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DETERMINANTS OF THE PROFITABILITY OF COMMERCIAL BANKS IN ETHIOPIA

Keywords: health, profitability, determinants, commercial banks, pooled OLS, Ethiopia.

J E L Classification: G20, G21, G28.

Abstract: The healthiness of the banks is critical because they are highly fragile, vulnerable and closely integrated with other sectors. One way of testing the healthiness of the banks is through the measure of their profitability. Profitability is the primary objective of any business including commercial banks. Profitable banks can withstand any negative shocks and stabilize the whole financial sector. The main objective

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of this study was to analyze the determinants of the profitability of commercial banks in Ethiopia. To achieve this objective a secondary source balanced panel data of ten years from nine commercial banks were used, and internal determinants; business mix indicators, risk aversion index, management efficiency, liquidity risk, bank size, and external determinants; ownership, market concentration, and GDP, were regressed against return on asset by using the pooled OLS technique. Results indicated that internal determinants were more important than external factors. Thus business mix indicators, risk aversion index, management efficiency, liquidity risk and bank size had a significant effect on the return on asset, whereas except ownership other external determinants, i.e. market concentration and GDP were insignificant to determine return on assets of Ethiopian commercial banks. Finally bank managers were recommended to rely on the debt financing sources paying a due attention to the optimal levels, mobilize more deposits, extend loan provision and expand business mixes services.

■■■ INTRODUCTION

Background of the study

Since the 17th century the banking industry has been serving as the most important financial sector of any economy of the world. The performance of banks can progress or stagnate the economies of countries. It is better to remind that the banking sector was the major contributing factor in both the great depression of the 1929 as well as the 2008's economic recession. The income of the country and its economic level, inflation rates, economic policies, exchange rates across the world, and laws and regulations are considered as certain macroeconomic factors that can influence the success or failure of the banks regardless of the countries they are situated.

Diversification plays an important role in a bank's desirable efficiency; its costs could be associated with higher income volatility, implying higher risk (Doan, Lin & Doong, 2018).

Ignoring measures of non-traditional activities in the estimation of bank efficiency can be misleading, although at least two studies find little or no impact of off-balance sheet activities (Jagtain, Saunders & Udell, 1995 and Kosmidou, Tanna & Pasiouras, 2008 cited in Doan, Lin & Doong, 2018) on the examination of cost or profit efficiency.

The health of the banking sector is critical because they are economically important and closely integrated with other sectors (Devis, 1995).

One way of testing healthiness of banks is through the measure of their profitability. Commercial banks with a better financial performance have a better

ability to resist any negative shocks and contribute to the stability of the financial sector (Athanasoglou, Sophocles & Delis, 2008). Since the banking sector is the major player in the economic development of nations, a close watch for the factors that can affect the performance of commercial banks is crucial for the managements, investors and policy makers.

Statement of the problem

Finance is a life blood of industry, commerce and trade. The banking industry is serving as a backbone in any modern business activities. A bank is a financial institution in which a substantial part of its business consists of mobilization of deposits and providing loan and advances. It plays an intermediary role by mobilizing and channeling scattered financial resources from temporarily surplus societies to deficit productive investments. Banks provide savers a return on their deposit by means of interest, and charge interest by lending the same money to borrowers. This smooth flow of funds facilitates the development of the overall economy (Praveen, 2011).

Objectives of the study

The main objective of this study is to examine the determinants of bank profitability in Ethiopian commercial banks. And achieved the following specific objectives;

1. Investigate the effect of bank specific factors, i.e. Business mix indicators, risk aversion index, management efficiency, liquidity risk and bank size, on the profitability of commercial banks in Ethiopia.
2. Analyzes the impact of external factors, i.e. market concentration, ownership, and GDP growth rate, on the profitability of commercial banks in Ethiopia.

Research Hypothesis

The following hypotheses were developed in line with the specified objectives.

- A; H₀: there is significant relationship between risk aversion index and profitability of commercial banks in Ethiopia.

- B; HO: there is significant relationship between management efficiency and profitability of commercial banks in Ethiopia.
- C; HO: there is significant relationship between business mix indicators and profitability of commercial banks in Ethiopia.
- D; HO: there is significant relationship between Market concentration and profitability of commercial banks in Ethiopia.
- E; HO: there is significant relationship between GDP and profitability of commercial banks in Ethiopia.
- F; HO: there is significant relationship between ownership and profitability of commercial banks in Ethiopia.
- G; HO: there is significant relationship between Liquidity risk and profitability of commercial banks in Ethiopia.
- H; HO: there is significant relationship between Bank size and profitability of commercial banks in Ethiopia.

