that have developed their human capital have more per capita income than countries in Africa with a lower level of human capital. From Table 2, the mean value of human capital (measured by Barro-Lee's mean age of schooling) is 1.74 over the period. This compares unfavourably with the United States' average age of education of 3.41 over the period 2002–2014. This means Africa needs to develop her human capital if she wants to reach the high-income level status. The expectation in this study is that human capital accumulation in Africa would have a positive impact on economic growth based on the correlation coefficient in Table 3.

The mean value of government final consumption expenditure (GEX) is 14.89 per cent of GDP. The size of government expenditure is as small as 2.74 per cent of GDP in some countries and as high as 38.41 per cent in other countries. From the Keynesian perspective, an increase in government expenditure can have a stimulating effect on economic growth. This, however, depends on the source of revenue that supports such increment. If the government finances her expenditure through taxation, a business will not obtain enough funds to expand their output and that can constrain economic growth.

Similarly, government expenditure on consumption has a limited acceleration effect on growth. The impact of government expenditure on economic growth also depends on whether an expenditure is financed through domestic borrowing, external borrowing, or expansion in the money supply. If governments finance their expenditure through domestic borrowings, it crowds out the private sectors' access to finance, since excessive government borrowings can result in a high cost of a loan by the private sector. Government borrowings outside the national boundaries allows the private sector to access funds in the domestic financial system to finance their expansions. If the government prints more currency to finance her consumption, the effect would be more money in the system that can have a downward force on interest rates. Low-interest rates imply more access to finance by the private sector. Thus, the effect of government expenditure on economic growth is multifaceted and unclear.

Inflation rates (INF) in Africa has been very volatile over the period. The rate has been as low as –35.84 per cent in some countries and as high as 44.39 per cent in other countries. High inflation harms typically economic growth as it constraints the purchasing power of businesses and individuals. However, if high inflation were as a result of increases in money supply, then interest rates would be lower if the rate of increase in money supply exceeds that rate of increase in prices. This would free up more funds into the private sector for growth. We expect inflation to harm economic growth.

The effect of foreign direct investment (FDI) on growth has received much attention in recent times. The new growth theory suggests that if a country's internal structures such as institutions and human capital are receptive and responsive to harnessing foreign direct investment, then her economy can grow faster towards its long-term path. Foreign direct investment will not enhance economic growth if the country has not developed an absorptive capacity to channel foreign direct investment into growth. FDI can also be in the form of the transfer of new knowledge and technology that can have positive effects on economic growth. Weak institutions and irresponsible financial systems can undermine the effectiveness of foreign direct investment into economic growth. A determining factor of FDI into Africa has been her natural resources, especially her oil. According to Blancheton and Opara-Opimba (2013) the top ten recipients of close 84 per cent of FDI in 2009 were oil-producing countries. This means only a small amount of FDI went to the rest of 44 African countries. Table 11 shows that the mean FDI has been 5.27 per cent of GDP over the 14 years, 2002–2015. More FDI can improve the infrastructure level in the continent and this demands that Africa should restructure her systems to accommodate more FDI. However, FDI inflow has been as high as 89.48 per cent of GDP in some countries.

Economic institutions, defined as in the degree of economic freedom (EFREE), has a positive impact on economic growth (Gwartney et al., 1999; Williamson & Mathers, 2011). A society where exits high degree of protection of property rights, judicial effectiveness, government spending,

fiscal health, business freedom, labour freedom, monetary freedom, trade freedom, investment freedom and financial freedom, economic freedom is high and that has a positive impact on economic growth. In this study, we analyze the impact of the economic institution on economic growth by using the composite index of economic freedom produced by the Heritage Foundation. As mentioned earlier, most African countries are considered economically unfree in the 2018 Economic Freedom Index by the foundation. The mean level of 55.24 for the 44 countries included in the study (see Table 1) means that Africa is “mostly unfree.” Since the level of economic freedom is weaker among countries in Africa, this study expected a negative relationship between the degree of economic freedom and economic growth.

The study also employed Kaufman’s governance indicators to measure the impact of governance institutions. According to Acemoglu and Robinson (2012), differences in the political account for the cross-country differences in per capita income. The inauguration of the African Union in 2002 couple with acceptance of the tenets of democracy across most countries in Africa (in recent times) requires an examination of whether good governance or the lack of it influences economic growth in Africa. We also analyze whether, in the wake of less competitive banking systems, good governance can serve as a substitute for the level of bank market power toward economic growth in Africa.

The six governance indicators included in the study are control of corruption, government effectiveness, regulation quality, the rule of law, political stability and voice and accountability. The definition of these variables, according to Kaufmann and Kraay (2010), is provided in Table 1. Kaufmann and Kraay (2010) employed multiple indexing methodology to measure the perception of stakeholders on these variables. The initial data were measured on the scale: -2.5 to 2.5 . Table 2 shows that mean values for these indicators for African countries have been negative over the period 2002 to 2015. This indicates a lower level of governance in Africa. Table 3 also shows a high degree of correlation among these variables. Therefore, in the econometric analysis, we substituted these variables into separate estimations to avoid inefficient estimates.

3. Empirical results

Table 4 reports the results on the models that include estimates on the impact of bank market power on economic growth. In the first estimation (01), we added the Boone Indicator and other control variables, human capital, government expenditure, inflation, foreign direct investment and trade openness. In the second estimation (02), we included the Lerner Index to check the robustness of the impact of bank market power on economic growth in Africa. The third estimation (03), we covered the economic freedom. The subsequent estimates (04, 05, 06, 07, 08 and 09) included control of corruption, government effectiveness, regulation quality, political stability, the rule of law and voice of accountability, respectively.

The first lag of the dependent variable is negatively related to the level of economic growth in 01, 03 and 09. This indicates the level of adjustment towards long-run growth pattern when there is a short-run deviation. In 01, the speed of change is about negative 4.7 per cent, even though the coefficient of the lagged dependent variable was insignificant. On the other hand, the lagged dependent variable was positively related to economic growth when the Lerner Index, control of corruption, government effectiveness, regulation quality, the rule of law and political stability entered the model. This illustrates the positive magnifying effect of other growth drivers, such as governance institutions on economic growth, as portrayed by the new growth theories.

3.1. Bank market power and economic growth in Africa

The Boone Indicator has a positive coefficient. This implies that bank market power is positively related to economic growth in Africa. A 1 standard deviation increase in the level of bank market power, increases economic growth by 0.33. Even though there exists a positive and practical relationship between the level of bank market power and economic growth (when the Boone Indicator was employed as a proxy), this relationship is not statistically reliable at the 5% significant level. The Lerner Index, however, shows a more robust and meaningful connection

