

EFFECT OF ASSET- LIABILITY MANAGEMENT ON PROFITABILITY OF PRIVATE COMMERCIAL BANKS IN ETHIOPIA

Ifa Akuma Fayisa

Lecturer, Department of Accounting and Finance, University of wollega, wollega, Ethiopia

Abstract

This research was conducted to investigate effect of ALM on profitability of private commercial banks in Ethiopia by using panel data of seven private commercial banks in Ethiopia from year 2005 – 2017 G.C.The study used audited annual financial report of selected banks and analyzed by using multiple regression models moreover, net interest income, was to measure profitability. Fixed effect regression model was applied to investigate the effects of Asset, Liability and Macroeconomic factors on banks, by employing statistical Cost Accounting model for the sampled banks. To conduct the study quantitative research method was employed and explanatory research design was used in trying to establish the causal effect relationship between profitability and asset liability management and macro-economic variables (which were; loans & advances, deposit in foreign banks, investments in security, fixed deposits, saving deposits, demand deposits, GDP gross rate, inflation rate and market concentration). Secondary data was utilized through structured record of the review of the financial statements of the bank which was obtained from the national bank of Ethiopia and each of the banks. The study utilized panel data analysis methodology in attest conclusions about the effect of the explanatory variables on the dependent variable. The study revealed that loan and advances, deposit in foreign banks, and investment in security had a statistically significant and positive except loan and advance effect on net interest income, while demand deposit had a statistically significant positive effect on net interest income. Whereas saving deposit and fixed deposit from the liability part, don't have statistically significant positive effect on profitability as measured by net interest income. On the other hand market share and Inflation do not have statistically significant and positive effect on profitability while real GDP growth rate has got a statistically significant positive effect on profitability as measured by net interest income, Therefore, Bank managers are advised to give due attention to the statically significant positive variables (I.e, deposit in foreign bank, investment in security and GDP) to Improve profitability.

Key words:-Profitability, Private commercial banks, asset liability management, Ethiopia.

1. Introduction

The financial system consists of a variety of institutions, markets and instruments. It provides the principal way by which saving are changed in the earning investments. Given its significant role in the allocation resources the efficient functioning of the financial system is a vital importance to a modern economy (Chandra, 2003). One of the main objectives of financial institution is mobilizing

International Journal in Management and Social Science Volume 07 Issue 11, November 2019 ISSN: 2321-1784 Impact Factor: 6.319 Journal Homepage: http://ijmr.net.in, Email: <u>irjmss@gmail.com</u> Double-Blind Peer Reviewed Refereed Open Access International Journal



resources and channeling them to the investors. This channeling role of financial institutions takes different forms in different economic systems (Alemayehu, 2006). According to Somashekar (2009) Commercial banks are considered not only as dealers in money but also act as the leaders in economic development. They are not only the stock up houses of the country's funds but also the reservoirs of resources necessary for economic development. They play a significant role in the economic development of a country. Commercial banks are among the financial intermediaries that raise funds, as traditionally perceived, primarily by issuing checkable/demand deposits, saving deposits, and time/fixed deposits (Mishikin, 2004). Because the financial system in our country is at its kidding stage, commercial banks are also authorized to provide all the banking service in the financial market. Since there is no well-organized financial market, almost all of the transactions and activities of money and capital market are carried out by the commercial banks. According to Roy (2010) Commercial banks today are important not only from the view of economic growth, but also financial stability of the country. In developing economies, banks are particular for three important reasons. First, they take a most important role in developing other financial intermediaries and markets. Second, due to the absence of strong bond markets and equity markets, the corporate sector and investors depends heavily on banks to meet its financing needs. Finally, in developing markets or underdeveloped countries markets banks provide to the needs of a vast number of savers from the household, who wish to secure income and liquidity and safety of funds, because of their inadequate capacity to manage financial risks in general. As Mishikin (2004) shows, a commercial bank's liability which is mainly financed by current, saving, and fixed deposits and equity (which is contributed by shareholders) represent its sources of funds; while asset which is composed of mainly investments, loans and advances represent its use of funds. Given the legal requirements of commercial banks, each commercial bank determines its own composition of liabilities and assets, which determines its specific operating objective; maximizing shareholders' equity (profit).

Profitability is a measure of economic gains realized by a firm in relation to the capital invested. This level of economic success can be determined by the amount of reported profits in a fiscal year. Zopounidis,[2001] stated that business environment is characterized by risks and uncertainties to effectively compete in the market place banks manage their assets and liabilities taking into consideration the risk level, earnings, liquidity, profit, solvency, the level of loans and deposits to mitigate losses and thus improve profitability. Since asset liability management plays a critical role in risk management, it is imperative that banks recognize the asset liability importance and apply effective risk management procedures; Effective implementation of advanced asset liability management techniques allows banks to hedge the risk and to maximize Profitability in today's highly competitive markets for banking services.

