Banking Market Structure in Sub-Saharan Africa: The Role of Institutions

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ABSTRACT

This study presents how institutions could affect the structure of the banking market in SubSaharan Africa in the era of *mobile banking*. Covering a sample of 40 countries from 2007 to 2017, the results show that institutions are a potential determinant of bank concentration and market share. Moreover, these results differ depending on whether the country is French-speaking or English-speaking. Better quality institutions could improve the structure of the banking market in either region, although the focus is on the French legal system.

La structure du marché bancaire en Afrique Subsaharienne : le rôle des institutions

Résumé : Cette étude présente comment les institutions pourraient affecter la structure du marché bancaire en Afrique Subsaharienne à l'ère du *mobile banking*. Portant sur un échantillon de 40 pays et couvrant la période 2007 à 2017, les résultats montrent que les institutions constituent un potentiel déterminant de la concentration bancaire et de la part de marché. En outre, ces résultats diffèrent selon qu'on est en zone francophone ou en zone anglophone. Les institutions de meilleure qualité pourraient améliorer la structure du marché bancaire dans l'une ou l'autre de ces deux régions bien qu'un accent soit mis sur le système juridique français.

Keywords: banking structure, institutions, Sub-Saharan Africa, *mobile banking*.

JEL classification : G18, G20, G28

INTRODUCTION

The banking market in the sub-region is marked by numerous variables that affect its structure. Research in market structure are numerous, as economists seek to understand the functioning and performance levels of the companies that make up the market. Carlton et al (2008) define market structure as all the factors that contribute to a market's competitiveness. Banking market structure attracted the attention of researchers early, because of the sensitive nature of money, which constitute the main transaction on this market.

The state of the banking market in the Sub-Saharan Africa (SSA) sub-region presents different statistics from one monetary zone to another. For example, in the CEMAC zone, banking market concentration in terms of total assets passed from 2,528 to 2,134 in 2015, then to 2,215 in 2019 (BEAC, 2020)[1]. As far as the East African zone is concerned, taking the concentration ratio, which is defined as the share of banking assets held by the three largest banks in the zone, it is the lowest of all the zones in the sub-region (BEI, 2020)[2]. Overall, the concentration ratio of the three largest domestic banks in our study area has been declining year after year. In 2007, it was 76.04%; the following year, it was 72.25%. In 2015, it fell to 65.44% and in 2017, 64.58%; a market structure in which concentration is above average. But the steady decline in this ratio is becoming worrying, and we might wonder about the reasons for it (appendix 1).

Statistics on banking markets in the sub-region are not always reflect the performance of these markets,

but rather due to abstention from risk taking by some banks in the region (Allen et al., 2015). However, we wonder about the factors that might explain the banking market structure in sub-Saharan Africa. In other words, we want to identify the factors that can be taken into account to ensure that the banking companies that make up the market in this region perform as well as those in other regions, both in terms of management and risk taking.

In terms of management, the banking industry in the sub-region is strongly affected by the institutional and legal environment. These include barriers to market entry and exit, the legislative framework and banking regulation. Some studies have focused on the effect of regulation and institutional quality on banking market structure (Gonzalez, 2009). From the point of view of risk taking, the private sector in the sub-region is essentially made up of SMEs/SMIs, whose balance sheets are not always attractive to banks.

We focus on the determinants of market structure since they affect not only bank profitability, but also the financing of the economy. Since the work of Mason (1939), several authors have focused on this notion. Most of their studies have focused on the relationship between market structure and profitability, or vice versa. There is an abundant literature on market structure. Originally, authors were interested in all firms in the market. Later, industrial organization economists began to focus their studies on market structure in various sectors. The determinants of market structure thus vary according to the field of study.

Mason (1939), as mentioned above, places market structure at the center of industrial economics. Based on the relationship between prices and production policies, the effect of a firm's organization on market reactions and the elements of market structure, the author finds it necessary to clarify the concepts of market and market structure. He adopts Pigou's definition, according to which "the market is a nodal point at which a product, whose units are perfectly substitutable for one another, is available for purchase and sale". Thus, the market and market structure must be defined in terms of a single seller or buyer. According to him, the structure of a seller's market includes all the considerations that determine commercial policies, and its market then includes all the sellers and buyers that can affect its sales volume.

For greater precision, Bain (1954), on the basis of Mason's work and his own work initiated in 1951, continues to establish a relationship between the observed specificities of market structures and firm performance. In order to carry out his studies, he defined the concepts of industry and degree of industry concentration[3]. He relates industry to the concept of demand, and considers it to be a group of companies or a division thereof producing entirely within a production group that is its close substitute. As for the degree of industry concentration, it refers to the proportion of the combined production volume of this production group offered by one, four, eight or twenty firms.

Building on the work of his predecessors, Bain (1956) redefined market structure as the set of elements that affect the interactions of firms participating in the market. These elements are based on specific market variables, and include market concentration (supply and demand), barriers to market entry, product and service differentiation, and regulation. Collins and Preston (1969) then focused their research on consumer goods, showing that price-cost margins have a positive effect on concentration.

Following the work of Mason (1939) and Bain (1959, 1968), several authors joined the field of industrial economics. These authors contributed with new variables, including the basic or fundamental conditions of the industrial environment, the characteristics of the economic environment and economic policies (Arena et al., 1988; Chevalier, 1995). However, very few studies focus solely on the determinants of market structure.

Most of their work focuses on the relationship between market structure and the other elements of the trilogy[4] of industrial economics. The studies that followed gradually moved away from market structure and focused solely on one or the other components of the Structure-Conduct-Performance (SCP) model that make up market structure. These studies constitute the new evolutionary theories of industrial organization economics.

Towards the 1970s, a number of empirical studies emerged, forming a strong theoretical basis. This was the work of authors such as Demsetz (1973), whose research on 95 sectors of activity highlighted economies of scale, the specific know-how of certain firms, and their reputation. Following him, Schmalensee (1989) shows that firms' strategic behavior can modify market structure in the long term. It becomes difficult to estimate the effects of independent variables, since they are interrelated. The assumption of long-run market equilibrium makes it impossible to identify exogenous explanatory variables for firm and market performance. Thus, market structure is no longer exogenous as in the SCP model. Rather, it is endogenous, deriving from the strategic behavior and performance of the firms present on the market.

Strickland and Weiss (1976) go beyond concentration and focus instead on product differentiation as a measure of market structure. Their study focuses on advertising expenditure. Capon et al. (1990) follow this logic, confirming Bain's analyses. They add growth, degree of capitalization, size and level of marketing to their analysis. For Scherer and Ross (1990), elements of market structure include the size of actors, degree of differentiation, presence or absence of barriers to entry, and degree of diversification.

More recently, Carlton et al. (2008) show that market structure indicators are used to reflect the degree of market competition. For him, the absolute concentration ratio is expressed in terms of the market shares of the top *n* companies; i.e., the ratio of sales (revenues) to employees, value added and many others.

The work of Mason and Bain has enabled researchers to broaden the scope of their research and to focus on each market segment, which is well-defined in terms of various sectors of activity. We are focusing our research on the structure of the banking market, a study that is timely given the intermediation role played by banks in the economic system. A number of studies have also attempted to understand the relationship between banking market structure and bank profits (Berger, 1995; Berger and Hannan, 1997). All these studies have only taken into account bank-specific variables, regulations and macroeconomic variables. Very few studies have focused solely on the determinants of banking market structure.