LITERATURE REVIEW

According to Banking Regulation Act, "Banking means the accepting for the purpose of lending or investment of deposits of money from the public, repayable on demand or otherwise and withdraw able by cheque, draft, and an order or otherwise" (Praveen, 2011).

In the economy banks perform a multitude of functions. However, the three primary functions in an economy: the operation of the payment system, the mobilization of saving and the allocation of savings to investment projects. By allocating capital to the highest value use while limiting the risks and costs involved, the banking sector can exert a positive influence on the overall economy, and is thus of broad macroeconomic importance (Roland, 2011).

Theory of the banking firm is different from the theory of the firm which is widely applicable to any business with the exception of banks. Theory of the banking business underlined that banks make profit by selling liabilities with one set of characteristics (a particular combination of liquidity, risk, size, and return) and using the proceeds to buy assets with a different set of characteristics through the process of asset transformation (Mishkin & Eakins, 2012).

By allocating capital to the highest value use while limiting the risks and costs involved, the banking sector can exert a positive influence on the overall economy, and is thus of broad macroeconomic importance (Roland, 2011).

The impact of banking activities on monetary statistics, such as money supply figures and credit extension to the domestic private sector, is also of concern to policy makers. Reviews of banks can serve as a structured mechanism to ensure that monetary authorities recognize and quantify non intermediated funding and lending, as well as other processes that are important to policy makers in the central bank. The advantage of a structured approach to evaluating banks is that banking sector behavior is considered in a systematic and logical manner, making sector statistics readily available for macroeconomic monetary analysis. Bank supervisors are thereby placed in a position where they are able to meaningfully assist monetary authorities, whose policies are influenced by developments in the banking sector (Greuning & Bratanovic, 2009).

EMPIRICAL LITERATURE REVIEW

Profitability of financial institutions specifically banks are affected by internal and external factors. Bank profitability is usually measured by the return on assets, and is expressed as a function of internal and external determinants (Dietrich & Wanzenried, 2009).

A study by Habtamu (2012) for the period of 2002 to 2011, on the determinants of the profitability of private commercial banks in Ethiopia, proxies return on asset, return on equity and net interest margin as a measure of profitability. Million, Matewos and Sujata (2014) for study period from 2003 to 2014 on the impact of credit risk on profitability found that nonperforming loan ratio have a negatively significant effect, and loan loss provision have positively significant, while capital adequacy ratio and loan to deposit ratio have insignificant impact on the profitability of commercial banks in Ethiopia.

THE RESEARCH METHODOLOGY AND THE COURSE OF THE RESEARCH PROCESS

Research design

To achieve the study objective as well as to test the hypothesis, the study employed quantitative research design by analyzing secondary source balanced panel data. The quantitative research is a means for testing objective theories by examining the relationship among variables.

Data Sources and data collection techniques

The study used only secondary source data. Secondary data generally provide a source of data that is both permanent and available in a form that may be checked relatively easily by others, i.e. more open to public scrutiny.

Sampling design

The total population for this study constitutes all commercial banks operating in Ethiopia. For the study a ten years data is used. So purposive sampling of commercial banks which started operating before 2007 is included in this study this is because of majority of the Banks in the country has age of less than ten years. As a result out of the 17 banks currently operating in the country nine banks, namely commercial bank of Ethiopia, Dashen, Abysinia, Weagen, United, Nib, Cooperative bank of Oromia and Lion bank, are selected because they have 10 and more year's age in the bank industry. Finally the result is inferred for the whole population.

Data analysis Techniques

The data, after collection, was processed and analyzed in accordance with the outline laid down for the purpose at the time of developing the research plan. This is essential for a scientific study and for ensuring that we have all relevant data for making contemplated comparisons and analysis. Technically speaking, processing implies editing, coding, classification and tabulation of collected data so that they are amenable to analysis. After collecting the row data it is edited, coded and tabulated.

Model Specification

Regression analysis is a statistical methodology that utilizes the relation between two or more quantitative variables so that a response or outcome variable can be predicted from the other, or others. This methodology is widely used in business.