Table 1. Variables and their descriptions

Variable	Description
GDP Per Capita Growth Rate (G)	This is the standard measure of economic growth of countries. The GDP per capita growth rate measures the extent to which the average income per person in an economy has grown over a period. High growth is an indication that an economy is expanding and for that matter, businesses have more incentives to expand. Rising income also implies that banks and other financial institutions can create more credit from the result of increasing deposits. All other things being equal, we expect the level of bank market power to have a positive impact on economic growth through the effective allocation of credits. It is calculated by subtracting the GDP year's GDP per capita from the Current Year's GDP per Capita (at 2010 U.S. dollar constant price) as a ratio of the previous year's GDP per capita. <i>Source: World Bank (2017b).</i>
Human Capital (H.C.)	Human capital is key to the transformation of many economies. The knowledge of the people in a particular country is a determinant of their ability to generate and utilize technology toward the improvement of capital accumulation into economic growth. Human capital is measured by the average year of schooling. <i>Source: Pen World Table Version 9.0.</i>
Government Expenditure (GEX)	The Keynesian view holds that the government can stimulate economic growth through her expansion of fiscal policy that raises expenditure without having to raise tax revenue. If the government wants to increase economic activities but does not want to do so through increased tax revenue, the government can resort to bond financing from the banking sector. Such an act can have a dual effect on economic growth. If the amount raised through the issue of debt instruments are used to finance capital expenditure, it will boost investment and capital accumulation and then economic growth. On the other hand, acquired funds that are used to finance government consumption can harm economic growth if consumption does not necessarily lead to the expansion of the business sector or consumption is on imported products. This is calculated as general government expenditure as a ratio of GDP. <i>Source: World Bank (2017b)</i>
Inflation (INF)	Inflation fundamentally reduces the purchasing power of consumers. In this case, inflation will reduce the general patronage of goods and services which can affect the expansion of the private sector. Inflation can also increase costs of production which can have a downward effect on intermediate productivity. However, inflation can also be a result of an expansionary monetary policy which increases the money supply and therefore makes more credits available to businesses for their expansion at a cheaper cost. In this case, the effect of inflation on output can be positive. It is calculated as the annual change in the consumer price index. <i>Source: World Bank (2017b).</i>
Foreign Direct Investment (FDI)	Foreign direct investment is a measure of capital inflow and at the same time the level of financial integration at a point in time. Foreign direct investments have the most direct impact on the real sector. The banking system can facilitate the flow of foreign direct investments but the attraction of FDI also depends on the performance of the real economy and the institutional framework within a jurisdiction. On the surface, FDI should have a positive impact on economic growth but if a country's local conditions such as the level of education, institutions and financial systems have no absorptive capacity to accommodate FDI into productivity, then FDI can be counter-productive. <i>Source: World Bank (2017b).</i>
Boone Indicator (B.I.)	This is our measurement of bank market power. It is estimated by regressing bank marginal cost on bank market share or any measure of profitability. The coefficient of the estimates is used to define the level of market power. This measurement has a direct implication on bank efficiency as its estimations signify that efficient banks (banks with increasing marginal costs) stand the risk of reducing their market share. In a competitive banking system, the Boone Indicator is negative and large in magnitude. When the Boone Indicator is negative and smaller is an indication of rising bank market power. According to the relationship banking hypothesis, large banks can effectively channel credit into productive sectors than smaller firms. <i>Source: World bank (2018).</i>
Lerner Index (LI)	Alternatively, we measured bank market power by the Lerner Index. The Lerner Index, which defines the relative divergence between price and marginal cost. The larger the Lerner Index, the higher the level of bank market power and vice versa. We expect the Lerner Index to have a positive effect on economic growth in Africa. <i>Source: Global Financial Development Database (2018).</i>

(Continued)

Variable	Description
Economic Freedom (EFREE)	The Heritage Foundation (2018) constructed the economic freedom index by finding the equal-weighted index of 12 indicators: property rights, judicial effectiveness, government spending, fiscal health, business freedom, labour freedom, monetary freedom, trade freedom, investment freedom and financial freedom to form a single that defines a country's level of economic freedom. The score ranges from 0 to 100 with a score of 0 implying the most repressed regime and a maximum score of 100 reflecting the freest regime. The index also group countries into clubs of economic freedom. The first club (Free) includes countries which record scores between 80 and 100; the second club (mostly free) includes countries with scores between 70 and 79.9; and the third club (moderately free) includes countries with scores between 60 and 69.9. Also, countries in which record scores between 50 and 59.9 are classified as "Mostly Unfree" whilst countries in which record scores 49.9 or below are classified a repressed. Even though African countries have made significant advancements in the rankings since 2011, the 2018 edition of the Economic Freedom Index report classified 32 African countries as either mostly unfree or repressed. In the report, 8 African countries (Botswana, Rwanda, South Africa Ivory Coast, Uganda, Seychelles, Burkina Faso and Cape Verde) were classified as "Moderately Free" countries. Only Mauritius qualified to be included in the "Mostly Free" but no country in Africa was considered "Free". This means that there is much room for improvement in terms of the deregulation of African Economies. Source: <i>Heritage Foundation</i>
Control of Corruption (COR)	The next sets of variables and their definition were culled from Kaufmann and Kraay (2010). COR is control of corruption and it measures on a scale -2.5 to 2.5, "perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests".
Government Effectiveness (G.E.)	G.E. is government effectiveness. It measures on a scale -2.5 to 2.5, the perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.
Mobile Phones Penetration (MOB)	We used this indicator to measure the level of technological innovations that can facilitate information flow, transactions, development of new financial products and allocation of funds. It is especially a useful indicator when measuring the impact of mobile money, mobile banking, electronic payment, internet banking, SMS banking since access to cellular technology facilitates the diffusion of these products in Africa. This is calculated as the number of mobile phones subscription per 100 of the population. We expect technological innovation to have a positive impact on economic growth. Source: World Bank (2017b)
Trade Openness (TRADE)	Trade among countries facilitates the flow of resources from more resource endowed economies to less endowed economies. Trade enables countries to also sell their output in other countries, which has a positive effect on aggregate demand. In this direction, we expect trade openness to have a positive impact on capital accumulation towards growth. However, trade openness can have a crowding effect on capital accumulation in it results in the net importation of consumption products since the acceleration effect of imported consumption is smaller than the acceleration effect of imported investment. This calculated as the sum of annual exports and imports as a ratio of GDP. Source: World Bank (2017b).
Regulation Quality (R.Q.)	R.Q. is regulation quality (it measures on a scale -2.5 to 2.5), which captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. Source: World Bank (2017b).
Political Stability and Absence of Violence (P. S.)	P.S. is political stability and absence of violence/terrorism. It captures, on a scale of -2.5 to 2.5, the perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism. Source: World Bank (2017b)
Rule of Law (ROL)	ROL is the rule of law. It captures on a scale of -2.5 to 2.5, perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Source: World Bank (2017b)

(Continued)

Table 1. (Continued)

Variable	Description
Voice and Accountability (VOICE)	VOICE is voice and accountability, which measure on a scale of –2.5 to 2.5, capturing perceptions of the extent to which a country’s citizens can participate in selecting their government, as well as freedom of expression, freedom of association, and a free media. <i>Source: World Bank (2017b)</i>

Source: Author (2018)

between bank market power and economic growth in Africa. The result indicates that a one standard deviation increase in the Lerner Index increases economic growth by 2.4 standard deviations. The implication is that a less competitive banking system is beneficial for economic growth in Africa. This is in line with the relationship banking hypothesis (Petersen & Rajan, 1995) that posit that in less competitive banking environments, banks with market power can spot and monitor relatively unknown borrowers and allocate credits to support their projects. The result is however contrary to the one in the studies that reported that less competitive banking framework constrains access to finance (e.g. Beck et al., 2004; Love & Martinez Peria, 2015).

3.2. Control variables and economic growth in Africa

Human capital has a strong negative relationship with economic growth in all estimations for the period. This is contrary to the endogenous growth theorist position that the level of education has a strong positive effect on economic growth. This means that in Africa, the level of education has an indirect impact on economic growth. The lack of direct influence of education on economic growth is an indication that the pedagogy of the educational system has not been tailored to support the economic growth prospects in Africa.

Government expenditure has a mixed impact on economic growth, depending on the variables we rotated in the estimations. In estimation 01, which includes the insignificant Boone Indicator, the level of government expenditure has a robust positive relationship with economic growth at the 5 per cent significance level. However, the Lerner index entered and produced a significant result; the level of government expenditure had a strong negative relationship with economic growth. The differences in the results can be partly attributed to differences in the number of observations. Still, it also shows that when the level of bank market power becomes growth-enhancing, the level of government consumption expenditure becomes harmful to economic growth. When the level of government effectiveness entered the model, the level of government expenditure also hurt economic growth. When all other institutional factors entered the respective estimations, the level of government expenditure positively affects economic growth. This implies that, in Africa, the effect of government expenditure on economic growth is conditional on the prevalence of other drivers of growth, namely, the degree of bank market power and quality of institutions.

