HAIGAZIAN UNIVERSITY

IMPACT OF EXTERNAL & INTERNAL FACTORS ON PROFITABILITY & NET WORTH OF COMMERCIAL BANKS IN LEBANON

BY

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DECLARATION

I, **Christapor Avedis Kouyoumjian**, declare that the research work reported in this dissertation is my own, except where otherwise indicated and acknowledged. It is submitted for the degree of Master of Business administration Major Finance in the Haigazian University. This Thesis has not, either in whole or in part, been submitted for a degree or diploma to any other universities.

Christapor Avedis Kouyoumjian

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On the January Day of 22nd 2016

ABSTRACT

The aim of this research is to study and analyze the external and internal factors effect on the profitability and net worth of the commercial banks in Lebanon.

Treasury bill of 12 months is chosen to represents the market interest rates. The external factors which are chosen in this research study consist of several aspects such as inflation, money supply, growth in coincident indicator and interest rates variability.

The Internal factors which are chosen in this research study consist of several aspects such as growth of the bank's assets, profitability, efficiency, capital adequacy, liquidity, market share, competition, loan to deposit ratio and non-performing loans.

This study uses a joint Mathematical Models used by the following researches to test the impact of interest rate fluctuation and external and internal factors on short and long run Profitability of commercial banks. (Godspower, 2012) and (Raharjo, 2014) (Flannery, 1981, 1983)

The study applied regression analysis using HAC and Robust least square Huber Type 1, 2 and 3 tests for a data that covers 11 years period from 2003 till 2013.

The internal variables that have significant impact on NIM are Capital adequacy ratio, Liquidity, Loan to deposit ratio, competition, market share, operating efficiency, growth in assets and return on assets, and the external factors are Interest rates, Money supply and interest rates variability.

Concerning NW, the internal variables that have significant impact on it are Loan to deposit ratio, competition, Market share, return on assets and operating efficiency. The external variables that have significant impact on NW are Interest rates, Money supply and interest rates variability.

For large banks the internal variables that have significant impact on NIM are operating efficiency, return on asset, and growth in assets. The external variables that have significant impact on NIM in large banks are Interest rates, money supply and interest rates variability.

Concerning NW of large banks the internal variables that have significant impact are Loan to deposit ratio, liquidity, operating efficiency, market share, return on assets and

competition. The external variables that have significant impact on NW in large banks are interest rates, money supply and growth in coincident indicator.

The internal variables that impact NIM in small banks are loan to deposit ratio, liquidity, competition, operating efficiency and return on asset.

The external variables that significantly impact NIM in small banks are interest rates, money supply and interest rates variability.

The internal variables that impacts NW in small banks are loan to deposit ratio, operating efficiency, market share, return on assets, competition and growth in assets.

The external variables that impacts NW in small banks are, interest rates, and growth in coincident indicator.

The variables that are significantly different when comparing large banks to small banks in term of Net interest margin are liquidity, Interest rates and operating efficiency.

The variables that are significantly different when comparing large banks to small banks in terms of Net worth are liquidity, loan to deposit ratio, competition, operating efficiency and return on assets.

DEDICATION

This research report is dedicated to

God

My Family

&

Haigazian University

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CHAPTER 1

INTRODUCTION

1.1 CONTEXT OF THE STUDY

Rose, 1995 states that, one of the basic functions of the financial system is to transfer funds from lenders to borrowers.

Nowadays commercial banks are one of the most essential financial intermediaries applying this basic function in the current market, who have a vital role in the economy. It is especially for a country whose economy is still dependent on the presence of banks as the main source of financing for economic activities.

Since financial intermediation function performed by commercial banks has an impact on the economic growth and economy stability of a country, commercial banks are required to have a good performance.

At the macro-economic level, bank is one of the means to transmit monetary policy; meanwhile at micro economic level bank is a major source of financing for businesses and individuals (Koch and Donald, 2000).

If banks implement the financial intermediation function efficiently, they will encourage the economic growth of a country (Levine, 1997).

In a country where financial sector is dominated by commercial banks, any failure in the sector has an immense implication on the economic growth of the country.

This is due to the fact that any bankruptcy that might take place in the banking sector has a domino effect that could result in bank runs crises and brings economic problems.

One of the indicators that can be used in measuring the efficiency of banks is net interest margin.

The Lebanese banking sector has a reputation of maintaining stability and profitability under tough economic conditions and this study tests how the interest rates fluctuations and other external and internal factors affect commercial banks' short and long run profitability in Lebanon.

1.2 STATEMENT OF PROBLEM

The target of commercial banks is to achieve wealth maximization, and to be well hedged against any unexpected changes in interest rates, and to do this they should well manage the maturities of their assets and liabilities and keep the gap between interest income and interest expense at a desired level.

NIM is the major part of the banks profit which is Interest income minus interest expense divided by the average earning assets and it is the reason why banks will go for high interest rate when charging borrowers and pay the lowest possible interest rates to depositors.

As per Saunders and Cornett 2003, studies on interest rates have shown that unexpected changes in interest rates expose banks to interest rate risk, where such risks will result in reinvestment and refinancing risk affecting banks profitability and net worth.

Interest rate risk along with other risks can cause harm and failure to the commercial banks. For instance as interest rate increases, credit risk will increase, leading to liquidity risk and in turn leading to solvency risk which impact profits and net worth of commercial banks.

As we know the vital role of commercial banks on the economic growth and stability of a country; and as the Lebanese banking sector has a reputation of maintaining stability and profitability under tough economic conditions that it has been through, our interest has turned to look for how internal and external factors that impact the banking sector, affect the Lebanese banks short and long run profitability.

1.3 RESEARCH OBJECTIVE & CONTRIBUTION

The objective of the research is to evaluate the effect of the Market interest fluctuation, external and internal factors on the Net Interest Margin and Net worth of commercial banks in Lebanon.

This study will help improve understanding and evaluation of the factors affecting the long and short run profitability of commercial banks.

It would help bank managers make better managerial decisions by understanding internal and external factors, and by forecasting external factors and by controlling

internal factors that affect the profitability and net worth of the commercial banks in Lebanon.

1.4 MY RESEARCH QUESTIONS:

What is the effect of market interest rates fluctuations on the short and long run profits of commercial banks in Lebanon?

What is the effect of the external factors on short and long run profitability of commercial banks in Lebanon?

What is the effect of the internal factors on banks short and long run profitability of commercial banks in Lebanon?

1.5 DIFINITION OF TERMS AND ABBREVIATIONS

NIM – Net Interest Margin
NW – Net worth
CAR – Capital adequacy ratio
LDR – Loan to deposit ratio
LIQ – liquidity ratio
NPL – Non-performing loans
COM – Competition
MPR – Market share
CPI – Consumer price Index
MS – Money supply (M3)
Sigma T-bill12 – Interest rates variability on 12 month Treasury bill rate
Gassets – Growth in assets
GCI – Growth in Coincident Indicator
BOPO – Operating efficiency
ROA – Return on assets
T-bill 12 – 12 month Treasury bill rate

1.6 LIMITATIONS

- This test has been done only on commercial banks
- CAR has been computed using Bassel I regulation in old period but it's been computed using Bassel II regulation in recent periods.
- This test has been done using only one type on interest rate
- The net interest margin (NIM) is not a measure of total banks' profits since it does not include non-interest income and expenses.
- Other determinants of banks profit such as, taxation and regulations were also not included.
- It doesn't include other countries to compare the level of the effect of interest rate fluctuations on profit and net worth's of commercial banks across countries.

1.7 ASSUMPTIONS

- We assumed that T-bill 12 is an indicator for remaining interest rates
- We assumed that all financial statements are prepared under the same reporting standards.
- We assumed that the independent variables used were the best factors affecting the dependent variables.
- We assumed the NIM and NW were the best dependent variables to show profitability and Capital worth of commercial banks.
- Using 36 commercial banks represents the full Lebanese banking sector

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION AND BACKGROUD OF STUDY

"Banks are a way to transmit monetary policy at the macro-economic level, while at the micro economic level; commercial banks are the biggest means of financing for organizations and consumers (cited, Koch and Donald, 2000)."
Commercial banks should have a well performance of operations, as the role of financial intermediation set by banks has impact on the growth of the economy and country stability. On the other hand, banks with poor performance can later on fail and thus impact negatively into confidence crisis to the bank systems and result in a deceleration of growth of the economy to decline or result into a downfall of economy.
"In countries where the commercial banks have dominated the financial sector, any downfall will hugely impact on the economic growth. This is because if any bankruptcy that may take place in the sector, has a disturbing impact that can lead to bank runs, crises and lead to financial crisis and tribulation of the economy (cited, Ongore and Kusa, 2013)."
"If banks apply the financial intermediation function professionally, they will motivate the economic growth of a country (cited, Levine, 1997)." The best indicator to use to compute the efficiency of banks is the Net Interest Margin. "High Net Interest Margin is usually associated with inefficiencies in the banking sector, specifically in developing countries, because of expenditures which resulted due to the inefficiency transferred to the consumers when charging high interest rates (cited, Fry, 1995; Randall, 1998; and Barajas *et al.*, 1999)." On the other hand, to the lower net interest margin, the expected social cost suffered by the public to banking intermediation activities undertaken will also be low.

Low interest rates indicate efficient intermediation costs and show the effectiveness of the monetary policy, a financial stability that is well maintained and a banking system that is competitive. "High intermediation costs would reduce the incentive for economic actors" (cited, Hadad *et al.*, 2003).
Interpretation of the high net interest margin can be seen from two sides. At First, high net interest margin shows a low level of efficiency of banking and non-competitive banking market conditions. Secondly, "high interest margin shows inadequate in banking regulations and high asymmetric information" (cited, Claeys and Vennet, 2007). "In some conditions, high net interest margin is showed with a high risk premium; whereas the conditions of increasing competition will motivate speculative behavior of the banking system that could lead to financial instability (cited, Hellman, Murdock and Stiglitz, 2000)."
"Interest margin is one of the pointers that can be utilized in assessing the profitability of banks. Other pointers used to compute the profitability of banks is the NIM (cited, Murthy and Sree, 2003; Caruntu 2008)." Therefore, the higher the level of interest margin which is reflected, the higher profitability of the bank and bank stability is well-maintained. On

the contrary, high NIM may also show the presence of lending practices with a high credit risk that banks should establish loan loss reserves are large enough (cited, Khrawish, 2011).

"The financial system is made up of a network of financial markets, institutions, businesses, households, and governments. There are many roles of the financial system, with the main role of transferring loanable funds from lenders to borrowers (cited, Rose et al, 1995)." Lenders are the ones whose current income receipts are higher than their current expenditure, giving them extra money to lend to borrowers. This financial transaction can be made out directly between lenders and borrowers or semi-directly, where a third party is involved. The shortcomings of direct and semi-direct financing have made way for a third method which is the financial intermediation, and that is done by financial intermediaries.
"Commercial bank is a classic example of financial intermediary at work; meeting the definitive needs of both borrowers and lenders. Early banks gave funds specifically to two classes of borrowers: merchants and governments (cited, Kohn, 2004)." Lending to merchants often took the form of discounting commercial bills. The standard IOU was used by merchants. Governments on the other hand were always in need of credits. They borrowed from early merchants exchange for their trading rights.
Financial intermediaries buy the IOUs made by borrowing consumers, and meanwhile they sell these IOU's to other consumers who come to banks to save money.
"There are 2 kinds of financial intermediaries; the depository and non-depository institutions. Depository institutions are financial intermediaries whose significant proportion of their funds comes from customer deposits (cited, Saunders and Cornett, 2003)." These are made up of commercial banks, savings associations and banks, and credit unions.
The most significant financial intermediary that is serving the public nowadays is the commercial bank. Commercial banks have services that are more than most of the remaining financial institutions which contain of expanding the supply of money by lending credits to borrowers. Deposits are accepted from saving surplus units, and given as loans to saving units deficit. The essential parts of the balance sheet, assets and liabilities are the loans and deposits.
Today's financial institutions have become an important part of consumer's life.
"A financial institution is a business firm whose principal assets are financial assets or claims, bonds, such as stocks and loans; instead of real assets, such as buildings, equipment, and raw materials" (cited, Rose et al, 1995).
Financial institutions lend money to consumers or invest in securities in the financial marketplace. They also propose many financial services, like insurance protection and sale of retirement plans, to safekeeping of valuable and provision of mechanisms for making payments, transferring funds, and storing financial information.
Interest rate is the calculation of the cost of borrowing of funds between two entities.
A better way to state this is to say that the interest is the reward paid to the depositor for allowing the bank to use its personal funds. Interest is the price of the money used.
"Smith (1991) mentioned it as the return to the supplier of financial resources for temporary loss of freedom or compensation for parting with his money."

Profitability computes the firm's capability to gain revenue in excess of expense an accomplishment, which is necessary if the organization, is to be reflected a going concern.
Profitability is a measure of overall performance effectiveness of the firm. It has also been described as a measure if the company is performing satisfactorily. So the pointers of the profitability is the profits made by the business, the growth and expansion, cost of the operation incurred and demand for goods and services excess of return over cost economies of scale market power and cost control.

2.2 COMMERCIAL BANKS AND THEIR SERVICES

"Commercial banks have the largest group of depository institutions in size. They perform actions same as to the ones of savings institutions and credit unions; they accept deposit funds and make loans (cited, Saunders and Cornett, 2003)." However, they are different in their structure of assets and liabilities.
"The national banks must be members of Federal Reserve System and must be insured by the Bank Insurance Fund (BIF), which is administered by the Federal Deposit. Insurance Corporation (FDIC)" (cited, Fabozzi and Modigliani, 2003).
"Because of the inherent special nature of banking and banking contracts, officials have imposed numerous restrictions on their product and geographic activities (cited, Saunders and Cornett, 2003)."

"Commercial banks now offer much more services than most of the other financial institutions, such services ranging from regular checking accounts, through consumer and mortgage lending, to underwriting of new securities issues by corporations and governments (cited, Rose et al, 1995)."

The types of banks are divided into three different categories which are the individual banking, the institutional banking and the Global banking. Where the individual banking is when the bank is taking care of customer demand like lending to them, mortgages, credit cards etc. in this type of banks the gains are as interest income and fee income. As for the institutional banking, they make loans to nonfinancial and financial institutions and to governments. The gains from this type of banking are also as interest income and fee income. Finally, the last type is the Global banking type which engages in corporate financing, forex product and services and capital market. In global banking mostly gains come from fee income from the services rendered.

2.3 FUNDINGS AND PRDUCTS OF COMMERCIAL BANKS

"There are three main sources of funds for commercial banks; deposits, non-deposit borrowing, and equity capital or net worth (stocks and retained earnings" (cited, Fabozzi and Modigliani, 2003).

There are the deposits, which are the funds deposited by the customers or the corporations and these deposit come in three types which are the demand, time and savings deposits.
Concerning the demand deposit, the customer can at any time demand back its funds from the bank. These funds don't bear any interest but they allow customer to write unlimited number of checks. As for the time deposits, they pay either fixed or floating rate of interest and if the funds were demanded back by the customer prior to its maturity the bank will deduct penalty charges from the due interest. Concerning the saving deposits, these pay interest but they don't bear a specific duration or a maturity date and the customer has the right to demand back the deposit at any time he or she like.
There are also the Non-deposit borrowings; this is used by banks to manage their assets in an aggressive method. These types of borrowings are the security repurchase agreements, the short term borrowings of reserves in the federal funds.
As for the last type, it's the Equity Capital which is when commercial banks borrow from their own shareholders. Bank are highly leveraged as most of their assets come from their borrowing from debt.
"The principal components of equity capital are retained earnings, capital reserves, par value of common and preferred stock, and surplus (cited, Rose et al, 1995)."
"Loans represent three-fifth of the assets of all US insured banks." (cited, Rose et al, 1995) Banks make a baffling array of loans for thousands of different reasons. There are three categories of loans made by commercial banks.

For the product types of commercial banks we have real estate loans, C&I loans, and the individual loans as well as other loans and non-debt products.

Real estate loans made up a huge portion of the bank's assets. They are used to buy real estate like property or land etc. these are usually very long termed.
Concerning the Commercial and industrial loans, these are the business loans; these loans are used by firms for the purchase of inventories and equipment. These loans can be on short and long term maturities.
Concerning the individual loans, these loans are made specifically to individuals for car loans or other personal loans. In this type of loans the rates are set at the time of the contract and they can be fixed or floating depending on the deal; moreover, when the interest rates are at their low level customers will prefer to go for fixed rates to keep paying low interest rate on the life of their loan.

As for other loans, these include micro-financing made to farmers, and other loans made to other banks and other types of institutions, brokers and dealers etc..
Concerning the non-debt products, these are usually engaged by commercial banks and they can be either on or off balance sheet. These include securitization, derivatives, LC's, Loan commitments, Investment in interest earning assets, Credit allocation, intergenerational Wealth transfer, trust services and correspondent banking. As discussed, these could be on or off balance sheet and the off balance sheet accounts have become very important lately as they generate high levels of income to the commercial banks.
Securitization is the approach of selling packed funds and other assets that are backed by securities. This is used by commercial banks in order to hedge against interest rate risk.

This also provides commercial banks with a higher level of liquidity. Securitization brings in fee income to banks.
Derivatives are financial products used in the financial market to hedge against market interest rate risk and other risks. Banks gain commission and fee income from derivatives.
LC's are used for trade and it is used to hedge against payment default where the intermediary bank covers the payment.
Loan commitments are contracts made by banks that have specific agreements on interest and other aspect that ensure that a bank will commit to a certain specified deal.
Investment in interest earning assets is made up of the T-bills and T-bonds and sovereign bonds. These are used by banks to gain liquidity at the quickest time possible.
In Credit allocation, government considers residential real estate and farming sectors to be very essential for the economy and they need to be financed to ensure their continuation in the economic growth of the country.
Intergenerational Wealth transfer is when commercial banks aid savers to transfer their wealth from duration of young age to older ages.
A trust service is when commercial banks manage the assets of customers or businesses where the beneficiaries are not experience in the management of their own assets.
Finally, correspondent banking is when a bank back up another bank where that specific bank doesn't have a specific service or isn't able to perform a certain task.

2.4 LEBANSES BANKING SECTOR

The Lebanese banking sector has proved to have solid fundamentals and was able to resist crises. The country faced lots of political instability which definitely impacted the banking sector and since 2011 the economic growth was very slow. The GDP growth was slowing down for the past three years. However, the Lebanese banking sector continued to grow and the reason behind this growth was the large depositor's base which is very large compared to the number of population in Lebanon. Deposits at Lebanese banks have reached three times the country's GDP in recent years. There are around forty two commercial banks, eleven foreign banks and seventeen investment banks in the full Lebanese banking sector and these banks employ over twenty two thousand workers of which 72% come from university.

Concerning the Lebanese banks activity, the results show that Lebanese banks have grown in their activities in the past three years where their joint deposits reached an 8.9% growth in 2013. The Lebanese banks mainly concentrated to bring in foreign funds that make an essential part of the reserve in the central bank of Lebanon.

The Lebanese Central Bank hold a huge amount of funds to hedge against the country's massive public debt and to protect LBP value fluctuation against the US dollar.

Banks in Lebanon are successful in bringing in deposits and the reason behind this is their reputation and the interest rates that are being offered in the market. The offered

rates are 5% for the Lebanese pounds and 3% for the US dollar during times when the interest rates in advanced economies were giving 0%.

Banks in Lebanon show individual care for their client's needs, keeping a high standard of customer service and offering large variety of products and services and other banking features; most essentially the fact that customers in Lebanon benefit from the banking secrecy law. Moreover, the Lebanese banking system puts huge efforts to fight money laundry and keep a high level of banking reputation.