One study of the determinants of banking market structure is that by Gonzalez (2009), cited above, which explored institutional variables. But his sample was made up of several banks from a mix of developed and developing countries. Such a mix could bias his various results, since the contexts are not the same, especially at institutional level. We are studying this theme in the SSA sub-region, and are approaching institutions from two angles: historical and qualitative. In addition to the institutional aspect, we take account of online banking (*mobile banking*).

Our work completes the existing literature on banking market structure in three aspects. First, we explore new variables. These are institutional variables that will enable us to verify the historical contribution and quality of institutions. Some of these variables are external to the banking market, but are likely to affect its functioning. Secondly, we're checking the effect of mobile banking, which we'll be measuring with Internet users. This is because, these days, the volume of banking transactions carried out online via the Internet is considerable, and the financial system is growing rapidly. As a third point, we analyze its determinants in two legal systems: the French legal system (civil law) and the English legal system (*common law*). Such a study could help policy makers to take action to promote the development of banking markets. Such development can only lead to greater access to bank financing for companies, a source of economic growth.

The rest of this work is organized as follows: section 2 presents the institutions in relation to the structure of the banking market, section 3 describes the methodology, section 4 presents the results and interpretations, section 5 shows the robustness tests and section 6 concludes the paper.

CONSIDERATION OF INSTITUTIONS IN THE STRUCTURE OF THE BANKING MARKET

Since North's (1990) work on institutions, which he defines as any form of constraint that human beings

devise to frame human interactions, many authors have been interested in this notion. So far as institutions influence our thoughts and actions, and are therefore crucial to a nation's economic growth and development. Institutions are generally classified into four groups: (1) legal institutions, which include the legal system and the definition and application of legal rules; (2) economic institutions, which refer to the set of rules governing the production, allocation and distribution of goods and services, and also include market regulation policies; (3) political institutions, which include the political system and electoral rules; (4) and social institutions.

For the purposes of our study, we restrict ourselves to the first two groups, which are likely to affect the structure of the banking market. In order to assess their effect on banking market structure, we group them under three headings: legal origin, banking supervision and control, and institutional quality.

2.1- Legal origin

The legal origin is based on the theory of law and finance, whose proponents are La Porta et al (1996, 1997, 1998, 2000). The latter are interested in the differences in levels of financial development due to membership of legal institutions. Their work can be organized into two points: (1) These researchers show that in countries where the legal system facilitates contracts between private agents and protects property rights as well as those of investors, agents with financing capacity are more motivated to invest in promising projects. Hence the expansion of financial markets and, by extension, banking markets. On the other hand, a legal system that does little to protect property and investor rights is a brake on the expansion of the financial system. (2) The second point refers to the type of law distinguished by these authors. These are civil law and *common law*. They show that *common law* countries have better protection of investors' rights and contracts. This favors financial development, unlike civil law, which offers little protection for investors. Legal origin thus affects the structure of the banking market through two channels: policy and adaptability (Kpodar, 2006).

Regarding the political mechanism, La Porta et al (1996) show that the French system protects private property rights (correlative to state property rights) less than the English system. This would explain the differences observed in financial systems. These legal systems differ in terms of private versus state property rights. Kpodar (2006) shows, for example, that in developing countries, the state is often the largest borrower in the local banking system. Its payment schedules are therefore free of any barrier, as the banks are unable to take it to court. The direct consequence of this is a reduction in the amount of credit available to the private sector, and a consequent increase in financial intermediation costs. In developing countries, the executive takes precedence over the judiciary. This predominance of the state over all other powers means that it has a stranglehold on all sectors of activity, including markets and even the banking market. This state control weakens existing institutions and affects the profitability of banking institutions, and hence the structure of their market, which is highly dependent on bank profitability.

With regard to the adaptability mechanism, researchers in the theory of law and finance have shown that legal systems differ in their ability to evolve and adapt to the needs of the economy in terms of contracts. Systems that adapt easily will be able to stimulate financial development and hence the structure of the banking market. Financial development goes hand in hand with the sophistication and diversification of financial assets as a result of innovation in the sector. The introduction of such new products and services requires a revision of legal texts. Studies have shown that the legal institutions that can ensure that innovation propels the financial sector towards development are those of English law.

In addition to the work of La Porta et al. Several other authors have studied the effect of legal origin on financial development. Levine (1998, 1999) builds on the work of his predecessors and relates legal origin to financial development and economic growth. Beck et Levine (2002) studied the channels through which legal origin influences financial development in a sample of 54 countries and found that legal origin acts on financial development through the adaptation channel.

However, some researchers, such as Stulz (2000), have departed from this theory, pointing out that legal origin is a variable that does not vary over time, and belongs to the distant past of the country in question. However, the financial variables used evolve over time, which does not solve the problem of omitted variables. For Rajan and Zingales (2003), the time-invariant legal origin alone cannot explain the variations over time and the differences in the level of financial development between countries. What's more, some civil law countries, such as Crete, have a level of development comparable to that of other Anglo-Saxon law countries in Asia, demonstrating the limitations of this theory.

2.2- Banking supervision and control

Since the publication of Barth et al. (2001a) database on banking regulation and supervision, research into the relationship between banking supervision and the functioning of the banking system has gained momentum. Most of this work focuses on the effect of these institutional variables on financial development (Levine et al., 2000; Barth et al., 2001b). The strong points of this banking regulation relate to: (1) the nature and independence of the supervisory agency, (2) the scope of the supervisory agency's powers, (3) restrictions on banking activity, (4) deposit insurance and (5) the accounting framework. In addition to these regulatory principles are the 25 basic principles formulated by the Basel Committee to ensure better monitoring of the market and banking activity with a view to achieving better returns.

Very few studies have taken into account the effect of institutional variables linked to banking supervision on the structure of the banking market. DemirgücKunt et al. (2003) examine the link between regulation, banking market structure, institutions and the cost of financial intermediation. He concludes that acute banking regulation leads to a reduction in the efficiency of the financial system. These results are similar even when profitability measures are controlled by bank concentration. More recently, Gonzalez (2009), as mentioned above, has also incorporated these variables into his study of the determinants of banking market structure. He considers three political economy variables, among others: the characteristics of banking regulation (legal restrictions on bank entry and non-traditional banking activities, and the generosity of deposit insurance), banking supervision (private and official) and the quality of institutions and applicability of contracts in a country. These results show that greater market supervision and higher-quality institutions are associated with greater market concentration and market share.

2.3- Institutional quality

Gonzalez (2009) in his research finds that the three measures of quality of the institutional environment used have similar effects on concentration and market share. These three indicators of institutional quality include: (1) the Kaufman et al. (2001) index, calculated as the average of six indicators: voice and accountability in the political system, political stability, government effectiveness, regulatory quality, rule of law, control of corruption; (2) the law and order index of the International Country Risk Guide; (3) the property rights and economic freedom index used by La Porta et al. (1998).

These parameters are all important for the functioning of a market and the protection of companies operating in it, than for risk taking in banking. In the same direction, a number of studies have shown that weak institutions hamper financial development (Levine, 2003; Kpodar, 2006), thereby adversely affecting bank performance ratios and disrupting the functioning of the banking market.

METHODOLOGY

3.1- Empirical modeling

To analyze our data, we use two estimation techniques: OLS and a dynamic effects model. The OLS method enables us to estimate our basic model. Although it does not take into account all measurement

errors, nevertheless it minimizes the impact of experimental errors. In moreover, it allows us to control for country heterogeneity for variables that are structural and stable over time. To correct for possible OLS errors, we use a linear panel data model with individual or unobserved effects. It is generally defined as follows : $y_{it} = \alpha_i + \beta' X_{it} + \varepsilon_{it}$

Where α_i is the individual effect. The next step is to check whether α_i should be treated as a fixed effect or a random effect; *i* and *t* represent the individual effect and the time effect respectively. We use random effects model because of the presence of dummy variables in the model (legal origin variables). The random effects model has the advantage of being a compound error model. It includes a fixed term and a random term specific to each individual and controlling for individual heterogeneity (Goaied and Sassi, 2012).