Furthermore, inflation is positively related to economic growth and this result is consistent in all estimations. This is contrary to the general view that price volatility is detrimental to the growth prospects of many economies. McKinnon (1973) and Shaw (1973) suggest that economic repressions of all forms do not promote financial development. The level of financial development generally has positive influences on economic growth. Therefore, financial repression may not induce economic growth. However, in economies where there are fewer cyclical industries, inflation does not have a substantial impact on the activities of businesses. Businesses can transfer high prices to consumers for essential products such as drugs, food and financial services.

The level of foreign direct investment has a strong negative impact on economic growth. This result is consistent in all estimations. The existing literature explains that FDI may not influence positively on

Table 2. Summary statistics of the variables

	Mean	Median	Maximum	Minimum	Std. Dev.	Observations
GDPG	2.26	2.36	32.25	-36.83	4.53	615
HC	1.74	1.66	2.68	1.09	0.39	481
GEX	14.89	14.29	38.41	2.74	5.56	579
INF	6.94	5.57	44.39	-35.84	6.63	610
FDI	5.27	3.18	89.48	-4.02	7.88	613
BI	-0.07	-0.04	1.13	-3.20	0.24	529
LI	0.29	0.30	0.64	-1.15	0.16	388
EFREE	55.24	55.60	77.00	31.50	6.75	579
COR	-0.58	-0.66	1.25	-1.84	0.58	615
GE	-0.67	-0.67	1.04	-1.87	0.59	615
PS	-0.52	-0.36	1.18	-1.69	0.88	615
ROL	-0.61	-0.62	1.06	-1.86	0.59	615
RQ	-0.58	-0.55	1.12	-2.24	0.55	615
VOICE	-0.58	-0.71	0.97	-2.00	0.70	615

The table shows the summary statistics of the variables in this paper. GDPG is the growth of per capita gross domestic product (GDP), a measure of economic growth. H.C. is human capital, measured by the Barro-Lee (2014) average age of schooling published by Penn World Table Version 9.0. GEX is government expenditure measured by government final consumption expenditure as a ratio of GDP. INF is Inflation measured by the annual changes in the consumer price index. FDI is foreign direct investment measured by the inflow of foreign direct investment as a ratio of GDP. B.I. is Boone Indicator, a measure for bank market power, calculated in the GFDD (2017) as the coefficient of the regression between bank market share and bank market share aggregated at the country-level. LI is the Lerner Index, a measure of bank market power, calculated as the price of a bank minus marginal cost as a ratio of price aggregated at the country-level. TRADE is trade openness measured as the sum of export and imports as a ratio of GDP. EFREE is economic freedom, which is an index of twelve indicators, property rights, judicial effectiveness, government spending, fiscal health, business freedom, labor freedom, monetary freedom, trade freedom, investment freedom and financial freedom. The next sets of variables and their definition were culled from Kaufmann and Kraay (2010). COR is control of corruption and it measures on a scale -2.5 to 2.5, "perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as 'capture' of the state by elites and private interests." G.E. is government effectiveness. It measures on a scale -2.5 to 2.5, the perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. R.Q. is regulation quality (it measures on a scale -2.5 to 2.5), which captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. PS is political stability and absence of violence/terrorism. It captures, on a scale of -2.5 to 2.5, the perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism. ROL is the rule of law. It captures on a scale of -2.5-2.5, perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. And, VOICE is voice and accountability which measure on a scale of -2.5 to 2.5, capturing perceptions of the extent to which a country's citizens can participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.

Source: Author: Calculated from World Bank, Heritage Foundation and the Penn World Table Version 9.0 Data.

Table 3. Correlation matrix of the variables

	GDPG	HC	GEX	INF	FDI	BI	LI	EFREE	COR	GE	PS	ROL	RQ	VOICE
GDPG	1.00													
HC	0.04	1.00												
GEX	-0.04	-0.09	1.00											
INF	0.14	0.09	-0.22	1.00										
FDI	0.10	-0.08	-0.07	0.14	1.00									
BI	-0.18	-0.03	0.17	-0.12	-0.01	1.00								
LI	0.01	0.02	0.15	-0.03	-0.03	0.06	1.00							
EFREE	-0.03	0.47	-0.03	-0.04	-0.02	0.05	0.05	1.00						
COR	0.03	0.31	0.23	-0.15	-0.04	0.09	0.16	0.66	1.00					
GE	0.07	0.49	0.20	-0.13	-0.13	0.04	0.20	0.73	0.85	1.00				
PS	0.00	0.06	0.11	-0.22	0.02	0.18	0.05	0.40	0.62	0.57	1.00			
ROL	0.02	0.39	0.14	-0.16	-0.07	0.13	0.11	0.71	0.83	0.88	0.71	1.00		
RQ	0.00	0.44	0.19	-0.16	-0.04	0.06	0.07	0.80	0.78	0.87	0.62	0.86	1.00	
VOICE	0.01	0.21	0.10	-0.07	-0.11	-0.01	0.05	0.51	0.50	0.56	0.59	0.63	0.65	1.00

Source: Author: Calculated from World Bank, Heritage Foundation and the Penn World Table Version 9.0 Data

economic growth because economies may not have systems that harness the inflow of FDI into growth. For FDI to contribute to economic growth, the level of human capital, institutional quality and technological advancement should be able to accommodate the inflow of FDI toward growth. If the countries' absorptive capacity is weak, FDI inflow may not contribute to economic growth.

Finally, the level of trade openness in Africa induces economic growth in all estimations over the period. This is consistent with the general view that trade openness is a contributor to economic growth. Trade allows countries to import inputs and technology from other countries to support production. It also affords countries the opportunity to exports their output to other economies that have a positive effect on aggregate demand.

3.3. Institutional quality and economic growth in Africa

The study also sought to examine whether strong institutions positively influence economic growth in Africa. The institutional quality variables include economic freedom, control of corruption, government effectiveness, regulation quality, the role of law, political stability and voice of accountability. The results are shown in Table 4. The Table shows that there is no significant relationship between the level of economic freedom and economic growth in Africa. However, other institutional quality drivers have a strong positive correlation with economic growth in Africa.

Control of corruption has a strong positive and significant impact on economic growth in Africa. This means that if the economies reduce corruption, they will grow at a faster rate. This is consistent with the consensus that corruption retards growth in Africa. High rates of corruption divert resources meant for capital expenditure into the pockets of few corrupt officials that hampers the production of outputs with positive externalities. This result is consistent with the result in Fayissa and Nsiah (2013) which also found a strong positive impact of control of corruption on the economic growth of 39 countries in Africa in the period 1995 to 2004. However, Issahaku et al. (2018) found that control of corruption does not contribute to economic growth. The authors studied the relationship from the perspective of developing countries for the period 1996 to 2013 using the two-stage instrumental variables econometrics technique. The implication is that in some jurisdictions, the effort to control corruption yields no positive results on economic growth.

Government effectiveness also has a strong positive impact on economic growth in Africa. Table 4 shows, economic growth will improve by 11.68 per cent if Africa is committed to improving the quality of public services, the quality of civil services, the degree independence from political pressure, the quality of policy formulation and implementation as well as the degree of credibility of government's commitment to such policies. This implies that public services and their effectiveness are significant contributors to the growth prospects of Africa. This result is consistent with the results in Issahaku et al. (2018), which found that government effectiveness has a robust positive relationship with economic growth in high and upper-middle-income countries. The authors, however, found a substantial negative impact on government effectiveness and economic growth in lower-income countries and lower-middle-income countries. They stressed that government effectiveness hurt economic growth because of the low quality of institutions in those countries. Thus, improvement in government effectiveness in Africa is essential for high growth in per capita income.

