RESEARCH PAPER | Economics | Volume : 5 | Issue : 10 | October 2015 | ISSN - 2249-555X

Regular Banking Capital and Banks Profitability in the West African Economics and Monetary Union (Waemu)

KEYWORDS: Profitability, Return On Asset (ROA), Regulatory banking capital, WAEMU

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ABSTRACT *The banking capital is a key indicator of banking regulation. This study aims to analyse the determinants of banking profitability in the WAEMU by focusing on the relationship between capital equity of banks as approximate measure of regulatory banking capital and profitability. From a sample of pooled individuals' data of thirty banks over the period from 2008 to 2011, we identify the determinants of banking profitability of the Union by applying the Ordinary Least Square (OLS) on panel data with fixed effects. The results show that equity capital of banks influence negatively the banking profitability while it is positively and significantly influenced by banking loans. The banks regulation should take into account the degree of individual risk.*

Introduction

The banking capital is one of the key variables that are controlled by monetary authorities to insure the market discipline. Indeed, according to Rajhi and Gassouma (2011), the regulatory capital is the amount of equity capital of banks that is required by monetary authorities in order to compensate unexpected shocks of solvency. According to these authors, the international solvency that is founded in 1988 by Bâle Committee has enacted the regulatory ratio called Cooke ratio. Thus, the Cooke ratio is the ratio of eligible equity capital of banks and adjusted asset to risks. Cooke has fixed for this purpose, the minimum of required standard of equity capital of banks about 8% to cover risks. That regulation through the banking capital is the most important caution apparatus (Camara, 2007).

However, the banks as financial institutions are looking at the profitability in their management under constraint of banking regulation (Kablan, 2007). For instance, according to Bank Commission's Annual Report of West African Economics and Monetary Union (RACB, 2010), the minimum of equity capital of banks reached one (1) to five (5) billions of FCFA and 300 Million to one billions of FCFA respectively for banks and other financial institutions at the beginning of 2008. Also, the analysis of the relationship between the equity capital of banks and banking profitability in WAEMU like other considered areas could be very important because the observation of the variation equity capital of banks over the recent period shows their positive variation about 5.7 % from 2007 to 2008 ; 23.5 % between 2009 and 2010 (RACB, 2009 and 2011). However, the net profit fluctuates with annual decrease of 57 % in 2008, the annual increase of 602.4 % in 2009, the decrease of 43.1 % in 2010 and the increase of 96.1 % in 2011 (RACB, 2009, 2010, 2011 and 2012). Thus, what is the incidence of regulatory capital of commercial banks on their profitability in WAEMU areas? How banks' profitability does react vis-à-vis of their equity capital?

The economic theory and existing empirical studies often diverge when talking about the impact of certain interior factors of banks (equity capital of banks, total assets, personal charge, etc) on their profitability. Furthermore, in reference to that analysis, the past studies in WAEMU focus on aggregate data per country (Tanimoune, 2003; Gammadigbé, 2012). That give us an incentive to focus on individual data of banks in the Union and particularly study the relationship between the regulatory equity capital of banks as a proxy of banking capital and banking profitability by introducing other variable (like banking loans, personal charges, inflation rate, economic growth) that were often taken into account in the literature. The aim of the study is to identify the determinants of banks' profitability. The study is organized as follow: section 1, presents the literature review, in section two is presented the methodology and the third section presents the results and discussion.

1. Literature review

1.1 Concept of profitability

There are different approaches and measures of profitability. To appreciate the banking profitability, the financial analysts use multiple instruments that can be grouped into three categories (Nouy, 1992). The first approach is based on intermediate balance of management; the second approach of profitability measurement is based on the analysis of costs, returns and margins and the third approach comprises the set of calculated operating ratio in order to highlight the operating structures. That last approach is used in this work because it contains the ratios that are mostly used by bankers in order to appreciate their profitability. Those ratios are so called coefficient of profitability (ROE) that express the returns of investors. It does not necessarily match up the needed financial analysis and coefficient of return (ROA) that expresses the returns on asset. That ratio will be used because of the fact that it takes into account the key variable (Equity capital of banks).

1.2 Relationship between capital ratio and banking profitability in the literature

The studies on the relationship between capital ratio and banking profitability diverge theoretically as well as empirically.

- The negative link between profitability and equity capital of banks

Camara (2007), studying the capital regulation and risk of failure of European Banks has established a negative relationship between capital ratio and banking profitability by considering the overall sample and non-quoted banks over the period from 1992 to 2004. This result is in contradiction with what financial and economic theory predict. Indeed, according to the economic theory, the best capitalized banks have easily access to finance in financial market because of their low level of risk and as well as their solv-

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ability. Yet, the prudential regulation imposes the minimum level of coverage of charges by stable resources. But, for other authors, there is an optimal level of equity capital of banks that allows enterprise to maximize its profitability. Thus, Delbreil et al (1996), have asserted that the theoretical works on the financial structure are multiple and the results show that, there is no evidence to assign the univocal significance of indebtedness or to the degree of financial autonomy.