The model is formulated as follows : $y_{i,t} = \alpha_i + \sum \beta_i X_{i,t} + \sum \lambda_p \varphi_{p,i} + \varepsilon_{i,t}$

The specific individual effect α_i comprises two components : α *and* μi

i.e. $\alpha_i = \alpha + \mu_i$, α is the constant and $?_i$ the unobservable individual effect.

The model becomes : $y_{i,t} = \alpha + \sum \beta_i X_{i,t} + \sum \lambda_p \varphi_{p,i} + \mu_i + \varepsilon_{i,t}$

Drawing on the work of Demirgüç-Kunt et al. (2003), we specify our model as follows :

$$C = f(B, M, I, I') \quad (1)$$

$$PM = f(B, M, I, I') \quad (2)$$

Where *C* is the concentration index, *B* the set of variables specific to the banking market, *M* the matrix of macroeconomic variables, *I* the institutional variables and *I'* the innovation variable. In equation (2), *PM* represents market share, which is the alternative measure of banking market structure. This relationship also validates the EFS hypothesis and will be estimated for robustness.

Based on the estimation techniques used in this chapter, we specify our model as follows :

$$C_{i,t} = \alpha_0 + \alpha_1 B_{i,t} + \alpha_2 M_{i,t} + \alpha_3 I_{i,t} + \alpha_4 I'_{i,t} + \mu_{i,t} \quad (3)$$

$$PM_{i,t} = \beta_0 + \beta_1 B_{i,t} + \beta_2 M_{i,t} + \beta_3 I_{i,t} + \beta_4 I'_{i,t} + \mu_{i,t} \quad (4)$$

and are the coefficients of the regression. and refer to the country and time.

Relationships (3) and (4) allow us to assess our results using the OLS method. This estimation technique does not take into account possible errors in the measurement of variables, still less the bias of omitted variables and double causality between variables. To correct for these potential biases, we define a dynamic model with fixed or random effects, depending on the results of the Hausman test. This estimation technique allows us to take into account country specific and time related effects. The model is as follows :

$$C_{i,t} = \alpha_0 + \alpha_1 B_{i,t} + \alpha_2 M_{i,t} + \alpha_3 I_{i,t} + \alpha_4 I'_{i,t} + \gamma_i + \lambda_t + \mu_{i,t} \quad (5)$$

$$PM_{i,t} = \beta_0 + \beta_1 B_{i,t} + \beta_2 M_{i,t} + \beta_3 I_{i,t} + \beta_4 I'_{i,t} + \gamma_i + \lambda_t + \mu_{i,t} \quad (6)$$

Where γi and λi are the unobserved country and time-specific effects.

3.2- Variables and data

Several measures are used to capture market structure. Four (4) measures are commonly used in the literature: market concentration, market share, the Herfindahl index and the number of firms (banks) in the market.

Market concentration is the most widely used measure of market structure in the literature, both for the market in general and the banking market in particular. The concentration ratio measures the potential influence and collusion of sellers in the market (Kaufman, 1966). Bain (1954), as mentioned above, defines the degree of concentration as the proportion of the combined production volume of that production group offered by one, four, eight or twenty firms. In the banking market, this is the fraction of banking assets held by a country's m largest commercial banks. The relationship is defined as follows : $CR_m = \sum_{i=1}^{m} \frac{X_i}{X}$

With CR_m the concentration ratio of the m largest banks, X_i the bank's assets i where i is the index of the i-th largest bank and X the sum of the assets of all the country's commercial banks. This ratio can also be defined in terms of market share; thus, concentration would be equal to the sum of the market shares of the m largest firms (banks). Mathematically, we have : $C_m = \sum_{i=1}^{m} S_i$

With C_m measuring concentration and S_i the bank's market share i.

Most studies use the concentration ratio of the country's three (3) largest banks. These include studies by Berger (1995), Goldberg et Rai (1996), Demirgüç-kunt et al. (2003), Gonzalez (2009) and many others. Although the concentration ratio has several limitations, it is one of the indicators of market structure available to researchers. Shepherd (1964) argues that, eventhough the concentration ratio has many shortcomings, it is a direct and fairly clear indicator of an industry's structure. We use this variable in our study. It is calculated as the share of assets held by the three largest banks in the total assets of the country's commercial banks.

One of the most widely used indicators of banking market structure in the literature is market share. Among the authors who have used it in their studies are Berger and Hannan (1997) and Gonzalez (2009). It is calculated as the fraction of bank assets in relation to the total assets of the country's commercial banks. $S_i = \frac{A_i}{A_t}$ with A_t assets of the country's commercial banks. This measure will be used as an alternative variable to analyze the sensitivity of our results. It is measured by a proxy variable for measuring efficiency. This is the ratio of bank costs to income, calculated as the quotient of total costs to income for all the country's commercial banks.

Institutional variables are measured by legal origin and three indicators of institutional quality from Kaufman et al. (2002) (KKZ index). To measure legal origin, we use: French origin (civil law), British origin (*common law*) and other types of law[5]. Following Gonzalez (2009), the three indicators of institutional quality we use include: the rule of law, i.e. protection of people and property against violence and theft, independent and effective judges and enforcement of contracts; voice and accountability, i.e. citizens are free to choose their government and enjoy political rights, civil liberties and freedom of the press; and regulatory quality, relating to the relative absence of government control over the goods market and its interference with the banking system. In addition to the KKZ index, this author used two other indices of institutional quality: (1) the International Guide to Public Order and Country Risk Index, and (2) the Property Rights and Economic Freedom Index. We find significantly similar results for these indicators. For our purposes, we prefer these variables, which are perfectly correlated with each other (see Table 2). The results show that institutions have a negative effect on concentration and a positive effect on market share. These indices range from -2.5 to2.5, with higher values indicating higher-quality

institutions. Thesevariables are all likely to have a positive effect on measures of banking market structure.

The other explanatory variables we use in this study consist of (1) Specific banking market variables, which include the bank's net interest margin (NIM), calculated as the book value of interest on net income relative to interest on average assets (total earnings), it measures the bank's profitability; operating expenses, calculated as the share of operating costs in total assets and used to measure the efficiency of the banking market; the liquid liabilities ratio (or money supply M3), calculated as the quotient of money supply to GDP and used to measure the depth of the banking system; and the liquidity ratio, calculated as the quotient of bank loans to bank deposits and used to measure the stability of the banking sector. The net interest margin and liquid liabilities[6] are expected to show positive signs, while overheads and the liquidity ratio are assumed to have a negative effect on the structure of the banking market, as their increase is a sign of inefficiency and instability in the banking system; (2) Macroeconomic variables comprising the annual GDP growth rate, the inflation rate and trade. The assessment of these variables is beneficial for the structure of the banking market insofar as their evolution affects financial development and is diffused throughout the banking market via performance ratios, with the exception of the inflation rate, which has a negative impact on banking market indicators, as the increase in the inflation level is positively linked with that of the interest rate. This will result in a reduction in credit offered, as borrowers will prefer to wait until interest rate conditions return to normal before applying for a loan (Sahile et al., 2015).