The lending activities in the Lebanese banking sector for resident and non-resident private sectors have inclined in recent years and they have actually exceeded the Lebanese GDP.

Bank in Lebanon were motivated by the Central Bank to lend for housing loans to middle income of the Lebanese population. They have also been encouraged to invest in technology startups. In return the CBL would reduce the Reserve requirement required from banks, by lending them at very low rates.

Bank in Lebanon have a very high quality of assets by having net doubtful loans to equity for 4% and net doubtful loans to gross loans for 1.2%.

As for the profitability of commercial banks in Lebanon, they suffered in the past several years as the surrounding situations affected the banking sector immensely; however, they still managed to prove a growth of 5% on their profits consolidated.

As for liquidity, the banking sector enjoys a high liquidity ratio and this in turn is beneficial against high risks of the country. This liquidity was also beneficial to sustain crises. Also the Central Bank of Lebanon demand to have 15% of legal reserve kept with it from all commercial banks. Banks show to be ahead of the requirements by having a 30% average liquidity kept in foreign currency.

Concerning the compliance with the international financial regulations, the Lebanese banks have been following strictly these regulations in order to keep a sound international standing. They keep Captial adequacy ratio of 12% set by the central bank before even it was set by the Bassel III.

Lebanese banks are also less sensitive than other international banks as they are less exposed to derivatives in the market as the central bank has forced a law against investing in the derivatives, and thus they enjoy a protection against the credit crisis.

2.5 THE PROFITABILITY OF COMMERCIAL BANKS MEASURE AS NIM

Net Interest Income is the difference between the interest received from loans and investments and the interest paid on deposits and other liabilities, as predicted in his theoretical model that there is interdependence between deposits and loans in banks. This meaning, that Net interest income is the difference between interest income and interest expense. Whereas the net interest margin is the net interest income divided by the Average earning assets and presented as a percentage of the earning assets. Obviously the Net Interest Income is not to be compared with organizations of different sizes; however, it could be compared meaningfully between organizations. Angbazo (1997) specified that determinants such as credit risk and interest rate risk, as well as the interaction between these two types of risks are part of the factors that affect net interest margin.

In order to gain control over the size of the NIM, commercial banks management manages the deposits and liabilities. There are two ways to apply this control and it can be either, defensive or aggressive. The defensive way is when the management does not let the interest rate changes to decrease or increase the net interest margin whereas the aggressive approach is focuses on increasing bank's net interest margin using the portfolio of the bank as a tool to be changed.
"The success and failure of both strategies depends on the movement of interest rates." (cited, Rose et al, 1995)
"In some countries where banks are the main sources of funds, the level of net interest margin are one of the important policy variables to measure how efficient is the bank in performing its function as an intermediary institution, to collect deposits and distribute loanable funds." (cited, Sidabalok and , Viverita, 2011)
Determinants of interest margin could be stated using 2 ways, which are mainly the traditional way and the modern way. The traditional approach is to have opinions of the variables which impact the net interest margin, which are done through the analysis of the financial position of the concerned bank, whereas the modern approach is done by considering the demand and supply rate based on the microstructure of the commercial bank.
Net interest income is the spread between the interest expense and interest income paid by the bank. It can be said that the bank can promote third party funds to the maximum divided by the ratio of loanable funds.
A study examined by Ho and Saunders (1981) is a modernizer in analyzing the NIM to make banking model as intermediary between the recipient and the channeling of funds called the dealer's model. In this model, the commercial bank serves as an intermediary being risk averse between loan markets and third party funds market. As per this analysis, the determination and the size of the net interest margin is attained by 2 essential determinants which are the degree of competition among banks and the exposure factor of the interest rate money market in the area that the bank is located in.

There is the Bid-ask spread method which is the name that is given to the model made by Ho and Saunders where the model is the academic research bases in making net interest margin models. The Model enhanced by Ho and Saunders of the net interest margin became the base for many more researchers in developing models of the NIM of

commercial banks, where NIM models enhanced by Angbazo (1997). This model is also used by Saunders and Schumacher (2000), Brock and Suarez (2000), and Drakos (2002).
The conclusion of the analysis was that the NIM of commercial banks are relatively high due to less efficient banks resulted from low level of competition. Using the model of Ho and Saunders with the approach of panel data, Gounder and Sharma (2012) discovered that NIM is positively correlated with the rate of interest paid bank, operating costs, the strength of the market, and credit risk.

2.5.1 Variables of Net Interest Margin and Net Worth

The variables of the NIM are the ROA, CAR, LDR, Npl, MPR and the market interest rate.
The ROA is the Net income of the bank divided by its total assets showing how efficiently that bank assets are being managed.
The CAR, which is the capital adequacy ratio which is the ratio kept in capital to cover the risk of the bank; a capital that would cover the earning assets.
The Loan to deposit ratio, is a liquidity ratio that presents to ratio of loans to the available deposit in assets. This shows how much a bank is able to cover the sudden withdrawals of funds by customers. If the ratio is high that means that the bank has less liquid position.
Npl which are the non-performing loans; these are the loans that have not been paid for over 90 days, and they are in a default position. This happens if the assets, the loans are not well managed by the management.
MPR is the market power loans of each bank divided by the total loans of all banks; it shows how much market power that bank has.
"Net interest margin is the ratio of a bank's net interest income to average earning assets of banks. The bank's net interest income is bank interest income minus interest expense. Thus the net interest margin is highly dependent on lending rates and deposit rates offered by banks. Deposit rates and lending rates are influenced by market interest rate benchmark." (Cited, Raharjo, 2014)

2.6 COMMERCIAL BANKS PROFITABILITY

Costs of banks are considered bank's profitability's essential part which is related directly to the concept of capable management. For example Bourke (1989) and Molyneux and Thornton (1992) came up with an encouraging affiliation among profitability and management of better quality. If the bank's ownership status is relate with its profitability or not is another essential aspect to point out to, but there is very minimal proof found to support the supposition that private organizations will earn comparatively higher profit.
The final set of factors of the profitability of banks works with the control variables of macro-economy.
Growth rate of money supply, inflation rate and long term interest rates are usually used as variables. The issue of the suggestion among inflation and bank's profitability has been introduced by Revell (1979). He stated that the result of inflation on the profitability of banks depends upon if wages and other operating expenses of banks are increasing faster than the inflation.

It is assured that the profits of a business firm are the end result of operations and a sign of its well performance.
Griffith (2001). Profitability is the organization's capability to generate gains and it must be reflected only in income statement. If the organization is to certify that the income generated is greater than the input cost. In economy point of view, profitability states to excess of income over expenditure which can be showed in terms of net profit margin and return on equity while according to Larson (1981), in accounting's opinion states profitability as capability of the firm to generate net income on consistent basis. The principle motivating force in any business is profitability, though indeed it is not the only reason in any business, most of the time, it's the most important.

2.6.1 How profitability is measure in commercial banks

A significant ratio that presents the profitability of commercial banks is the ROA. This ratio represents the ratio of income to the banks total assets. The ROA computes that capability of the banks management to be able to generate income by using the bank's assets at their disposal; it's a computation of how efficiently the banks resources are used to generate income. It also describes the efficiency of the management of a company in generating income from the total resources of the bank. The NIM is the computation of the gap between the amount of interest expense paid out by bank to the lenders and the income it generates.
It's usually presented as a percentage of what the financial firm gains on loans in a specific period of time and other assets minus the interest paid on borrowed money divided by the average amount of the assets on which it earned in that period. Khrawish emphasizes that net interest margin measures the spread between the interest income the bank receive on loans and securities and interest cost of borrowed funds. It reflects the cost of bank intermediation services and the efficiency of the bank.

2.7 COMPETITION INFLUENCE ON BANKS

There have been several studies that have examined competition among banks. The tests that have the most new findings on the effect of bank competition on the risk of bank failure are divided into 2 parts:
Jimenez, researchers have lately discovered the effect of bank competition on banks risks taking. Competition is alternatively computed by focus and Lerner indices. They have found a negative correlation between Lerner index and bank risk taking.
Empirically Berger, Klapper (2009) have found proof of positive impact of competition on risk taking in developed countries. It's been found a positive effect of bank concentration on bank risk.
Also, second group of tests are the macro based that analyze the impact of competition on financial stability. The primary finding is that banking crisis is not likely to occur in a highly concentrated banking system.

The competition reduces the chance of a bank crisis and inclines the time to crisis. This literature states that there is no accord on the impact of bank competition on risk taking.

2.8 BANK CAPITAL ADEQUACY

"Bank capital is those fund attributed to the proprietors as published in the balance sheet" (cited, Nwankwo, 1991). There are several functions that these funds complete but there is an agreement that the intervening and fundamental function is to have a cushion against any losses that are not hedged by current earnings and to hedge depositors and other creditors against loss in the event of liquidation. We have different opinions by several experts in the banking and finance as to what is that makes a satisfactory capital, but they all come to an agreement that it is an age long issue for which there do not seem to be any agreement in sight. So, as mentioned by Nwankwo (1911), the problem of what makes an acceptable capital for banks has a long way history.
As described by Nwankwo (1991) that the capital satisfactory to have is that quantum of funds that a commercial bank should keep, so in a practical manner can perform its operations. The amount of capital that could efficiently release the primary capital function of preventing bank failure by absorbing losses was viewed as the adequate capital. As per the risk engaged in the banking business adequate capital is what provides the best protection against insolvency of the commercial bank and liquidation. Unexpected restraints could be faced by any inadequate bank. The predominant and forecasted economic conditions of the whole economy and bank's served main area can surely affect the current situations of banks. Since capital is a cushion against which to charge of losses, it is needed to have higher capital as the riskier the asset composition are to keep a given level of soundness. Likewise, the more volatile and focused the liability the larger the risk and thus to keep solvency is it required to have a higher value of adequacy.
The risk in high volatility is obtained from the fact that huge withdrawals could push asset liquidation at an unfortunate time; and liability maturity mismatch may force refinancing or liquidation at a loss.

2.9 PROFITABILITY MEASURE RETURN ON ASSETS

Profitability is the capability of a bank to gain profit from all the business activities it conducts. It shows how efficiently the management can make profit by using all the assets it has. As per Harward and Upton (1991) "profitability is the ability of a given investment to earn a return from its use." ROA presents how efficient management is at utilizing its assets to generate earnings. "Earlier studies on capital adequacy as a determinant of profitability of banks revealed that a high capital adequacy ratio should signify a bank that is operating over-cautiously and ignoring potentially profitable trading opportunities" (cited, Goddard, Molyneux, and Wilson 2004), which mean that a negative relationship between equity to asset ratio and bank performance. "Banks with higher equity to asset ratio will normally have lower needs of external funding and therefore higher profitability" (cited, Pasiouras and Kosmidou, 2007).

2.10 DETERMINANTS OF COMMERCIAL BANK PERFORMANCE

We can characterize the determinants of the performance of banks as external and internal factors. He stated that bank individual characteristics which influence the bank performance are affected by the external factors that are not controlled by the company and the internal decisions of the management.

2.10.1 Bank specific factors/internal factors Capital adequacy

One of the bank's most essential aspects that impact profitability is the capital as it is the amount of owns fund that support the banks business and act as cushion in case of adverse situation. Banks capital brings in liquidity for the bank because deposits' are almost insubstantial and disposed to bank runs; he specifies and highlights that capital decreases the chances of liability. The adequacy of capital is mediated on the basis of capital adequacy ratio (CAD).This points out the internal strength of the bank to withstand losses during crisis. **"**The bank asset are the current asset, credit portfolio fixed asset and other investments of the bank." Loan portfolio quality impacts the profitability of the bank. The highest risk facing the bank is the losses calculated from delinquent loans, thus non-performing loans ratios are the best proxies for asset quality. One of the key elements in determining the profitability of banks is the management efficiency which is an internal factor. This has been shown by using several different financial ratios like the earnings growth rate, loan growth and asset growth. The efficiency of the management can also take part in the efficiency of the operational activities by using evaluation systems on control of the staff quality and the control of discipline system.

2.10.2 External factors / Macro Economic factors Inflation

The impact of inflation on the profitability of banks depends if initially it was expected or not. In the case that it was expected and the interest rates are agreed it will bring forth revenue which rises faster than cost, then it could have a positive influence on profitability than when it's not expected. Usually high inflation brings high interest, and so accordingly demotivating borrowing in the long run because of the worry that one will not be able to finance the loan due to changes in the payments.
The banks size in their profitability model to take into consideration of the change of greater loan and product accessibility and differentiation of larger banks to asset market which small banks cannot be available to. Larger profitability is suggested to larger banks. Bourke (1989) disagreed that growth of the market a positive influence on commercial banks profitability, he showed that the growth in total market associated specifically with the entry barrier might bring forth for banks a potential to earn higher profits.

2.11.1 LOAN TO DEPOSIT RATIO

A Loan to deposit Ratio is often used for assessing a bank's liquidity by dividing the total loans of banks by their total deposits. If this ratio is too high that will mean that the banks might not have satisfactory level of money to cover near future payments and in turn suffers liquidity problems.
Samy Ben Naceur (2003) tested the effect of bank's characteristics, financial structure and macroeconomic factors on bank's net interest margins and profitability in the Tunisian banking industry for the 1980-2000 period.
The study primarily stated that there is a positive correlation between the NIM and the bank loans and they have important impact. Syahru Syarif (2006) conducted a study and analyzed the correlation between NIM and other factors, specifically ROA and LDR. It was decided by the study that these two factors have positively impact significant to the NIM variables. Raharjo (2014) study analyzed all of the micro variables CAR, LDR, NPL, ROA, and total asset, only CAR and NPL turn out to have significant impact in affecting intermediation efficiency. This happens because the used computation in efficiency inputs outputs are partial finance ratio where banks can manage it, so that the real bank performance cannot reflect well.
Another study examined the profitability and cost control measures and the study determined that the bank's profitability is meaningfully determined by the cost control methods used by the bank. Moreover the study saw that the high profit earning banks recorded lower operating costs. "The bank profitability depends on various determinants. A study described that the bank profitability variables and concluded that the bank profitability is linked with bank management, customer service and financial performance etc. (cited, Shah, 1979)."
A study examined the motives of low profitability in the organization, it found the reasons are low productivity; low productivity is due to the result of incompetent methods of operation, bad layouts, excessive product variety, not up to par working conditions, power breakdowns and poor maintenance of records.

2.11.2 Impact of Loan to Deposit Ratio

Loan- deposit ratio is a useful instrument to regulate bank liquidity, and by extension, it affects the profitability of the banks. The profit of banks is based on the interest charged against the deposits; it means that the profit is gained through the positive difference between interest of loans and interest on deposits supported a study by Joni Tamkin Borhan & Towpek (2006). It could be that usually banks will not be earning maximum return if the LDR ratio is too low. Many studies described several determinants impact of ROA viz. capital and ROA, loan ratio and profitability (Bashir and Hasan, 2003) ratio of equity to assets and profitability (Athanasoglou et al. 2006), Loans & deposit and profitability of the bank (Naceur, 2003) and deposits to total assets ratio and profitability Anna P. I. Vong et al (2009). Among the several factors, loans and deposits is one of the main factors for computing the profitability of the bank. Loans and deposit are both equally significant in the banking operation. The main purpose of the study is to recognize the influence LDR of locally owned commercial banks and the profitability of the same banks. Usually the primary source of income for the banks is interest from loans and

advances given to consumers or organizations. The main function of the bank is to lend funds to the borrowers through rally the interest revenue; this is the best source of income for the commercial banks. Usually all of the banks strive to increase the loans amount to borrowers in order to increase their aggregate revenue in the financial statement. It is normal that the commercial banks propose to have more loans the more it wants to generate high income and gain profits. It is comprehensible that the commercial banks propose more loans the more it goes to generate high income and profit. "It is obvious that the banks giving out more loans to the customers for the benefit of interest revenue, on the same time there could be a chance for a risk of liquidity. At the same time it negatively impacts the bank profitability, (cited, Rasiah (2010).)" A study conducted by Husni (2011) described a positive and essential correlation between the total liabilities to total assets, and return on assets. The tools used in the study are the Loan to Deposit Ratio and the Return on assets. Previous studies conducted the Loan to Deposit Ratio and the bank liquidity, but as per the records of the International Conference on Global Business, Economics, Finance and Social Sciences shows the study conducted the primarily concentrated on focusing on the direct relation between the ROA and LDR of commercial banks that are locally owned.

2.12 IMPACT OF LIQUIDITY ON PROFITABILITY

There is a massive literature about the analysis of liquidity holdings for financial organizations. Even that there is a very limited amount of studies to embrace liquidity as an determinant that explains the bank profitability, Berger (1995) tests the statistical relationships between the capital of banks and its earnings and he found that they are positively correlated, which is between the capital and return on equity. This result is also constant with the "expected bankruptcy cost hypothesis." The results by Berger state that the banks with a higher level of capital have their funding expenditures decrease to the extent it balances more than the expenditure from selling the additional capital. As Berger (1995) describes the concept of the "expected bankruptcy cost hypothesis" in the realm of capital, it is also theoretically appropriate to the influence of liquid assets on profitability, whereas banks holding more liquid assets gain from a superior awareness in funding markets, declining their financing expenditure and gaining profits. A recent paper enhanced a model where a bank's total credit risk is fragmented into "insolvency risk" the restricted probability of default because of weakening of asset quality if there is no run by short-term creditors and "illiquidity risk" "the probability of a default due to a run when the institution would otherwise have been solvent".
A formula for "illiquidity risk" is delivered by the model and the authors present that the profitability of an "illiquid" default is declined by the incline in the liquidity ratio of a bank. In the context of the current paper, these two ideas are brought together. If the expected bankruptcy cost hypothesis is just and if the incline in the liquid assets of a bank declines its profitability of default, then bank profits must display a positive correlation with the carrying liquid assets. An opportunity cost on the bank given their low return relative to other assets is forced by the carrying liquid assets, thus having a negative influence on profitability.
It is anticipated that liquid assets disclose a non-linear relationship to bank profitability in which increasing liquid assets would enhance a bank's profitability as long as the

marginal benefit of having more liquid assets outweighs the opportunity cost of their low relative return.