Furthermore, regulation quality also has a strong positive impact on economic growth. In regimes where the governments have instituted and implemented responsive policies and regulations that allow the private sector to develop, economic growth would be high. This calls for continuous monitoring and strengthening of regulations that, for instance, allows the financial sector to provide greater credits to firms that heavily rely on external finance to implement their projects. This result is in line with the finding in Fayissa and Nsiah (2013), but the outcome is contrary to the one in Issahaku et al. (2018). Both the current study and Fayisa's paper applied the first difference dynamic GMM, whilst Issahaku's study used the two-stage least squares procedure.

Table 4. Bank market power, institutions and economic growth in Africa

Eq Name:	01	02	03	04	05	06	07	08	09
GDPG(-1)	-0.047 (0.015)***	0.029 (0.012)**	-0.001 (0.011)	0.092 (0.009)***	0.100 (0.015)***	0.089 (0.012)***	0.032 (0.022)	0.048 (0.012)***	-0.026 (0.019)
HC	-13.430 (2.044)***	-4.945 (1.632)***	-8.349 (2.161)***	-1.985 (1.636)	0.924 (3.007)	-2.993 (1.826)	-5.790 (3.280)	-6.321 (1.464)***	-10.189 (4.053)**
GEX	0.261 (0.033)***	-0.152 (0.021)***	0.056 (0.031)	0.303 (0.053)***	-0.104 (0.045)**	0.406 (0.049)***	0.407 (0.054)***	0.384 (0.041)***	0.221 (0.069)***
INF	0.028 (0.011)***	0.016 (0.005)***	0.004 (0.010)	0.028 (0.017)	0.021 (0.016)	0.020 (0.024)	0.065 (0.032)**	0.115 (0.015)***	0.054 (0.029)
FDI	-0.125 (0.028)***	-0.139 (0.019)***	0.037 (0.031)	-0.115 (0.010)***	-0.135 (0.045)***	-0.120 (0.014)***	-0.088 (0.013)***	-0.141 (0.015)***	-0.071 (0.040)
TRADE	0.117 (0.012)***	0.067 (0.007)***	0.055 (0.011)***	0.030 (0.002)***	0.019 (0.005)***	0.036 (0.002)***	0.045 (0.003)***	0.030 (0.002)***	0.035 (0.004)***
BI	0.325 (0.182)								
LI		2.404 (0.774)***							
EFREE			-0.025 (0.039)						
COR				5.312 (0.302)***					
GE					11.677 (1.000)***				
RQ						6.693 (0.572)***			
PS							5.578		

(Continued)

Table 4. (Continued)

Eq Name:	01	02	03	04	05	06	07	08	09
ROL							(0.490)***	9.896	
								(0.255)***	
VOICE									10.986
									(1.010)***
Observations:	348	292	361	386	386	386	386	386	386
AR(2):	0.985	0.195	0.607	0.998	0.997	0.975	0.937	0.937	0.503
Sargan Test:	0.303	0.281	0.342	0.260	0.386	0.303	0.343	0.274	0.381
No. of Cross Section	35	31	36	37	37	37	37	37	37

The dependent variable is GDPG. GDPG is the growth of per capita gross domestic product (GDP), a measure of economic growth. HC is human capital, measured by the Barro-Lee (2014) average age of schooling published by Penn World Table Version 9.0. GEX is government expenditure measured by government final consumption expenditure as a ratio of GDP. INF is Inflation measured by the annual changes in the consumer price index. FDI is foreign direct investment measured by the inflow of foreign direct investment as a ratio of GDP. BI is Boone Indicator, a measure for bank market power, calculated in the GFDD (2017) as the coefficient of the regression between bank market share and bank market share aggregated at the country-level. LI is the Lerner Index, a measure of bank market power, calculated as the price of a bank minus marginal cost as a ratio of price aggregated at the country-level. TRADE is trade openness measured as the sum of export and imports as a ratio of GDP. EFREE is economic freedom, which is an index of twelve indicators, property rights, judicial effectiveness, government spending, fiscal health, business freedom, labour freedom, monetary freedom, trade freedom, investment freedom and financial freedom. The next sets of variables and their definition were culled from Kaufmann and Kraay (2010). COR is control of corruption and it measures on a scale -2.5-2.5, "perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as 'capture' of the state by elites and private interests." GE is government effectiveness. It measures on a scale -2.5-2.5, the perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. RQ is regulation quality (it measures on a scale -2.5-2.5), which captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. PS is political stability and absence of violence/terrorism. It captures, on a scale of -2.5-2.5, the perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism. ROL is the rule of law. It captures on a scale of -2.5-2.5, perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. And, VOICE is voice and accountability which measure on a scale of -2.5-2.5, capturing perceptions of the extent to which a country's citizens can participate in selecting their government, as well as freedom of expression, freedom of association, and a free media. All equations were estimated using the first difference GMM econometric procedure. The language origins of African countries were used as transformed instruments. Other instruments include the logged values of both the dependent, the independent and control variables. All estimations were done with the help of EViews Version 9.0. AR(2) tests the Arellano and Bond second-order serial correlation and Sargan Test tests the hypothesis that the instruments correlate with the error term. ***significant at 0.01 level and **significant at 0.05 level.

Source: Author: Calculated from World Bank, Heritage Foundation and the Penn World Table Version 9.0 Data

This might have partly accounted for the differences in results. The dynamic GMM procedure produces results that apply to the short-run.

Next, the paper also examined the impact of political stability on economic growth in Africa. Acemoglu and Robinson (2012) posit that political systems largely determine differences in cross-country per capita income, emphasizing that sound political systems are essential for economic growth. Kaufmann and Kraay (2010) suggest that if the citizens do not harbour the feeling that their governments would be destabilized or overthrown, then the political system is sound and that can impact positively on the growth prospects of Africa (as the finding in this study and a host of others show). Our estimates show that political stability increases the growth rate of per capita income by about 5.58 standard deviations. In recent times, the African continent has enjoyed relative stability (except occasional scenes of protests and election petitions in Ghana, Gambia, Kenya and Togo). If Africa strengthens her level of political stability, it will have a more significant positive impact on economic growth.

Similarly, the level of the rule of law in Africa has a positive impact on economic growth. Increases in the rule of law will increase economic growth by close to 10 standard deviations and this impact is significant at the 1 per cent level. If the systems to ensure enforcement of contracts and laws, protection of property rights, sound adjudication of cases and avoidance of crime and violence were invigorated, the impact on economic growth would be more significant. Again, Fayissa and Nsiah (2013) found a similar result for 39 African countries.

Finally, voice and accountability have a strong positive impact on economic growth in Africa. This means that participative governance, freedom of expression, freedom of association and free media are beneficial for economic growth in Africa. The result is also consistent with the result in Fayissa and Nsiah (2013).

3.4. The role of institutions in bank market power-economic growth in Africa transmission

The next sets of empirical estimations allow us to test the hypothesis that the quality of institutions interacts with the level of bank market power to induce economic growth in Africa. The expectation is that in regimes of weaker institutions, bank market power serves as a substitute and facilitates the flow of external finance into productive sectors in Africa. In each of the estimations, 01, 02, ..., 09, we multiplied measures of institutional quality (economic freedom, control of corruption, government effectiveness, regulation quality, political stability, the rule of law and voice and accountability) by measures of bank market power (Boone Indicator). We then differentiated the effect of bank market power and interpreted the resulting relation: where is the coefficient of the relationship between bank market power and economic growth, is the coefficient of the interaction between bank market power and institutions and is the average of each of the seven measures of institutional quality. A positive interaction coefficient implies that both bank market power and a specific institutional measure are complementing in inducing economic growth.-

In contrast, a negative coefficient indicates that both are substitutes in inducing economic growth in Africa. We assume that the subscripts for countries and time are still in place. The results are presented in Table 5.

