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RESEARCH ARTICLE

Is it possible to make Banking Industry free for International Banks?

(An empirical study to investigate the Capital Adequacy of the industry in Ethiopia)

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Abstract

The objective of the study was to examine the determinants and level of capital adequacy of the banking industry using empirical model. In order to address the objective, the paper used a panel data set that employed bank-level data from a sample of eight banks covering the period 2000–2013 and estimated the dynamic panel data model with generalized method of moments (GMM). On top of this, descriptive statistic was used to assess the level of average capital adequacy ratio of the banks. The finding shows that, lagged value capital adequacy, portfolio risk, average capital adequacy of the industry and asset size are significant factor that affects the capital adequacy ratio of banking sector in Ethiopia. Moreover, except the alternative cost of capital, the other hypotheses are in line with previous studies. In a similar vein, the descriptive statistic has shown that, the average CAR of the banking sector is much greater than the international standard of 8.1% which indicates the sector is in a good position in terms of capital adequacy. Therefore, the researcher concluded that, the banking sector, especially the largest banks, are capable to compete with international banks if the market for the industry is free for foreign banks to join the market, citreous paribus (such as management skills, workers experience, business environment, etc.).

INTRODUCTION

The corporate finance pattern is of vital importance for the financial well being of companies. Capital structure is basically permanent long term financing of a firm including long term, common stock and preferred stocks and retain earning. Although there has been plenty of research focusing on the primary determinants of capital structure, there is still disagreement regarding which factors significantly affect a capital structure or firm's capital adequacy to absorb possible losses that might happen because of so many factors. Although many studies in the literature addressed the issue of determinants of capital adequacy of firms in general, there is not much research on the capital structure of banks, especially in Ethiopian context where there is no capital market to simply see the value of the firm in the market. This is probably due to the fact that banks are structurally and functionally different from the non-financial sector. More recently, the determinants of capital adequacy ratios have received attention rather than the capital structures of banks in developed economy still a lot has to be done for the least developed or developing economy.

Determinants of capital structure in financial institutions differ from non-financial institutions due to issues peculiar to these institutions. For banks, which constitute the largest portion of financial institutions in Ethiopia, liabilities relating to legal capital regulations are the most important factors determining the capital structure. Banks generally hold more capital than the minimum capital ratios required by capital regulations that banks are obliged to meet. In general, this is explained by the fact that banks tend to operate in a prudential manner against probable shocks. However, recent studies demonstrate that factors that determine the capital adequacy ratio are not only limited to

legal liabilities, but variables specific to banks are important in determining the level of capital. Therefore, the study analyzed the capital adequacy ratio of banking sector in the Ethiopian using a panel of bank-level data.

- **Objectives of the study**

- The main goal of the study is to evaluate the competitive position of banking industry with international banks using CAR.

In order to achieve the general objective, the following specific objectives set.

- To understand the capital structure in financial institutions of Ethiopia;
- To determine the capital adequacy ratio of banking sector in Ethiopia,;
- To explore the factors that determines capital adequacy;
- To see whether banking sectors in the country fulfill the minimum CAR standards;
- To forward suggestions and recommendation for policy makers and other researchers.

1. Literature Review

Since the seminal paper of Modigliani & Miller (M&M) in 1958, capital structure in companies has been among the most important topics in finance area. However, the issue of capital structure in companies has not been resolved. There is not a comprehensive theory that is able to explain the decisions of companies on financial structure. For financial companies, the literature on capital structure is very limited and the issue has not been addressed for these companies for long years (Marques and Santos, 2003), states in his study that the determinants of decisions relating to financing structure in banks have not been established through empirical analysis. Berger et al. (1995) identify the above factors that affect the financing structure of all companies, financial and non-financial alike. They identify "safety net" as a factor that is functional on the capital structure of financial institutions only. Differently from non-financial companies, financial institutions are under protection by a safety net (practices such as deposit insurance system, payment guarantees, liquidity window they have on the occasion of sudden liquidity shortage etc.) that enables them to operate in a sound manner and they point to the importance of external factors that affect the capital structure of financial institutions. Although the safety net can explain the difference in the capital structure of financial institutions and other companies, probably the most important factor that affects the capital structure of financial institutions is the legal capital requirements, or the "capital adequacy ratio."