2.13 NON-PERFORMING LOAN

A Non-performing loan is the loan that is about to default or it is in the state of default. Meaning the party that the loan was lent to will not be able to return the funds to the banks. However, this can depend also on the contract terms. As per the IMF, "a loan is non-performing when payment of interest and principal are not paid for over 90 days, or at least 90 days of interest payment have been capitalized, refinanced or delayed by agreement, or payment are less than 90 days overdue, but are other good reasons to doubt that payment will be made in full!"
When banks do not want to give away funds this is present, specifically when interest rates are at their lowest and an institution is not able to get loans even if it has profitable projects. Excess demand for credit is led by credit crunch and thus rationing of credit, in which per non-price mechanism allocated are loans. Finally, it forces extra pressure on the monetary policy performance. Based on this, some proofs was noticed by researches that when higher level of non-performing loans declines, banks aspiration incline to lending of funds. Less evidence were at hand that were cleared for crisis countries due to inaccurate financial systems and interference of government. As per the research which have analyzed the correlation between non-performing loan and efficiency; when the non-performing loan is in a high volume, the cost efficiency is lower. Lending of funds and hence troubled the investment of organizations without access to the capital market. This finding is reliable with the story of a "credit crunch". Non-performing loans (NPLs) hampered firm investment via deterioration in both firms' and banks' balance sheet condition. The worsening in banks' financial position condition may be described to have had a circulation effect, because it biased the investment of bank-dependent firm, even when the balance sheet of the latter were in good condition. They have also observed another problem connected with non-performing loans (NPLs); namely "forbearance lending" term. The Japanese banks are said to have unwilling to write-off non-performing loans (NPLs) and to have bowled over their lending even in cases where there was minimal prospect of the borrower institutions being able to reimburse the loans lent. In order to see if banks have been attracted in patience lending, they have evaluated the relationship between firms' debt/asset ratio and their outstanding loans.
Organizations with faster loan growth or higher debt to asset ratios are more likely to have lower Return on assets. So they have summed up that the quality of commercial banks loan portfolio will decrease and they will be in a vulnerable situation, as long as they keep their non-performing loans and also keep providing forbearance loans. Thus, they have also briefed that the incline in nonperforming loans biased real economic performance through malfunctioning found in the banking sector.
A study tested many issues underlying the hottest financial news in this year's global market. This article have emphasized on Thailand, South Korea, Malaysia and Indonesia governments who have made the required enhancement in their institutions and legal system and provided injections of public funds. Yet, bank credit growth rate continue to stagnate, restricting the vital flow of funds needs for economic reconstruction. The nonperforming loans (NPLs) of locally-owned commercial banks inclined by 7.5 times

from 305 billion bahts to 2,289.6 billion baths loans in arrears by three months or more. The non-performing loans (NPLs) ratio rose by a huge amount of 41.8 pints from 8.3% to 50.1 %.

Thus there is a massive influence on the economy by the non-performing loans. An example is Thailand that has worked to restructure its banking sector under the supervision of the IMF. It was in August time of the 1998, when the government publicized the Financial Sector Restructuring Package. The implemented plan meant to boost bank lending through the public funds injection and the consolidation of financial institutions.

However, financial organizations have been slow to reply to these financial restructuring measures, and the nonperforming loans (NPLs) ratios have continued to rise. Moreover, due to determinants that include the late restructuring of corporate debt and the lengthy stagnation of real economic activity, the government pushed to formulate additional measure.

Unlike the test of the other countries, the problem of the non-performing loans in South Korea was directly triggered by the currency crisis. Before July 1997 devaluation of the Tahi baht, the South Korean financial sector problems were becoming apparent. Under the leadership of the financial supervisory commission that was established on the 1st of April 1998, South Korea has been rebuilding its financial system. There was a rapid completion of the financial position evaluation of banks and the selection of capable of survival banks, flagging the way for procedures that are succeeding, which include the injections of public funds, and the acquisition of non-performing loans.

The only substitute approach will be based on an international framework or a regional one, if the governments concerned cannot solve the problem. The IMF cannot provide the funds needed to restructure banking systems, specifically to dispose of non-performing, it can only supply funds in reply to international balance of payment crises. Moreover, in terms of reinstating financial intermediation functions and rebuilding the banking systems, problems like injections of public funds, enhancement to various systems and the restoration of credibility is greatly important. A study described that the value of non-performing loans (NPLs) held by banks multiplied from 15billion ringgits in June 1997 before the currency crisis to 60.5billion ringgits in December 1998.

Although the value of non-performing loans (NPLs) has inclined greatly, its ratio to total lending is relatively low when associated with the ratios recorded in Thailand and Indonesia.

2.14 CONCEPT OF INTEREST RATES

Interest rate describes the certain amount of cash compensated by someone on the utilization of funds for a specific time period. Also, when a debtor compensates to creditor with the amount of cash for the use of creditor's funds for a time period, is called interest rate. Creditors charge the interest rate as percentage of the sum of funds lent. Likewise, the institutions like bank for the utilization of money pays interest rate to the depositor. "Profitability of bank is said to be as income by interest or non-interest and after tax profits which are calculated as an amount of income after the subtraction of provisions and operating costs (cited, Albertazzi & Gambacorta, 2006)." In everyday life, interest rate plays a significant part. It can specially influence purchasing power of consumers. As

depositor it is important to concentrate on these trends in interest rate because the common trends in interest rate can have a huge impact on savings of people. The major difference in these trends makes it important to test the existing investment opportunities and potential opportunities. The changes in interest rate have important impact on banks. The major part of bank's revenue comes from the difference in the interest rate that it charges from and pays to customers. In the commercial bank's operations interest rates have become slight hint. To accomplish the constancy in the overall economy by managing foreign trade rates and by controlling the inflation, the SBP uses interest rate as a tool.

Interest rate is the amount the borrower must pay to the lender over and above the total borrowed expressed as the percentage of the total amount of the funds borrowed. Interest rates are observed as mainly monetary phenomena, a payment for the use of money .The ownership of the real money wills the premium which we require to make us part with money is the measure of the degree of our disquietude . Using the contract method, this theory places interest on the supply and demand for money disagreeing that it's the interaction of variables which controls interest rate. It says that classical theory emphasizes on what could be termed as the economic variables and debates that the level of real interest rate is gained by the level of savings which delivers the level of loanable funds.

It is with this theory which releases the relevance for conflicting funds that it is merely the use that determines the absolute price level and interest rate is not impacted. The center portion of commercial banks core business of financial intermediation are the interest rates, since they are greatly important in the financial sector, the main leader of matching demand and supply, the main broadcast mechanism of monetary policy and normally the key factor of profitability. It is pointed out by their level the banks insight of risk, the depth of financial markets which influences bank's ability to spread their risks, market liquidity conditions, the cost of operating business and the competition level in the financial sector. Interest rate is known as a certain sum of money received or paid. The creditor is to receive money, in this case the interest, when he lent money and the debtor pays interest when he borrows funds. The sum of the interest that a creditor is to receive is a percentage of the amount of money he lent in the first place, likewise, the borrower pays a certain percentage of the amount of money he borrowed, but, usually it is the job of bank to issue the loans and accept the deposits.

Banks motivate the public to deposit their money by offering interest rates which encourage the public to make deposits by opening their different accounts with the banks and commercial banks use their funds for making loan to other consumers. In practice, when bank makes loan to a borrower it charges higher rate but pays lower rates to the lender. It is due to this Gap that banks make profit. To earn much profit bank charges higher interest rate as much as it is possible and on the other hand pays lower rate as much as possible. On the other hand, to bring the same borrower and depositor banks are competing with each other to maintain the interest rates in comparable range. Due to the competition among the banks interest rate remains in a comparable range. For tracking and managing the significant development interest rate is to be talked as an important economic problem (cited, Boulier, Huang &Taillard, 2001). On the other hand, "in the profit and loss statement interest rate also engage in managing the interest component entirely (cited, Buiter & Panigirtzoglou, 2003). In addition, the interest rate also summarizes the way of whole business debt summary, including the receipt of debt,

excellence of the debt, expectations of visions participation proportions and fixed floating mixture of the debt" (cited, Brigo & Mercurio, 2006; Einav, Jenkins, & Levin, 2008).Interest rates are useful in different types like there are different interest rates for saving account and for taking loan.
To gain control over the interest rate that transforms the transforms interest rates to control the lively of financial system, the central bank set the interest rates. But the projected results are not constantly the results of the variation in the interest rate. In the economy, it is the central bank that plays several significant parts, but regulating the interest rates which affect the financial system is the major role. For example, regulating the interbank loan rate can be used to complete this. The rates used by the commercial banks to lend or to save are influenced by the interbank interest rate and thus the banks present their rate to the public with a percentage higher or lower from the interbank rate. This is how they make their profits.

2.14.1 MARKET INTEREST RATE

"Interest rates measure the price paid by a borrower or debtor to a lender or creditor for the use of resources during some time intervals." (cited, Fabozzi and Modigliani, 2003) Goedhuys (1982), defined interest rate as "the overall level in financial assets and claims of all types whether call loans or debentures, company shares or government bonds, bank overdraft or bill of exchange." There are 2 types of interest rate which are the nominal and real interest rates. Real interest rate is the rate corrected for inflation. Nominal interest rate on loan relates the amount of interest on the loan to the amount of money lent, while real interest rate is that which incorporates the effect of inflation. It is measured in terms of purchasing power. "The two rates are connected by a simple relation called Fisher Effect, which says that real interest rate is measured as nominal interest rate minus expected inflation rate, because an expectation about future inflations definitely affects market interest rate." (cited, Kaufman, 1986)
"The market interest rate is the interest rate offered most commonly on deposits in banks, other interest bearing accounts, as well as loan; it is determined by the supply and demand for credit." (cited, Farlex, 2009) Market interest rate depends significantly on the supply and demand for credit, competition in the loanable market, and other economic factors, such as inflation rate, expectation of investors, monetary policy of the government etc. The question is if the rate may be suspected to move above or below today's level, how far it may go, and how long the movement may take. There are many different market interest rates in a given currency and these are the treasury rate which is used by the government to borrow funds, there is also the interbank rate which is the rate at which banks borrow from each other, the mortgage rate which is the rate at which mortgages are lent. The deposit rate is the rate at which deposits are held, and the lending rate is the rate at which funds are lent. There is the federal fund rate which is the rate on reserves traded between the commercial banks for overnight and the repo rate which is the discount rate at which the central bank repurchase government securities from the commercial banks.

2.14.2 Interest Rates Effects

Increasing Effect

"The interest rate that a bond pays to its holder is not much attractive due to high interest rate" (cited, Accaglobal.com). For borrowing and saving there are several types of interest rates that bank offers. To set the rate of interest that impacts the lively of financial system, central bank plays an important role. The central bank executes that job by controlling the loan rate for interbank. Because it effectively impacts the interest rates for loan and savings that commercial banks offer. Inflation is from one of them. Increasing interest rate motivates consumers to keep their funds with bank by offering hand sum saving interest income. Rising interest rate and over spending puts pressure on inflation. However, borrowing is more expensive which results into fall in mortgage and investment when interest rate rises. It influences the currency revaluation to increase the value of money. Interest rate is also charged to unpaid bills, mortgages and credit cards and it is only applicable on the unpaid portion of bills or loans. It is very important to be familiar with your interest rates and to know that how it is added to your loans or bills. For instance, your interest rate adds more than the amount you are paying, it possibly means your debts increase although you are paying for debts. Interest rates are not same even though they are more competitive. When a bank feels that a certain debt will not be repaid, it will normally charge higher interest rate. Loans like credit cards are very expensive to handle, so banks usually charge higher interest rates. In addition, bank charges high interest rate to risky people. The study of Samuelson Paul A, (1945) showed that when interest rate inclines it actually impact to borrowers but it don't affect the bank's performance. The borrower will bear the impact of high interest rate while the performance of bank would not be influenced by high interest rates. Because when interest rates increase then the bank charges more to borrower than the return it pays to depositors. So, both the borrower and depositor will bear the cost.

Decreasing Effect

Lower interest rates bring opportunity to businesses the go for capital investment loan by making essential profit and massive investment in rising sectors, and improving the firm's confidence. The economy becomes stable as a result to this, and it pushes the employment opportunity up in the country. A different aspect of interest rates that are low is that it easier for other parties to pay, and thus decreases the risk of repayment of loan. It points out that during the times when interest rates are lower people are left with more disposable income to spend and thus they have easier time to make savings decisions.

2.15 FACTORS THAT DETERMINE THE LEVEL OF INTEREST RATE

Changes in interest rate are calculated by many factors which include the supply and demand for credit, competition in the loanable market, and other economic factors, such as inflation rate, expectation of investors, monetary policy of the government etc.

There are several factors that regulate interest rates charges in commercial banks and they include the following:

There are the loanable funds, where "In a free-market, system like the economy of the United States, interest rate is determined in the market place by the interaction of borrowers and lenders." (cited, Shetty et al, 1995) Such interaction results in an equilibrium interest rate, when preference of borrowers and lenders are successfully matched. "An equilibrium interest rate is acceptable to both parties to the transaction, and it is the rate at which the loan transaction is completed." (cited, Rose et al 1995)

Concerning inflation, it is when the price levels increase in the economy. In other words it is when the purchase power of consumers decreases in the economy. As pre Dave Roos in 1991, inflation and some monetary policies are most likely to bring fluctuation of interest rates by either increasing or decreasing it.

"Inflation affects interest rate because it affects the value of money promised in future." (cited, Kohn, 2004). "The interest rate quoted in the financial market is sometimes contrasted with the real rate of interest, which is the observed market rate, corrected for price changes. (cited, Goedhuys, 1982)." As stated by the Fisher effect, high inflation results in the savers need for higher nominal interest rate, which is in order to maintain the real rate of interest. "Real interest rate is measured as nominal interest rate minus expected inflation rate, because an expectation about future inflations definitely affects market interest rate. (cited, Kaufman, 1986)"
As per several studies carried out by many researches about the relationship between the interest rate and expected inflation, there is a one to one relationship between them in the long run.
Laatsch and Klein (2003) described that nominal interest rate adjust one-for-one with the change in expected inflation, but changes in nominal interest rate does not lead or holdup changes in expected inflation.
"If banks' management were able to completely anticipate inflation rate, it shows that banks are able to properly adjust interest rates in order to increase their revenues faster than their expenditures, and thus buy higher profits. However, unexpected inflation can lead to improper adjustment of interest rate, and so to the possibility that costs will increase faster than revenues. (cited, Anthanasoghou et al, 2006)."

What concerns the monetary policy, "if the central bank wants to use the monetary policy to regulate inflations, they sells securities, raise reserve requirement of banks, and raises the discount rate. These actions decrease the supply of money, decrease banks' excess reserve, and incline the cost of credit (cited, Mayo, 1989)." Moreover, if the central bank cares to constrict banks' lending to the private sector, it increases the bank rates; this in turn causes an increase in the rate of interest charge on bank loans.
The monetary policy focuses on achieving many targets which include full employment, bringing growth, stabilizing long term interest rates, smoothing business cycles, stabilizing real exchange rate and stopping any financial crisis from taking place.
Some of these purposes are consistent and some aren't; some of the cared target contradict each other their effect in the economy.

Monetary policy targets are targets that are rough targets also are not objectives in and of them but will work directly towards achieving the longer-term targets of policy if attained. The targets of the monetary policy are separated as either intermediate goals or operating goals.

Intermediate targets are factors, although thought to impact the best objectives of monetary policy, are not controlled directly by the Central Bank. They contain several monetary aggregates and long-term interest rates. On the contrary, operating objectives are tactical goals that the Central Bank can impact better in the short run. Although Central Banks cannot use monetary policy tools directly to intermediate targets, they can use them to affect operating targets, such as reserve money and short-term interest rates, which influence movements in intermediate variables. Monetary instruments that affect operating targets are generally classified as direct or indirect. Direct instruments work as per the regulations that directly impact interest rates or volume of credit. These instruments have become more ineffective as money and financial markets are enhanced, also, they bring in misrepresentations, and endorse financial disintermediation, fiscal supremacy. Indirect instruments are called as market based instruments since their use impact the market determined price of bank reserves as the Central Bank engrosses in transactions with both financial and non-financial institutions. There are two primary types of indirect tools, open market operations and Central Bank lending policies which are used to insert and bear liquidity. The monetary transmission procedure joins monetary policy actions to the ultimate goal of policy. The traditional textbook explanation emphasized on the demand for money, which is, the liability side of the financial system. On the other hand, since the late 1980's, researchers have been re-testing this transmission process from the assets side of Bank's balance sheets, namely credit to the private sector.

The Credit channel is the newly pointed out additional channel of transmission of monetary policy with two inferences that are of special significance for policy makers. In many cases credit may serve as a principal indicator for economic activity as well as a superior intermediate variable for monetary policy. In some circumstances by observing credit rather than monetary aggregates, policymakers can get a clearer picture of inflation, a longer term economic growth. A great understanding of the nature and characteristics of business cycles has been allowed by pointing out the credit channel of monetary transmission. Following the studies during the times of the late 1990's shows, the monetary policy impact and other shocks to the macroeconomic tends to be more persistent and stronger than traditional models would expect, and to explain the difference the credit channel aid.

Concerning the financial sector banks and reforms, It is extremely important to realize that the most important difference in the post and pre liberalization period was that in the pre investment were not driven by the market whereas in the period later on, investment are driven by market. The industrial licensing systems assured that investment was continuous with plan target and the financial plans assured that the strategic investment was realized. The whole financial system, along with banks worked to achieve planned investment goals in several different sectors. During this time, the broadcast and checking functions of banks were significantly highlighted as the government focused a large portion of bank lending.

The period that witnessed a considerable deregulation of the financial sector was after the period of the liberalization along with radical reforms of trade, and industrial policies that

in turn resulted in completely market driven investment. Foreign banks and private sector banks existed but their growth; operations and possible new entry were constrained severely by the policy environment. There were several limits placed during this time on the banks with regard to allocation of credit and pricing. In addition, bank's funds sources were very regulated and limited.
With respect to all financial intermediaries including banks non-banking financial companies and development banks, this body practices its powers of examination and direction. By 1994, banks had started competing for both deposits and loans as a result of the improvements process. In addition, the competitive pressures inclined quite substantially because of important entry of new banks. With the improvements and the maturing money markets, to increase funds, banks have highly used these markets. To the results of imperfections intrinsic in these markets this describes banks. These imperfections form the foundations of the credit channel in particular of the bank lending channel and of monetary transactions in general.

Concerning the monetary policy review of the operation of instruments, around 70 percent of the aggregate deposits of the banking systems were established by the long term deposits constricted at fixed rates. Around 40 percent of the total loan portfolio was established by the advances in the form of short term credit at fixed rate. In an environment of decreased inflation and declining nominal interest rates there is also a gap of depositor interest in soft deposit schemes.
To alter the reserve base of the banks, this mentions to the issuance and to the acquisition of government securities by the Central Bank and thus to check their capability to enlarge credit. All open Central Banks open market acquisition of securities raises the cash reserves of the banks, the currency kept by the public and every sale decreases it. In addition, it's by the considerations of the public debt management instead of the monetary control that these operations were conquered. The government converted Reserves in order to guarantee that there is a sufficient stock of marketable securities would be available in the portfolio of the Reserve bank for conducting open market operations.

There are also investor expectations; "The expectation theory argues that interest rates are functions of investors' expectations (cited, Rose et al, 1995)." If investors expect that the money supply will increase as a result of Federal Reserve in future times, than the interest rates will increase. This is because investors reacted towards the increase in money supply before it was actually implemented.

Concerning the competition among banks, competition in the loanable market also affects the interest rate. Low costs of deposit and high interest on loan by banks will result in increased profit. But in order to be able to achieve this depend on how much competition faced in the industry. "Even if there are few commercial banks to compete with, the non-bank substitute may be a problem, this leads to disintermediation." (cited, Rose et al, 1995)

Concerning the uncertainty, Robert L.H (1969) declares that when lenders or investors are sure about the future interest rate, they could wish to protect themselves. This raises the term structure of interest rate and presents new dimension into the interest rate. Uncertainty about the future also plays a principal role in the process of interest rate computation. The types of uncertainties include.
1- The time period over which the funds are made available. The longer the maturity of the loan, there will be higher level of uncertainty that circumstances may change; therefore the lenders would want to have higher interest rate to be received. Thus the longer the term of the loan the higher the interest rate charged.
2- The banks will be concerned about how well the borrowers will be able to repay the borrowed funds. The higher the default risk of a customer the more they will be charged for the loan received from the banks.
3- During the period of low economic growth, commercial banks shorten the spread between the deposit rate and repo rate, probably to try to attract deposits. This occurred between 2006 and 2008 when there was decelerating real economic growth

Concerning liquidity, the capability to meet its short term dues of an organization it's the liquidity using the ratios of the current liabilities. While sitting their deposits and lending interest rate, banks thus reflect liquidity positions. The interest rate that is charged on borrowed loan varies on the size of the firm required, the availability of loan able funds, and the length of the period the deposits are going to remain in banks.