The model adopted for the analysis can be re-written as follows:

$$\begin{aligned}
 ROA_{i,t} = & \alpha + \beta_1(\text{capta})_{i,t} + \beta_2(\text{Bmix})_{i,t} + \beta_3(\text{GexOPin})_{i,t} + \\
 & + \beta_4(\text{LOANDEP})_{i,t} + \beta_5(\text{BS})_{i,t} + \beta_6(\text{OWN})_{i,t} + \beta_7(\text{HH_TA})_{i,t} + \\
 & + \beta_8(\text{GDP})_{i,t} + \epsilon_{i,t}
 \end{aligned}
 \tag{1}$$

Where:

ROA = Return on Asset

Capta = Capital to total asset

GexOPin = General expenses to operating income

LOANDEP = Loan to deposit

Bmix = Business mix (service charge and commission income to total operating income)

BS = bank size (Total asset)

OWN = Ownership

HHI_TA = Herfindhal-Hirschman Index in terms of total asset

GDP = Real GDP growth rate

ϵ = the error term

t = time (in year)

i = individual bank

Capital adequacy

Capital adequacy ratio is measured by the proportion of banks equity capital to total asset. Studies found that the relationship between capital adequacy ratio and banks profitability is negative. The higher the ratio of equity to asset ratio the higher will be the risk aversion ability of the banks, but this high capital adequacy ratio also negatively impacts the profitability, growth capability and competitive ability of banks (Ezike & Oke, 2013).

Bank size (Asset)

The effect of bank size on the profitability of commercial banks is limited up to certain extent. As the size of the banks increase profitability also increases, but beyond certain extent the impact will be negative (Athanasoglou, Sophocles & Matthaïos, 2005). Goddard, Molyneux and Wilson (2004) also found positive relationship between bank size and bank profitability.

Liquidity risk

Liquidity risk is basically a bank's inability to meet the cash demand of its customers. It indicates the ability of the bank to deal with deposit withdrawals and loan demands (Million, Matewos & Sujata, 2014). The higher amount of loans against per dollar deposit increases bank liquidity risk (Samad, 2015). Amdemikael (2012) concluded that the relationship for liquidity risks found to be statistically insignificant on the profitability of commercial banks in Ethiopia.

Management efficiency

Ongore and Kusa (2013) believe that management efficiency is a complex subject to capture with financial ratio, and it is still one of the key determinants that affect the bank's profitability. Generally, the operating profit to income ratio, the ratio of cost to total asset, and the ratio of net interest expense to net interest income, were used by prior studies to measure management efficiency. Among these researchers Nessreddine, Fatman and Anis (2013), Muluaalem (2015) used the above last two ratios respectively.

Business mix indicators

Service Charge & Commission Income to total income ratio is used to represent the business mix for the banks. Although fee based services in general generates lesser income than loans, it is expected to add something on banks profit and have a positive relationship with profitability. The share of income from service charge and commission is found to be one of key drivers of the performance of Ethiopian Banks (Tesfaye, 2014).

The Herfindahl - Hirschman Index (HHI)

The relation of HHI to bank profitability is not certain because many of these market structure studies do not provide consistent support for the approach that there is a direct relation between concentration and profitability (Patria, Capraru & Ihnatov, 2015). The result of their study on the EU 27 banking system found that market concentration diminishes bank profitability. Thus competition has a positive impact on the banks profitability.

Economic growth (GDP)

According to Herald and Heiko (2009), economic growth is one of the determining factors for commercial banks deposits. Therefore, increase in GDP increases wellbeing of the society, which influences the growth of commercial banks profitability positively.

Simiyu and Ngile (2015) in Kenya found that from 2001 to 2012 real GDP growth rate had positive but insignificant effect on the ROA of banks. Tan and Floros (2012) found a negative relationship between GDP growth and bank's profitability in China over the period from 2003 to 2009. Tesfaye (2014) founds that the real GDP growth rate which measures the economic growth of Ethiopia from 1990-2012 had insignificant impact on performances of commercial banks.

RETURN ON ASSETS

Return on Asset is the appropriate measure for management's efficiency by indicating its ability to utilize the company's asset in generating returns.

Return on assets is the net profit after tax divided by total assets, and it indicates the returns generated from the assets financed by the bank. This is probably the most important single ratio in comparing the efficiency and operating performance of banks as it indicates the returns generated from the assets that bank owns.

The ROA formula is as follows:

$$\text{ROA} = \text{Net Income} / \text{Average Total Assets}$$

Ownership

A study by Abebaw and Kapur (2011) on the financial performance and ownership structure of Ethiopian commercial banks found that private banks had better profitability, asset quality and capital adequacy performance and public sector banks were better in cost management measures. Similarly Yidersal and Wang (2017) concluded that there was a significant impact of ownership structure on the profitability of commercial banks measured by ROE.