There are various studies in the literature that emphasize the importance of capital adequacy ratio on the capital structure of financial institutions. For example, Osterberg and Thomson (1990) state that the capital structure of financial institutions differs from that of non-financial institutions and the impact of legal regulations on such a difference cannot be ignored. Furthermore, they point out that the theoretical framework that is applied to the capital structure of non-financial institutions cannot be applied one-to-one to financial institutions due to regulations relating to capital in financial institutions. Berger et al. (1995) state that the impact of legal capital requirements on capital held by banks is very important. They provide empirical evidence from the United States. According to Capital Adequacy Accord, capital adequacy ratio, which was 6.21% the end of 1989 increased to 8.01% in 1993 following the enforcement of the legal framework. Haubrich and Wachtel (1993) state that the United States banks increased the proportion of low-risk government securities in their portfolios following the introduction of legal capital requirements. Consequently, financial institutions, unlike non-financial institutions, have significant differences in capital structure for safety net reasons or their legal capital requirements. Thus, the fundamental issue in this study is to understand the capital structure in financial institutions and more importantly, capital adequacy ratio and the determinants of this ratio.

2. Research Methodology

The study employed firm-level panel data from the Ethiopian banking sector for the period 2000- 2013. Banking data for the pre- 2000 period are unreliable and also difficult to find since their accounting system was not perfect. Out of the total nineteen banks found in Ethiopia, eight largest banks were include in the sample based on the year of establishment, which is before June, 2000. The source of data for analysis is solely the secondary one collected from the National Bank of Ethiopia (NBE), Central Statistics Agency (CSA), internet, and the respective sampled banks annual reports. The collected data were analyzed using both descriptive statistics and regression analysis and the results were presented using tables, charts and graphs. The researcher used a panel data set and estimated the model with generalized method of moments.

3.1. Theoretical framework

- **Capital Adequacy Ratio and Its Determinants**

Factors such as technological change, increased competition, and changes in customer demand forced financial institutions to expand the range of products they offer and improve their institutional structures. It has been regulated by NBE that banks abide by minimum prudential regulations and strengthen their risk management for the sustained stability of the financial sector and the overall economy. Capital adequacy regulations are deemed the

most important quantitative instrument used by supervisory authorities, National Bank of Ethiopia (NBE), to protect the rights of customers and to enhance the stability of the financial system. Their functions are such as covering possible unexpected losses emanating from the risks undertaken, increasing credibility, reducing the risk of systemic crises and creating a competitive environment. In 1988, the "Capital Accord" named Basel I was published. It focused on the minimum capital to be held by banks in order to minimize the costs to depositors in case a bank goes bankrupt. The accord determined a lower limit of 8.1% for "Capital to Risk Weighted Assets Ratio". The following sub-topics summarize the factors that affect capital, based on the findings in the literature.

a) Risk Level (Portfolio Risk)

In banking, one of the most important determinants of capital is related to the risk that banks have taken. Legal regulations relate the level of capital that banks must maintain with the level of risks that they carry. The main reason of this is that capital is viewed as a shield against unexpected losses and bankruptcy. The level of risk taken in banking can be measured by the share of the risk weighted assets in the bank's total assets (RISK= Risk Weighted Assets/ Total Assets).The relation between portfolio risk and capital adequacy in banking is expected to be negative. One other factor that can cause this negative relationship is the deposits insurance system. This system can increase the risk appetite of banks (Alfon et al. 2004).