Concerning the nature of credit customers, "The rates charged by the banks depend on the satisfactory evaluation of nature of the business engaged in by the customers, suppliers of the customers, size of the business, and nature of the competitors and customers of the business." Duffle and Kenneth J, Singleton (2003).
Most of the borrowers in commercial banks get low interest rate on their funds deposited in banks due to the reason that most of them do not exceed one year and most of the loans that are given to them are above or equal to two years. Thus banks have fewer deposits and this in turn pushes banks to charge high interest rates.

Concerning the operating efficiency, the operating efficiency encompasses adoption of an effective service delivery mechanisms and essential institutional capability in such areas as negligence control, information management and staff development. It is within the management responsibility to carry out well-organized operation and attain financial feasibility, if the institution commitment and willingness to control costs set positive interest rate and select appropriate personnel.

Concerning the central bank policies, the Central bank cares interest on the loans made to borrowers mainly the government and to other commercial banks and act as lender of last resort to the banking sector. The rate at which central bank gives funds may indeed be chosen at will by the central bank can influence market interest rate and can set rate to a fixed number.

Concerning interest rate spread, Levine (1997) asserts that the efficiency of financial sector have close link with a country economic growth, he pointed out that financial intermediation affects both savings and investment rates and the gap between these two

can be proxied by banks interest margin. So, banks interest margin could be understood as the pointer of the efficiency of the financial system.
As described by Demirgue and Huizinga (1999) the high difference delay the growth of investment and saving and suggests that for certain borrowers the cost of using the financial system can become unaffordable. According to Mody and Martines Peria (2004) the influence of high gap tends to be more sever for countries that are developing, where banks usually are underdeveloped and small, to meet their financial needs, a large portion of individuals and firms tend to depend on banks.

Concerning the causes of high interest spread, banks need risk premium to recompense for the added volatility in market. Banks are not certain about financial risks which have interest rate risks, credit risks, liquidity risks, exchange rate risks and operational risks. "Liquidity risk is the ratio of customer short term funding to total assets." (cited, Demirgue and Huizinga, 1999) This signifies the risks of not having enough cash to satisfy unexpected high withdrawals of deposits or new loans requests, pushing up banks to borrow funds at excessive costs.
Net loans to total assets, is the way to measure interest rate risk. Wong (1997) states that as the probability of defaults increases the bank margins, it rises to reimburse for losses. Consequently high default risk will result to wider interest spread. Competitive banking has lower margins banks that are more efficient, better innovations, greater quality products, and greater access to financial services. It was pointed out that private owned banks as opposed to government are associated with higher efficiency and broader financial sector. Lower banks spread and competition efficiency are resulted from foreign bank entry to the domestic banking industry. Saunders and Schumacher (2008) noted that high interest gap is resulted from capital held by bank to protect itself against risks. Capital held in excess of the supervisory minimum for insuring against credit risks are high due to differential taxation, this is offset by raising banks gap. Banks use high interest on lending to protect them against the possibility of default arising from variability exchange rates, high and variable inflation rate. Brock and Rojas- Suarez (2000) found out that persistent high treasury bills rates are related to high interest rate spreads. Demirgue-Kunt and Huizinga (1999), asserted that in a small open economy that is exposed to external balance of payment shocks which exerts upward inflationary pressures, the central bank's action to tighten monetary policy so as to tighten inflation might bring out costs in the form of short-term volatility in exchange and interest rates.

2.16 INTEREST RATE RISK

Management of financial institutions faces different types of risk when managing loan portfolios or individual securities. "The risk encompasses credit or default risk, liquidity risk, repayment risk, and interest rate risk." (cited, Rose et al, 1995)The major concern throughout the financial system is the interest rate risk.
Interest rate risk mentions to the effect of interest rate fluctuations on rate earning assets and rate paying liabilities. For a given change (1%), interest rate risk also contains the impact of shift in size and arrangement of assets and liabilities (cited, Saha et al, 2009). As many other studies on interest rate have shown (cited, Delis et al, 2011; Kasman et al, 2011; Hanweck and Kilcollin, 1984), maturity mismatch of banks assets and liabilities, and

unforeseen change in interest rate, possibly uncovers the banks to interest rate risk. "This uncovering will consequence to refinancing or reinvestment risk, depending on the direction and level of interest rate change (cited, Saunders and Cornett, 2003)."
"In periods of high interest rates, institutions having heavy commitments to long term securities face a large risk of depreciation in the value of their portfolios." (cited, Hanweck and Kilcollin, 1984). Therefore the cost of rolling over or borrowing funds could be more than the return earned on such investment (refinancing risk). However, if institutions depend greatly on short term assets than liabilities, in the event of low interest rate, extra borrowed fund will be reinvested at low interest rate (reinvestment risk) (cited, Saunders and Cornett, 2003).
Since banks have been increasing their securities holding relative to loan in recent years, interest rate risk has been increasing in the banking industry. "It reduces the liquidity of the banks and increases the risk of insolvency." (cited, Rose et al, 1995). "Interest rate risk is a more serious threat to intermediaries than default risk." (cited, Kohn, 2004).
There are different ways a financial institution can extent the exposure it faces in running a mismatched maturity book. They include re-pricing model, maturity model, duration model, convexity, the term structure of interest rate.

2.17 HEDGING AND MEASURING INTEREST RATE RISK

When market rates change, large banking organizations are well hedged against interest rate volatility; leaving net current operating earnings largely uninfluenced, their revenues and costs adjust equally quickly. When interest rates change, forcing their earning to aggressively fluctuate, thrift institutions have seriously mismatched balanced sheets at the other extreme. Small commercial banks in many ways lie between the thrifts and their larger counterparts. Small banks share the predominantly retail orientation of thrifts, but have access to a broader range of asset and liability powers. This result in unclear ex ante whether small banks suffer a greater resemblance to thrifts or large commercial banks in terms of interest rate risk exposure.
Instead of making untestable expectations about the maturity of individual liability and asset categories, this method's primary strength stands in its capability to deduce average maturities from the data. For instance is a bank who's reported Return on assets is always replicated average market rate of interest estimation period. One would deduce that it is within the estimation period that the bank's assets all matured. To be accurate, to reflect current market rate conditions with a gap, multi-period fixed rate assets push revenues and the extent of this gap means an average portfolio maturity.

2.18 FORECASTING THE INTEREST RATE

"While the emphasis of defensive asset/liability management is to protect the portfolio from interest rate changes, the success of aggressive asset/liability management depends on ability to forecast future interest rates." (cited, Rose et al, 1995).
There are several different ways to forecast the movements of interest rates. Making use of the flow of funds concept with loanable funds framework is one of the most widely used

approaches. It is with this concept that financial analysts that project the demand and supply for loanable funds.
"While the supply of loanable funds includes funds provide by major financial institutions as well as by other sources (excluding individuals), the demand for loanable includes credit demand from businesses, consumers, and government. It is important to note that the quantity of loanable funds supplied is presumed to increase with rise in the interest rate" (cited, Rose et al, 1995).
"Expected future equilibrium interest rate can also be revealed in the prices and yields attached to contracts calling for future deliveries of interest bearing financial assets in the financial future markets (cited, Rose et al, 1995)." "However, the record of professional forecasters has been so bad in anticipating interest rate changes. So it has been said that "the most important role for a forecaster is to forecast often with as much ambiguity as possible (cited, Rose et al, 1995)." More so, interest rate may be forecasted indirectly by forecasting the future rate of inflation, provided the analyst has confidence in the Fisher effects. "So since there is a sizeable error rate in inflation forecast by the market in general, better forecast of inflation rate, which is indirectly forecast of interest rate, can be profitable to the financial institutions (cited, Rose et al, 1995)."

2.19 EFFECT OF INTEREST RATE RISK ON BANKS' PROFITABILITY

"Interest rate movement is a major concern to all financial institutions and markets. It affects decision making, performance, and growth of any particular financial institution, (cited, Madura, 1989)." Normally, the intermediary's average yield on asset will exceed the rate it pays to depositors in order to attract funds. A positive net interest margin must exist over a long term for a financial institution to remain in the business of borrowing and lending money. But the maintenance of a positive net interest margin over time has been a special problem for a number of financial institutions in the recent years, due to volatile interest rates as well as other factors like restrictive regulations, reckless management etc.
"According to Hanweck and Kilcollin, (1984), four factors determine the effect of a change in the general level of interest rate on banks' net interest margin (NIM)" First, there is percentage of assets and liabilities. The higher the liability percentage relative to assets, the lower the NIM will be if interest rate increases. Second, there is a response of new asset and liability rates to changing general level of interest rate. Interest rate spreads between assets and liabilities may widen or narrow as interest rate rise, thereby increasing or decreasing NIM. Third, asset and liability portfolios may shift with changes in interest rate. For example, deposits and loans made at low interest rates may be renegotiated at current rate. Fourth, the size of a bank's portfolio may change with changing interest rates, and so may affect NIM.
"The total effect of interest rate changes on profitability (Net Interest Income) can be summarized by its "*gap".* GAP is the difference between the interest rate-sensitive assets (loans) and interest rate sensitive liabilities (deposits) (cited, Rose et al, 1995)." In aggressive management strategy, if interest rates are expected to rise, commercial banks with positive gap will experience rise in interest margin. Net income will increase because revenue from interest rate-sensitive assets will increase more than their expenditures. Financial institution with negative gap has to fix its portfolio if it expects interest rate to

increase, for example, decreasing the maturity of its assets, by issuing long term securities and buying short term securities. Expectations of falling interest rate will produce the opposite adjustment of portfolio.
"Management will want to shift to negative gap position to benefit from falling interest rate (cited, Rose et al, 1995). Falling interest rate may be accompanied by recession which can cause slower growth in loans and increase in loan losses. For all banks, profitability tends to be reduced (cited, Hanweck and Kilcollin, 1984)."
Economists and policymakers have been greatly worried about the impact of market interest rates on commercial bank revenues; costs and profitability as financial market status have become more volatile in recent years. The well-known fact that depository intermediaries "borrow short and lend long" shows that rapid market rate increases could bring forth and unacceptable number of financial firm failures. This worry has been reflected by the monetary policy discussions. Stable market rates a goal of monetary policy was considered by the Federal Reserve Board: The extent to which money market conditions are allowed to fluctuate in the short run is also affected by the unique role of the Federal Reserve System as the Nation's lender of last resort. The Federal Reserve has a responsibility for keep orderly conditions in that market and liquidity pressures eventually transfer on the money market. The banking system's ability to endure these conditions has come as a surprise, but seems to show that banks have effectively balanced their asset and liability portfolios to hedge against interest rate changes. In this case this phenomenon should be documented. On the other hand, the monetary authority must have estimates of the impact of market rate fluctuations on bank profitability in order to evaluate the trade-off between rate stability and other policy goals.
Profitability of financial institutions that lend long term loans and borrow short term loans is profit restricted during periods of increasing interest rates .The level of interest rate has direct impacts on consumer capability to repay the loans. When interest rate are at their low, consumers are willing to borrow because they find it easy to repay their dues. On the other hand, when interest rates are high people are unwilling to borrow because repayment on loans has higher cost. Martinez Peria (2004) stats that high interest spread can delay the growth of savings and investments and suggest that the cost of using the financial system is excessive for certain borrowers and therefore low margin. The bank profit is obtained from the difference between the interest rate it charges by lending and interest it pays for the deposit. If bank is not giving out loans then there are no profits from the deposits. Winston and Rowland (2002) stated that high interest rate can have a major implication for financial intermediation as they can increase the cost of capital which in turn limits financial resources available to potential borrowers thereby reducing the volume of investment opportunities and reducing it to sub optimal level. In addition to wider spread might echo a number of problems such as bank invalidity. Bank net interest margin are perceived as a summary computation of banks interest rate of return, reflecting both volume and mix of asset and liabilities and are set to cover the cost of intermediation .Therefore interest margin are bank's profitability significant determinants. The interest rate risk is the coverage of a bank's financial status to different movements in interest rates. The NIM is shows to be the most sensitive to fluctuation in interest rates. Samuelson (1945) declares that bank profits inclines with increasing interest rates, under general market conditions. He says: "The banking system as a whole is immeasurably helped rather than hindered by an increase in the interest rates…and commercial banks would profit more than savings banks" (cited, Samuelson, 1945). Hancock (1985)

discovered supporting proof for this argument when she examined the guesswork that banks benefit from high rather than low interest rates, even though at the aggregate level, inclines in interest rates decrease output and employment.
"An analysis of the sensitivity of banks' net interest margin and profitability to interest rates, credit and term structure shocks across product specializations (cited, Hanweck and Ryu, 2005) reveals that net interest margins associated with banks' portfolios are the most sensitive to interest-rate changes." These results were backed up by the Basel Committee 2004 research. The Basel committee 2004 research finds that changes in bank net interest margin is negatively related to interest rate fluctuation, but it displays a positive relationship with increases in the yield curve, even though the large portion of the impact depends on the bank's structure of assets and liabilities.

A study by English (2002) corroborates the findings of Hanweck and Ryu (2005). English (2002) declares that the fact that floating interest rate and the slope of the yield curve have important impact on banks' net interest income is the most well-known view among financial market observers. Returns on bank liabilities adjust rapidly to changes in the market interest rates and are tied to short-term interest rates. However, returns on bank assets are slower to adjust to changes in the market rates and are seen as more closely tied to longer-term rates. Bank net interest margins are anticipated to be higher when the yield curve is sharper for a sustained time, since a steeper yield curve indicates higher rates on assets relative to those on liabilities.
;moreover, for a certain yield curve, an increase in both short term and long-term interest rates is predicted to temporarily decrease net interest income, resulting the quicker adjustment of yields on liabilities than yields on assets. English's (2002) study of commercial banks net interest margin and market interest rates in 10 countries find support for the conventional view on the relationship between changes in market interest rates and the slope of the yield curve on banks' net interest margins.
They find that controlling requirements and interest-rate fluctuation have essential impact on banks interest-rate margins across these countries.
Flannery (1981) practices the Seemingly Unrelated Regression (SUR) to forego a study using 15 banks with asset holdings of over $35 billion at year end in 1978 for the period 1959-1978 in his examination of the impact of market interest rates on commercial bank profitability in both the long and short run. He found out that in the long run, four of fifteen banks' interest margins were significantly influenced by market rate changes before taxes. Net current operating expense is only influenced by market changes in the long run for two banks, after adjusting for taxes, in that, net earnings increase when the there is an increase in market interest rate.

2.20 IMPACTS ON BANK PROFITABILITY

There is negative impact of advanced financing expenses and positive influence of diversification on banks profitability. Sufian (2011) declared that the effect of banks inside aspects and macroeconomic components on the banks' profitability during 1992-2003 in Korea. Liquidity has negative impact on banks profitability with small liquidity level, to form superior profitability. Banks who focused more towards diversification has positive effect on profitability. Size portrayed positive where as there is a negative effect of financial

crisis on the profitability of Korean banks. Banks in Korea showed extra profitability during the period of before-crisis as compared to after crisis. As reveals in the study of English (2002) and Hanweck and Ryu (2005), the fluctuations of the interest rate have essential impact on bank's net income incurred by interest. Moreover, slope of the yield curve also have a positive influence and it is a most famous over view in the financial market observation including.

The bank's liabilities will rapidly adjust with the changes by interest rate in financial market and the short term interest rate is closely related to the return on the bank's liabilities. Also, returns on assets of the bank are expected more to be closed with long term interest rate and get adjusted slowly with the changes in the market rate. One can estimate the net interest margin to be higher, when the yield curve is steeper.

Also, given the slope of yield curve, whenever there happens an increase in short and long term interest rate is normally exposed to decrease the income for the time being, means that the maximum adjustment of the asset and liability yields. As per the study of English (2002) the margin of net interest of commercial banks and rates of market interest found supportive in the view of relationship among the slope of the curve and market interest rate on net interest margin of the banks. Saunders (2000) found that the dealer model on countries in Europe and United States, 614 banks were taken up for data as sample size for 1988 to 1995 as sample period.

By measuring the relationship between size, growth and profitability of the banks, it was discovered that the changes in bank profitability is subjected to the increase in bank volume and profitability and therefore the fluctuation of banks profit depends on size and growth. It was computed bank growth strategy on profitability of the banks, the key findings was that the bank growth as measured by assets were correlated with bank profitability as measured by ROA.

Bourke (1989) found that profitability has positive relationship with the changes in capital ratios and increase in assets, assuming that well capitalized banks have ability to found cheaper source of financing with better quality assets and grow, as per this, the better capitalize banks have the ability to absorb the loan loss and increase the profitability. The bank growth in terms of capital ratios tends to increase profitability by decreasing bankruptcy costs and interest expenses, therefore instead of the banks to depends on debenture it can use its own equity for the matter of banks expansion and higher capitalized banks tends to attract several customer deposit because of its future prospect and going concern. Moreover, increase in bank size in terms of increase in total assets have positive association with the profitability, this is true due to the facts that the increase in bank size in terms of increase in total assets tend to increase economies of scales and increase profitability of the bank. On the other hand, it was noted that profitability is inversely related to profitability as the increase in banks growth through well diversified portfolio tends to increase information asymmetry and bureaucracy which will lower profitability due to inability to effectively monitor the operations.

Hirtle eta al (2004) measured the profit level in accordance to bank networks, in this context the large and wide network which indicates growth in banking have higher profitability compared to limited network, it is widely perceived when the banks grow in terms of large and wide networks tends to increase the deposit mobilization and loan facility and hence higher growth and higher profitability. Ponce (2010) measured the determinants of bank profitability in Spain; the results indicated that there is higher profit growth in banks having higher proportional of loans total assets, higher customer

deposits, efficiency and lower credit risks. In this aspect they argued that higher profitability is to the bank which is capable of holding higher assets in terms of loans. Although there is additional costs of holding higher loan, the bank receive higher profit level, and where there is higher loan, liquidity is the problem thus, banks need to strike to balance between the two, as in theory higher loans means higher profitability. Angbazo (1997), De young and Rice (2004) and Athanasoglou et al (2008) found that there is positive relationship between quality of the assets as measured by decrease in doubtful assets, decrease in impairment losses decrease in non-preforming loans and increase in receivable.
In general profitability of the banks is increases by the structure of the health balance sheet and the effectiveness of credit administration. Claeys and Vennet (2008) stated that the bank's profitability and the increase in customer deposits and total liabilities of the banks have positive association. In this aspect the total liabilities and growth of customer deposit enhance the external growth of the bank through bank branches and deposit is considered the easiest and the cheapest means of the bank financing.

2.21 EFFECT OF INTEREST RATE RISK ON NET WORTH

The commercial banks face market value risk in addition to refinancing and reinvestment risk that occur when interest rates change, whereby the market value of the banks' assets is reduced due to rising interest rates. "The interest rate shock that results in losses in the market value of assets directly affect the net worth (owners' equity), because debt holders are senior claimants on a firm's assets, while equity holders are junior claimants (cited, Saunders and Cornett, 2003)." Molyneux and Thorton (1992) tested the factors of banks profitability in several countries; the result showed a positive relation between return on equity and the level of interest rates.
The market value of both assets and liabilities fall, when interest rates increase.
In case the maturity of liabilities is much shorter than the maturity of the assets in the banks, in case of any change in the value of interest rate, the market value of assets diminishes more than the value of the liabilities. "This in turn impacts the Net worth of the banks since it's a balance sheet composition (cited, Saunders and Cornett, 2003)." Saha et al, (2009) established this that because interest rate hike decreases the present value of asset much more than that of liabilities, therefore depleting a bank's net worth there is danger in the banking books. This gives us the Pillar 2 of Basel II, which indicates that interest rate risk in the banking book should also attract capital charges, if the loses in the Economic Value of Equity (EVE) is severe enough. EVE equals present value of assets minus present value of liabilities.