Mansouri and Afroukh (2008), were interested in the study of determinants of banking profitability (measured by the assets earning and interest margins) in Moroco. Their analysis, using panel data of five major banks cylindered sample covers à period from 1963 to 2006. The results from their study enabled to establish the relation between banking profitability and the panel of potential exogenous factors grouped into organizational variables, macro-financial and macroeconomic variables. For organizational variables and specifically the equity capital of banks, the results show the negative relationship on the both types of measurement of profitability. While that result confirms the Camara's one (Camara, 2007), it goes beyond doubt about the forecasting of economic and financial theory. These results confront the idea of other authors for whom the equity capital of banks has a positive effects on banking profitability (Bashir, 2000 ; Abreu et Mendes, 2002 ; Naceur, 2003), but the access of capital ratios is considered as harmful to assets' profitability because by increasing that ratio, the banks tend to realize a minimal fruition of available capital.

➢ **The positive link between profitability and equity capital of banks**

Contrary to previous studies, Yao (2005), studied the determinants of European banking profitability on the sample of 136 Banks covering the period 1994 to 1997. He established the positive and significant relationship between the asset profitability and equity capital of banks (capital ratio) by using a panel method with fixed individuals' effects. According to this author, those results go in the same way of those from Bourke (1989) Molyneux and Thornton (1992). These studies converge with economic theory that forecast the positive relationship between equity capital of banks and banking profitability. This empirical review reinforces the ambiguity of the effects of capital on profitability. Based on the previous review, the following hypotheses are postulated:

H1. The equity capital of banks has positive and significant effect on banking profitability

H2. The ratio of banking loans influence positively and significantly the banking profitability in WEAMU.

2. Estimation method

2.1. Model specification and estimation methods

The pioneers of studying the banking profitability and their determinants were Short (1979), Bourke (1989). Short (1979) mentioned that the linear model was also efficient, even among other functional forms whilst working on determinants of banking profitability. Also, in the literature, the appropriate model used is linear function. The theoretical model of Bourke (1989) is presented as follow:

$$Y = c + \varphi_1.S_1 + \varphi_2.S_2 + \cdots + \varphi_n.S_n \quad (1)$$

In equation (1), Y is dependent variable; c is the constant of the model; are exogeneous variables.

$$Y = f(M_{it}, N_t) \quad (2)$$

is the matrix of in-bank variables of bank i at time t, is the matrix of out-bank variable of banks at time t. By following the linear formulation of Bourke (1989), we can write the panel model as follow:

$$Y_{jit} = c + \alpha \cdot X_{jit} + \beta \cdot Z_{jt} + \varepsilon_{jit} \quad (3) \text{ with } \varepsilon_{it} = v_i + \mu_{jit} \text{ and where :}$$

is dependent variable that characterizes the profitability (ROA) of bank i at time t in the country j; C is the constant of the model; α and β are the parameters of the model; X_jit represents a vector of managerial variables of bank i at time t in the country j; Z_jt represents a vector of macroeconomic variables depending on each country; is the error term of the model. is the individual effect of bank i ; is the idiosyncratic error term inherent to each bank and assumed to be identically and independently distributed (iid); j is the country, I the bank and t the time. This model has been used also by Molyneux and Thornton (1992). Thus the organizational variables (), that will be used in this study are: the ratio of capital base (KPA), the ratio of personal charges (FPA), and the ratio of banking loans. Talking about macroeconomic variables, real gross domestic product (PIBR) and inflation rate or consumer price index (TINF) is taken into account. The model is then presented as follow:

$$ROA_{jit}c + \alpha_1 \cdot CBA_{jit} + \alpha_2 \cdot FPA_{jit} + \alpha_3 \cdot KPA_{jit} + \beta_1 \cdot TPIBR_{jt} + \beta_2 \cdot TINF_{jt} + \varepsilon_{jit}(4) \text{Avec } \varepsilon_{jit} = v_i + \mu_{jit}$$

Avec

Given the fact that the variables are the coefficients, it implies that the best specification test is the Fisher test. That test allows choosing between models without and with fixed effects. The method of estimation is Ordinary Least Square

2.2 Data

The data used are those from the balance and net results from banks' accounts as well as other financial institutions of WAEMU (2010, 2011). We use also the macroeconomic data from World Bank (TPIBR and TINF). Furthermore, these data are expressed in term of annual percentage and collected by country. Our sample comprises thirty (30) banks selected in six countries of WAEMU over the period of 2008-2011. That sample comprises in detail five banks from Benin, five banks from Burkina Faso, five banks from Ivory Coast, five banks from Mali, five banks from Senegal and five banks from Togo. The choice of period of study relatively short and recent can be justified by the fact that when statistical unity is the bank rather than a country, we tend to exclude two countries (Guinée Bissau and Niger) in advantage of time extension. That constitutes a limit for this study. According to IMF (2003), the sectorial balances (households, societies, financial institutions and public sector) are often essential for the analysis of financial stability but it is hard to get them in WAEMU. The banks choice is based on two criterions:

- Only the banks that have data over the period of study and whom it may concern for our study are selected. By applying this criterion we obtain a sample of forty seven (47) banks.
- Our sample, to be representative in terms of countries, we have selected the most five performant banks that have continuous data with non-null profitability over the period of study.