b) Asset Size

Like portfolio risk, asset size should be taken as a factor that determines the CAR. The general opinion is that asset size is inversely related to capital adequacy. For example, Kleff and Weber (2003) assert that large banks could maintain less capital due to their advantage in covering their capital requirements from external sources relatively easily. They also claim that capital requirements of large banks are lower, because they have less investment opportunities and that their portfolios are diversified to a large extent. Wong et al. (2005) assert that risk management techniques of banks with large asset size are more developed than those of smaller banks. This provides some advantages to large banks in measuring the risks of borrowers through scale effect, and thus, they require less capital. Alfon et al. (2004) claim that the main reason for small banks to maintain higher capital levels than larger banks is their aim to finance their long run business strategy. Since it is more costly for small banks to adjust their capital in case of a sudden capital requirement, they choose to carry more capital. Therefore, inflation-adjusted asset size will be used as an independent variable for the regression analyses of the Ethiopian banking sector.

c) Capital Adequacy of Previous Period

The adjustment cost described above does not only vary across size. The capital adequacy of previous period is one of the factors that determine the cost of adjustment. Keeping too much capital can be a matter of concern in terms of profitability and efficiency, but an insufficient amount of capital could generate more negative results. Consequently, banks adjust capital by more than the minimum required amount. Therefore, the capital amount banks want to maintain in the current period can be associated with the capital amount of the previous period.

d) Alternative Cost of the Capital:

One of the main determinants of capital that firms hold is the alternative cost of capital, in banking sector and the rest of the economy. An increase in the alternative cost of capital decreases the willingness of banks to hold more capital. Holding excess capital does not have a large effect on profitability when cost of capital is low. As the most suitable indicator of alternative cost of the capital for banks is return on equity (ROE), it will be used in the regression analyses. ROE is adjusted for inflation using the consumer price index.

e) Share of Deposits in Non-equity Liabilities:

Deposits are generally considered cheaper sources of funds compared to borrowing and similar financing instruments (such as financing by bond or syndication and securitization loans) for banks (Kleff and Weber 2003). Therefore, a decrease in the share of deposits in total liabilities creates a cost effect by increasing share the borrowed financing sources. As increasing cost can decrease the profitability of banks, banks will be in need of capital to compensate for this decrease. In order to understand the effect of the share of deposits on capital adequacy, the share of deposits in non-equity liabilities is used as a variable in the regression analysis.

f) The Average Capital Adequacy of the Sector:

It is not possible for the market participants to have the detailed information that supervisory authorities and private supervision companies have. For this reason, it can be argued that high capital adequacy will act as a signaling mechanism for the banks that want to change the perception of the market participants and rating companies positively (Alfon et al. 2004).In order to see this signaling effect, we will use the average capital adequacy of the sector as an explanatory variable.

g) Economic Growth:

In periods of positive economic growth, expectations are positive for banks as well as most other sectors of the economy and risks are relatively low. However, when economic growth rate is negative, banks may suffer sudden capital losses as a result of possible risk realizations. For this reason, banks generally tend to work with more capital in periods when expectations on the economy turn to negative. Having more capital may reduce the negative effects of the economic environment by signaling a strong capital structure. Even if this hypothesis might work in some situations, in reality customers/creditors need to withdraw their money from bank to invest in other assets (stocks or real assets) instead of putting their money in bank that generates only fixed return, the reverse holds true. Therefore, the relationship between capital adequacy and economic growth is positive. The study employed the growth rate of gross domestic product in our regression analyses.

3.2. Hypotheses

Hypothesis	**Determinants and their respective acronym**	**Measure (Proxy)**	**Expected sign**
H_1	Portfolio Risk (PR)	PR=RWA/Total Assets	Negative (-)
H_2	Asset Size (AS)	AS=Total Assets	Negative (-)
H_3	CAR Previous period (CAR_{t-1})	CAR_{t-1} = (RWA/Total Assets) $_{t-1}$	Positive (+)
H_4	Cost of capital (CC)	CC=ROE/CPI	Negative (-)
H_5	Deposit Ratio (DR)	DR= Total Deposits/Total Liabilities	Negative (-)
H_6	Average CAR sector (ACAR)	ACAR=$\sum CAR_{i,t}$/No. of Banks	Positive (+)
H_7	Economic Growth (EG)	EG= Gross Domestic Product	Positive (+)
	Capital Adequacy Ratio (CAR)	CAR= Capita & Reserve/RWA	Dependent variable