2.22 EVALUATING CHANGES IN INTERMEDIARY PROFITABILITY

Market Conditions and Bank Profits

Empirical approximations of the replies of nominal revenues and costs to market rates can be combined to persuade about intermediary welfare. Two distinct methods of market

rate conditions may impact bank revenue and costs: the level of interest rates and the variability of rates around their average level within each period.
Only if regulators provide entry or exit barriers to local banking markets, noncompetitive profit rates persist in the long run. The level of intermediaries' long run revenues and costs could also depend on interest rate volatility. A ceteris paribus increase in market rate volatility has two potential effects on financial intermediary firms. First, firms with a comparative advantage in securities trading would usually benefit at the expense of less informed traders in the market. The profits of such banks are reported independently. Moreover, the public's demand for loans and intermediated deposits may depend on the degree of uncertainty in primary security markets. Tobin's [16] well-known liquidity preference argument proposes this chance for fixed-rate deposits, and Benjamin Klein [9] claims the public's demand for medium of exchange varies with price level uncertainty which tends to be reflected in nominal interest rate fluctuations. On the other hand, with higher market rate volatility, the want for fixed rate intermediary loans may be expected to increase.

2.23 Growth in assets

The growth in assets is the growth in commercial banks assets from year to year. According to the study of Raharjo, 2014, the growth in assets is positively related to profits of banks. The higher the growth of banks the better their performance will be. In his study the growth in assets has a positive relationship with NIM with a coefficient of 0.0341.

2.24 Interest rate variability

The interest rate variability is the fluctuations of interest rates in the market. According to the research of Dalia Daley 2012 and Flennery, 1963, interest rates variability are positively related to profits however statistically it was found to be not significant. Although it's not mentioned why but It could be because banks are doing a good job in forecasting interest rates that they are not incurring any adjustment costs.

2.25 Money supply

According to the study of Godspower, 2012, money supply had an opposite relationship with interest rates and thus and opposite relationship with profits. The higher the money supply the lesser the interest rates and therefore the lesser the profitability of banks.

2.26 FINDINGS OF THE LITERATURE

Mburu G, stated in his study that there is a negative correlation between the interest rates and the profitability of commercial banks. According to his studies the coefficient of interest rates to commercial banks profits is -0.690; he used the SPSS and found out the Pearson correlation coefficient.
According to the study carried out by Dalia Daley, in which the T-bills were used as the interest rates, it was found that the interest rates and the profitability of commercial banks

are positively related and an increase in the T-bills will result in a slight increase in profitability.
According to Dalia Daley research interest rate variability is the uncertainty in interest rates of the market; she found interest rate variability to have a positive relationship with profits with a coefficient of 0.000225 however it was found to be statistically not significant.
In the Study of Waseem Ahmad Khan the following has been found:
There is a -0.69 correlation rate between the interest rates and the profitability of banks. This means that the relationship that these two variables have is strong but it is also negative meaning they move in opposing direction. In Wassem literature, the findings were different than what he had found in this own study, and the reason Waseem suggests that is behind these findings is that, the banks in Pakistan (since his study was on banks in Pakistan) have a huge spread and when the changes of the interest rates are being immersed effortlessly by this spread. Another reason behind this suggested Waseem was that banks in Pakistan are gaining income from other investments thus their gains are not primarily dependent on their NIM.

As per the study of Daniel K Tarus, the results showed a positive relationship between inflation and the NIM and the results are statistically significant. As for the economic growth he found a negative relationship between growth and NIM and the results showed to be statistically significant.

In the study of Muhammad Faizan Malik on the public sector the results show that interest rates was positively correlated with Return on asset ratio and the coefficient was 0.873. the F-statistic was found to be 51.993 which meant that the result were statistically significant. This meant that interest rates have great impact on return on asset ratio in commercial banks. The R^2 was 0.251 meaning that 25% of banks in the country of the study had interest impacting their ROA. The value of R was 0.449 meaning a 45% correlation between the interest and the ROA.
In his study the same was tested for the public sector the ROE and the results showed that that there was also a positive relationship between interest rates and the ROE and the coefficient was 0.344. The f-statistics was 22.568 showing that the model was highly significant. The R^2 was 0.138 meaning 14% impact of interest on ROE. The R was 0.398 meaning a 40% correlation between the interest and the ROE.
The same was tested by Muhammad Faizan Malik on the private sector banks, the results showed that also a positive correlation between interest and ROA with a coefficient of 0.608. The F-test was 91.042 meaning a very highly significant model. The R^2 was 0.344 showing 34% of impact of interest on ROA and the R was 0.515 meaning 52% correlation between interest and ROA.
The same test applied on the private sector banks on ROE and the results showed also a positive relationship with a coefficient of 0.362. F-test was 41.171 showing a highly significant model. The R^2 was 0.192 meaning the banks in the country of study were effected 19% by the changes in interest rates. The R was 0.413 showing a 41% correlation between the interest and the ROE.

In the study of Euphemia Ifeoma Godspower, the results found were as follows:
Her study was on the commercial banks in Africa for a period of continuous 10 years.

She did the regression between the repo rate, the prime lending rate, the deposit rate and consumer price index, the money supply (m3) and the uncertainty. She found that there was high correlation between the repo rate the prime rate and the deposit rate and she stated the reason behind this was that the repurchase rate was a benchmark for the other two rates that it determined them. Euphemia faced the multicollinearity problem in her findings as it was hard for her regression to tell what was impacting the dependent variable the most from her chosen independent variables. Thus she chose the repurchase rate to be used in her regression for the remaining mathematical model.
In her second regression she tested the NIM with the repo rate, the liquidity, the capital adequacy ratio, the competition and the non-performing loans. These were the internal factors that were tested. The results showed a positive correlation between the Net interest margin and the **repo rate** and the NIM and the remaining internal variables; however, the relationship with the remaining internal variables is much stronger in correlation than the correlation between NIM and the Repo rate. It was also found that the Repo rate and the remaining variables have a negative relationship with each other except the non-performing loans. The reason stated behind this was that the repurchase rate was engaged as a benchmark for pricing loan by financial organizations. Taken the other variables in this study, it was shown that liquidity and Npl had positive relationship, but Npl has a negative relationship with competition.
In her study also, Euphemia tested the regression between the Net worth of commercial banks with the repo rate, liquidity, Capital adequacy ratio, competition and Non-performing loans. The results of this regression were that all of the mentioned internal variables have negative correlation with Net worth accept the Non-performing loans.
In her study, Euphemia divided the data into two parts, separating the large banks and the small banks and tested the mean profit for both. She found out that in Africa the small banks have a higher NIM than larger banks but instead they also suffer from a higher standard deviation. The same was tested for net worth and it was found that net worth for both types increases from year to year with a standard deviation that is low.
From her graphs Euphemia showed that the small banks have much higher NIM and the larger banks have lower NIM. Two banks were name to prove this result. Same was graphed for the Net worth of banks and the results show that small banks have lower Net worth than the larger banks have, the reason behind this was suggested was due to the fact that larger banks have availability to much important part of non-interest earning.
Another graph represented the repurchase rate comparison with big banks and small banks and the results showed that the repurchase rate impact more the small banks than it impacts the larger banks. She stated that this was something that was for the benefit of the small banks to gain much higher NIM as the interest rates fluctuated. It's been cited by Hanweck and Kilcollin's (1984) "small commercial banks as a group have experienced increase in profitability both absolutely and relatively than large banks during periods of rising interest rates."
She also plotted a graph comparing the repo rate with the trend of small and large banks, the results showed that there were no significant impacts from the repo rate on the net worth of both types of banks.
Another graph was showing the trend between the repo rate, the consumer price index, the money supply (m3) and the uncertainty. The results showed that the consumer price index and the repurchase rate have been proceeding with the similar direction; however, the money supply and the uncertainty have less correlation with the repo rate.

As for the graph plotted for the trends of the prime rate, the repo rate and the deposit rate, the results showed that they all move in the same direction and the reason behind this was stated that the repo rate was used as a benchmark for the other two rates.
To some up her results, Ehphemia stated the following: she found rationally high explanatory powers of the models and the F-statistics for all the used models are significant at 5% level.
Concerning the repurchase rate and the consumer price index, as the consumer price index increased, so did the repurchase rate with a coefficient of 0.188 with a p-value of less than 0.001. Meaning that for every one percent increase in the consumer price index, the repo rate will increase by 19%, this was found to be statistically significant since the two tail p-value happened to be less than 0.05 within the confidence of 95%.
Concerning the money supply (m3) and the repurchase rate the results showed that there was a negative relationship between these two where they moved in opposing trends. The results stated that for every 1% increase in MS the repo rate will decrease by 0.11% with a coefficient of -0.107 and a p-value equal to 0.008. This was also statistically significant since it has a p-value of 0.008 at the interval of 95% confidence.
Concerning the repurchase rate and the uncertainty rate which is the standard deviation of GDP, the results showed a negative correlation between these two variables and with a coefficient of -1.303 and a p-value of less than 0.001 meaning that for change of unit in uncertainty the repurchase rate will suffer a decrease by 1.30%. This result was also found to be statistically significant.
Concerning the results of the banks profit fluctuation with the repurchase rate was carried out on three parts, which was on all sampled banks, on small banks and on the large banks. The finding was as follows: first of all the variables used are the CAR, Liquidity ratio, competition and the Npl. On the full sample of banks the regression showed that repo rate increase resulted in an increase in NIM with a coefficient of 0.364 and this was also statistically significant as it had a p-value of 0.012 which was less than 0.05 at the interval confidence of 95%. For the remaining variables CAR had a coefficient of 0.287, competition 0.002 and Npl 1.019; however they all turned out to be statistically significant expect the liquidity ratio which had a high p-value of 0.513 which is off course higher than 0.05.
As for the big banks, the repurchase rate was positively correlated with NIM with a coefficient of 0.037; however, this turned out to be statistically not significant as it was a p-value that is higher than 0.05
On small banks alone, the results show that there is a positive relationship between NIM and the repo rate with a coefficient of 0.481 and this result is statistically significant since the p-value is less than 0.05 with the interval confidence of 95%. As for the CAR, Npl and liquidity they all have a positive coefficients0.298, 2.195 and 0.01; however, CAR and Npl are statistically significant whereas liquidity has a p-value higher than 0.05 therefore it is statistically not significant.
Concerning the relationship of the repurchase rate and banks Net worth, the result on all sampled banks were that the repo rate has a positive relationship with Net worth with a positive coefficient of 163.97 and this is also statistically significant as it has a p-value less than 0.05 in the interval of confidence of 95%. As for the remaining variables they all have a positive relationship with coefficient of liquidity, 8.209, CAR 20.814 and competition 0.644 and they are all statistically significant as they have p-values of less

than 0.05 at interval confidence of 95%. The exception is the Npl that has a negative correlation and it is statistically not significant as it has a p-value higher than 0.05.
As for the same test on the large banks the results showed a negative relationship between the repo and NW and this result is not statistically significant as it has a p-value higher than 0.05. Competition and liquidity are also negatively related to NW and they also are statistically not significant with p-values higher than 0.05 concerning the CAR and NPL they are positive coefficients however they are also statistically not significant.
Applying the same test on the small banks showed also a negative correlation between repo and NW and it was also statistically not significant as for liquidity and competition they turn out to have positive correlation but liquidity only has is statistically significant, competition on the other hand is not. CAR and Npl have negative coefficients and also are statistically not significant.
In her study, Ehphemia also tested the primary and most influential determinants of the repo rate and considered it as the dominant determinant. The results showed that the uncertainty had the highest impact on the repo rate with a coefficient of -1.303 while MS and CPI had coefficient of 0.19 and -0.11
The study continued taking each variables of CPI, MS and Uncertainty to be used in the Hausman test to check each variables impact on the internal factors and the results show that CPI, MS and uncertainty decrease NIM, and these results are statistically not significant since they all have p-value higher than 0.05 at the confidence interval of 95%. For competition and liquidity they both have positive coefficient of 0.02 and 0.006 and are statistically significant; however, CAR and Npl have positive coefficient of 0.036 and 0.383 but they both are not statistically significant.
The same test was carried on the large bank separately, the result showed that uncertainty and CPI will increase NIM but MS will decrease it; however, they all have high p values and thus are statistically insignificant. Liquidity, CAR and Npl are negatively correlated and are statistically significant. Competition has a positive relationship but it's not statistically significant.
Carrying out this test on small banks, it was found that uncertainty, MS and CPI decrease NIM and they are not statistically significant. As for competition and liquidity, they have negative coefficients but with only liquidity are significant statistically with a p-value of 0.097. CAR and Npl are positively correlated but also they are not statistically significant.
The same study mentioned above was done by taken Net Worth as the variable instead of taking the NIM.
For all sampled banks, the results showed that CPI will increase NW while MS and Uncertainty will decrease it. The results for these 3 are statistically insignificant as they all have p-values higher than 0.05. CAR, liquidity and competition also turn out to have a positive relationship with NW, but having only liquidity statistically significant. Npl has an inverse relationship with NW and it's statistically insignificant.
Taking this on large banks, the results showed that uncertainty and CPI have both positive relationship with NW but they are both statistically insignificant. But MS tends to decrease NW and the result of this one is also statistically insignificant.
Liquidity, CAR and Npl are all positively correlated with NW and at the same time they are all statistically insignificant at the 95% confidence interval. Concerning competition, it has a negative relationship with NW and a p-value that is higher than 0.05 meaning it is statistically insignificant.

Coming to small banks, the results showed that MS, CPI and uncertainty were positively correlated with NW with p-values less than 0.05 meaning they are all statistically significant. Concerning liquidity and competition, the coefficient are positive meaning a positive correlation with NW and the p values are less than 0.05 for liquidity, meaning liquidity is statistically significant at the 95% confidence interval except competition which has a p value of 0.348 and is statistically insignificant.
In her study she also found the following coefficient for CPI and money supply:
Testing on NIM in all sampled banks CPI had a coefficient of -0.143 and it was statistically not significant. Money supply has a coefficient of -0.068 and it was statistically not significant.
Testing on large banks CPI has a coefficient of 0.008 and it was statistically not significant and money supply has a coefficient of -0.009 and it was statistically not significant.
Testing on small banks CPI had a coefficient of -0.208 and it was statistically not significant and money supply had a coefficient of -0.0996 and it was statistically not significant.
Testing on NW of all sampled banks CPI had a coefficient of 36.062 and it was statistically not significant and money supply had a coefficient of -18.654 and it was statistically not significant.
Testing on large banks CPI had a coefficient of 243.44 and it was found to be statistically not significant. Money supply had a coefficient of -169.91 and it was found to be statistically not significant.
Testing on small banks CPI had a coefficient of 68.356 and it was found to be statistically significant.
Testing on small banks Money supply had a coefficient of 24.162 and it was found to be statistically not significant

In the study of Raharjo P., 2014, which also tested the internal and the external factors affecting the profitability of the commercial banks measured by its NIM, the results were found and plotted into graphs. He found in his study that ROA impacted Net interest margin at the significance level of 1% with a coefficient of 0.7347 showing a positive relation with NIM and it was found to be statistically significant; while the reserve requirement affected it at the significance level of 5% and the other affected it at the level of significance of 10%.
He took into consideration the size of banks and found out that they impact NIM by 0.0091 meaning that banks NIM is related to its growth in assets. The larger the bank assets, the higher the NIM will be. Pamuji stats that the bank's growth is related to the growth of its assets. The more well managed the assets are the better the banks performance will be, the worse the management is the more Non-performing loans will the bank have and thus in turn it will charge a higher interest on loans increasing interest spread.
According to Pamuji, return on assets has an important impact on NIM and they are positively correlated. According to his results in order for banks to increase their profitability, they will need to improve their NII by having higher interest margins.
Concerning the CAR, Pamuji's study shows that there is a positive relationship between CAR and NIM, whereas statutory reserve has a negative relationship with NIM meaning that high liquidity will result into less interest income to that bank however, it will gain a liquidity position on the other hand to have less insolvency risk.

Concerning the loan to deposit ratio, it is positively correlated with NIM as per the results of Pamuji's with a coefficient of 0.1985 but it was statistically not significant. As for the external factors used by Pamuji are which are the MPR, INFL and LPS, it is shown that only inflation has a positive impact on NIM.
As per the study of Pamuji Gesang Raharjo found that market share was positively related to NIM with a coefficient of 0.0291. He also found that operating efficiency is negatively related to NIM with a coefficient of -0.4724 as banks use operating efficiency to efficiently manage their interest expenses to their interest revenues, so the lesser the interest expenses to their interest revenues the higher their profitability will be. In his study he also found that LDR was positively related to NIM with a coefficient of 0.1985. Market share was found to have a positive relationship with profits as it had a coefficient of 0.0291 and it was found to be statistically significant. As for inflation it was found to have also a positive relationship with profits with a coefficient of 0.0176.
Growth in assets were positively related to profits with a coefficient of 0.0341

2.27 CONCLUSION

The conclusion of the literature and the finding show many results. It shows that commercial banks are well protected to substantial interest rate risk. Banks choose their portfolio of assets and liabilities carefully to protect their annual profit margins successfully. Banks surely experience profit variability in the short term as the market interest rates float. These fluctuations don't represent major threat to the feasibility of gains for banks.
The main part of the profits of the commercial banks is obtained from the difference between the interest income and interest expense as a percentage of their earning assets; which is called the Net Interest Income. Net interest income is a massive section of banks' profit, it is the reason why the financial intermediaries try to offer lowest returns to savers and lend funds to borrowers at the highest possible interest rates.
As per the literature, the interest rate risk impacts both the profits and the net worth of the commercial banks, as the net interest income is a major part of the profit of commercial banks. As per the regression conducted by researchers it is found in their regression for public sector that the interest rate has essential effects on the profitability (ROA). In the case of the return on equity in public sector, the interest rates have a significant effect on profitability.
In the private sector, the interest rate has significant effect on their (ROA). All of the internal factors used in this study have an effect on the interest margin however on a different level of importance. Return on asset is an internal determinant which has a certainly important positive impact on net interest margin, during this time inflation is the only external factors that impact on interest margins.
The variables that have impact on the NIM of the groups of commercial banks are firm by business characteristics. For instance, inflation turned out to be the only variable impacting on the net interest margin of state-owned commercial bank. However, main factors that impact the net interest margin of national private bank CAR, Npl, LDR, ROA, MPR, Competition and The market interest rate.

As per the above mentioned findings, it's been concluded that there is a positive relationship between interest and the NIM, but they are different as compared to the size of the banks; this is the same for the remaining variables that have been tested.

CHAPTER 3

RESEARCH METHODOLOGY

This part of this article emphasizes on the population, design and the sampling methods that have been engaged.

3.0 MAIN DESIGN OF RESEARCH

This study involved mathematical modeling, and is quantitative in nature. It shows the impact of interest rates and other external and internal factors on NIM and NW of commercial banks in Lebanon.

Regression model is used to measure the relationship between the various variables

This study uses a joint Mathematical Models used by the following researches to test the impact of interest rate fluctuation and external and internal factors on short and long run Profitability of commercial banks.