Asset liability management enables a firm to balance between its liabilities and assets. This in turn minimizes financial risks and hence improves profitability. Asset liability management guides a firm in making investment decision. This is because the firm is able to allocate sufficient funds for investment as a result of adoption of liquidity management best practices and argue that firms that



maintain a proper structure of their balance sheet records high profitability compared to those firms who fail to maintain proper balances of assets and liabilities, this is achieved by effective risk management which play an integral role in addressing financial risk since all risk cannot be eliminated but it is the responsibility of risk managers to identify their risk levels and know which level can be controlled or accepted(Uyemura and Van Deventer, 2003).

Various authors reveal that the variables that are directly related to the bank's asset liability management (i.e. loans to assets ratio, and foreign bank to asset ratio, investment to asset ratio, customer deposit to asset ratio) are those which mostly affect banks profitability. And also agree on non-management controllable such as macro-economic variable and market concentration has a significant effect on banks net earnings. Their findings showed that Asset, macro-economic and market concentration factors has a positive impact and liability have a negative impact on banks profitability (Sayeed &Hoqve, 2010 and Nasif, 2010).

The main issue of ALM is the bank's balance sheet and the main question is: given a certain level of risk, government regulation, globalization, competitors, and alternative choices of investment, and liquidity and interest rate changes in the market, what should be the composition of a bank's assets and liabilities in order to maximize the bank's profit? What should be the optimal combination of ALM? These are the two questions raised by Kosmidou(2005) who argued that the optimal balance between these factors cannot be found without considering important interactions that exist between the structure of a bank's liability and capital and the compositions of its assets. Therefore, the assets and liabilities of commercial banks shall be managed in order to maximize shareholder value, to enhance profitability and increase capital, to serve customer and community needs, and to protect the institution from any disastrous financial consequences arising from different changes.

One of the key motivators of asset-liability management worldwide was the Basel Committee. The Basel committee on banking supervision (2001) formulated broad supervisory standards and guidelines and recommended statements of best practice in banking supervision. The purpose of the committee was to encourage global convergence toward common approaches and standards. In particular, the Basel II norms (2004) were proposed as an international standard for the amount of capital that banks need to set aside to guard against the types of financial and operational risks they face. Basel II proposed setting up rigorous risk and capital management requirements designed to ensure that a bank holds capital reserves appropriate to the risk the bank exposes itself to through its lending and investment practices. Generally speaking, these rules mean that the greater risk to which the bank is exposed, the greater the amount of capital the bank needs to hold to safeguard its solvency and overall economic stability. This would ultimately help protect the international financial system from the types of problems that might arise should a major bank or a series of banks collapse. Therefore the assets and liabilities of commercial banks shall be managed in order to maximize shareholder value, to enhance profitability and increase capital, to serve customer and community needs, and to protect the institution from any disastrous financial consequences arising from different changes.



2. STATEMENT OF THE PROBLEM

In order to cope up with the changes in the environment, the Ethiopian banking industry has became competitive and have been forced to effectively manage their asset and liability to mitigate various risks that arise due to mismatch between their assets and liabilities. ALM is the heart bit of the financial institution specially banks with the aim to reduce the risks of the banks and maximizing total revenue (Faruk, 2014). Banks Profitability depends on the skills of the management to deal sharply and successfully with asset and liability to tide over risks and uncertainties through shifting them or hedging benefits (Kavitha, 2012). According to Litiekiene (2008) ALM is very important for commercial banks to accept such strategy that would reduce the default risk, interest rate risk and would stabilize the risk, profitability, liquidity and safety.

The asset measure of bank profitability and efficiency are affected by both internal and external factors. Various studies attest to this fact (Balachander, 1997, Ramlall, 2009, Alper and Anbar, 2011). Internal factors are related to bank management which encompasses the ALM culture of the bank and external determinants are factors which reflect the macroeconomic and legal environment that affect the operation and performance of commercial banks.

The traditional ALM programs focus on interest rate risk and liquidity risk because they represent the most prominent risks affecting the organization balance-sheet (as they require coordination between assets and liabilities). But ALM also now seeks to broaden assignments such as foreign exchange risk and credit risk; however the main objective of ALM is not to eliminate risk. Rather, it is to manage risks within a framework that includes self-imposed limits. Nonetheless, in the context of Ethiopian banking industry, the subject has received a limited research attention. In which case, in order to either prove the above premises or reach into some other assertion regarding the relationship between asset liability management and Profitability of Ethiopian banking sector, empirical investigation is lacking. As far as the knowledge of the researcher is concerned, there are a few researches related to asset liability management and Profitability in Ethiopian banking industry (Tamiru, 2013 and Seblewongel Lemma, 2017). Among a few studies corresponding with this research is that, the research conducted by Seblewongel Lemma (2017) on the impacts of asset liability management on the profitability of commercial banks in Ethiopia .Seblewongel has used six independent variables through quantitative research approach: capital adequacy, asset quality, operational efficiency, liquidity, income diversification and bank size as dependent variables. However, it couldn't assess the effect of asset liability elements deposit in other bank, loan and advance, fixed asset, demand deposit and saving deposit and macroeconomic variables on the effect of asset liability management on the profitability of private commercial banks. Tamir (2013) has used eight dependent variables includes deposit in other banks, other investment and debit balance, loan and advance ,fixed assets ,saving deposit ,demand deposit, fixed deposit, real gross domestic product and inflation. However, the researcher did not incorporate the variable like market concentration and did not use the measurement of the core business operation as the dependent variable (I.e. NIM).