The interaction between bank market power and control of corruption has a strong positive impact on economic growth. The interaction increased economic growth by 2.43 (standard deviations when we differentiated the effect of bank market power, as I explained in the above. This shows that efforts to control corruption and the level of bank market power are complementary in inducing economic growth in Africa. Corruption will divert funds from the banking system into unproductive activities in Africa. If African countries control corruption, the banking system can do effective intermediation.

The interaction between the level of bank market power and the degree of economic freedom induces economic growth. The interaction term between the bank market power and economic freedom shows a complementary effect on economic growth. This result means that banks with

Table 5. The interaction effect of bank market power, institutions and economic growth in Africa

Eq Name:	01	02	03	04	05	06	07
GDPG(-1)	-0.059 (0.014)***	-0.054 (0.007)***	-0.042 (0.017)**	0.019 (0.035)	-0.069 (0.019)***	-0.063 (0.014)***	-0.068 (0.018)***
HC	-13.159 (2.091)***	-5.466 (0.880)***	-11.704 (2.446)***	-1.823 (5.309)	-12.761 (2.499)***	-14.047 (2.013)***	-10.039 (2.082)***
GEX	0.275 (0.038)***		0.292 (0.040)***	-0.243 (0.054)***	0.263 (0.096)***	0.238 (0.054)***	0.268 (0.044)***
INF	0.029 (0.011)**		0.012 (0.010)	0.045 (0.010)***	0.043 (0.010)***	0.022 (0.014)	0.116 (0.015)***
FDI	-0.112 (0.029)***	-0.004 (0.014)	-0.126 (0.031)***	-0.110 (0.036)***	-0.127 (0.039)***	-0.144 (0.028)***	-0.141 (0.025)***
TRADE	0.118 (0.013)***		0.109 (0.012)***	0.045 (0.011)***	0.100 (0.013)***	0.136 (0.014)***	0.084 (0.014)***
BI	4.800 (1.231)***	-26.641 (1.439)***	-1.843 (1.567)	17.735 (2.626)***	-8.544 (2.847)***	6.903 (2.461)***	-0.560 (2.040)
BI*COR	4.086 (1.112)***						
BI*EFREE		0.474 (0.027)***					
BI*GE			-1.825 (1.303)				
BI*RQ				24.914 (3.608)***			
BI*PS					-4.570 (1.440)***		
BI*ROL						5.568 (1.989)***	
BI*VOICE							-0.961 (2.452)
Observations:	348	334	348	348	348	342	348
AR(2):	0.947	0.987	0.977	0.995	0.979	0.874	0.997
Sargan Test:	0.364	0.313	0.250	0.431	0.262	0.230	0.369
Number of Cross Section	35	33	35	35	35	34	35

***significant at 0.01 level and **significant at 0.05 level.

Source: Author: Calculated from World Bank, Heritage Foundation and the Penn World Table Version 9.0 Data

market power require free economic systems to do effective intermediation that channel funds into the productive sector. The result is contrary to the findings in Fernandez et al. (2010), which found that bank concentration and the level of institutional quality are substitutes in inducing economic growth.

Furthermore, Table 5 also shows a strong positive interaction effect between regulation quality and bank market power towards economic growth. The estimated coefficient of the interaction effect is 3.285. This means that the regulation quality level in Africa complements the level of bank market power to induce economic growth. When regulations are reliable such as to facilitate the flow funds from the financial sector to the private sector, the level of bank market power has

Table 6. The interaction effect of bank market power, regional integration and economic growth in Africa

Eq Name:	01	02	03	04	05	06
GDPG(-1)	-0.048 (0.023)**	-0.035 (0.013)***	-0.006 (0.025)	-0.055 (0.017)***	-0.050 (0.016)***	-0.037 (0.019)
HC	-9.057 (3.302)***	-12.512 (2.240)***	-7.322 (2.932)**	-12.272 (1.709)***	-12.077 (2.210)***	-15.122 (3.109)***
GEX	0.072 (0.123)	0.272 (0.039)***	0.219 (0.062)***	0.234 (0.045)***	0.260 (0.044)***	0.292 (0.082)***
INF	-0.003 (0.023)	0.005 (0.013)	-0.034 (0.022)	0.011 (0.013)	0.013 (0.010)	0.016 (0.015)
FDI	-0.186 (0.051)***	-0.093 (0.037)**	-0.202 (0.041)***	-0.125 (0.026)***	-0.115 (0.027)***	-0.122 (0.034)***
TRADE	0.134 (0.021)**	0.107 (0.011)**	0.129 (0.024)**	0.104 (0.010)**	0.106 (0.014)**	0.099 (0.011)**
BI	-34.858 (6.657)***	0.354 (0.172)**	0.588 (0.284)**	0.226 (0.211)	0.269 (0.148)	0.304 (0.237)
BI*ECOWAS	35.574 (6.747)***					
BI*EAC		-38.136 (11.526)***				
BI*ECCAS			-65.366 (23.344)***			
BI*COMESA				-27.784 (6.544)***		
BI*ARABMAG					-35.466 (9.132)***	
BI*SADC						-16.621 (12.340)
Observations:	348	348	348	348	348	348
AR(2):	0.999	0.847	0.624	0.818	0.867	0.927
Sargan Test:	0.575	0.340	0.480	0.279	0.259	0.238
Number of Cross section	35	35	35	35	35	35

ECOWAS is a dummy which ascribes “1” if a country in African belongs to the Economic Community of the West African States and “0” otherwise. EAC is a dummy which ascribes “1” if a country in African belongs to the East African Countries and “0” otherwise. ECCAS is a dummy which attributes “1” if a country in African belongs to the Economic Community of the Central African States and “0” otherwise. COMESA is a dummy which ascribes “1” if a country in African belongs to the Economic Community of the West African States and “0” otherwise. ARABMAG is a dummy that ascribes “1” if a country in Africa belongs to Arabmaghreb Union and “0” otherwise. SADC is a dummy which attributes “1” if a country in African belongs to the Southern African Development Community and “0” otherwise.

Source: Author: Calculated from World Bank, Heritage Foundation and the Penn World Table Version 9.0 Data.

a positive effect on economic growth. The implication is that weak regulations in the less-competitive banking system in Africa leads to misallocation of funds from productive sectors.

On the contrary, the interaction between the level of political stability and bank market power is negative 6.168 and it is highly significant. This shows that the level of political stability and bank market power are substitutes. A stable political environment requires the banking system to be more competitive to induce higher growth. This means that as African countries are pursuing

political stability, they must also put in place mechanisms to make their banking systems more competitive to promote economic growth. In unstable political environments, a bank with market power can ensure effective intermediation to induce economic growth.

Finally, the interaction between the level of bank market power and the rule of law is positive 3.507. Again, this means that the level of bank market power and the rule of law in Africa are complements. The quality of the rule of law and bank market power must increase together to induce economic growth. The implication is that, given the level of bank market power, Africa must strengthen her mechanism to enforce laws and contracts protect the property and the rights of individuals and businesses; and ensure swift adjudication of cases in court. These have inducing-effects on economic growth in Africa.

Thus, when we analyzed the effect of each of the institutional quality factors, we realized that their interactions with the level of bank market power have various responses on economic growth. Studies, including the current one, have shown that institutional quality in Africa is lower relative to the level in high-income countries. Also, our descriptive analysis shows that the level of bank market power in Africa is even higher, implying that the banking system is less competitive. The interactions depict the multiplicative effect of low-quality institutional arrangements and less competitive banking systems on economic growth. The interaction terms, therefore, test the hypothesis, inherent in the relationship-banking hypothesis, that in the weaker institutional framework, a less competitive banking system allocates financial resources to productive sectors than a more competitive banking system. From the results, we find the confirmation of the hypothesis only in systems characterized by weaker political stability. The use of fixed-effect estimates in Appendix 1 also confirms the static relationship among variables.