Euphemia Ifeoma Godspower (2014) and Pamuji Raharjo (2014) Mark J Flannery (1981,1983)

- $NIM_{it} = \alpha + \beta_1 MI_{it} + \beta_2 ROA_{it} + \beta_3 LDR_{it} + \beta_4 CAR_{it} + \beta_5 Comp_{it} + \beta_6 Npl_{it} + \beta_7 MPR_{it} + \beta_8 BOPO_{it} + \beta_9 SigmaT\text{-}bill12_{it} + \beta_{10} GrowthA*T\text{-}bill12_{it} + \beta_{11} GrowthCI_{it} + \beta_{12} LIQ_{it} + \varepsilon_t$
- $NW_{it} = \alpha + \beta_1 MI_{it} + \beta_2 ROA_{it} + \beta_3 LDR_{it} + \beta_4 CAR_{it} + \beta_5 Comp_{it} + \beta_6 Npl_{it} + \beta_7 MPR_{it} + \beta_8 BOPO_{it} + \beta_9 SigmaT\text{-}bill12_{it} + \beta_{10} GrowthA*T\text{-}bill12_{it} + \beta_{11} GrowthCI_{it} + \beta_{12} LIQ_{it} + \varepsilon_t$

3.1 APPROACHAND METHODS OF THE SAMPLE SIZE OF THE DATA

The sample is made up of 36 commercial banks in the Lebanese banking sector.

Banks have been placed into 2 categories, Alpha and non-Alpha banks as per the classification of the Lebanese bank association. 15 Alpha banks which have a deposit over 2 billion Lebanese pounds, and 21 Small banks.

The period of study is chosen over 11 years from 2003 till 2013.

The financial statements of every bank over the 11 years period are collected from the association of the Lebanese banks archives.

For the Market interest rate 12 month Treasury bill rate is chosen as it is a benchmark for the remaining rates, and it is calculated as the average of the 12 months rate of each year.

Consumer price index is used to present inflation

M3 is used for the money supply

Sigma T-Bill 12 is used for the variability of Interest rates and it has been computed by standard deviation of 12 months T-bill rate.

Growth in Coincident Indicator is used for the consumer confidence

Interest rates are collected from BDL website.

NIM – Net interest margin is used to represent the commercial banks profitability; it's been computed as the difference of interest income and interest expense divided by the average earning assets.

NW – is used as the book value of every commercial bank and it is logged as its value is very high; it is considered as the long run profitability.

ROA, BOPO, CAR, LDR, LIQ, NPL, Competition, MPR, Growth in asset*T-bill 12 have all been collected and or computed from the financial statements of banks collected from Lebanese bank association

Regression will be conducted between the independent variables Internal and external factors and the dependent variables NIM and NW for all sampled banks, large banks and small banks.

One regression was conducted for both of large and small banks using interactive dummy variables.

Hypothesis will be tested for all sampled banks and for large and small banks separately.

TABLE 1. LIST OF SAMPLED BANKS RANKED BY TOTAL ASSETS SIZE

Bank	ID	TYPE	Total Assets	Percentage of Total Assets to the Banking Industry	Rank	Number of Years
Bank Audi Sal	4	ALPHA	36,191,283.00	18.79%	1	11
BLOM Bank Sal	14	ALPHA	26,148,652.00	13.57%	2	11
Byblos Bank Sal	15	ALPHA	18,485,087.00	9.60%	3	11
Fransabank Sal	21	ALPHA	16,964,386.00	8.81%	4	11
Bank Med Sal	6	ALPHA	13,790,395.00	7.16%	5	11
Bank of Beirut Sal	5	ALPHA	13,616,869.00	7.07%	6	11
Societe General de Banque au Liban Sal (SGBL)	33	ALPHA	13,010,956.00	6.75%	7	11
Banque Libano Francaise Sal	10	ALPHA	11,031,692.00	5.73%	8	11
Credit Libanais Sal	17	ALPHA	8,359,701.00	4.34%	9	11
BBAC Sal	13	ALPHA	5,107,292.00	2.65%	10	11
IBL Bank Sal	24	ALPHA	4,747,714.00	2.46%	11	11
First National Bank Sal	20	ALPHA	3,547,878.00	1.84%	12	11
Lebanon & Gulf Bank Sal	27	ALPHA	2,715,529.00	1.41%	13	11
Credit Bank Sal	18	ALPHA	2,643,200.00	1.37%	14	11
Al-Mawarid Bank Sal	2	SMALL	1,695,277.00	0.88%	15	11
MEAB Sal	28	SMALL	1,683,272.00	0.87%	16	11
Lebanese Swiss Bank Sal	26	SMALL	1,501,881.00	0.78%	17	11
-Banque Bemo Sal	7	SMALL	1,484,632.00	0.77%	18	11
Arab Bank PLC	3	SMALL	1,443,494.00	0.75%	19	11
Banque Misr Liban Sal	11	SMALL	1,184,501.00	0.61%	20	11

TABLE 1. LIST OF SAMPLED BANKS RANKED BY TOTAL ASSETS SIZE

Bank	ID	TYPE	Total Assets	Percentage of Total Assets to the Banking Industry	Rank	Number of Years
HSBC Bank Middle East Limited	23	SMALL	1,085,164.00	0.56%	21	11
North Africa CommercialBank Sal	31	SMALL	970,093.00	0.50%	22	11
Jammal Trust Bank Sal	25	SMALL	826,067.00	0.43%	23	11
Ahli International Bank Sal	1	SMALL	787,372.00	0.41%	24	11
Banque de L'industrie et du Travail Sal (BIT Bank)	9	SMALL	724,449.00	0.38%	25	11
Banque de L'habitat Sal	8	SMALL	643,738.00	0.33%	26	11
Finance Bank Sal	19	SMALL	459,063.00	0.24%	27	11
Near East Commercial Bank Sal	30	SMALL	397,316.00	0.21%	28	11
Syrian Lebanese Commercial Bank Sal	34	SMALL	332,899.00	0.17%	29	11
National Bank of Kuwait (Lebanon) Sal	29	SMALL	312,305.00	0.16%	30	11
Banque Pharaon et Chiha Sal	12	SMALL	299,519.00	0.16%	31	11
Citibank N.A.	16	SMALL	296,071.00	0.15%	32	11
The Saudi National Commercial Bank	35	SMALL	88,057.00	0.05%	33	11
Rafidain Bank	32	SMALL	38,240.00	0.02%	34	11
Habib Bank Limited	22	SMALL	34,104.00	0.02%	35	11

3.2 VARIABLES OF THE DATA

Dependent Variables:

Net Interest Margin representing the profitability of the commercial banks.

Net worth: computed as the book value of the commercial banks, representing long time profitability.

Independent Variables:

The CPI which represents the inflation

The Growth in Coincident Indicator

The Money supply percentage (M3)

TB12 months Treasury bill rate

ROA, BOPO, LDR, LIQ, CAR, MPR, Competition and NPL, SigmaT-bill12, Growth in asset *T-bill 12

3.3.1 STATISTICALTESTS

- Multiple Regression analysis was carried out using EVIEWS
- HAC Standard errors & covariance and Robust Least Squares are used for the regression, using Huber Type 1, 2 & 3 tests.
- Robust Least squares was used for the first time as it wasn't used in the literature and the analysis was based on this regression as the majority of the variables were found to be statistically significant using this method.
- The significances of the variables were found to be constant when comparing the Huber Type 1, 2 and 3 tests.
- The data is adjusted for Heterocedastisity, autocorrelation, and MM-estimation is used to adjust for outliers in dependent and independent variables as we have many outliers in our data.

Summary of statistical test:

In this study The Robust least square using the MM estimation was used to adjust for outliers in the dependent and at times independent variable of the data, and Huber test was used to adjust for Heterocedastisity and autocorrelation.

The difference between the Huber Type I, II and III was not clarified as it was an option found in the e-views system under the regression method of Robust Least square method, which are a different ways to adjust for Heterocedastisity and autocorrelation. In our research we found that using the three types of Huber test gave us the same coefficients; however, different p values. Most of the time, the p-values were constant in terms of significance.

3.4 DEFINITION OF THE VARIABLES

- NIM is the Difference between interest income and interest expense divided by the average earning assets; it measures the short run profitability.
- Net worth is the total stockholders' equity of each bank and it is considered as the long time profitability of banks
- CAR is the bank's capital divided by the risk weighted assets.
- Loan to deposit ratio is banks loans divided by the deposit.
- Liquidity is the banks primary liquid assets.
- NPL is bank's loan loss provisions divided by their total loans.
- BOPO is banks interest expenses divided by their interest revenues.
- MPR is banks total loans divided by the total loans of the whole banking sector.
- ROA is banks Net income divided by their total assets.
- Competition is the average total assets of the 3 largest banks divided by the total assets of each bank.
- Interest rate is the 12 month Treasury bill rate taken as the average of each year.
- Money supply is the M3 posted by BDL
- CPI represents inflation
- Growth in Coincident indicator is the yearly growth in CI and it represents consumer confidence.
- Sigma T-bill is the standard deviation of 12 month Treasury bill rate for each year.
- Growth in assets is the growth of the total assets of each banks on yearly basis

3.5.1 SETS OF HYPOTHESIS

Hypothesis 1
H0: Changes in interest rates do not impact NIM of commercial banks of all sampled banks
H1: Changes in interest rates do impact NIM of commercial banks of all sampled banks

Hypothesis 2
H0: Changes in interest rates do not impact NIM of commercial banks of all large banks
H1: Changes in interest rates do impact NIM of commercial banks of all large banks

Hypothesis 3
H0: Changes in interest rates do not impact NIM of commercial banks of all small banks
H1: Changes in interest rates do impact NIM of commercial banks of all small banks

Hypothesis 4
H0: External factors (MS, CPI, Interest Variability, CI) do not impact NIM of the commercial banks of all sampled banks.
H1: External factors (MS, CPI, Interest Variability, CI) do impact NIM of the commercial banks of all sampled banks.

Hypothesis 5
H0: External Factors (MS, CPI, Interest Variability, CI) do not impact NIM of the commercial banks of large banks.
H1: External Factors (MS, CPI, Interest Variability, CI) do impact NIM of the commercial banks of large banks.

Hypothesis 6
H0: External Factors (MS, CPI, Interest Variability, CI) do not impact NIM of the commercial banks of small banks.
H1: External Factors (MS, CPI, Interest Variability, CI) do impact NIM of the commercial banks of small banks.

Hypothesis 7
H0: Internal Factors (CAR, LIQ, LDR, ROA, BOPO, MPR, COM, NPL, GAS) do not impact NIM of the commercial banks of all sampled banks.

H1: Internal Factors (CAR, LIQ, LDR, ROA, BOPO, MPR, COM, NPL, GAS) do impact NIM of the commercial banks of all sampled banks.

Hypothesis 8
H0: Internal Factors (CAR, LIQ, LDR, ROA, BOPO, MPR, COM, NPL, GAS) do not impact NIM of the commercial banks of large banks.
H1: Internal Factors (CAR, LIQ, LDR, ROA, BOPO, MPR, COM, NPL, GAS) do impact NIM of the commercial banks of large banks.

Hypothesis 9
H0: Internal Factors (CAR, LIQ, LDR, ROA, BOPO, MPR, COM, NPL, GAS) do not impact NIM of the commercial banks of small banks.
H1: Internal Factors (CAR, LIQ, LDR, ROA, BOPO, MPR, COM, NPL, GAS) do impact NIM of the commercial banks of small banks.

Hypothesis 10
H0: Changes in interest rates do not impact NW of commercial banks of all sampled banks
H1: Changes in interest rates do impact NW of commercial banks of all sampled banks

Hypothesis 11
H0: Changes in interest rates do not impact NW of commercial banks of large banks
H1: Changes in interest rates do impact NW of commercial banks of large banks

Hypothesis 12
H0: Changes in interest rates do not impact NW of commercial banks of all small banks
H1: Changes in interest rates do impact NW of commercial banks of all small banks

Hypothesis 13
H0: External factors (MS, CPI, Interest Variability, CI) do not impact NW of the commercial banks of all sampled banks.
H1: External Factors (MS, CPI, Interest Variability, CI) do impact NW of the commercial banks of all sampled banks.

Hypothesis 14
H0: External Factors (MS, CPI, Interest Variability, CI) do not impact NW of the commercial banks of large banks.
H1: External Factors (MS, CPI, Interest Variability, CI) do impact NW of the commercial banks of large banks.

Hypothesis 15
H0: External Factors (MS, CPI, Interest Variability, CI) do not impact NW of the commercial banks of small banks.
H1: External Factors (MS, CPI, Interest Variability, CI) do impact NW of the commercial banks of small banks.

Hypothesis 16
H0: Internal Factors (CAR, LIQ, LDR, ROA, BOPO, MPR, COM, NPL, GAS) do not impact NW of the commercial banks of all sampled banks.
H1: Internal Factors (CAR, LIQ, LDR, ROA, BOPO, MPR, COM, NPL, GAS) do impact NW of the commercial banks of all sampled banks.

Hypothesis 17
H0: Internal Factors (CAR, LIQ, LDR, ROA, BOPO, MPR, COM, NPL, GAS) do not impact NW of the commercial banks of large banks.
H1: Internal Factors (CAR, LIQ, LDR, ROA, BOPO, MPR, COM, NPL, GAS) do impact NW of the commercial banks of large banks.

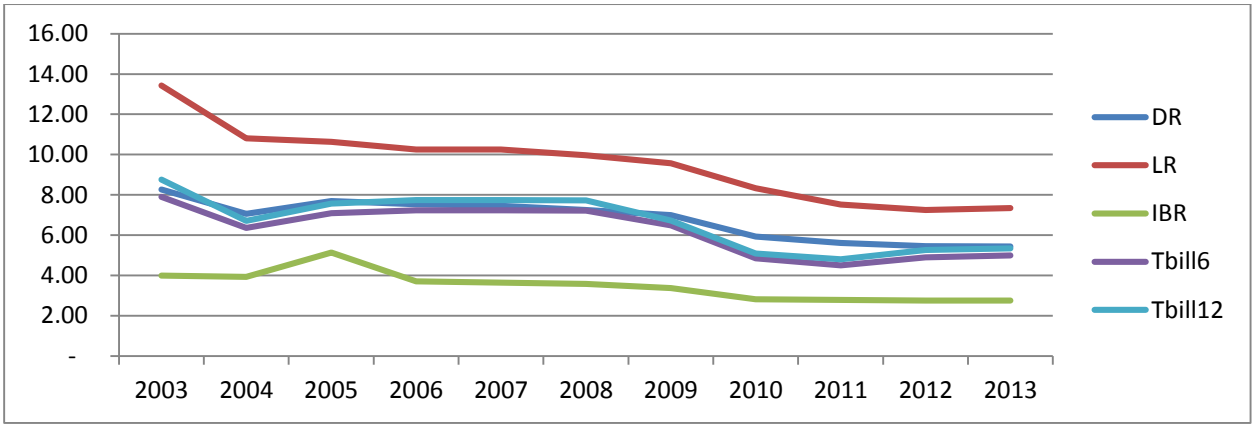
Hypothesis 18
H0: Internal Factors (CAR, LIQ, LDR, ROA, BOPO, MPR, COM, NPL, GAS) do not impact NW of the commercial banks of small banks.
H1: Internal Factors (CAR, LIQ, LDR, ROA, BOPO, MPR, COM, NPL, GAS) do impact NW of the commercial banks of small banks.

CHAPTER 4

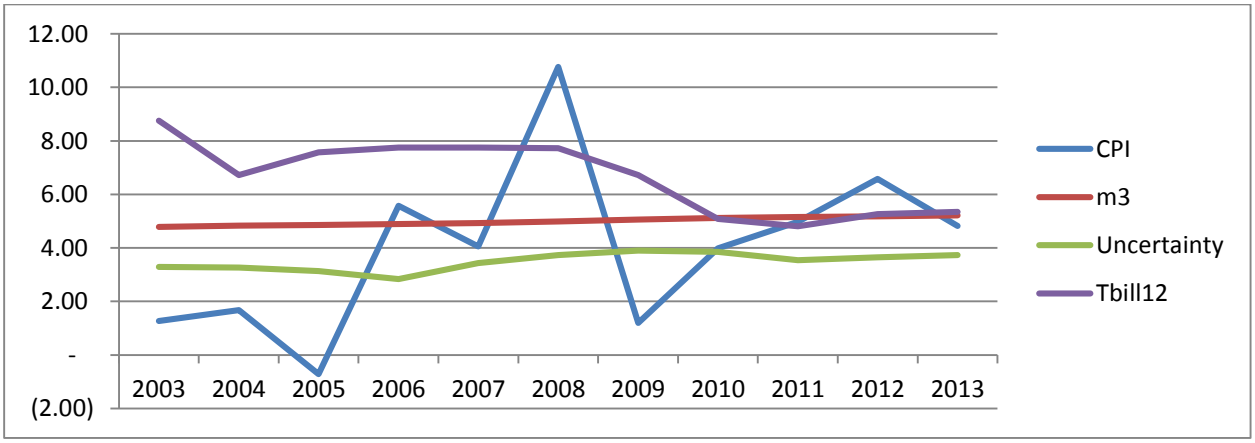
PRESENTATION AND DISCUSSION OF RESULT

4.1.1 TREND ANALYSIS

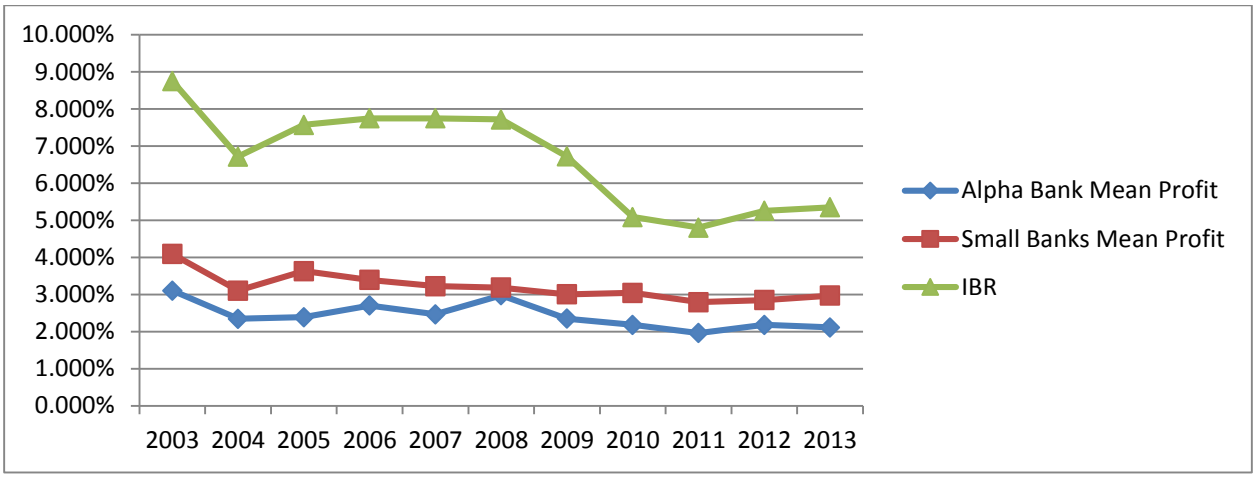
We plotted a graph between several different interest rates to check their correlation between each other. We chose T-bill 12 to represents the remaining rates and as we can see in the following table the trend is similar to the remaining rates and can be used as an indicator for the remaining rates.