To these variables, we add *mobile banking*, which is a financial innovation variable. Financial innovation is measured by a proxy variable, internet users. This variable is assumed to have a positive effect on the structure of the banking market, since it is a driver of growth and hence of financial development.

Our data are from secondary sources and come from several databases : WDI for macroeconomic variables, FDSD for banking market variables, WGI for regulatory quality and legal origin comes from La Porta et al. (1998). Our sample is organized as a panel and spans the period 2007-2017. This study area is preferred insofar as poor governance weakens institutions, as we have shown from the outset of this paper. In addition, statistics on the concentration ratio show a decrease in this ratio over the study period, and there is a strong disparity between countries as regards the structure of the banking market.

The correlation between measures of banking market structure and institutional variables is shown in figure 1 and figure 2. In both cases, the trend is the same. We observe a negative correlation between the two measures of market structure and the institutional variables. A relationship that is favorable for market share and detrimental for concentration.

Figure 1: Market structure and institutional variablesSource: Author, based on Stata

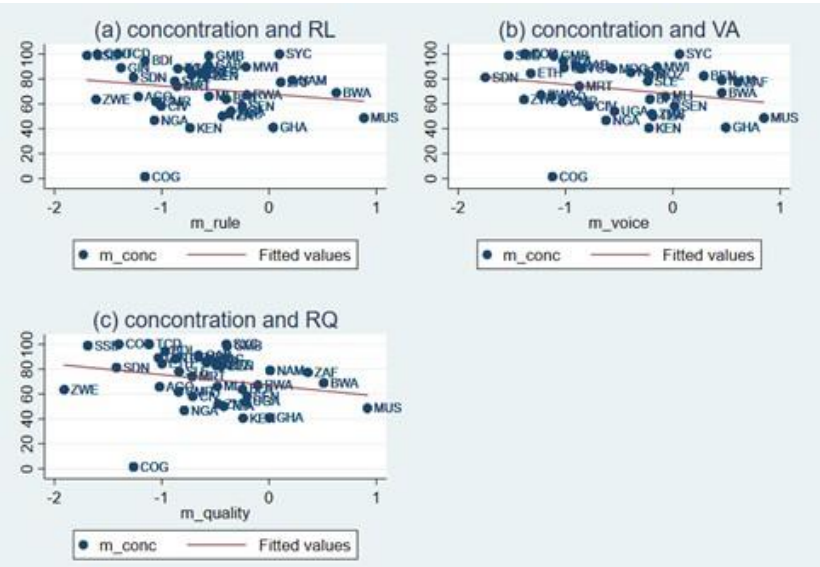
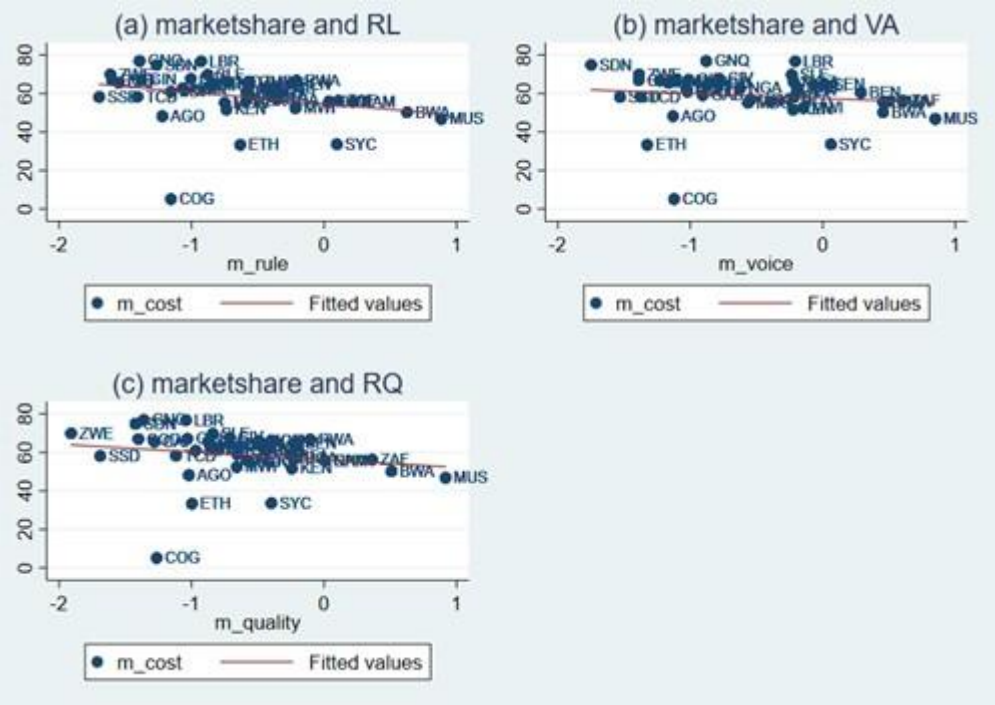


Figure 2: Market share and institutional variables



Source: Author, based on Stata

Table 1 gives the descriptive statistics for each variable; the average concentration ratio over the period is 70.93%, with a standard deviation of 20.74%. This ratio varies between -1.35 and 100%. In terms of market share, we can see that the banking market in SSA has a less efficient market structure, as the ratio is above average. Market share is measured by a proxy for efficiency. This is the cost to income ratio of assets. The higher the ratio, the less efficient the banking system.

Table 1: Description of variables

Variables	**Observations**	**Mean**	**Standard déviations**	**Minimum**	**Maximum**
Concentration	364	70,93	20,74	-1,35	100
Market share	424	58,85	15,34	2,63	100
Rule of law	436	0,69	0,61	-1,94	0,99
Voice/accountancy	436	0,55	0,67	-1,84	0,94
Regulatory quality	436	0,64	0,58	-2,16	1,13
Civil law	440	0,38	0,48	0	1
Common law	440	0,43	0,49	0	1
Liquid liabilities	416	1,11	2,26	1,71	4,6
Overhead	419	5,64	2,88	0,01	29,23
NIM	415	7,1	7,58	0,01	100
Liquidity ratio	416	74,38	24,59	8,14	131,11
GDP/capita	437	4,5	5,29	-46,08	20,76
Inflation	417	8,75	21,72	-8,97	379,85
Trade	433	76,09	36,31	19,1	311,35
Internet	431	12,01	13,11	0,24	62

Correlation matrices are given in Tables 2, 3, and 4. Institutional variables have mostly negative effects on banking market concentration and market share. The concentration ratio is found to be negatively related to bank profitability and economic growth.

Table 2: Correlation between market structure and institutions

	Concentration	Market share	Rule ol law	Voice and accountancy	Regulatory quality	Civil law	Common law
Concentration	1						
Market share	0,21	1					
Rule of law	-0,13	-0,23	1				
Voice and accountancy	-0,23	-0,13	0,81	1			
Regulatory quality	-0,18	-0,14	0,91	0,79	1		
Civil law	0,07	0,02	-0,22	-0,14	-0,12	1	
Common law	-0,25	-0,04	0,3	0,25	0,25	-0,56	1

Table 3 : Correlation between market structure and specific variables

	Concentration	Market share	NIM	Liquid liabilities	Overhead	Liquidity ratio
Concentration	1					
Market share	0,21	1				
NIM	-0,27	-0,21	1			
Liquid liabilities	-0,13	-0,01	-0,09	1		
Overhead	0,06	0,43	0,3	-0,14	1	
Liquidity ratio	-0,1	0,12	-0,24	0,29	-0,22	1

Table 4: Correlation between market structure and macroeconomic variables

	Concentration	Market share	GDP per capita	Inflation	Trade	Internet
Concentration	1					
Market share	0,21	1				
GDP per capita	-0,13	-0,07	1			
Inflation	0,01	-0,09	-0,2	1		
Trade	0,19	-0,16	0	0,02	1	
Internet	-0,17	-0,08	-0,1	-0,06	0,19	1

RESULTS AND INTERPRETATION

Table 5 shows the results of the OLS estimations. Variables are introduced progressively and by group into the model. Column (5) gives the results of the overall model. The explanatory variables explain banking market concentration at 0.47% (R-squared = 0.47). Column (1) contains the regression results of the institutional variables on market concentration. Of the six institutional variables used, four are significant.