Most of previous studies conducted to test the relationship between ALM and profitability using comprehensive measures of profitability return on asset (ROA) and return on equity (ROE), no one was emphasized on the core business operations profitability of banks. For the purpose of this study core business operation of commercial banks was defined as the banks' operations of deposit mobilization and providing loans to customers. Hence, didn't take into account other measures of profitability particularly the measure of profitability for core business operations of banking sector, net interest income(NII).

Nevertheless, study goes further to include other variables influencing Profitability with relation to ALM targeted factors are loan and advances, deposit in foreign bank, investment in securities, Fixed deposit, saving deposit, demand deposit, GDP, inflation and market concentration, their effect on Profitability of private commercial banks in Ethiopia. In order to bridge this gap this research is aimed at analyzing the effects of Asset Liability Management on profitability of commercial banks and making such a study contextually relevant and prospectively significant in Ethiopia.

3. OBJECTIVE OF THE STUDY

3.1. General Objective

The general objective of the study is to investigate the effects of asset liability management on profitability of private commercial banks in Ethiopia.

3.2 Specific Objectives

1. To analyze the effects of earning asset on profitability of private commercial banks in Ethiopia.

2. To analyze the effects of liabilities side on profitability of private commercial banks in Ethiopia

3. To examine the effects of macro-economic factors on profitability of private commercial banks in Ethiopia.

4. Hypotheses

In line with the broad purpose statement the following hypotheses were also formulated for investigation. Hypotheses of the study stands on the theories and past empirical studies related to profitability and Asset Liability Management. The results from the literature review were used to establish expectations for the relationship of the different determinants. Hence, based on the objective, the present study seeks to test the following hypotheses:

Hypotheses

- H1: H_{al} Loan and advances positively affect Bank profitability. .
- H2: H_{al} Deposit in foreign bank positively affects Bank profitability.
- H3: H_{al} Investmentin security positively affects Bank profitability.



- H4: H_{al} Fixed deposit negatively affects Bank profitability.
- H5: H_{o1} Saving deposit negatively affects Bank profitability
- H6: H_{al} Demand deposit positively affects Bank profitability.
- H7: H_{al} GDP positively affects Bank profitability.
- H8: *H*_{ol}Inflation rate negatively affects Bank profitability.
- H9: H_{ol} Market concentration negatively affects Bank profitability.

5. EMPIRICAL Evidences on Banks Profitability

Various researches disclosed that internal factors significantly affect the asset measures of bank profitability which actually measures management efficiency employing the available resources to generate profit (Balachander, 1997). According to Ramlall (2009) and Alper and Anbar (2011) bank profitability can be affected by both internal and external factors. Internal factors are related to bank management which encompasses the ALM culture of the bank and external determinants are factors which reflect the economic and legal environment that affect the operation and performance of commercial banks.

Various authors reveal that the variables that are directly related to the bank's asset liability management (i.e. loans to assets ratio, deposit in local and foreign bank to asset ratio, investment to asset ratio, customer deposit to asset ratio) are those which mostly affect banks profitability. They also agreed on non-management controllable such as macro-economic variables and market concentration has a significant impact on banks net earnings. They arriving conclusion like Asset, macro-economic factors and market concentration has a positive effect and liability have a negative effect on banks profitability (Sayeed &Hoqve 2010 and Nasif, 2010). In Ethiopia, recent finding shows that Asset and macro-economic factors i.e, GDP and inflation have a positive impact and liability have a negative effect on the profitability of banks (Tamiru, 2013).

As we seen in theoretical literature banks generate survival income from its advancing loans. Empirical study reveals that loans and advances significantly affect commercial banks profitability. According to Gul, Irshad and Zaman (2011) Having too much loans shows the chances of rising banks return on assets. Alper and Anbar (2011) study reflects that the ratios of loans to assets are found negative and significant impacts on ROA. Flamin, McDonald and Schumacher (2009) conclude that credit portfolio volume and weak asset quality affect negatively return on asset. Bank loans are expected to be the main source of income and are expected to have a positive impact on bank performance. Inflation reduces credit expansion by contributing to higher net interest margins.

Muhammad & Mohammad (2009), in their application of SCA to assess ALM impact on profitability they recognized that Private commercial Banks are better than public banks in terms of asset management, but they do not have any superiority over public banks in terms of liability management.



This does not provided them conclusive support that ALM in private banks is superior to ALM in public banks. Thus, study could not explain the profitability differences between these two sets of banks through analyzing ALM. Their study considered the market concentration index and GDP growth rate, unlike the previous ones.