Source: Compiled from various studies

3.3. Specifications of the Model

The study used dynamic panel data regression analysis since lagged dependent variable as a covariate. Hence, Generalized Method of Moments (GMM) is used for this dynamic panel models because it allows a flexible specification of the instruments. The panel data analysis facilitates analysis of cross-sectional and time series data. We use the pooled regression type of panel data analysis. The general form of the model is:

$$\mathbf{CAR_{j,t} = \beta_o + \Sigma\beta_i \; X_{j,t} + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.. (1)}$$

Where

- **$CAR_{j,t}$** = the measure of leverage of a firm j at time t
- βo= the intercept of the equation
- βi= the change co-efficient for Xit variables
- X_{it} = the different independent variables for leverage of a firm i at time t
- j= the number of the firms i.e. j = 1, 2, 3….n(in this study n= 8 firms)
- t = the time period i.e. t = 1, 2, 3…T (in this study T = 14 years)
- ε = the error term

Specifically, when we convert the above general least square equation into our specified variables, the equation will be: The variables involved of the model in linear equation form were put as follows:

$$CAR_{j,t} = \alpha + \beta_1(PR_{j,t}) + \beta_2(\log AS_{j,t}) + \beta_3(\text{lag } CAR_{j,t}) + \beta_4(CC_{j,t}) + \beta_5(DR_{j,t}) + \beta_6(ACAR) + \beta_6(EG) + \varepsilon \text{---------------}(2)$$

4. Data Analysis and Discussions

Both descriptive and econometric analysis results respectively were presented below**.**

Table 4.1. Summary Statistics

Variables	**Mean**	**Std. deviation**	**Minimum**	**Maximum**
Portfolio Risk	.581	.132	.23	.87
Capital Adequacy Ratio	.209	.0913	.08	.56
Cost of capital	3.20	12.073	-4.33	126.21
Deposit Ratio	.783	.165	.39	.97
Average CAR sector	.208	.033	.159	.26
GDP Growth rate of the economy	8.929	3.976	-3.8	12.4
Asset Size (Log)	8.204	1.420	4.963	11.975
Capital Adequacy Ratio (Lagged)	.207	.092	.08	.56

Source: Stata 12.0 Output

Descriptive statistics for the variables of interest are displayed in Table 4.1. The average bank in the sample has a capital adequacy ratio of 20.9 percent and the share of its risk-weighted assets in total assets is 58.1 percent. This shows that, the banking sector in the country can fulfill the CAR minimum requirement of 8.1%. The share of deposits in total non-equity liabilities is around 78.3 percent. The average capital adequacy ratio of the all banking sector was around 20.8 percent and the real GDP growth rate of the country was 8.93%. The coefficient for correlation between the dependent and independent variables are good except for asset size. Moreover, as it's proved using VIF and the coefficient, the model has no problem of multicollinearity problem since the correlation coefficient is between 0.0060 and 0.737. Therefore, it is reasonable to run the regression.

Table 4.2.Regression Output

CARt	Coef.	Std. Err.	z	P>z	[95% Conf. Intervall]	
CARt-1.	.3054475	.0602077	5.07	0.000	.1874425	.4234524
PR	-.3170071	.0546858	-5.80	0.000	-.4241894	-.2098248
CC	.0002278	.0003059	0.74	0.456	-.0003717	.0008273
DR	-.0341101	.0802081	-0.43	0.671	-.191315	.1230948
ACAR	.6506273	.1691045	3.85	0.000	.3191886	.9820661
EG	.0014357	.0010138	1.42	0.157	-.0005513	.0034228
logAs	-.026828	.0067373	-3.98	0.000	-.0400328	-.0136232
_cons	.4280975	.1037901	4.12	0.000	.2246727	.6315223