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The rule of law is significant at 5%. So, if the rule of law were to improve by one point, market concentration would increase by 11.59 points. This result can be interpreted in three points: (1) when people's security is assured, they are motivated to invest in large projects, which requires recourse to the bank. As a result, people will increasingly turn to the bank. This will be reflected in bank performance through profitability ratios, which in turn will positively affect the structure of the banking market through its measures, including concentration; (2) the rule of law also implies the presence of effective, independent judges. Under these conditions, economic agents, including households, will be able to trust the judicial system and save more. Similarly, they will more often turn to bank financing, to the detriment of informal financing such as tontines and many others; (3) This result also implies that when contract enforcement is guaranteed, the concentration of the banking market benefits. In fact, the establishment of a bank loan requires the signing of a contract in which the parties (bank and borrowers) agree on the contractual clauses. The bank has the right to take legal action against its debtor in the event of default, and even to seize the collateral in the event of total default when all means of recourse have failed. Borrowers have a duty to respect the purpose of the credit and the payment schedule. The execution of contracts in a country requires each contracting party to respect its commitments. As a result, claims arising from repayments will contribute to increasing bank assets, which in turn will boost market concentration (Kaufman et al., 2002).

The second significant variable is voice and accountancy index. This variable would explain the concentration at 7.20 points. This result is negative and contrary to our expectations, meaning that this measure of institutions has a negative effect on market structure. The interpretation we can make at this level is based on three points referring to the three elements that enter into the definition of voice and accountancy (Kaufman et al., 2002). The first aspect concerns the freedom of citizens to choose their government. However, in the developing countries that make up the bulk of our sample, citizens have no influence over the electoral process, the people's choice is not always respected, the political authorities make their choice triumph, and in these conditions, economic agents tend to abstain from bank financing. Only those customers who are favored by the political system in place will be able to continue banking without worry. The number of bank customers will therefore decline, and this will be reflected in the structure of the market through specific banking variables. The second element concerns civil liberties. When people in a country are not free in terms of their civil rights, this can be an obstacle to entrepreneurship. When citizens are not free to choose their government, this automatically affects their civil liberties. The result is a reduction in their investment plans and commitments to banks. The third aspect of the Voice and accountancy indicator concerns freedom of the press. The government that imposes itself on the people will also influence the press. The information conveyed by the latter will not always be in favor of the market, but rather in their favor. Banking market authorities will not arbitrate transactions with a view to better structuring the banks operating there, but rather with a view to protecting their own interests.

Table 5: Basic results

Variables	Concentration				
	(1)	(2)	(3)	(4)	(5)
Rule of law	**11.59****				**28.68*****
	(4.546)				**(4.536)**
Voice and accountancy	**-7.203*****				**-12.95*****
	(2.738)				**(2.370)**
Regulatory quality	**-9.190****				**-20.79*****
	(4.539)				**(4.126)**
Civil law	-4.741				1.323
	(4.384)				(3.630)
Common law	**-12.65*****				**-14.18*****

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	(4.384)				(3.630)
Common law	**-12.65*** **				**-14.18*** **
	(3.959)				**(3.483)**
Other righs	-1.168				0.179
	(4.002)				(3.337)
NIM		**-0.905*** **			**-0.985*** **
		(0.133)			**(0.114)**
Overhead		0.0463			**0.903***
		(0.417)			**(0.524)**
Liquid liabilities		**-7.47e-05****			**0.000223*** **
		(3.69e-05)			**(4.11e-05)**
Liquidity ratio		**-0.220*** **			**-0.301*** **
		(0.0487)			**(0.0489)**
GDP per capita			**-0.728*** **		**-0.769*** **
			(0.245)		**(0.238)**
Inflation			-0.0754		-0.153
			(0.167)		(0.159)
Trade			**0.129*** **		**0.165*** **
			(0.0367)		**(0.0359)**
Internet				**-0.289*** **	**-0.405*** **
				(0.0868)	**(0.0817)**
Constant	77.27***	95.08***	65.23***	**75.69*** **	**98.71*** **
	(4.526)	(5.106)	(3.455)	**(2.289)**	**(8.081)**
Observations	362	344	347	**358**	**326**
R-squared	0.122	0.162	0.059	**0.030**	**0.471**
		Ecarts types entre parenthèses			
		*** p<0.01, ** p<0.05, * p<0.1			

The quality of regulation can be broken down into two key points: the absence of government control over the market, and government interference in the banking system. A one-point improvement in this variable leads to a decrease in banking market concentration of 9.19 points, which is contrary to our expectations. This result can be explained by (i) State intervention in the economy (including the market) disrupts the law of supply and demand, whereas classical theory has shown that the market regulates itself, with supply adjusting to demand in such a way that equilibrium is always assured. However, the majority of sub-Saharan African states control all the economic sectors of their nations. This sometimes excessive intervention is a source of instability on the banking market. (ii) Some members of the government are shareholders in certain banking institutions. In the event of a dispute between banking institutions, the state will tend to protect the banks whose shareholders are part of the system. In developing countries, the executive is above the judiciary. Disputes are decided in favor of the system in place, not in accordance with the law. When certain companies are favored in the market over others, this creates situations of tension and disorder in the market. This has repercussions on the range of services offered by banks, and consequently on banking ratios, including the concentration ratio. These results run counter to those obtained by Gonzalez (2009).

With regard to measures of legal origin, only one variable is significant: *common law*. Its coefficient is negative, contrary to our expectations. The significance of this variable shows that legal origin could explain 12.65 points of the variations in the concentration ratio. This result is not surprising insofar as the colonial past of sub-Saharan African countries has a significant impact on their economies. Legal systems differ from one colonial power to the next, and sometimes do not correspond to the habits and customs of the colonies. It is also for this reason that the applicability of laws in the colonies causes problems (Kpodar, 2006). In countries where two legal systems meet, having been colonized by two imperial powers, the situation is much more complicated, since both claim to be the originator of legal texts, while some judges complain that the texts submitted to them are incomprehensible (La Porta et al., 2008). This is the case in countries like Cameroon. This claim to ownership of legal texts is sometimes a source of conflict, tension and instability in these countries. All these problems may explain the negative effect of legal origin on the structure of the banking market, since it is these laws that frame the markets, including the banking markets.

When all model variables are included in the estimates (column (5)), the same variables that were significant in the regression of institutional variables on concentration remain significant, and the coefficients bear the same signs. There is a slight increase in these coefficients. For example, the coefficient for the rule of law rose from 11.59 to 28.58. For the variable voice and accountancy, its coefficient rose from -7.20 to -12.75. The coefficient for regulatory quality rose from -9.19 to -20.79. For the *Common law* variable, its coefficient rose from -12.65 to – 14.18. These variables thus confirm the effect of institutions on banking market structure. Our results confirm those of Demirgüç-Kunt et al (2003), who found a negative impact of institutional variables on the NIM on banking assets. However, according to the theory of the structuralist model, this NIM has a positive and direct relationship with the structure of the banking market. Our results thus run counter to those obtained by Gonzalez (2009), who found a positive effect of institutional environment variables on market concentration. This may be due to the fact that his sample comprised a mix of developed and developing countries.