Muhammad and Mohammad (2009) measured profitability by assuming two levels of measures of income: total income and net operating income.

There are many asset-liability management models in the practice. Looking to the past, the first mathematical models in the field of bank management are found. Asset and liability management models can be deterministic or stochastic (Kosmidou and Zopounidis, 2001). Deterministic models use linear programming, assume particular realizations for random events, and are computationally tractable for large problems. The deterministic linear programming model of Chambers and Charnes (1961) is the pioneer in ALM. Chambers and Charnes were concerned

Mulvey and Vladimirou (1992) used dynamic generalized network programs for financial planning problems under uncertainty and they developed a model in the framework of multi-scenario generalized network that captures essential features of various discrete time financial decision problems.

Mulvey and Ziemba (1998) present a more detailed overview of various asset and liability modeling techniques, including models for individuals and financial institutions such as banks and insurance companies.

Moreover, over the years, many models have been developed in the area of financial analysis and financial planning techniques. Kvanli (1980), Lee and Lerro (1973), Lee and Chesser (1980),

Baston (1989), Sharma et al. (1995), among others have applied goal programming to investment planning. Booth et al. (1989), Giokas and Vassiloglou (1991), Seshadri et al. (1999) presented bank models using goal programming.

Hester &Zoellner (1966) employed statistical cost accounting (SCA) model on US banks. Mihir& Ravi (2009) implemented the canonical analysis to assess the nature of relationship between assets and liabilities setting the hypothesis assets influence liabilities. This method was also used by Seem Jawal (2010), who found that strong canonical correlation between asset and liability accounts, indicating high asset-liability dependency and the canonical correlation in each sector (pubic, private and foreign banking sectors) of banks in India under study declined from the period 1997-2000 to 2005-2008.

6. KNOWLEDGE Gaps and lapse

From the review of the relevant literature relating to effect of asset liability management on bank profitability, it's possible to know the existence of knowledge gap. The results of the empirical findings confirms to the hypothesis of the study which predicts the existence of a positive relationship between asset liability management and profitability of commercial banks in Ethiopia and also Literature has confirmed that poor management of assets and liabilities exposes the firm into financial



risks that might impact negatively on the profitability of the firm. The firm should therefore work towards achieving a proper match between assets and liabilities. This is also consistent with the theories of the study which shows that firms that maintain a Proper fit between their assets and liabilities achieve profitability as compared to those firms that do not effectively balance their assets and liabilities.

However in the case of Ethiopia to the knowledge of the researcher there exists a single study undertaken by (Tamiru,2013). Tamir to examine the effect of asset liability management on Profitability of bank in Ethiopia and he focused on asset liability management elements but this study come up with other aspect of asset liability management that affect the Profitability of banks in Ethiopia, Targeted factors include loan and advances, deposit in foreign bank, investment in securities, fixed deposit, saving deposit, demand deposit, GDP, and inflation. Tamir has not incorporated market concentration and also cannot use measurement of core business operation. Because these variables are very important variables which can significantly affects the profitability of Ethiopian banking industry.

Hence, given the contradicting results of earlier studies on the relationship between Asset Liability Management and profitability, and most of previous studies conducted to test the relationship between Asset Liability Management and profitability using comprehensive measures of profitability return on asset (ROA) and return on equity (ROE), no one was emphasized on the core business operations profitability of banks. Hence, didn't take into account other measures of profitability particularly the measure of profitability for core business operations of banking sector, net interest income, there is an objective ground to study the effect of Asset Liability Management on profitability in the context of banking industry working in Ethiopia with a focus on the profitability of core business operations of banks. Besides, even though a study addressing ALM in developed and some is developing economies are available and they would be of great value for related literatures. But, scant attention has been given to cover an assessment of ALM in the banks of least developed countries, like Ethiopia.

Therefore, this study is designed to scrutinize the effect of Asset Liability on profitability of core business operations of private Commercial banks in Ethiopia by using net interest income (NII) as measure of profitability of the core business operations of banks.

7. Research methodology

The study adopts explanatory and quantitative research type. The purpose of explanatory research describes cause and effect relationship of dependent and independent variables and was make it suitable for this study because the researcher was fairly knowledgeable about the aspects of the phenomenon, but little is known regarding their nature. The study was also guide by pure quantitative research approach. The secondary data was gathered from the national bank of Ethiopia by the researcher. The collected data was readily computed to express the study independent and dependent



variable from the collected financial statement through the theoretical concept of each variable calculation.

Profit is the ultimate goal of Private commercial banks. All the strategies designed and activities performed thereof are meant to realize this grand objective. Net interest income is interest income minus interest expense. In this research going to measure banks profitability by using the net-interest income measures by conducting a multivariate regression for the dependent variable.

This study accounts the book value of assets. Because, notes to the financial statements of banks excerpt that financial statements are prepared in accordance with the historical cost convention. Average variable are computed by adding beginning and ending book values and dividing by two. These values are further divided by average total assets of the year to express them in ratios for the same period.