Table 1. Summary of variables and their measurement

	Variables	Notation	Proxy
Dependent	Return on asset	ROA	Net income/total asset
independent variables	Business mix	Bmix	Commission & service charge/total operating income
	Liquidity Risk	LOANDEP	Total loan/total deposit
	Capital adequacy or risk aversion	capta	Equity/total asset
	Bank size(Asset)	BS	log total asset
	Management efficiency	GNexOPin	Generalexp/operating income
	Bank concentration	(HHI_TA)	Sum of the square of market share (Herfindhal-Hirschman Index)
	Economic growth	GDP	%ge of real GDR growth
	Ownership	OWN	0=private 1=Government

Source: own competition, 2018.

RESULTS AND CONCLUSIONS

In this sub section a general overview of the data used for the analysis is presented. Each variable consists of ninety observations, i.e. a panel with ten years and nine cross sections (bank). The mean, median, standard deviation, maximum and minimum values of each variable were tabulated as follows.

Table 2. Summery statistics

	Mean	Median	Maximum	Minimum	Std. Dev.	Observations
ROA	0.029182	0.032200	0.049400	-0.0376	0.011998	90
OWN	0.111111	0.000000	1.000000	0.000000	0.316030	90
GEXOPIN	0.677786	0.366672	16.65205	-16.36671	2.790958	90
LOANDEP	0.610032	0.591408	0.967004	0.296870	0.121911	90
HHI_TA	0.434219	0.449075	0.459838	0.378287	0.028413	90
GDP	10.22820	10.35250	11.79500	7.958000	1.123022	90

Table 2. Summary...

	Mean	Median	Maximum	Minimum	Std. Dev.	Observations
CAPTA	0.136860	0.125736	0.507519	0.044576	0.060806	90
BS	9.067999	9.018887	12.39009	5.583496	1.298482	90
BMIX	0.184467	0.181074	0.444737	0.000000	0.080835	90

Source: own competition, 2018.

The mean for the return on asset indicates 2.92 percent. That is in the past 10 years from 2007 to 2016 commercial banks in Ethiopia were making a profit of 0.0292 cents on average per unit birr investment on asset. The maximum ROA between these years was 4.94 percent and the minimum is a loss of 0.0376 cents per each birr. The loss in ROA is due to the inclusion of newly established banks in the sample, for which startup cost for new bank over weights their revenues.

The ratio of general expense and loan loss provision to operating income is considered as a proxy for management efficiency in controlling expenses. The mean figure is 0.6778 which indicates that on average, 67.78 percent of the operating income of commercial banks in Ethiopia goes to general expenses. These expenses are non-interest expenses excluding employee salary and benefits. The maximum amount is 16.65 and the lowest is -16.367, the negative amount is due to higher startup costs faced by newly established banks. For which operating expenses are higher and operating income is at negative because of infancy stage of the business. The variability in operating expense between the banks is 2.79.

Ownership has coded 1 and 0 for the government and private banks respectively. Therefore the mean value is 11.11 percent, which means among the sampled nine banks 11.11 percent is government owned, and the rest 88.8 percent are private banks. Here even if it is only one Government owned bank it is giant and dominant one in the country.

Capital to total asset ratio is a proxy used to measure the risk aversion index of the banks. On average 13.68 percent of the bank's asset is financed by share holders' equity while the remaining 86.32 percent is debt. The maximum amount of asset covered by equity capital is 50.75 percent while the minimum is only 4.46 percent. The deviation between the banks is 6.61 percent which

shows higher variability of capital financing between the Ethiopian commercial banks.

With regard to business mix indicators which are measured by the ratio of service charge and commission to total operating income from interest and non-interest sources.

Herfindhal-Hirschman Index in terms of asset measures the bank concentration in the banking industry of the country. GDP is one factor among the macroeconomic determinants of bank profitability.

Test for Multicollinearity

One of the assumptions in the ordinary least squares is that explanatory variables were not perfectly correlated with one another. The statistical method for testing multicollinearity is analyzing the correlation coefficients between explanatory variables or variance inflation factor (VIF) Gujarati (2004). Accordingly, in this data the variance inflation factor for all variables is below 10. This indicates that there is no problem of multicollinearity.