3.5. The role of regional integration in bank market power- economic growth transmission in Africa

The interaction between bank market power and ECOWAS has a robust positive effect on economic growth in Africa. The coefficient of the interaction estimation is positive (0.716) and significant at the 1 per cent level. This means the less competitive banking environment in the ECOWAS region is beneficial to economic growth. The interaction between bank market power and EAC hurts economic growth. The coefficient of the interaction effect is negative 37.782 and significant, which signifies that bank market power does not promote economic growth in the East African Community. The interaction between the level of bank market power and ECCAS is negative (-64.778) and strong (significant at the 1 per cent level).

Furthermore, the level of bank market power in COMESA does not promote economic growth. Similarly, the empirical results show that the level of bank market power does not induce economic growth in the ARABMAG. Finally, the level of bank market power was not significant in explaining economic growth in the SADC sub-region. Thus, apart from the ECOWAS region, bank market power does not support economic growth in the other five sub-regions.

The results show exciting features of the growth-effects of less competitive banking systems in the various regions in Africa. In terms of cross-border banking, the evidence indicates that a more competitive banking environment would be growth-enhancing in ECCAS, COMESA, ARABMAG, and EAC since the less competitive system did not support economic growth. Therefore, regulations in those systems should be directed at improving the number of banks and financial products in those markets. The high level of competitiveness across ECOWAS partly drove the positive impact of bank market power on growth in the region. If the level of competitiveness in the region induces economic growth, then we also find support for the assertion that economic growth is higher in the more competitive banking environment. The policy makers in ECOWAS laise with the banks in their effort toward sustainable economic development since the banking system in that region appears responsive to the region's growth prospects. The evidence in this study undoubtedly provides useful information about how the banking system supports the developmental agenda of the AU and her regions. However, for the continuation of

the discourse on how the financial sector contributes to the growth orientation of the continent, researchers must adhere to the call and investigate how the integration of the banking systems can provide a synergetic effect on economic growth.

4. Conclusion

This study examines how banks with market power influence economic growth in Africa. Although prior studies carried out similar investigations, most did not conduct the research using aggregated country-level observations. By conducting the investigations in the context of Africa, we produce information concerning how the level of competitiveness in the banking system contributes to the sustainable growth plan by the AU. The paper also investigates how economic and governance institutions influence economic growth and interact with the level of bank market power to induce growth. The results confirm the relationship-banking hypothesis that suggests that large banks can allocate credits effectively even in systems of weaker institutions.

Finally, we analyze how the level of bank market influences growth in six sub-regions on the continent. This is to support discourses on how the characteristics of the sub-regional banking environment can support economic growth in the continent. We found that a more competitive banking environment in the various sub-regions would be beneficial to economic growth. This result is a contribution to the discussions that regional integration can induce the banking system to contribute to economic development.

Thus, the investigations are necessary because the information in this paper offers policy directions on how the banking system contributes to sustainable economic development in Africa and emerging economies in general. The paper proposes a finance-institution framework that can make Africa grow faster and develop her economic and governance institutions. When a state is not empowered to expand tax revenue or to exercise greater autocracies to ensure development, the country becomes a handicap. In that case, inadequate access to finance requires that there should be effective intercourse between the financial sector and the state machinery to induce sustainable development. The paper also portrays the avenues where public institutions can support (through sound policies) the financial sector to contribute to private sector development when the states in not empowered to raise revenue through taxation. We also found that in all sub-regions, a more competitive bank environment should be encouraged to induce economic growth. However, the study's conclusion is limited to the African countries included in the study. Further studies can replicate the analyses in other regions. Researchers can also implement a method that purport to model a comparative analyses on the issues in developing and developed nations.

Funding

The authors received no direct funding for this research.

Author details

Anthony Adu-Asare Idun¹
E-mail: aidun@ucc.edu.gh
Anthony Q. Q. Aboagye²
E-mail: qaboagye@ug.edu.gh
Godfred Alufar Bokpin²
E-mail: gabokpin@ug.edu.gh

¹ Department of Finance, School of Business, COHLS, University of Cape Coast, Cape Coast, Ghana.

² Department of Finance, University of Ghana Business School, Legon, Accra, Ghana.

Citation information

Cite this article as: The effect of bank market power on economic growth in Africa: The role of institutions, Anthony Adu-Asare Idun, Anthony Q. Q. Aboagye & Godfred Alufar Bokpin, *Cogent Economics & Finance* (2020), 8: 1799481.

References

- Acemoglu, D., Aghion, P., & Zilibotti, F. (2002). *Distance frontier, selection and economic growth*. NBER.
- Acemoglu, D., Johnson, S., & Robinson, J. A. (2001). The colonial origin origins of comparative development: An empirical investigation. *American Economic Review*, 91 (5), 1369–1401. <https://doi.org/10.1257/aer.91.5.1369>
- Acemoglu, D., & Robinson, J. (2012). *Why nations fail?: The origin of power, prosperity and poverty*. Crown Publishers.
- Acharya, V. V., Pedersen, L. H., Philippon, T., & Richardson, M. (2017). Measuring systemic risk. *The Review of Financial Studies*, 1-47.
- African Development Bank Group. (2010). *Financial sector integration in three regions of Africa*. Sildar.
- Agyei-Ampomah, S. (2011). Stock market integration in Africa. *Managerial Finance*, 37(3), 242–256. Retrieved from <https://doi.org/10.1108/03074351111113306>
- Allen, F., & Gale, D. (2004). Competition and financial stability. *Journal of Money, Journal of Money, Credit, and Banking*, 36(3),453-480.