We also assessed the effect of individual bank-specific variables on market concentration. The results are shown in column (2) of Table 5. Three variables are significant and negatively affect concentration: net interest margin, liquid liabilities and liquidity ratio.

The net interest margin (NIM) is significant, and its coefficient has a negative sign. A one point increase in NIM results in a 0.91 point decrease in the concentration ratio. This result can be interpreted in two essential ways.

- From an institutional point of view, it is clear that the efforts made in terms of structures are not reflected in the banks' profitability. For a market to function perfectly, it must be able to rely on contracts and their enforceability, as well as their binding legal nature. A number of studies have shown that weak legal systems and institutional infrastructures hinder market development (La Porta et al., 2000; Levine, 2003).
- Through the elements that go into making up the market structure (including the banking market's specific control variables), marginal net interest could have a negative effect on concentration since these elements are closely linked to bank performance. However, Allen et al. (2015) showed that bank profitability results fall short of expectations, although these ratios are high compared to other regions of the world. Thus, the resulting gap could exert a negative influence on market concentration.

The money supply is significant and negatively affects market concentration. This result is inconsistent with our expectations and implies that increasing bank deposits would have a negative impact on market structure. The interpretation we can give here is twofold.

On the one hand, banks in sub-Saharan African countries are generally over-liquid, as they do not take too much risk in granting credit. Some profitable, growth-generating projects are not always financed due to

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credit rationing. Although banks are able to support the full amount allocated to these projects, they prefer not to do so in order to protect themselves against counterparty risk. One reason for this may lie in the weakness of banks' institutions, which does not encourage them in their role of financing the economy.

On the other hand, the majority of investment projects in developing countries are microprojects, and often lack the documentation needed to apply for bank financing. Such projects do not attract the attention of bankers. They prefer to keep their usual credit portfolios rather than add risky loans.

The result for the liquidity ratio is as expected, and shows that a one-point increase in this ratio leads to a 0.22-point drop in the concentration ratio. An increase in this ratio is a sign of instability in the banking market. Loans will exceed deposits, showing that banks are using their reserve requirements to finance projects. A decrease in this ratio would therefore be beneficial for an efficient market structure.

The results for bank-specific variables in column (5), where all determinants are taken into account, show that these variables are all significant. The signs are always the same, with the exception of the sector size indicator (money supply), whose positive sign is the expected sign. Thus, when all variables likely to have an effect on market structure are introduced into the regression, the money supply effect becomes beneficial for market concentration. Alongside this result, another surprising one is that of operating costs, which becomes significant. But with an unexpected effect on concentration. This shows that the inefficiency of the banking system is positively associated with the structure of the banking market. This result can be explained by the fact that operating costs are very high in sub-Saharan Africa, and tend to have a negative impact on the structure of the banking market.

Among the macroeconomic variables used, two are significant: GDP per capita growth rate and trade. The GDP coefficient is negative and unexpected. Trade has a positive effect, in line with our expectations. These results are the same when all variables are introduced into the model. GDP is negatively related to concentration. There is an assumption that economic growth has a positive effect on financial development (Kpodar, 2004). This positive effect of growth on financial development should be reflected in market structure through bank performance ratios, but this is not the case. One reason for this is the negative sign of the net interest margin.

For the other variables, the innovation measure is significant, and its coefficient has a negative sign. This result shows that innovation negatively affects the structure of the banking market in sub-Saharan Africa. This could be due to institutions not adapting easily to change and the adoption of new products.

Thus, all the significant variables in either regression should attract the attention of decision makers, since the signs are mostly contrary to expectations and show a reducing effect of these determinants on market concentration, evidence of an inefficient structure of the banking market in sub-Saharan African countries.

The random-effects results are given in Table 6. The Chi-2 probability of the Hausman test results is above the 10% threshold. Thus, this test does not allow us to choose between the fixed-effects model or the random-effects model. We choose the random-effects model for two reasons:

- Legal origin is a time-invariant variable, and we want to see its marginal effect on the structure of the banking market.
- Inter-country variability is greater than within-country variability. Therefore, the *R2 Between* which is most relevant to random effects and which is 0.48 is higher than the *R2 Within which* is 0.21.

Estimates were made by group of variables, and overall as in the OLS model. In this paragraph, we present some of the differences in results.

Table 6: Random effects results

Variables	Concentration				
	(1)	(2)	(3)	(4)	(5)
Rule of law	-1.145				4.172
	(4.008)				(4.374)
Voice and accountancy	**-12.42*** **				**-12.02*** **
	(3.318)				**(3.366)**
Regulatory quality	2.235				1.144
	(3.553)				(3.728)
Civil law	-7.660				-2.322
	(9.320)				(6.645)
Common law	-9.077				-5.789
	(9.104)				(6.573)
NIM		**-0.595*** **			**-0.767*** **
		(0.164)			**(0.150)**
Overhead		0.106			-0.0111
		(0.274)			(0.420)
Liquid liabilities		**-0.000223*** **			**-0.000124***
		(6.93e-05)			**(6.51e-05)**
Liquidity ratio		**-0.158*** **			**-0.101** **
		(0.0469)			**(0.0466)**
GDP per capita			-0.0594		-0.111
			(0.114)		(0.138)
Inflation			**0.177***		0.146
			(0.0929)		(0.107)
Trade			**0.0651***		0.0318
			(0.0396)		(0.0414)
Internet				**-0.329*** **	**-0.242*** **
				(0.0453)	**(0.0541)**
Constant	**73.17*** **	**90.89*** **	**66.07*** **	**75.85*** **	**87.12*** **
	(8.152)	**(4.997)**	**(4.485)**	**(3.878)**	**(8.561)**
Observations	362	344	347	358	326
r2_overall	0.0809	0.116	0.0307	0.0258	0.247
r2_between	0.0893	0.374	0.0599	0.00112	0.475
r2_within	0.0716	0.0417	0.0199	0.159	0.206
	Standard deviations in brackets				
	*** p<0.01, ** p<0.05, * p<0.1				

When we take into account the marginal effect of legal origin on the structure of the banking market, which evolves over time, no measure of legal origin is significant. Only one institutional environment variable remains significant. This is the voice and accountancy variable. The coefficients are almost similar in the two regressions (columns (1) and (5)), -12.42 and -12.02. This result is similar to that obtained

for MCOs (-12.95). Thus, only institutional quality affects the structure of the banking market. This result is in line with those of Rajan and

Zingales (2003), who showed that a non-variable factor such as legal origin alone cannot explain differences in development levels.

The results in column (2) of Table 6 show a similarity with those of the basic model. The same variables specific to the banking market are significant, and the coefficients carry the same negative signs. The only difference lies in the result of the efficiency measure, which remains insignificant even in the global model.

Net interest margin is significant and remains negative, thus rejecting one of the hypotheses of the structuralist school, which postulates a positive relationship between market structure and profitability. This hypothesis is not verified in the Sub-Saharan African sub-region. These results confirm those obtained by Demirgüç-Kunt et al (2003), who found a negative relationship between concentration and net interest margin.