Like the assets counter parts liabilities figures show book values. Averages are taken and then are divided for average total assets to come with ratios.

GDP is one of the primary macroeconomic indicators used to measure the health of the economy of a country, and it is a measure of the overall economic output within a country's borders over a particular time, usually a year. Since economic growth and financial sector performance are positively correlated (Levine, 2000), the real GDP growth, used in this study, is expected to have a positive effect on bank's profitability. Consumer price index is a key inflation indicator. It is gauged based on data related to consumer spending habits and the prices paid for a variety of goods, including food, clothing, medications, energy, homes and furnishings. In the study the general inflation rate was taken from National bank of Ethiopia (NBE)

There is consensus in academic literature that economies of scale and synergies arise up to a certain level of size. Beyond that level, financial organizations become too complex to manage and diseconomies of scale arise. The effect of size could therefore be nonlinear; meaning that profitability is likely to increase up to a certain level by achieving economies of scale and decline from a certain level in which banks become too complex and bureaucratic. Hence, the expected sign of the coefficient of bank size is unpredictable based on academic literature.

Market share = <u>The deposit of a company operates in a specific year</u> The total deposit amount of all banks for the same year

Herfindahl - Hirschman Index (HHI) is a more official and frequently used measure of market concentration that measures the size of a bank in relation to the industry and serves as indicator of the degree of competition among banks. It is calculated by squaring the market share of each bank and then summing up the resulting numbers, which is mathematically presented as follows:

 $\text{HHI} = \textstyle{\sum_{j=1}^{N} S^2}$

Where:



Si - Represents the market share of bank i in the market

N - The number of competing firms in the market.

The statistical cost accounting (SCA) multivariate model will be employed to figure out the effect of explanatory variables on the dependent variable.

In order to test the research hypothesis and investigate relationship between variables multiple regression model were used.

Modeling is based on panel data techniques. Comprises of both cross sectional elements and time series elements; the cross sectional element is reflected by the seven (7) private banks and the time series element is reflected the period of study (2005-2017). Panel data is favored over time series or cross sectional data because it can control for individual heterogeneity and there is a less degree of multi-linearity between variables (Altai, 2005).

The traditional model (Hester and Zoellenr, 1966) suggests an equation for showing the variations in banks net income, Ybt expressed for bank b and time t in terms of variations of assets and liabilities in the following way:

 $Ybt = \alpha 1 + \Sigma \alpha 2iAibt + \Sigma \alpha 3jLjbt + ebt(1)$

Where,

Ai =Ith asset.

Lj = jth liability.

 α 1= net fixed income that is not dependent on assets and liabilities.

ebt = error term.

 $\alpha 2i = marginal rate of return on assets.$

 α 3j = marginal cost of liabilities

As the banks have wide variations in their business volume, all variables of equation (1) are divided by a banks average total asset (ATAbt) (kosmidou*et al.*, 2004). Thus equation (1) takes the form of:

Where, the stochastic term ubt = ebt/ATAbt

The structure of the traditional SCA model ignores macroeconomic variables. In reality, a number of factors affect banks earning and cost relating to assets and liabilities. These factors are market structure and macroeconomic conditions. If these factors are not included in the model, regressions results were unreliable and coefficients biased Kwast& Rose (1982) incorporated the influences of these factors and presented a modified model as equation 3. This model is applied to this study.

Ybt / ATAbt = $\alpha 1$ / ATAbt + $\Sigma \alpha 2i$ Aibt/ ATAbt + $\Sigma \alpha 3jLjbt$ / ATAbt + $\Sigma \alpha 4GDP$ + $\Sigma \alpha 5INF$ + $\Sigma \alpha 6HHI$ + ubt(3)

GDP - Real growth rate of gross domestic product

INF - Rate of Inflation

HHI - Herfindahl Index of market concentration associated with each bank.



All assets and liabilities were not being included as independent variables in the model. This was done to avoid prefect co linearity within the independent variables. Hence, cash and fixed assets on the assets side and equity capital on the liabilities side will be excluded from the model (Muhammad and Mohammad, 2009).

8. RESULTS OF THE REGRESSION ANALYSIS

As stated in Brooks (2008), in financial research, there are two major classes of panel estimator approaches that can be employed. Namely, the fixed effects model and random effects model. In order to select the appropriate model which provide consistent estimates for this study, Hausman test was employed.

Table1. Presents the Hausman specification test which suggests the fixed effects model was better than random effects model as the p-value (0.005), is less than 0.05 for dependent variables which imply that the random effects model should be rejected and thus, the analysis is based on the fixed effects estimates.