- Amidu, M., & Wolfe, S. (2013). Does bank competition and diversification lead to greater stability? Evidence from emerging markets. *Review of Development Finance*(3), 152–166.
- Anzoategui, D., Martinez Peria, M. S., & Rocha, R. R. (2010). Bank competition in the Middle East and Northern Africa Region. *Review of Middle East Economics and Finance*, 6(2), 26–48. <https://doi.org/10.2202/1475-3693.1313>
- Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies*, 58(2), 277. <https://doi.org/10.2307/2297968>
- Barro, J. R., & Lee, J. (2013). *A new data set of educational attainment in the world 1950–2010*. <http://www.barrolee.com>
- Beck, T., Demirgüç-Kunt, A., & Maksimovic, V. (2004). Bank competition and access to finance: International evidence. *Journal of Money, Credit and Banking*, 36(3), 627–648. <https://doi.org/10.1353/mcb.2004.0039>
- Bempong, E., & Sy, M. (2015). The banking system in Africa: Main facts and challenges. *African Economic Brief*, 6(5), 1–16.
- Berger, A. N., Hasan, I., & Klapper, L. F. (2004). Further evidence on the link between finance and growth: An international analysis of community banking and economic performance. *Journal of Financial Services Research*, 25(2/3), 169–202. <https://doi.org/10.1023/B:FINA.0000020659.33510.b7>
- Blancheton, B., & Opara-Opimba, L. (2013). Foreign direct investment in Africa: What are the key factors of attraction other than natural resources? *Savings and Development*, 37(1), 1–34. <https://www.jstor.org/stable/savideve.37.1.1>
- Bonaccorsi Di Patti, E., & Dell’Ariccia, G. (2004). Bank competition and firm creation. *Journal of Money, Credit and Banking*, 36(2), 225–251. <https://doi.org/10.1353/mcb.2004.0011>
- Boone, J. (2008). A new way of measuring competition using the profit elasticity: American sugar industry, 1890–1914. *The Economic Journal*, 118(531), 1245–1261. <https://doi.org/10.1111/j.1468-0297.2008.02168.x>
- Boubakri, N., El Ghouli, S., & Saffar, W. (2015). Firm growth and political institutions. *Journal of Multinational Financial Management*, 31(3), 104–125. <https://doi.org/10.1016/j.mulfin.2015.05.003>
- Cetorelli, N. (2001). Competition among banks: Good or bad? (Economic Perspectives, 2/Q). Federal Reserve Bank of Chicago.
- Cetorelli, N., & Peretto, P. F. (2012). Credit quantity and credit quality: Bank competition and capital accumulation. *Journal of Economic Theory*, 147(3), 967–998. <https://doi.org/10.1016/j.jet.2012.01.006>
- Cetorelli, N., & Strahan, P. (2006). Finance as a barrier to entry: Bank competition and industry structure in local U.S. markets. *Journal of Finance*, 61(1), 437–461. <https://doi.org/10.1111/j.1540-6261.2006.00841.x>
- Clarke, M. Z. (2004). Geographic deregulation of banking and economic growth. *Journal of Money, Credit and Banking*, 36(5), 929–942. <https://doi.org/10.1353/mcb.2004.0072>
- Clerides, S., Delis, M. D., & Kokas, S. (2015). A new data set on competition in national banking markets. *Financial Markets, Institution & Instruments*, 24(2–3), 267–311. <https://doi.org/10.1111/fmii.12030>
- Dell’Ariccia, G. (2000). *Learning by lending, competition and screening incentives in the banking industry*. Washington DC: International Monetary Fund.
- Demirgüç-Kunt, A., & Maksimovic, V. (1998). Law, finance, and firm growth. *The Journal of Finance*, 53 (6), 2107–2137. <http://www.jstor.org/stable/117462>.
- Diallo, B. (2015). Bank competition and crises revisited: New results. *Economic Letters*, 129(1), 81–86. <https://doi.org/10.1016/j.econlet.2015.02.015>
- Djankov, S., McLiesh, C., & Shleifer, A. (2007). Private credit in 129 countries. *Journal of Financial Economics*, 84 (1), 299–329.
- Fayissa, B., & Nsiah, C. (2013). Impact of governance on economic growth in Africa. *Journal of Developing Areas*, 47(1), 91–108. <https://doi.org/10.1353/jda.2013.0009>
- Fernandez, A. I., Gonzalez, F., & Suarez, N. (2010). How institutions and regulations shape the influence of bank concentration on economic growth. *International Review of Law and Economics*, 30(1), 28–36. <https://doi.org/10.1016/j.irl.2009.09.001>
- Fernandez, A. I., Gonzalez, F., & Suarez, N. (2013). How do bank competition, regulation, institutions shape the real effect of banking crises? International evidence. *Journal of International Money and Finance*, 33 (3), 19–40. <https://doi.org/10.1016/j.jimonfin.2012.10.002>
- Fernandez de Guevara, J., & Maudos, J. (2011). Banking competition and economic growth: Cross-country evidence. *The European Journal of Finance*, 17(8), 739–764. <https://doi.org/10.1080/1351847X.2011.554300>
- Fernández de Guevara, J., & Maudos, J. (2007). Explanatory factors of market power in the banking system. *Manchester School*, 75(3), 275–296. <https://doi.org/10.1111/j.1467-9957.2007.01017.x>
- Fosu, S. (2013). Banking competition in Africa: Subregional comparative studies. *Emerging Market Review*, 15(2), 233–254. <https://doi.org/10.1016/j.ememar.2013.02.001>
- Ghosh, S. (2016). Political transition and bank performance: How important was the Arab Spring?. *Journal of Comparative Economics*, 44(2), 372–382.
- Global Financial Development Database (GFDD) (2017). Washington, DC: The World Bank.
- Guzman, M. G. (2000). Bank structure, capital accumulation and growth: A simple macroeconomic model. *Economic Theory*, 16(2), 421–455. <https://doi.org/10.1007/PL00004091>
- Gwartney, J. D., Lawson, R. A., & Holcombe, R. G. (1999). Economic freedom and the environment for economic growth. *Source: Journal of Institutional and Theoretical Economics (Jite)/zeitschrift Für Die Gesamte Staatswissenschaft*, 155(4), 643–663.
- Hahn, R. W. (1984). Market Power and Transferable Property Rights. *The Quarterly Journal of Economics*, 99(4), 753–765. Retrieved from <http://www.jstor.org/stable/1883124499753>
- Haselip, J. (2014). Book review: Why nation fail by Daron Acemoglu and James Robinson. *The Extractive Industries and Society*, 1, 119–120. 1 doi:10.1016/j.exis.2013.10.001
- Heritage Foundation (2018). *2018 index of economic freedom*. Heritage Foundation. www.heritage.org.
- Issahaku, H., Abor, J. Y., & Amidu, M. (2018). The effect of remittances on economic growth: Reexamining the role of institutions. *The Journal of Developing Areas*, 52(4), 29–46. <https://doi.org/10.1353/jda.2018.0050>
- Jayaratne, J., & Strahan, P. E. (1996). The finance growth-nexus: Evidence from bank branch deregulation. *Quarterly Journal of Economics*, 111(3), 639–670. <https://doi.org/10.2307/2946668>