The results of the regression with macroeconomic variables are shown in Table 6 column (3). Inflation and trade are found to be significant, with positive coefficients. Inflation has an unexpected effect, which may be due to the fact that profitability exerts a negative pressure on banking market concentration. This is because a rise in the inflation rate is reflected in the bank's key interest rates. This forces bank customers to reduce their financial transactions as much as possible until interest rate conditions return to normal (Francis, 2009).

The Internet variable, a measure of innovation, is also significant, but its influence on concentration remains negative. As mentioned above, all the variables likely to increase profitability will have a reducing effect on the structure of the banking market, as the two concepts are negatively related. All these significant variables thus constitute the determinants of banking market structure in sub-Saharan Africa. The following paragraph presents the robustness of our results.

ROBUSTNESS TESTS

To analyze the sensitivity of our results, we proceed in two ways: we use an alternative measure of market structure and then estimate our model by country group: common law and civil law countries. We also use *Generalized Method of Moments* (GMM) in a system because of its advantages. It solves the problems of simultaneity bias, double causality and omitted variables. The probabilities associated with the Sargan/Hansen overidentification and Arrelano and Blond autocorrelation tests are all significant, confirming the validity of the model. The results are given in appendix 2 and are similar to those obtained by OLS method.

The alternative dependent variable we use is market share, as described above. The proxy variable used to capture its effects is the cost to income ratio of banking assets. Its assessment reflects the inefficiency of the banking market. Indeed, the literature shows that efficiency measures can be used to capture market share. The results are shown in Table 7, using a random effects estimation technique. The results are similar to those obtained when the dependent variable is the concentration ratio.

Table 7: Market share as an alternative measure

Variables	Market share				
	(1)	(2)	(3)	(4)	(5)
Rule of law	-3.278				-0.970
	(4.183)				(3.669)
Voice and accountancy	-4.704				**-5.529****

	(3.241)				**(2.538)**
Regulatory quality	3.131				0.116
	(3.675)				(3.205)
Civil law	-2.294				-1.314
	(5.004)				(3.114)
Common law	-0.535				-4.410
	(4.959)				(3.186)
NIM		**-0.645*** **			**-0.767*** **
		(0.0877)			**(0.0919)**
overhead		**1.794*** **			**1.750*** **
		(0.218)			**(0.275)**
Liquid liabilities		-1.40e-05			2.27e-05
		(4.27e-05)			(4.56e-05)
Liquidity ratio		0.0419			-0.0164
		(0.0375)			(0.0408)
GDP per capita			-0.114		-0.00343
			(0.107)		(0.113)
Inflation			**-0.0849*** **		**-0.0914*** **
			(0.0276)		**(0.0263)**
Trade			**-0.0570***		**-0.0653*** **
			(0.0307)		**(0.0249)**
Internet				0.0660	0.0702
				(0.0560)	(0.0522)
Constant	**56.97*** **	**51.21*** **	**64.17*** **	**57.97*** **	**60.49*** **
	(4.604)	**(3.346)**	**(3.080)**	**(2.132)**	**(5.699)**
Observations	420	391	399	415	368
r2_overall	0.0304	0.285	0.0430	0.00652	0.388
r2_between	0.0401	0.610	0.0257	0.0245	0.735
r2_within	0.0142	0.122	0.0401	0.00612	0.191
	Standard deviations in brackets				
	*** p<0.01, ** p<0.05, * p<0.1				

The results in column (1), when institutional variables alone are included in the model, show that none of these variables is significant. When all the variables in the model are taken into account, the same variable that was significant in the previous model is still significant, but in different proportions. Its coefficient is 5.53, with a negative sign, which is in line with our expectations. Thus, the indicator of institutional quality, voice and accountability is a decisive variable for the structure of the banking market. This indicator clearly shows the importance of the institutional environment on the banking market. Higher institutional quality has a direct effect and is positively associated with banking market share. This result also implies that institutions are positively associated with banking market efficiency in Sub-Saharan Africa.

Two specific banking variables are significant. These are marginal net interest and operating expenses, and the signs are in line with our expectations. Marginal net interest would determine changes in market share at 0.77 points, and operating expenses at 1.75 points. The results are the same in columns (2) and (5).

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These results show that bank-specific variables are positively associated with banking market efficiency. The EFS model's hypothesis that efficient companies with a better market share would make supernatural profits is thus put forward.

The results for the macroeconomic variables in columns (3) and (5) are similar, the signs are negative and the coefficients have the same values in both regressions, 0.09 for inflation and 0.06 for trade. The inflation results are contrary to our expectations. They show that an increase in inflation would be beneficial for market share. Trade is helping to improve the efficiency of the banking market.

We have also analyzed the robustness of our results by estimating by legal system, i.e. according to measures of legal origin: civil law and common law. The regression results are presented in Table 8. The estimation technique used is OLS. The results are poorer in francophone countries than in anglophone ones.

The Francophone zone's institutional variables, which are significant, influence concentration positively for regulatory quality. These variables lose their significance when all the control variables are introduced into the model. This is not the case in the English-speaking zone. Of the six institutional variables in the model, five are significant, with two negative and three positive coefficients. With the exception of innovation, all the other variables in the model are significant in the English-speaking zone. Only three variables explain the structure of the banking market in the French-speaking zone: NIM, liquid liabilities and inflation. In all cases, the signs are contrary to expectations. These results confirm that banking markets in English-speaking countries are more efficiently structured than those in their francophone neighbors.

Table 8: Results by legal system

VARIABLES	Concentration			
	Civil law		Common law	
Rule of law	-1.237	1.890	7.545	**18.18****
	(12.56)	(9.372)	(7.480)	**(7.502)**
Voice and responsibility	-8.668	-5.428	**-23.96*****	**-29.23*****
	(6.369)	(4.561)	**(3.734)**	**(3.915)**
Regulatory quality	**69.37*****	5.876	**-11.04****	**-15.74*****
	(13.82)	(11.24)	**(5.448)**	**(5.424)**
NIM		**-1.067*****		**-1.380***
		(0.123)		**(0.702)**
overhead		-0.891		**2.895*****
		(0.933)		**(0.986)**
Liquid liabilities		**-0.00265*****		**0.000325*****
		(0.000492)		**(4.21e-05)**
Liquidity ratio		-0.0897		**-0.441*****
		(0.0801)		**(0.0834)**
GDP per capita		-0.492		**-0.582****
		(0.436)		**(0.281)**
Inflation		**0.563***		**0.416****
		(0.320)		**(0.199)**
Trade		0.101		**0.141****
		(0.0862)		**(0.0631)**
Internet		-0.140		-0.109
		(0.126)		(0.105)

Constant	64.88***	87.94***	68.42***	77.30***
	(6.291)	(11.21)	(1.709)	(10.10)
Observations	138	133	167	159
R-squared	0.188	0.594	0.391	0.633
	Standard deviations in brackets			
	*** p<0.01, ** p<0.05, * p<0.1			

Increasing in one point of the net interest margin would reduce the concentration ratio by 1.09 points in French-speaking countries and 1.38 points in English-speaking countries. These results imply that the interest rate decreases concentration more in French-speaking countries than in English-speaking ones, and that the efficiency of the banking market in anglophone countries is more assured than in their French-speaking neighbors following a variation in the Net interest margin on capital. In short, the banking market in these countries is characterized by a number of factors that set it apart from the banking market in civil law countries.

CONCLUSION

At the end of our work to show the role of institutions on the structure of the banking market in 40 sub-Saharan African countries from 2007 to 2017, our estimates led to three main results.