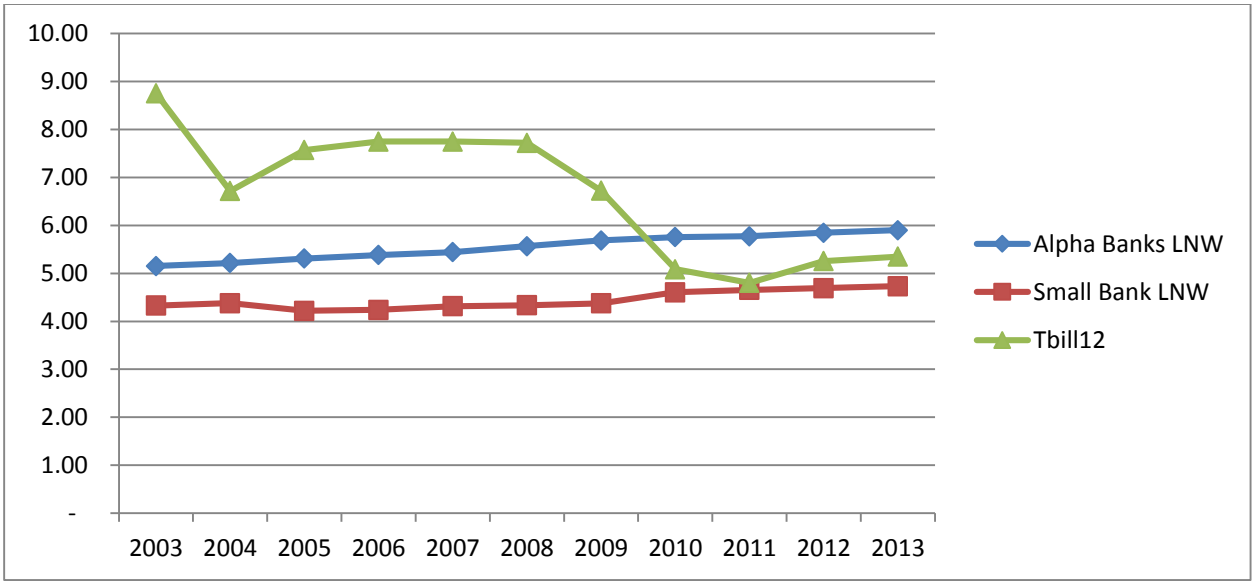
We also plotted a graph between 12 month T-bill rate and its determinants which are the Money supply, inflation and uncertainty in the market. We can see that Interest rate has a decreasing trend while the remaining variables all have an increasing trend showing the opposite correlation between the variables.



We plotted a graph showing the movement of 12 month Treasury bill rate with the movements of NIM of Large and small banks. we can see that they are positively correlated with each other they have a decreasing trend.



We plotter a graph showing the movement of 12 month Treasury bill rate with the movements of NW of large and small banks. we can see that they have opposing trends; as T-bill rate is decreasing Net worth of large and small banks are increasing.



4.2 REGRESSION ANALYSIS

4.2.0 NOTES FOR REGRESSION ANALYSIS

In our regression analysis we found different results when comparing between the results of our regression analysis and what it was tested by the researches in the literature review. Some coefficients were the same in sign in magnitude and significance; however, others were different in sign, magnitude and significance. We compared each and every variable with the findings of the literature review.
In this study we believe the difference between the results the regression in this research and the ones in the literature are due to different markets; this study is based solely on the Lebanese market while the studies in the research were based on the US market and African market. Another reason for the difference is that we chose a different sample size; we took almost the whole population of banks in Lebanon which is not the case in some of the literature. A third reason for the difference could be that we used a different method for regression analysis. Having said that, I would like to shed some light on the fact that we used a different method of regression analysis, because we had to adjust to all of heterocedastisity, autocorrelation and for outlier in the dependent and independent variables; especially that we had many outliers in the data.

4.2.1 REGRESSION RESULTS AND ANALYSIS OF NIM IN ALL SAMPLED BANKS

ALL SAMPLED BANKS								
NET INTEREST MARGIN (NIM) - Robust Least squares - MM-estimation								
	HAC st. error & cov.		Huber type 1		Huber type 2	Huber type 3	LITERATURE	
Variable			Coefficient	P-Value	P-Value	P-Value	Coefficient	Significant
C								
CARP	0.00566	0.2287	0.005392	0.0006	0.0051	0.0326	0.287	Yes
LIQP	-0.025219	0.0000	-0.022067	0.0000	0.0000	0.0000	-0.0050	Not
LDRP	-0.0009	0.4171	0.417100	0.0001	0.0002	0.0005	0.1985	Not
Tbill12	0.145974	0.0000	0.120685	0.0000	0.0000	0.0000	0.3640	Yes
NPL			NOT SIGNIFICANT				1.019	Yes
COMPETITION	0.000858	0.1998	0.001294	0.0000	0.0000	0.0000	0.002	Yes
MPR	0.014015	0.3505	0.020582	0.0076	0.0057	0.0060	0.0291	Yes
BOPO	-0.030085	0.0000	-0.029489	0.0000	0.0000	0.0000	-0.4724	Not
ROA	0.312947	0.0001	0.463935	0.0000	0.0000	0.0000	0.7347	Yes
D LOG M3	-0.002332	0.0587	-0.003071	0.0018	0.0028	0.0052	-0.0680	Not
CPI			NOT SIGNIFICANT				-0.143	Not
SigmaTbill12	-0.266421	0.0097	-0.309350	0.0019	0.0022	0.0037	0.20941	NO
Gassets*Tbill12	0.080731	0.0457	0.082293	0.0000	0.0040	0.0586	0.64637	YES
GinCI			NOT SIGNIFICANT					
R-Squared	0.7307		0.5488					

R-squared is 0.5488 meaning 54.88% of the dependent variables variation are explained by the model

- CAR coefficient is same in sign and in significance like the findings in the literature. In my findings CAR is statistically significant with a coefficient of 0.005392; Long term profitability contributes to short run interest sensitive margins.
- LIQ is similar in sign but different in significance compared to the findings of the literature, it has a coefficient of negative 0.022067meaning as banks keep higher levels of liquidity their profitability is lower than when they use their liquidity to lend loan and gain higher revenues.
- LDR is similar in sign but different in significance from the findings in the literature. It has a negative coefficient of -0.001994 and it is statistically significant; this is because as banks have higher amounts of loans, they are exposed to higher amount of default risks as failure to repay the loan.
- Interest rate has the same sign and significance with the findings in the literature. It has a positive coefficient of 0.120685 and is statistically significant this is because deposit rates are sticky and they are not sensitive to interest rates whereas lending rates are sensitive to interest rates, therefore as interest increases lending rate increases more than deposit rates, increasing profitability; this is contrary to lend long and borrow short.

- NPL was removed from the model as it was statistically not significant.
- Competition was similar in sign and similar in significance with the findings of the literature, it has a coefficient of 0.001294 means that the lesser the competition between banks the higher the short run profitability.
- MPR was similar in sign and in significance with the findings in literature, with a coefficient of 0.020582 and statistically is significant meaning that, as banks have more loans their profits will increase, increase profitability of banks.
- Operating efficiency has the same sign as the findings in the literature but different in significance, it has a coefficient of -0.029489, this means that as Interest expenses are higher than interest revenue so will NIM be lower, it is found to be statistically significant in the Lebanese market
- ROA has the same sign and significance as the findings in the literature, with a coefficient of 0.463935 meaning ROA is an indicator of NIM, as return on assets is a measure of profitability which includes Net Income and as it is positive thus the profitability of the bank is also positive
- MS has the same sign as the findings in the literature but different in significance, it has a coefficient of -0.003071 this is because as MS increases it increases deposits, and as deposits increase so will the interest expenses paid by banks and thus the lower profitability.
- CPI was removed from the model as it was found to be statistically not significant. This means that inflation did not affect the Net interest margin probably because it affects both interest revenue and interest expense.
- SigmaTbill12 was found to be different in sign and different in significance compared to the findings in the literature review with a coefficient of -0.309350; this is because the higher the rate of interest variability the higher is the cost of adjustment by banks and thus the lower the profitability.
- Growth in assets times Interest rate is an additional contribution to the literature, it has a coefficient of 0.082293 meaning that higher the banks in growth in their assets the more sensitive they are to interest rates. It is statistically significant. It similar in sign and significance.
- Coincident indicator was removed from the model as it was found to be statistically not significant.

4.2.2 REGRESSION RESULTS AND ANALYSIS OF NIM IN LARGE BANKS

ALL LARGE BANKS								
NET INTEREST MARGIN (NIM) - Robust Least Squares - M-estimation								
	HAC st. error & cov.		**Huber Type 1**		**Huber Type 2**	**Huber Type 3**	**Literature**	
Variable			**Coefficient**	**P-Value**	**P-Value**	**P-Value**	**Coefficient**	**Significant**
C								
CARP	0.00486	0.2238	0.005552	0.2462	0.1716	0.1028	-0.089	YES
LDRP	0.005849	0.3219	0.001735	0.6788	0.639	0.598	NOT LITTERATURE	
Tbill 12	0.101439	0.0000	0.099824	0.0003	0.0000	0.0000	0.037	Yes
LIQP	-0.002669	0.3733	-0.003072	0.4268	0.3415	0.2473	-0.035	NO
NPL	NOT SIGNIFICANT		NOT SIGNIFICANT				0.010	NO
COMPETITION	0.000479	0.6453	0.000911	0.2344	0.1820	0.1374	0.006	NO
MPR			-0.001894	0.8772	0.8551	0.8273	NOT LITTERATURE	
BOPO	-0.041175	0.0001	-0.053305	0.0000	0.0000	0.0000	NOT LITTERATURE	
ROA	0.418818	0.0014	0.313041	0.0038	0.0014	0.0004	NOT LITTERATURE	
D LOG M3	-0.002794	0.0259	-0.003126	0.0215	0.0114	0.0052	-0.009	NO
CPI	NOT SIGNIFICANT		NOT SIGNIFICANT				0.008	NO
SigmaTbill12	-0.136102	0.2552	-0.241790	0.0690	0.0378	0.0167		
Gassets*Tbill12	0.066701	0.0000	0.067335	0.0466	0.0169	0.0036	NOT LITTERATURE	
GinCI	NOT SIGNIFICANT		NOT SIGNIFICANT					
R-Squared	0.75069		0.560395					

- R-squared is 0.5603 meaning 56.03% of the dependent variables variation are explained by the model

- CAR is different in sign and in significance from the findings in the literature review, with a coefficient of 0.005552; there is no significant relationship between CAR and NIM in large banks, because large banks have optimal capital ratios.
- LDR on large banks is an additional contribution to the literature. It has a coefficient of 0.001735 and statistically is not significant, meaning LDR has no significant impact on large banks, this is both high and low liquidity is bad.
- T-bill 12 has the same sign and significance from the findings in the literature. It has a positive coefficient of 0.099824 and is statistically significant meaning

this shows that deposit rates are sticky whereas lending rates are sensitive to interest rates thus as interest increases profitability of banks also increase.

- LIQ is similar in sign and in significance with the findings of the literature, it has a coefficient of -0.003072, and is not statistically significant, meaning there is not significant relationship between Liquidity and NIM in large banks.
- NPL was removed from the model as it was found to be statistically not significant.
- Competition was same in sign and similar in significance with the findings of the literature, it has a coefficient of 0.001294 means that the lesser the competition between banks the higher the short run profitability.
- MPR in large banks is an additional contribution to the literature, it has a coefficient of negative 0.001894 and statistically is not significant meaning there is no significant relationship between market share and profitability. In Lebanon Large banks profitability doesn't depend on the ratio of banks loans to the sector loans.
- Operating efficiency of large banks was an additional contribution to the literature, it has a coefficient of -0.053305 and statistically is significant, this means that as Interest expenses are higher than interest revenue so will NIM be lower.
- ROA on Large banks was an additional contribution to the literature; with a coefficient of 0.313041 meaning ROA is an indicator of NIM, as return on assets is a measure of profitability which included Net income, and as it is positive thus the profitability of the bank is also positive.
- MS has the same sign as the findings in the literature but different in significance, it has a coefficient of -0.003126 this is because as MS increase the deposit will increase and thus interest expenses paid by banks will also increase decreasing profitability and it is statistically significant.
- CPI was removed from the model as it was found to be statistically not significant.
- Sigma T-bill 12 was an additional contribution to the literature and has a coefficient of -0.24179 and statistically is significant. This means that as the interest rate variability is higher this will leave banks with higher adjustment costs decreasing their profitability.
- Growth in assets multiplied by interest rate was an additional contribution to the literature; it has a coefficient of 0.067335 and is statistically significant. The effect of interest on the margin depends upon the growth rate of total assets, so if growth is high the interest sensitivity is also high.
- Growth in Coincident indicator was removed from the model as it was found to be statistically not significant.

4.2.3 REGRESSION RESULTS AND ANALYSIS OF NIM OF SMALL BANKS

SMALL BANKS								
NET INTEREST MARGIN (NIM) - Robust Least Square - M-estimation								
	HAC		**Huber Type 1**		**Huber Type 2**	**Huber Type 3**	**Literature**	
Variable	**Coefficient**	**P-Value**	**Coefficient**	**P-Value**	**P-Value**	**P-Value**	**Coefficient**	**Significant**
C								
CARP	0.005203	0.3861	0.000476	0.7602	0.8186	0.8796	0.298	YES
LDRP	-0.000909	0.4729	-0.001259	0.0094	0.0170	0.0529	NOT LITTERATURE	
LIQP	-0.028719	0.0000	-0.003072	0.0000	0.0000	0.0000	-0.02	Not
Tbill 12	0.195153	0.0023	0.185515	0.0000	0.0000	0.0000	0.481	YES
NPL	NOT SIGNIFICAN						2.195	Yes
COMPETITION	0.001013	0.3789	0.002006	0.0000	0.0000	0.0000	0.01	NO
MPR	-0.035970	0.8332	-0.128749	0.0630	0.1016	0.1927	NOT LITTERATURE	
BOPO	-0.031181	0.0000	-0.315160	0.0000	0.0000	0.0000	NOT LITTERATURE	
ROA	0.294037	0.0005	0.391438	0.0000	0.0000	0.0006	NOT LITTERATURE	
D LOG M3	0.001013	0.3789	-0.003166	0.0026	0.0170	0.0052	-0.0996	NO
CPI	NOT SIGNIFICANT						-0.208	NO
SigmaTbill12	-0.315191	0.0613	-0.319713	0.0025	0.0095	0.1014		
Gassets*Tbill 12	0.089643	0.1607	0.077767	0.0000	0.1293	0.6120	NOT LITTERATURE	
GinCI	NOT SIGNIFICANT							
R-Squared	0.75069		0.560395					

- R-squared is 0.5603 meaning 56.03% of the dependent variables variation are explained by the model

- CAR coefficient is same in sign but different in significance as the findings in the literature. In my findings CAR of small banks is statistically not significant with a coefficient of 0.000476; this means that past profitability does not affect short run profits.
- LDR is an additional contribution to the literature, it has a coefficient of -0.001259 and statistically is significant; this is because as banks have higher amount of loans they will be exposed to higher amount of default risk; failure to repay loans, and loan loss reserves are high.
- LIQ coefficient was similar in sign but different in significance to the findings of

the literature. It has a coefficient of -0.003072 and it was found to be statistically significant. Higher the liquidity the lesser the profitability in small banks as the liquidity could be used to get higher revenues from lending.

- Interest rate has the same sign and significance with the findings in the literature. It has a positive coefficient of 0.185515 and is statistically significant meaning, also in small banks deposit rates are sticky and lending rates are sensitive to interest rates as interest increases lending rates increase higher then deposit rate increasing profitability.
- NPL was removed from the model as it was found to be statistically not significant.
- Competition was same in sign but different in significance with the findings of the literature, it has a coefficient of 0.002006 and is statistically significant; this means that lesser the competition the higher the profitability of banks, because of Monopolistic competition.
- MPR on small banks was an additional contribution to the literature, it has a coefficient of negative 0.128749 and statistically is not significant meaning there is no significant relationship between market share and profitability. In Lebanon profitability doesn't depend on the ratio of banks loans to the sector loans.
- Operating efficiency on small banks was an additional contribution to the literature, it has a coefficient of -0.315160, this means that as Interest expenses are higher than interest revenue so will NIM be lower, it is found to be statistically significant in small banks.
- ROA on small banks is an additional contribution to the literature; with a coefficient of 0.391438 meaning ROA is an indicator of NIM, as return on assets is a measure of profitability which includes NI and as it is positive thus the profitability of the bank is also positive. It was found to be statistically significant.
- MS has the same sign as the findings in the literature but different in significance, it has a coefficient of -0.003166 this means that as interest increases we have found that NIM also increases, this is because as MS increases meaning increase in deposit which in turn will increase the interest expenses paid by banks thus decreasing profitability. It was found to be statistically significant.
- CPI was removed from the model as it was found to be statistically not significant.
- Sigma T-bill 12 was an additional contribution to the literature; it has a coefficient of -0.31971 and it was found to be statistically significant. It has a negative relationship because as interest variability increases it increase the cost of adjustment in banks decreasing profitability.
- Growth in assets multiplied by Interest rates has a coefficient of 0.077767 and statistically is not significant. Meaning that there is no significant relationship between growth in assets sensitivity to interest rate for small banks profitability and probably because growth in asset is small.
- Growth in coincident indicator was removed from the model as it was found to be statistically not significant.

4.2.4 REGRESSION RESULTS AND ANALYSIS OF NIM DIFFERENCE BETWEEN LARGE AND SMALL BANKS

Difference Large & Small				
NET INTEREST MARGIN (NIM) - Robust Least Square - M-estimation				
	Huber Type 1		**Huber Type 2**	**Huber Type 3**
Variable	**Coefficient**	**P-Value**	**P-Value**	**P-Value**
C				
CARP	0.005076	0.3133	0.2657	0.2730
LDRP	0.002993	0.4777	0.4229	0.3721
LIQP	0.025905	0.0000	0.0000	0.0000
T-bill 12	-0.085693	0.0123	0.0096	0.0280
NPL	NOT SIGNIFICANT			
COMPETITION	-0.001095	0.1907	0.1538	0.1317
MPR	0.126859	0.0712	0.1098	0.2010
BOPO	-0.021789	0.0000	0.0003	0.0035
ROA	-0.078403	0.4772	0.9823	0.5863
D LOG M3	0.000040	0.9814	0.9823	0.9847
CPI	NOT SIGNIFICANT			
SigmaTbill12	0.077911	0.6464	0.6458	0.7229
G-assets*T-bill 12	-0.010423	0.7867	0.8586	0.9464
G-inCI	NOT SIGNIFICANT			
R-Squared	0.560392			

Checking the difference between small and large banks, we can note from the above table that the variables with significant difference between large and small banks are Liquidity, T-bill rate and operating efficiency.

LIQ ratio affects large banks profitability more than small banks profitability.

Large banks are less sensitive to interest rates risk.