- Jennings. (2013). Institutions and prosperity. *European Journal of Political Economy*, 29(3), 252–258. <https://doi.org/10.1016/j.ejpolco.2012.10.001>
- Kaufmann, D., & Kraay, A. (2010). *World governance indicators 2016*. World Bank.
- Keeley, M. (1990). Deposit insurance, risk and market power in banking. *American Economic Review*, 80, 1183–1200.
- Kim, H., Park, K., & Song, S. (2016). Banking market size structure and financial stability: Evidence from eight Asian countries. *Emerging Markets Finance & Trade*, 52(1), 975–990. <https://doi.org/10.1080/1540496X.2015.1025653>
- King, R., & Levine, R. (1993). Finance, entrepreneurship and growth: Theory and evidence. *Journal of Monetary Economics*, 32(1), 513–542.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1998). Law and Finance. *Journal of Political Economy*, 106 (6), 1113–1155. <http://www.jstor.org/stable/10.1086/250042>
- La Porta, R., Lopez-De-Silanes, F., Shleifer, A., & Vishny, R. W. (1997). Legal determinants of external finance. *The Journal of Finance*, 52 (3), 1131–1150. <http://www.jstor.org/stable/2329518>
- Lagoarde-Segot, T., & Lucey, B. M. (2007). Capital market integration in the Middle East and North Africa. *Emerging Markets Finance & Trade*, 43(3), 34–57. <https://doi.org/10.2753/REE1540-496X430303>
- Leon, F. (2016). Does the expansion of regional cross-border banks affect competition in Africa? Indirect evidence. *Research in International Business and Finance*, 37(3), 66–77. <https://doi.org/10.1016/j.ribaf.2015.10.015>
- Leon, F. (2015). Does bank competition alleviate credit constraints in developing countries? *Journal of Banking & Finance*, 57(3), 130–142. <https://doi.org/10.1016/j.jbankfin.2015.04.005>
- Levine, R. (1998). The legal environment, banks, and long-run economic growth. *Journal of Money, Credit and Banking*, 30(3), 596–613. Retrieved from <http://www.jstor.org/stable/2601259> doi:10.2307/2601259
- Liu, G., Mirzaei, A., & Vadoros, S. (2014). The impact of bank competition and concentration on industrial growth. *Economics Letters*, 124(1), 60–63. <https://doi.org/10.1016/j.econlet.2014.04.016>
- Lorenc, A. G., & Zhang, J. Y. (2018). *The differential impact of bank size on systemic risk* (Finance and Economics Discussion Series 2018-066). Board of Governors of the Federal Reserve System. <https://doi.org/10.17016/FEDS.2018.066>
- Love, I., & Martínez Pería, M. S. (2015). How bank competition affects firms' access to finance. *The World Bank Economic Review*, 29(1), 413–448. <https://doi.org/10.1093/wber/lhu003>
- Lucas, R. E. (1988). On the mechanics of economic development. *Journal of Monetary Economics*, 22(1), 3–42. [https://doi.org/10.1016/0304-3932\(88\)90168-7](https://doi.org/10.1016/0304-3932(88)90168-7)
- Mahoney, P. G. (2001). The common law and economic growth: Hayek might be right. *The Journal of Legal Studies*, 30 (2), 503–525. <http://www.jstor.org/stable/10.1086/322053>
- Mankiw, N. G., Romer, D., & Weil, D. N. (1992). A contribution to the empirics of economic growth. *Quarterly Journal of Economics*, 107(2), 407–437. <https://doi.org/10.2307/2118477>
- McKinnon, R. (1973). *Money and capital in economic development*. Brookings Institution.
- Mirzaei, A., & Moore, T. (2014). What are the driving forces of bank competition across different income groups of countries? *Journal of International Financial Markets, Institutions & Money*, 32(3), 38–71. <https://doi.org/10.1016/j.intfin.2014.05.003>
- Mitchener, K. J., & Wheelock, D. C. (2013). Does the structure of banking markets affect economic growth? Evidence from U.S. state banking markets. *Explorations in Economic History*, 50(2), 161–178. Elsevier.
- Nguyen, M., Skully, M., & Perera, S. (2012). Bank market power and revenue diversification: Evidence from selected ASEAN countries. *Journal of Asian Economics*, 23(6), 688–700. <https://doi.org/10.1016/j.asieco.2012.08.004>
- Pagano, M. (1993). Financial markets and growth: An overview. *European Economic Review*, 37(2–3), 613–622. [https://doi.org/10.1016/0014-2921\(93\)90051-B](https://doi.org/10.1016/0014-2921(93)90051-B)
- Petersen, M. A., & Rajan, R. G. (1994). The benefits of lending relationships: Evidence from small business data. *The Journal of Finance*, 49(1), 3–37. <https://doi.org/10.1111/j.1540-6261.1994.tb04418.x>
- Petersen, M. A., & Rajan, R. G. (1995). The effect of credit market competition on lending relationships. *Quarterly Journal of Economics*, 110(2), 407–443. <https://doi.org/10.2307/2118445>
- Romer, P. M. (1986). Increasing returns and long-run growth. *The Journal of Political Economy*, 94(5), 1002–1037. <https://doi.org/10.1086/261420>
- Romer, P. M. (1990). Endogenous technical change. *Journal of Political Economy*, 98, 71–102. <https://doi.org/10.1086/261725>
- Sachs, J. D. (2003). Institutions don't rule: Direct effects of geography on per capita income. NBER Working Paper No. 9490, JEL No. O11, P16, P51, R11.
- Sengupta, R. (2007). Foreign entry and bank competition. *Journal of Financial Economics*, 84(2), 502–528. <https://doi.org/10.1016/j.jfineco.2006.04.002>
- Shaw, E. S. (1973). *Financial deepening in economic development*. Oxford University Press.
- Siddiqui, D. A., & Ahmed, Q. M. (2013). The effect of institutions on economic growth: A global analysis based on GMM dynamic panel estimation. *Structural Change and Economic Dynamics*, 24, 18–33. <https://doi.org/10.1016/j.strueco.2012.12.001>
- Stiglitz, W. (1989). Imperfect information in the product market. In R. Schmalensee & R. Willing (Eds.), *Hand of industrial organization* (Vol. 1). Elsevier.
- Williamson, C. R., & Mathers, R. L. (2011). Economic freedom, culture, and growth. *Public Choice*, 148(3/4), 313–335.
- World Bank. (2007). *Financial sector integration in two regions of Sub-Saharan Africa*.
- World Bank (2017a) (GFDD, 2017). *Global financial development report 2017*.
- World Bank (2017b) (WDI, 2017). *World development indicator report 2017*.
- World Bank. (2018). *Global Financial Development Database (GFDD)*. Washington, DC: The World Bank.

Appendix 1: Results from the Random Effect Estimations

<i>Eq Name:</i>	01	02	03	04	05	06	07	08
<i>Dep. Var:</i>	GDPG	GDPG	GDPG	GDPG	GDPG	GDPG	GDPG	GDPG
C	0.885 (1.015)	1.842 (1.469)	1.724 (1.288)	1.458 (1.445)	-0.205 (1.298)	1.385 (1.256)	0.590 (1.308)	1.067 (1.356)
GDPG(-1)	0.123 (0.044) ***	0.192 (0.059) ***	0.125 (0.073)	0.116 (0.051)**	0.121 (0.049)**	0.116 (0.049)**	0.119 (0.052)**	0.121 (0.048)**
HC	-0.057 (0.542)	-0.144 (0.524)	0.185 (0.683)	-0.428 (0.618)	0.615 (0.651)	-0.420 (0.538)	0.168 (0.582)	-0.155 (0.563)
GEX	0.020 (0.038)	-0.036 (0.052)		0.006 (0.047)	0.052 (0.046)	0.008 (0.045)	0.024 (0.046)	0.012 (0.047)
INF	0.085 (0.028) ***	0.077 (0.038)**		0.086 (0.031) ***	0.081 (0.030) ***	0.090 (0.030) ***	0.081 (0.031) ***	0.086 (0.031) ***
FDI	0.040 (0.036)	0.033 (0.045)	0.057 (0.032)	0.037 (0.025)	0.056 (0.024)**	0.032 (0.026)	0.045 (0.023)	0.039 (0.025)
TRADE	0.006 (0.009)	0.005 (0.009)		0.008 (0.009)	-0.000 (0.010)	0.008 (0.009)	0.005 (0.009)	0.007 (0.009)
BI	2.379 (3.425)		-38.903 (7.462) ***	-5.105 (4.918)	9.791 (4.342)**	-5.128 (3.398)	6.195 (5.679)	0.072 (2.809)
BI*COR	4.012 (3.138)							
LI		-3.459 (3.792)						
LI*EFREE		0.070 (0.061)						
BI*EFREE			0.686 (0.135) ***					
BI*GE				-2.952 (4.876)				
BI*RQ					14.547 (5.097) ***			
BI*PS						-1.735 (1.850)		
BI*ROL							6.785 (4.544)	
BI*VOICE								2.571 (4.167)
<i>Observations:</i>	386	310	390	386	386	386	386	386
<i>R-squared:</i>	0.086	0.090	0.088	0.084	0.151	0.085	0.095	0.084
<i>F-statistic:</i>	4.422	3.743	7.455	4.340	8.384	4.365	4.920	4.319
<i>Hausman Test</i>	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000



© 2020 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY) 4.0 license.

You are free to:

Share — copy and redistribute the material in any medium or format.

Adapt — remix, transform, and build upon the material for any purpose, even commercially.

The licensor cannot revoke these freedoms as long as you follow the license terms.

Under the following terms:

Attribution — You must give appropriate credit, provide a link to the license, and indicate if changes were made.

You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

No additional restrictions

You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits.



***Cogent Economics & Finance* (ISSN:) is published by Cogent OA, part of Taylor & Francis Group.**

Publishing with Cogent OA ensures:

- Immediate, universal access to your article on publication
- High visibility and discoverability via the Cogent OA website as well as Taylor & Francis Online
- Download and citation statistics for your article
- Rapid online publication
- Input from, and dialog with, expert editors and editorial boards
- Retention of full copyright of your article
- Guaranteed legacy preservation of your article
- Discounts and waivers for authors in developing regions

Submit your manuscript to a Cogent OA journal at www.CogentOA.com