Table 1. Hausman Test

	—— Coeffi	cients ——				
	(b)	(B)	(b-B)	<pre>sqrt(diag(V_b-V_B))</pre>		
	FIXED	RANDOM	Difference	S.E.		
nlata	-3.223887	-3.459925	.2360379	.1639328		
dfbat	.3288481	.3414223	0125743	.0315445		
iveata	1.720594	.8660176	.8545767	.2470286		
fdata	0296114	1.113747	-1.143359	.2116887		
sdata	1067279	0589818	0477461	.3246409		
ddata	6.623942	16.55693	-9.932986	2.207087		
rgdp	.662016	.9347554	2727394	.0817291		
inf	.0704034	.3892538	3188505	.0658385		
hhi	2.979272	9443716	3.923644	1.98264		
_cons	-1.288918	-3.21478	1.925862	.4913872		

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

Source: STATA 13 SOFTWARE

So based on the result i.e. the P-Value is less than 0.05 we will employ fixed method of panel data estimation.



Regression Results and Analysis

The empirical findings from the econometric results on the effect of asset liability management on Profitability of banks in Ethiopia presented in this section. The section covers the empirical regression model used in this study and the results of the regression analysis. The following empirical model was used in order to identify the relationship between asset liability management and Profitability of banks in Ethiopia. Table below reports regression results between the dependent variable (NIM) and independent variables. Hence, the following discussions present the interpretation on the fixed effects model regression results and relationship between explanatory variables and profitability.

Table 2. Results of the regression based on Fixed Effect model

•	xtreg	nim	nlata	dfbat	iveata	fdata	sdata	ddata	rgdp	inf	hhi,	fe

Fixed-effects (within) regression Group variable: banks					Number of obs = Number of groups =			
R-sq: within betweer overal	= 0.8886 n = 0.1480 l = 0.6879			Obs per	group: min = avg = max =	13 13.0 13		
corr(u_i, Xb)	= 0.0244			F(9,75) Prob >	= F =	66.49 0.0000		
nim	Coef.	Std. Err.	t	P> t	[95% Conf.	Interval]		
nlata	-3.223887	.5566352	-5.79	0.000	-4.332761	-2.115013		
dfbat	.3288481	.0885714	3.71	0.000	.1524048	.5052913		
iveata	1.720594	.3279117	5.25	0.000	1.067361	2.373828		
fdata	0296114	.248854	-0.12	0.906	5253539	.4661311		
sdata	1067279	.4298542	-0.25	0.805	9630414	.7495856		
ddata	6.623942	2.448344	2.71	0.008	1.746591	11.50129		
rgdp	.662016	.1152859	5.74	0.000	.4323547	.8916773		
inf	.0704034	.1692992	0.42	0.679	2668579	.4076646		
hhi	2.979272	1.668195	1.79	0.078	3439422	6.302486		
_cons	-1.288918	.6501141	-1.98	0.051	-2.584012	.0061755		
sigma_u	.26418906							
sigma_e	.16150932							
rho	.72794163	(fraction	of varia	nce due t	o u_i)			
F test that a	ll u i=0:	F(6, 75) =	13.87		Prob >	F = 0.0000		

Source: STATA 13 software

Significant of the model is tested, accordingly, table 2, of Multiple regressions indicated that the regression model predicts the outcome variable significantly with the p-value of (0.000) and its shows the overall model applied was significantly good enough in predicting the outcome



variable. It shows dependent variable (Net Interest Income) R^2 is 68.79 percent explained by its Independent variables, which is a good one. To conclude, the regression model used for the study has explained the overall model signifying the study was not lost very important variables that affect the study output.

The asset explanatory variables of this study were decomposed into explanatory variables as loans and advances (NLATA), deposits in foreign banks (DFBATA), and investments in security (IVEATA). As shown in the above table, the fixed effect regression result shows that all assets except loan and advance have positive effect on private commercial banks profitability. In other words, assets management has positive effect on commercial banks profitability. This finding coincides with the findings of Asiri (2007), Sufian and Habibulah (2009), and Miller and Noulas (1997), who found that assets management has positive effect on commercial banks profitability.

GDP Growth Rate (RGDP): This study justified that a positive and significant effect of Ethiopia real GDP growth and banks profitability in terms of net interest income. This results about GDP support the argument of the positive association between economic growth and the financial sector performance that revealed by the numbers of researchers (e.g. Neely and Wheelock, 1997; Demirguc-Kunt and Huizinga, 2000; Athanasoglou et al., 2005 and Bikker and Hu, 2002).

Inflation (**INF**): This study shows a positive and insignificant relationship between inflation and banks profitability at 10% significant level. The coefficients or estimated net interest margin from inflation rate (INF) is found to be positive and insignificant for private commercial banks profitability in this regression result. These reveal that National Bank of Ethiopia (NBE) and private commercial banks are straggling to perform well the forecasts of future changes in anticipation of inflation to adjust interest rates and margins. According to Flamini.V, McDonald.C, and Schumacher.L (2009) the positive effect of commodity prices on bank profitability rests on, the extent to which inflation affects bank profitability depends on whether future movements in inflation are fully anticipated, which, in turn, depends on the ability of banks to accurately forecast future movements in the relevant control variables. An inflation rate that is fully anticipated raises profits as banks can appropriately adjust interest rates in order to increase revenues, while an unexpected change could raise costs due to imperfect interest rate adjustment

Market concentration (HHI): Showing non balance sheet variables, the coefficients or estimated net interest margin from market concentration (HHI) is found to be positive and insignificant. Like with study of Saayed and Hoque(2010) and Nasif.F(2010) the positive coefficient of Market concentration (HHI) shows the favorable effect of market concentration on profitability of commercial banks. Hence the positive coefficient of market concentration agree with the favorable market concentration positively affect profitability of private commercial banks in Ethiopia. This implies that in Ethiopia banking Market concentration is still favorable or there is not dominant bank that expand the outlet of its total asset in industry.