Table 3. Correlation index between explanatory variables

	capta	GNexOpin	Bmix	HHI_TA	GDP	OWN	LOANDEP
capta	1.0000						
GNexOpin	-0.1844	1.0000					
Bmix	-0.0906	0.0120	1.0000				
HHI_TA	0.0980	-0.0178	0.0577	1.0000			
GDP	0.1623	-0.1688	-0.1816	-0.1881	1.0000		
OWN	-0.4293	-0.0613	-0.1037	-0.0000	-0.0000	1.0000	
LOANDEP	0.2721	0.2563	-0.1229	0.1666	0.1634	-0.4815	1.0000
BS	-0.6976	0.0196	0.0655	0.1931	-0.3396	0.6970	-0.4573
		BS					
BS		1.0000					

Source: own competition, 2018.

MODEL SPECIFICATION TESTS

Random effect versus Pooled OLS (Breusch and Pagan LM test)

The pooled OLS is a pooled linear regression without fixed and/or random effects. It assumes a constant intercept and slopes regardless of group and time period.

Regression Results and interpretations

The general objective of this study is to find out the determinants of bank profitability in the Ethiopian commercial banks. A panel data of ten years from the sampled nine commercial banks were used to achieve the specified objectives and answer the hypothesized statements.

Table 4. Regression output

Linear regression	Number of obs =	90
	F(8, 81) =	5.88
	Prob > F =	0.0000
	R-squared =	0.5147
	Root MSE =	.00876

ROA	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]
capta	-.089917	.044769	-2.01	0.048	-.1789932 -.0008408
GNexOpin	-.0013142	.0007116	-1.85	0.068	-.0027301 .0001017
Bmix	.0488447	.0115105	4.24	0.000	.0259424 .0717471
HHI_TA	.0029155	.0342972	0.09	0.932	-.0653252 .0711562
GDP	.0010893	.0010112	1.08	0.285	-.0009227 .0031013
OWN	-.0095011	.0040068	-2.37	0.020	-.0174734 -.0015288
LOANDEP	.0213929	.0089832	2.38	0.020	.0035192 .0392666
BS	.0035123	.0017717	1.98	0.051	-.0000128 .0070374
_cons	-.0228835	.027418	-0.83	0.406	-.0774367 .0316697

Source: own competition, 2018.

Regression output

The regression model is set as follows.

$$ROA = \beta_0 + (\beta_1) \text{capta} + (\beta_2)\text{Gexopin} + (\beta_3) \text{Bmix} + (\beta_4) \text{HHI_TA} + (\beta_5) \text{Loandep} + (\beta_6) \text{Bs} + (\beta_7) \text{Own} + (\beta_8) \text{GDP} + e \tag{2}$$

The regression output implies that all bank specific determinants, business mix, loan to deposit ratio and banks size have a significant positive impact, whereas capital to total asset and general expense to total operating income have negative impact on ROA. In addition from the external determinants bank concentration and GDP growth rates have a positive insignificant impact, whereas ownership by the Government has a significant negative impact on ROA of commercial banks in Ethiopia. GDP is one among the macroeconomic factors that determine the profitability of commercial banks.

■■■ CONCLUSION

The general objective of the study is to analyze the determinants of the profitability of commercial banks in Ethiopia. To achieve this goal internal determinants; business mix indicators, risk aversion index, management efficiency, liquidity risk, bank size, and external determinants; ownership, market concentration, and GDP, are regressed against return on asset. A panel data of ten years from the sampled nine banks were used to come up with findings.

The study results indicate that internal determinants are more important and strongly determine the banks' profitability than external variables. Thus Business mix indicators, risk aversion index, management efficiency, liquidity risk and bank size has a significant effect on the return on asset, whereas except ownership other external determinants, i.e. market concentration and GDP has no significant relationship to determine return on asset of Ethiopian commercial banks.

RECOMMENDATIONS

Based on the above findings the following recommendations are drawn.

- Since capital financing is found relatively costly than debt financing commercial banks in Ethiopia should emphasize more on mobilizing customer deposits than issuing equity. Also they have to render as much as loans from the mobilized deposit in order to utilize generated customer deposits. But due care have to be taken on both (deposit and loan) sides for optimal limits so as to balance their risk taking capabilities.

- It is recommended for Ethiopian commercial banks to expand the existing, and bring new innovative value added services which generates additional business mixes beside their normal operation.
- It is advisable for Ethiopian commercial banks to expand in size. Because, as the size of the banks increases their profitability also increases. Currently national bank of Ethiopia also influencing existing private banks to expand their capital and branches.
- Managers should focus on minimization and efficient utilization of general expenses in order to generate as much operating income and boost the profitability of commercial banks in Ethiopia.

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