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The application of this criterion excludes the Guinea Bissau and Niger from our sample. Finally, thirty (30) banks or hundred and twenty (120) observations are concerned in this study.

3. **Results and discussion**

Based on the results of the Fisher test, we choose the model with fixed effects. The estimates results seem to be constrained in the case where that technique solves some issues like residual autocorrelation problem for order 1, the multicollinearity, individual and global significant of variables. Table 1 summarizes the empirical results of estimates from panel model with fixed effects (M4).

Table 1: Fixed effects estimation results

Independent variables	**Coefficients**
CBA	**0.0253***** (3.1533)
FPA	0.0527 (0.4217)
KPA	**-0.0748***** (-2.7462)
TINF	**-0.0295***** (-1.7143)
TPIBR	**0.0364**** (1.7673)
Constant	0.4409 (0.8016)
Number of Banks Number of observation	30 120
R-square Adjusted R-square Prob(F-S) DW	0.7135 0.5989 0.0000 2.0225

Source: Author, estimation results using Eviews. The numbers in brackets represent the statistical of t-Student. *, **; *** coefficients significance respectively at 10%, 5% and 1% levels

Determinants of assets profitability: ROA (Return On Asset)

The results in table 1 show that all coefficients are less than 10% in absolute value. The econometric results in table 1 show that the volume of distributed banking loans (CBA) improves significantly assets profitability in term of percentage of total asset of the bank. That result confirms the economic theory prediction. This implies that the banking loans constitute the main sources of banking profits in WAEMU. In fact, the positive variation of banking loans ratio (CBA) improves the assets profitability. This result confirms those obtained by Mansouri and Afroukh (2008) in the case of Moroco. The hypothesis that postulates the banking loans influence significantly and positively the banking profitability in WAEMU is verified.

Besides, the personal charges (FPA) do not influence significantly the assets profitability. However, the sign of the personal charge is not in the same way as predicts economic theory because of their positive correlation with that profitability. This can be explained by the fact that the personal training and recruitment of high executive staff expenditures do not allow to increase that ratio in WAEMU. That strategy of banks does not motivate the staff to work hard for the whole institution. But Yao (2005) has established the positive and significant relationship between profitability and personal charge.

Moreover, the capital covers or equity capitals of banks (KPA) exercise a negative and significant effect on assets profitability. Any increasing of that ratio induces the decreasing of assets profitability. Yet, according to economic theory, the best capitalized banks have easily access to finance in financial market because they are less risky and solvent. Also, prudential regulation requires banks a minimum coverage level of resources usage by stable resources. However, the overcapitalization policy has created the deterioration of assets profitability of banks in our sample.

As for inflation rate (TINF), that variable seems to influence significantly and negatively the assets profitability. Thus, inflation leads not only to high investments charges, but also to high rate of loans leading to more interest and profits. The explanation is that the increase of inflation leads to the increasing of the structure expenses compared to loans interest rate within the Union.

Finally, the real Gross Domestic Product growth rate (TPIBR) influences significantly the assets profitability. This one is positively correlated with TPIBR. It implies that the increase of TPIBR leads to the increase of assets profitability. That confirms the results from Manouri and Afroukh (2008). It means that the economic growth by intensification allows driving the financial resources coming from households and enterprises in WAEMU. It comes that the decrease of banking operation leads to the loss of its clientele.

Conclusion

The general objective of this study is to analyse the impact of regulatory capital of WAEMU commercial banks on their profitability. The present paper also shades light on the potential determinants of banking profitability using a sample of thirty (30) banks from 2008 to 2011 by applying Ordinary Least Square methods on the panel model with fixed effects.

The results from our estimates showed that the equity capital of banks have negative and significant effects on profitability, meaning that the ratio of equity capital of banks have negative effects on assets profitability. According to Mansouri and Afroukh (2008), the control of solvability and liquidity as requires the international policy under supranational authorities has induced the negative effects on banking profitability.

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These results show also that, apart from the ratio of equity capital of banks as determinant of assets profitability, the economic growth has influenced significantly the profitability. As for the ratios of banking loans and inflation, they constitute the determinants of the both types of measurements of banking profitability. However, the inflation rate is a determinant that deteriorates the banking profitability in the Union over the period of study while the economic growth creates favourable economic environment to banking activities.

Besides, the personal charges (FPA) do not influence significantly the assets profitability. Nevertheless, the improvement of staff management could contribute to improve the profitability. The banks regulation should take into account the degree of individual risk.

The present study has used secondary data. A study using primary data obtained from the survey on each banking institution could allow extending the sample of institutions as well as extending the period of study. Therefore this extension will allow more clarification on banking policies and their interactions with global economic policies.

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