First, our results show that the institutional variables defined by Kaufman et al (2001) are indeed determinants of banking market structure in sub-Saharan Africa. Their effects on concentration are mixed. Even when we use market share as an indicator of market structure, at least one of the institutional environment variables is significant. These results are in line with those found by Demirgüç-Kunt et al. (2003). Second, one of the results of our analysis is that legal origin is one of the determinants of banking market structure. The same is true of the colonial past of the countries in the sample, since this variable, in addition to its institutional character, also captures the history of the countries in the sub-region. Although its marginal effect on measures of banking market structure is insignificant through random effects, other estimation techniques such as OLS and GMM reveal a pronounced significance of this variable. However, their effect is equally negative and does not favor the evolution of bank concentration. Finally, our results show that the market structure of civil law countries is less explained by the variables in our model, unlike that of English-speaking countries, where these variables are almost all significant. Thus, the Common Law legal system would be more conducive to efficient market structure than the French legal system.

The economic policy recommendations suggested by our results are addressed first and foremost to the political authorities, to ensure that they improve the quality of their institutions. These authorities must also put in place a system for overseeing innovative policies. Secondly, these recommendations are addressed to the banking authorities, since operating costs, which are part of operational efficiency, have a reductive effect on concentration, and these authorities must monitor bank margins to ensure that a balance is always maintained between costs and profits. However, our study does not take account of banking supervision variables, and future research could look into this.

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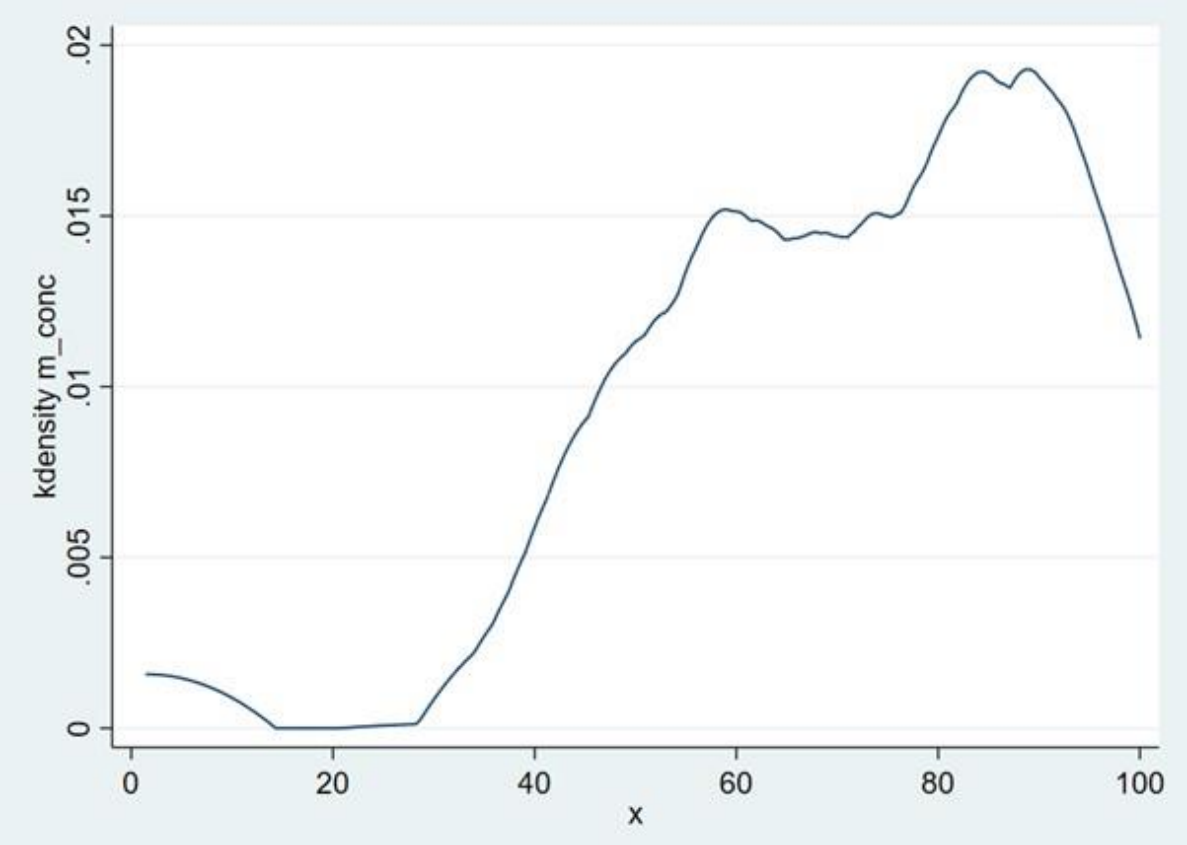
APPENDIX

APPENDIX 1: CONCENTRATION EVOLUTION



APPENDIX 2: ESTIMATIONS BY GMM

VARIABLES	Concentration					
	1	2	3	4	5	6
Rule of law	**-23.60*** **					2.556
	(8.317)					(6.208)
Voice/accountancy	**14.98***					**9.514****
	(7.905)					**(4.065)**
Regulatory quality	**65.14*** **					3.078
	(8.717)					(5.062)
Civil law	**-73.27*** **	**2,051*** **				**-16.73*** **
	(18.47)	**(562.9)**				**(5.907)**
Common law	**-170.5*** **	**958.4*** **				**-26.81*** **
	(44.47)	**(243.2)**				**(6.674)**
NIM			**-1.449*** **			0.138
			(0.421)			(0.203)
Overhead			**1.899****			**-0.845****
			(0.882)			**(0.376)**
Liquid liabilities			-0.000101			**-0.000147****
			(0.000293)			**(5.81e-05)**
Liquidity ratio			-0.160			**-0.292*** **
			(0.244)			**(0.0601)**
GDP per capita				**0.345***		**-0.321*** **
				(0.190)		**(0.118)**
Inflation				**0.632*** **		**0.219****
				(0.120)		**(0.0936)**
Trade				**0.162*** **		0.0860
				(0.0533)		(0.0534)
Internet						**-0.254*** **
						(0.0559)
Constant	**204.4*** **	**-1,152*** **	**84.08*** **	**52.79*** **	**33.38*** **	**114.2*** **
	(31.75)	**(326.3)**	**(27.82)**	**(3.701)**	**(1.451)**	**(10.07)**
Observations	362	364	344	347	430	326
Number of ID	37	37	37	36	40	35
sargan	59.39	70.83	65.46	48.72	405.5	170.7

Standard deviations in brackets

*** p<0.01, ** p<0.05, * p<0.1

FOOD NOTE

[1]BEAC (2020), Economic and Statistical Bulletin, DES N°07 – June

[2] EIB (2020), The banking sector in Africa: financing transformation against a backdrop of uncertainty.

[3] For Bain, the degree of industry concentration is taken as an indicator of market structure.

[4] The industrial economy trilogy refers to the three elements of structure-conduct-performance of the structuralist school, which advocates a close, positive relationship between these three variables.

[5] We group the other types of law into a single variable. These are the countries colonized by Germany, Spain and many others.

[6] The size or depth of the bank is measured by the money supply M3. In other words, this is liquid liabilities or money in the broad sense, calculated as the sum of cash and deposits at the central bank (M0), plus transferable deposits and e-money (M1), plus time deposits, transferable foreign currency deposits, certificates of deposit and securities repurchase agreements (M2), plus travelers' cheques, foreign currency time deposits, commercial paper and shares in mutual funds (FCP) or market funds held by residents. According to the literature, an increase in this variable leads to more bank financing, more investment and more deposits, which will boost bank margins and help improve the structure of the banking market.