9. Conclusions

In order to cope with the changes in the environment, banks have been forced to effectively manage their asset and liability to mitigate various risks that arise due to mismatch between their assets and liabilities, Risk is inherent to any business, but it can be controlled to mitigate its effect on profitability. ALM involves a set of actions and procedures designed to control banks risks and financial positions. The core issue of Asset-Liability Management (ALM) is the bank's balance sheet and the main question is: Given a certain level of risk, government regulation, globalization, competitors, and alternative choices of investment, and liquidity and interest rate changes in the market, what should be the composition of a bank's assets and liabilities in order to maximize the bank's profit? Extensive researches attempted to identify the effects of asset liability management on profitability of firms. However, the findings of prior empirical studies have provided varying and in some cases contradicting evidence related to the effect of asset liability management on profitability. Furthermore, the majority of these studies have been conducted in developed countries.

In light of the above, the main objective of this study was to investigate the effect of asset liability management on profitability of core business operation of private commercial banks in Ethiopia, employing the SCA model. This project research also tried to examine the effects of market concentration, GDP and inflation on performance of Ethiopian private commercial banks. To achieve the intended objectives the study used quantitative approaches panel data analysis methodology. The panel data were collected from audited financial statements particularly balance sheets and income statements of a sample of seven banks over the time period from 2005-2017. The collected data were analyzed by employing a fixed effect model using statistical package "STATA 13 Version".

In order to conduct the empirical analysis, one dependent variable and nine independent variables were selected and used by taking in to account the nature of banks operation. Net interest margin was taken as dependent variable, while the independent variables were loans & advances to asset ratio, deposit in foreign banks to asset ratio, investment in security to asset ratio, saving deposit to asset ratio, fixed deposit to asset ratio, demand deposit to asset ratio, market share, real GDP growth rate and inflation rate.

It was observed that 68.79 % of banks interest income variation is explained by the above mentioned variables. The results of the fixed effect estimation model showed the existence of the following relationship between the variables.

➤ The empirical findings of this study provide evidence that the profitability of private commercial banks in Ethiopia is positively affected by assets management. The significance of individual assets differs; loans and advances have the most significant effect on the profitability of private commercial banks followed by investments in security, deposit in foreign in banks, and does significantly affect private commercial banks profitability. This



leads us to generalize that the spreads realized from loans and advance in the Ethiopian private commercial banking market is not attractive.

- From the liability variables only demand deposit is the significant variable that positively affects profitability of private commercial banks. This may be due to the costliness of this source of fund. The saving and fixed deposits variable has negative and insignificant effect on private commercial banks profitability. This is due to the fact that commercial banks do not pay any interest for demand deposit but charge high service fees.
- The study also justified a positive and significant effect of Ethiopia real GDP growth toward banks profitability. This is because; the current Ethiopian economy growth could create a new and potential demand for financial services and it might reduce the probability of default loan.
- ➤ The researcher finds that banks market concentration has positive and yet insignificant effect on profitability. The positive coefficient of Market concentration (HHI) shows the favorable effect of market concentration on profitability of private commercial banks. Hence the positive coefficient of market concentration agree with the favorable market concentration positively affect profitability of private commercial banks in Ethiopia.
- Finally, Inflation a positive and insignificant relationship between net interest margins. The positive effect of inflation reveals the commodity prices on bank profitability rests on; the extent to which inflation affects bank profitability depends on future movements in inflation are fully anticipated, which, in turn, depends on the ability of banks to accurately forecast future movements in the relevant control variables.

10. Recommendations

Overall these empirical results provide evidence that, the profitability of Ethiopian private commercial banks are shaped by composition of asset liability and macroeconomic variables that are not the direct result of a banks managerial decisions. So, policy makers and decision makers at the private commercial banks should give high concern and set direction in order to set the optimum composition of asset and liability which maximizes the bank profit.

Since, the loan component was found to be the most significant contributor towards bank profitability; private commercial banks should focus on loans rather than investment in securities, investment in subsidiaries and coupon bonds because, the banks earn relatively higher interest income from loans than investment in securities. On the other hand, in order to resist the challenges of credit risk, a more thorough analysis of the loans portfolio may be



useful for the private commercial banks in structuring a sound, stable and profitable asset portfolio.