Source: Stata 12.0 Output

Table 4.3. Summary of the Hypothesis and the result

Hypothesis	Variables	Expected sign	Actual sign	Decision
$\mathbf{H_1}$	Portfolio Risk (PR)	Negative (-)	Negative (-)	Accept
$\mathbf{H_2}$	Asset Size (AS)	Negative (-)	Negative (-)	Accept
$\mathbf{H_3}$	CAR Previous period (CAR_{t-1})	Positive (+)	Positive (+)	Accept
$\mathbf{H_4}$	Cost of capital (CC)	Negative (-)	Positive (+)	Fail to reject
$\mathbf{H_5}$	Deposit Ratio (DR)	Negative (-)	Negative (-)	Accept
$\mathbf{H_6}$	Average CAR sector (ACAR)	Positive (+)	Positive (+)	Accept
$\mathbf{H_7}$	Economic Growth (EG)	Positive (+)	Positive (+)	Accept

Source: **Compiled from various studies and findings of this research**

As shown in the tables above, three variables, portfolio risk, deposit ratio and asset size, have negative relation with bank performance whereas, cost of equity, average capital adequacy, lagged value capital adequacy, and economic growth even though only lagged value capital adequacy, portfolio risk, average capital adequacy and asset size is the significant factor that affects the capital adequacy of banking sector in Ethiopia at 1% significance level. The results are similar to the previous studies. From theory point of view, as the level of risk increases the capital adequacy ratios will decreases as it has been proved in this finding too. Similarly, as the level asset size and deposit ratio increases, the level of the bank's capital adequacy ratio decreases as the finding shows. On the other hand, as the level of average capital ratio of the banking industry increases, the individual bank's capital adequacy also increased as proved in this study finding. Moreover, even though statistically insignificant, a change in the overall economy has an effect on the capital adequacy of the banking sector.

5. Conclusion

The study employed a dynamic model and estimates it with generalized method of moments. The level of risk assumed by a bank, asset size, alternative cost of capital, the share of deposits in non-equity liabilities, the average capital adequacy of the whole sector, and growth rates of the Ethiopian economy are the main variables that the study employed in the regression analysis. We find that most of these variables are significant in explaining why banks hold excess capital. The result shows that, lagged value capital adequacy, portfolio risk, average capital adequacy and asset size are significant factor that affects the capital adequacy of banking sector in Ethiopia. Moreover, the descriptive statistics has shown that, the average CAR of the banking sector is much greater than the international standard of 8.1% which indicates good stand of the sector in terms of their capital. Therefore, the researcher concluded that, the banking sector, especially the largest banks, are capable to compute with international banks, citreous paribus (such as management skills, workers experience, business environment, etc.).

As shown in the summary above, Portfolio Risk, Asset Size, and Deposit Ratio have a negative relation with capital adequacy of the banking sector. Whereas, lagged value of capital adequacy, Cost of capital, Average CAR sector, and Economic Growth have positive relation with the level of capital adequacy ratio of the sector. Therefore, except the alternative cost of capital, the other hypotheses are in line with other studies.

Reference

- Alfon I., et.al. (2004). How Individual Capital Requirements Affect Capital Ratios In UK Banks And Building Societies. Banco de España Working Paper, No: 0515
- Berger, A. N., Herring, R. J., and Szegö, G. P.. (1995). The Role of Capital in Financial Institutions. Wharton Working Paper, No: 95-01.Haubrich and Wachtel (1993
- Kleff, V. and Weber, M. (2003). How Do Banks Determine Capital? Empirical Evidence from Germany. ZEW Discussion Paper, No: 03-66
- Marques O. M. and Santos C. M. (2003). Capital Structure Policy and Determinants: Evidence from the Portuguese Banking Industry. Unpublished Working Paper.
- Miller H. M. (1995). Do the M&M Propositions Apply to Banks? Journal of Banking and Finance, 19(3): 483-489.
- Modigliani, F., & Miller, M. (1958). The cost of capital, corporate finance and the theory of investment. American Economic Review, 48, 261.
- Osterberg P. W. and Thomson B. J. (1990). Optimal Financial Structure and Bank Capital Requirements: An Empirical Investigation. Federal Reserve Bank of Cleveland Working Paper, No: 9007.
- Wong, J., Choi, K., and Fong, T.. (2005). Determinants of the capital level of banks in Hong Kong. Hong Kong Monetary Authority Quarterly Bulletin, September 2005: 14-37.