- Since deposits are banks' primary sources of funds that they can be invested to generate income. The private commercial banks should make unreserved efforts to mobilize deposits that will meet the growing credit demand of the economy by implementing several deposit mobilization strategies which in return make the bank more profitable.
- Private Commercial banks should take the necessary actions to increase its current account deposit, which create free funding from floats and contribute positively towards profitability. Thus, in order to secure from the almost nil cost current account deposits, private commercial banks should try to make their current account service attractive as much as possible. Thus, volume in regard to demand deposit should be a strategic tool for private commercial banks
- ➤ To improve its profitability and at the same time to place themselves in a better position above other banks in a competition for deposits the so called deposit war.
- As many literatures supports financial intermediation in Ethiopia is still in its early stages even by the standards of other low-income countries: in terms of unbanked society and many other metrics such as the total number of banks, banks contribution to GDP, bank accounts per person, branches per person, and bank credit per person are lower in Ethiopia compared to other African countries. Thus, private commercial banks should focus to reach this unmet demand of finance.

11. FURTHER RESEARCH DIRECTION

This study is duly designed to test the effects of asset liability management on profitability of private banks in Ethiopia Therefore, the researcher would like to recommend future researchers to include and measure the effect of other asset , fixed asset, operational efficiency, income diversification, government regulation and policy in order to obtain reliable results.

References

list of Journals

Athanasoglous P. et al., (2006), Bank-Specific, Industry- Specific and Macroeconomic Determinants of Bank Profitability, *Bank of Greece Working paper*, No. 25

Babes Bolyai University, FSEGA

Balachander ,K et. al, (1997),Determinants of commercial bank profitability in case of Malaysia; banks. *Journal of Engineering economics Siauliu universitetas BIATEC*, Volume XI, 1-

12.

Ebisa, D.(2012). Post 1991 Era financial sector deregulations in Ethiopia. Basic Research



econometric analysis. *Review of Economics and Statistics*, 1-52. *Economics. USA, Vol* 1(1),1-22. Effectiveness: Kluwer Academic Publishers ISBN 0-89838-278-5.

- Fama, E. F. 1980. Banking in the theory of finance: Journal of Monetary Economics 6: 39-57.
- Joseph F. Sinkey, Jr., (1998), —Commercial Bank Financial Management In the Financial Services Industryl, Fifth Edition, Prentice-Hall International Inc., New Jersey Journal of Agricultural Science and Review ISSN 2315-6880 Vol. 1(4), 81-87.
- Kavitha, N.(2012) Asset Liability Management of Scheduled Commercial: *BanksInternational Journal of Marketing and TechnologyVo2*, Issue 4, 20-44.
- Kwast, M.L, and Rose, J. T. (1982). Pricing, operating efficiency, and profitability among Large commercial banks. *Journal Of Banking And Finance* 6, 233-254.
- Lileikiene.A.(2008) Chosen strategies of asset and liability management in commercial Management in Banks," *ICFAI Journal of Risk Management* mathematical modeling for

bank: Journal of Basic and Applied Scientific Research 3(1) 484-493.

- Mauri, A. (2003), Origins and early developments of banking in Ethiopia, Working Paper (04)
- Oguzsoy, C. B., &Guven, S. (1997). Thoery and Methodology: Bank asset and liabilitymanagement under uncertainty European Journal of Operational Research, 102, *Production Economics*, 43, 67-73.Profitability in Sub-Saharan Africa:*IMF Working Paper*. Retrieved from http://www.lschumacher@imf.org profitability: Business and *Economics Research Journal Volume* 2(2). 139-152.
- Ramlall, I. (2009), Bank Specific, Industry Specific and Macroeconomic Determinants of Profitability in Taiwanese Banking System: Under Panel Data Estimation, International Research Journal of finance and Economics*Romanian Economic Journal*: XIV(39) 64.
- Singh, K. (2013) asset liability management in banks .AIMA Journal of Management & Research, May 2013, Volume 7.
- Sinkey, Jr. & Joseph, F. (1992). Commercial Bank Financial Management, In the Financial-Service Industry, (4thEd.), Macmillan Publishing Company, Ontario. South-Eastern European Journal of Economics 1
- Tamiru.B.(2013) Impacts of asset liability management ;Research Journal of Finance and
- Uyemura, D.G. & Van Deventer, D.R. (2003). Financial Risk Management in Banking, McGraw-Hill, New York, NY.
- Vaidyanathan.R.(1999). Asset-liability management: journal of management, 29(1), 39-48.
- Vasiliou, D. (1996). Linking profits to Greek production management. International Journal of
- Zopounidis, C. (2001). Multicriteria decision aid in financial management, European Journal of Operational R.



list of Books

Brooks.C (2008) Introductory econometrics for finance :2nd edition. Cambridge University Press

Chandra, P.(2003) *Fundamental s of financial management*; 3rd edition: New Delhi Tata MC Gran Hill.

Chakrabanti A.N. (2005) *Financial management*: Indian institute of banking Ance. MUMBAI. Gujarati N.D (2004) *Basic econometrics*, 4th Edition McGraw–Hill Companies Somashekar.N.(2009) *Banking*: New Delhi. New Age International (P) Ltd.