Large banks are less sensitive to operational efficiency

4.2.5 REGRESSION RESULTS AND ANALYSIS OF NW IN ALL SAMPLED BANKS

ALL SAMPLED BANKS								
LOG OF NET WORTH - Robust Least Squares - M-estimation								
	HAC st. error & cov.		**Huber Type 1**		**Huber Type 2**	**Huber Type 3**	**LITERATURE**	
Variable			**Coefficient**	**P-Value**	**P-Value**	**P-Value**	**Coefficient**	**Significant**
Tbill12	-22.24735	0	-27.52102	0.0000	0.0000	0.0000	163.97	YES
CARP	0.807084	0.0098	0.53275	0.0028	0.1227	0.3936	20.814	NO
LDRP	0.131906	0.1881	0.13469	0.0246	0.0151	0.0108		
LIQP	0.161698	0.5994	-0.03079	0.8700	0.5918	0.7529	8.209	YES
NPL	Not Significant						-100.042	NO
CPI	Not Significant						36.062	NO
COMPETITION	-0.739659	0	-0.78027	0.0000	0.0000	0.0000	0.644	NO
DLOGM3	0.509263	0	0.41303	0.0002	0.0000	0.0000	-18.564	NO
MPR	6.881387	0.0001	5.14607	0.0000	0.0000	0.0000		
ROA	14.33864	0.0187	16.06933	0.0000	0.0002	0.0035		
BOPO	-0.332766	0.3775	-0.45155	0.0109	0.0195	0.1168		
Sigma Tbill 12	9.322102	0.0483	-33.56699	0.0154	0.6559	0.6589	-66.548	NO
Gassets*Tbill12	-5.907963	0.0024	-3.13564	0.1552	0.7654	0.8865		
GinCI	Not Significant		32.00498	0.0004				
R-Squared	0.8863		0.69326					

- R-squared is 0.6932 meaning 69.32% of the dependent variable variations are explained by this model

- Interest rate has opposite sign but similar significance with the findings in the literature. It has a negative coefficient of -22.1359 and statistically is significant; this is because investments are discounted by the T-bill rate and if the rates are high the long term profitability will be lower thus lower Net worth.
- CAR coefficient is same in sign and significance as the findings in the literature. It has a coefficient of 0.386003 and statistically is not significant; this means that CAR has no significant relationship with NW. ultimately more capital doesn't increase long term profitability.
- LDR is an additional contribution to the literature it has a coefficient of 0.135533 and statistically is significant. This is because higher loans will increase the risk on banks therefore they will need to keep higher levels of capital.
- LIQ is different in sign and in significant to the findings in the literature. It has a coefficient of -0.134609 and is statistically not significant; this means there is no significant relationship between liquidity and net worth of commercial banks. Liquidity doesn't affect long run profitability but it effect short run profitability.
- Operating efficiency is an additional contribution to the literature, it has a

coefficient of -0.576681 and it is statistically significant. As interest expense increase profit will decrease, decreasing Net worth of banks.

- MPR is an additional contribution to the literature, it has a coefficient of 5.003408 and it is statistically significant. Higher loans will bring higher revenues increasing Net worth.
- ROA is an additional contribution to the literature; it has a coefficient of 15.625 and it is statistically significant. ROA is computed using net income therefore as ROA increases will show in increase in profits thus increasing Net worth.
- NPL was removed from the model as it was found to be statistically not significant.
- CPI was removed from the model as it was found to be statistically not significant.
- Competition was different in sign and in significance from the findings of the literature, it has a coefficient of negative 0.783930 and is statistically significant meaning that competition had negative impact on NW; monopolistic competition contributes to short run profits but not to long run profits.
- MS has different sign and significance from the findings in the literature; it has a coefficient of 0.465248 and statistically is significant; this is because increased money supply increases deposits increasing business activities in banks leading to higher net worth.
- Sigma T-bill 12 was found to be similar in sign and in significance compared to the findings in the literature review. It has a coefficient of -4.889177 and statistically is not significant meaning there is not significant relationship between interest rate variability and Net worth of bank.
- Growth in assets multiplied by the interest rates is additional contribution to the literature. It has a coefficient of -1.218 and it is statistically not significant. Meaning that there is no significant relationship between this variable and Net worth.
- Growth in Coincident indicator is an additional contribution to the literature. It has a coefficient of 32.00498 and is statistically significant. This shows that when consumer confidence is high it will increase banks profitability leading to higher net worth.

4.2.6 REGRESSION RESULTS AND ANALYSIS OF NW IN LARGE BANKS

ALL LARGE BANKS								
LOG OF NET WORTH - Robust Least Squares - M-estimation								
	HAC st. error & cov.		**Huber Type 1**		**Huber Type 2**	**Huber Type 3**	**Literature**	
Variable	Coefficient	P-Value	Coefficient	P-Value	P-Value	P-Value	Coefficient	Significant
Tbill 12	-17.81367	0.0000	-19.010420	0.0000	0.0000	0.0000	-94.127	NO
CARP	-0.692227	0.2042	-0.915083	0.0755	0.0574	0.0419	587.54	NO
LDRP	2.08235	0.0000	1.918545	0.0000	0.0000	0.0000		
LIQP	-1.583456	0.0003	-1.106302	0.0108	0.0116	0.0132	-7.481	NO
NPL	Not Significant		Not Significant				1667.5	NO
BOPO	2.274482	0.0633	1.273296	0.0204	0.0206	0.0216		
CPI	Not Significant		Not Significant				243.44	NO
MPR	-2.998021	0.0042	-3.137845	0.0165	0.0092	0.0044		
ROA	104.1951	0.0001	74.237110	0.0000	0.0000	0.0000		
COMPETITION	-1.298116	0.0000	-1.303370	0.0000	0.0000	0.0000	-2509.05	NO
DLOGM3	0.313348	0.0245	0.391958	0.0069	0.0036	0.0018	-169.912	NO
Sigma Tbill 12	7.895966	0.4015	-16.061110	0.3472	0.3050	0.2589	74.73	NO
Gassets*Tbill12	-0.497736	0.9148	-5.184647	0.1600	0.1832	0.2087		
GinCI	Not Significant		22.690120	0.0583	0.0357	0.0187		
R-Squared	0.9245		0.760264					

- R-squared is 0.7602 meaning 76.02% of the dependent variable variations are explained by this model

- T-bill 12 has a similar sign but different significance with the findings in the literature. It has a negative coefficient of -19.01 and statistically is significant. This is because as banks are discount investment by T-bills and when interest rates are high long term profitability will be lower thus lesser Net worth.
- CAR coefficient is different in sign and similar in significance from the findings in the literature. In my findings CAR is statistically not significant with a coefficient of -0.915083; this means that CAR has no significant relationship with NW in large banks.
- LDR is an additional contribution to the literature. It has a coefficient of 1.9185 and statistically is significant; the higher amount of loans, increases risk of default on banks; therefore, they are required to keep higher levels of capital.
- NPL was removed from the model as it was found to be statistically not significant.
- CPI was removed from the model as it was found to be statistically not significant

- Competition was similar in sign and different in significance with the findings of the literature, it has a coefficient of negative 1.30337 and statistically is significant; this means that competition had negative impact on NW; the lesser the competition, the lesser the risk on banks; therefore, banks are not required to keep high levels of capital.
- LIQ is similar in sign and in significant from the findings in the literature. It has a coefficient of -1.106302 and is statistically significant; this means that in large banks liquidity has effect long run profitability. The higher the liquidity the lesser the net worth as higher liquidity results in lesser profitability.
- Operating efficiency was not stable and is undefined
- MPR was not stable and is undefined
- MS has different sign and significance from the findings in the literature. It has a coefficient of 0.391958 and statistically is significant; this is because increased money supply increases deposits increasing activities in banks leading to higher net worth.
- ROA is an additional contribution to the literature; it has a coefficient of 74.23 and it statistically significant. It is positively related Net worth as it is positively related to profitability thus results in higher Net worth.
- Sigma T-bill rate was found to be different in sign but similar in significance to the findings in the literature review. It has a coefficient of -16.06111 and it found to be statistically not significant meaning that there is not significant relationship between interest variability and net worth in large banks.
- Growth in assets multiplied by the interest rates is additional contribution to the literature. It has a coefficient of -5.1846 and it is statistically not significant. Meaning that there is no significant relationship between this variable and Net worth.
- Growth in Coincident indicator is an additional contribution to the literature. It has a coefficient of 22.69012 and is statistically significant. This shows that when consumer confidence is high it will increase banks profitability leading to higher net worth.

4.2.7 REGRESSION RESULTS AND ANALYSIS OF NW OF SMALL BANKS

SMALL BANKS								
LOG OF NET WORTH - Robust Least Squares - M-estimation								
	HAC st. error & cov.		**Huber Type 1**		**Huber Type 2**	**Huber Type 3**	**Literature**	
Variable	Coefficient	P-Value	Coefficient	P-Value	P-Value	P-Value	Coefficient	Significant
Tbill 12	-13.00612	0.0320	-17.229730	0.0000	0.0000	0.0000	-34.782	NO
CARP	0.209841	0.5845	-0.166271	0.3269	0.3864	0.4712	-10.906	NO
LDRP	0.380468	0.0000	0.424595	0.0000	0.0000	0.0000		
LIQP	0.137205	0.5993	0.018959	0.9077	0.9071	0.9069	12.803	YES
NPL	Not Significant		Not Significant		Not Significant		-81.394	NO
BOPO	-0.472921	0.1567	-0.449935	0.0031	0.0062	0.0131		
MPR	-57.62459	0.0038	-60.298540	0.0000	0.0000	0.0000		
ROA	9.306833	0.0166	8.922855	0.0011	0.0035	0.0098		
CPI	Not Significant		Not Significant		Not Significant		68.356	YES
COMPETITION	-0.800727	0.0000	-0.796868	0.0000	0.0000	0.0000	0.118	NO
DLOGM3	0.370611	0.0023	0.198813	0.0812	0.0844	0.0926	24.162	NO
SigmaTbill 12	-2.246821	0.7875	-21.615800	0.1275	0.1401	0.1548	269.28	YES
Gassets*Tbill 12	-8.213339	0.0021	-5.708200	0.0045	0.0384	0.1425		
GinCI	Not Significant		20.576630	0.0247	0.0306	0.0386		
R-Squared	0.9245		0.760264					

- R-squared is 0.7602 meaning 76.02% of the dependent variable variations are explained by this model

- T-bill 12 has similar sign and opposite significance with the findings in the literature. It has a coefficient of -17.229 and statistically is significant. This is because as banks discount investment by T-bills and when interest rates are high long term profitability will be lower thus lesser Net worth.
- CAR coefficient is similar in sign and similar in significance from the findings in the literature. In my findings CAR is statistically not significant with a coefficient of -0.166271; this means that CAR has no significant relationship with NW in small banks.
- NPL was removed from the model as it was found to be statistically not significant.
- CPI was removed from the model as it was found to be statistically not significant
- Competition was different in sign and in significance from the findings of the literature, it has a coefficient of negative 0.796868 and statistically is significant; this means that competition had negative impact on NW; the lesser the

competition between banks, the lesser the risk on banks; therefore, banks are not required to keep higher levels of capital.

- LIQ is similar in sign but different in significant from the findings in the literature. It has a coefficient of 0.018959 and is statistically not significant; this means that in small banks liquidity has no significant effect on net worth.
- LDR coefficient is 0.424595 and is statistically significant. The higher the loans higher the risk and therefore banks will require to have higher capital.
- Operating efficiency is an additional contribution to the literature, it has a coefficient of -0.449935 and it is statistically significant. Operating efficiency is negatively related to net worth in large banks as the interest expenses increase profitability and net worth will decrease.
- MPR is not stable and is undefined
- MS has similar sign and significance as the findings in the literature. It has a coefficient of 0.198813 and statistically is not significant; this means in small banks MS has not significant relationship with NW
- ROA is an additional contribution to the literature; it has a coefficient of 8.922 and is statistically significant. Higher the profitability the higher the net worth of banks.
- Sigma T-bill 12 was found to be different in sign and in significance compared from the findings in the literature review. It has a coefficient of -21.615, and is statistically not significant; this means that uncertainty has no significant relationship with Net worth in small banks.
- Growth in assets multiplied by interest rates is an additional contribution to the literature; it has a coefficient of -5.7082 and is statistically significant. Meaning an increase in assets reduces the impact of interest rates on the long run profitability.
- Growth in coincident indicator has a coefficient of 20.576 and is statistically significant. The higher the consumer confidence the higher bank profits and thus the net worth.

4.2.8 REGRESSION RESULTS AND ANALYSIS OF NW DIFFERENCE BETWEEN LARGE AND SMALL BANKS

Difference Large & Small				
LOG OF NET WORTH - Robust Least Squares - M-estimation				
	Huber Type 1		Huber Type 2	Huber Type 3
Variable	Coefficient	P-Value	P-Value	P-Value
C				
CARP	-0.7488110	0.1671	0.1486	0.1385
LDRP	1.4939510	0.0009	0.0003	0.0001
LIQP	-1.1252610	0.0153	0.0161	0.0179
Tbill 12	-1.7806950	0.6846	0.6783	0.6783
NPL				
COMPETITION	-0.5065020	0.0000	0.0000	0.0000
MPR	57.1607100	0.0000	0.0000	0.0000
BOPO	1.7232310	0.0025	0.0027	0.0031
ROA	65.3142900	0.0000	0.0000	0.0000
D LOG M3	0.1931450	0.2953	0.2758	0.2623
CPI				
SigmaTbill12	5.5547610	0.8025	0.7956	0.7896
Gassets*Tbill 12	0.5235860	0.9008	0.9126	0.9264
GinCI	2.1134440	0.8886	0.8833	0.8788
R-Squared	0.760264			

The variables that are significantly difference in terms of Net worth in large and small banks are LDR, LIQ, Competition, MPR, BOPO and ROA

Large banks are less sensitive to liquidity and competition

LDR, MPR, operating efficiency and ROA affect large banks long term profitability more that small banks

Testing the differences between large and small banks we note the following:

LIQ ratio affects large banks short run profitability more than small banks short run profitability.

Large banks are less sensitive to interest rates risk, operational efficiency and competition than smaller banks are.

We also note that LDR, MPR, Operating Efficiency and ROA affect large banks long run profitability more that they effects small banks.

We also note that Competition and Liquidity affect small banks long run profitability more than in large banks.

- Large banks have more liquidity than small banks and they can manage this liquidity in the short run in a more efficient, more optimal and more profitable manner. Their long run liquidity needs are more stable which makes these large banks less sensitive to liquidity shocks in the long run.

- Large banks benefit from economies of scale, from less competitive market forces, higher and more stable market shares and have a greater control over costs, including labor and deposit costs. That is why they are less sensitive to interest rate risk and operational efficiency and benefit from low competition in the short run while incurring higher costs in the long run. Mindful low competition necessitates heavy advertising budgets that generate abnormal short run profits but affect adversely long run profits as these profits revert to the mean.

- Small banks are hurt in the long run by the anti-competitive behavior of large banks which lure away slowly their business, and eat in their market shares. Large banks are indeed more complex to manage, but small banks face a relatively higher risk of a bank run and subsequent bankruptcy cost especially since their loans are usually concentrated within the few while deposits are spread over within the many.

- Large banks are more profitable than small banks because of many factors like economies of scale, anti-competitive behavior, and more control over the needs of their clientele, be it borrowers or depositors.

4.3 HYPOTHESIS TESTING

Hypothesis 1

We reject H0; Interest rates do have impact on NIM in all sampled banks

Hypothesis 2

We reject H0; Interest rates do have impact on NIM in Large banks

Hypothesis 3

We reject H0; Interest rates do have impact on NIM in small banks

Hypothesis 4

We reject H0, MS, Interest rates variability do have impact on NIM in all sampled banks

We fail to reject H0, CPI & CI do not impact NIM in all sampled banks

Hypothesis 5

We reject H0; MS & Interest rates variability do have impact on NIM in all large banks

We fail to reject H0; CPI & CI do not have impact on NIM in all large banks

Hypothesis 6

We reject H0; MS & Interest rate variability do have impact on NIM in all small banks

We fail to reject H0; CPI & CI do not have impact on NIM in all small banks

Hypothesis 7

We reject H0, CAR, LIQ, LDR, ROA, BOPO, MPR, COM, GAS do have impact on NIM in all sampled banks

We fail to reject H0; NPL does not have impact on NIM in all sampled banks

Hypothesis 8

We reject H0, BOPO, ROA, GAS do have impact on NIM in large banks.

We fail to reject H0, CAR, LIQ, LDR, MPR, COM, NPL do not have impact on NIM in large banks

Hypothesis 9

We reject H0; LDR, LIQ, COM, BOPO, ROA, do have impact on NIM in small banks

We fail to reject H0; CAR, MPR, NPL & GAS do not have impact on NIM in small banks

Hypothesis 10

We reject H0; Interest rates do have impact on NW in all sampled banks

Hypothesis 11

We reject H0; Interest rates do have impact on NW in large banks

Hypothesis 12

We reject H0; Interest rates do have impact on NW in small banks

Hypothesis 13

We reject H0, MS, CI & Interest rates variability do have impact on NW in all sampled banks

We fail to reject H0, CPI do not have impact on NW in all sampled banks

Hypothesis 14

We reject H0; MS & CI do have impact on NW in large banks

We fail to reject H0, CPI & Interest rate variability do not have impact on NW in large banks

Hypothesis 15

We reject H0, CI do have impact on NW in small banks.

We fail to reject H0, CPI, MS & Interest rate variability do not have impact on NW in small banks.

Hypothesis 16

We reject H0; LDR, ROA, BOPO, MPR, & COM do have impact on NW in all sampled banks

We fail to reject H0, CAR, LIQ, NPL & GAS do not have impact on NW in all sampled banks.

Hypothesis 17

We reject H0, LDR, LIQ, BOPO, MPR, ROA & COM do have impact on NW in large banks

We fail to reject H0, CAR, GAS & NPL do not have impact on NW in large banks

Hypothesis 18

We reject H0, LDR, BOPO, MPR, ROA, GAS & COM do have impact on NW in small banks

We fail to reject H0, CAR, LIQ & NPL do not have impact on NW in small banks.

4.4 CONCLUSION

In conclusion, Net interest Margin and Net worth of the Lebanese commercial banks are affected both by internal and external factors with every variable at a different level of significance. Looking at these variables effect on bank's profits, we can conclude that having adequate capital contributes to having higher profitability whereas keeping lower levels of liquidity results in higher profitability as banks will be using the excess liquidity in lending and thus gaining interest revenue. We also not that having high amount of loans is both good and bad for banks as higher levels of loans bring higher default risk, and it also brings higher levels of interest revenue and increase banks profitability. In terms of competition, the lesser it is, the higher the bank's profitability and it is the opposite for operating efficiency, return on assets and growth in assets. The external factors effects on profits show that as there are higher levels of money supply in the market and interest rate variability, banks are exposed to higher levels of interest expense payment and adjustment costs, which results into lower level of profits. As for interest rates deposit rates are sticky and they are not sensitive to interest rates whereas lending rates are sensitive to interest rates, therefore as interest increases lending rate increases more than deposit rates, increasing profitability which is contrary to lend long and borrow short.

Testing the same factors on net worth, showed that commercial banks net worth are negatively related to interest rates; having high interest rates will discount banks investment at higher rates leaving it with lesser long time profitability. We also note that lesser competition is positively related to net worth as monopolistic competition contributes to short run profit but no to long run profits. Also similarly tested on NIM, having higher loans is both good and bad for banks as it both means having higher risk of default and gaining higher amounts of interest revenue. We also note that higher the return on assets is, the higher the net worth of banks. In terms of external factors increasing MS and interest rate variability exposes banks to higher levels of interest expense reducing profits and thus net worth. On the other hand we also note that having high consumer confidence in the market results to higher levels of net worth in commercial banks.

Testing NIM on large banks we conclude that higher loans increase the rate of default in large banks and results in lesser profits. In addition, Interest rates are positively related to large banks profits, because deposit rates are sticky and lending rates are sensitive to interest rates, therefore as interest increases lending rate increases more than deposit rates, increasing profitability; Moreover, In Lebanon large banks profitability doesn't depend on the levels of market share. We also note that having better operating efficiency, higher return on assets and higher

growth in assets results in higher levels of profitability in large banks. Concerning the external factors; increase in MS and interest rate variability exposes large banks to interest expenses and adjustment cost reducing their profits.

Testing NW on large banks, we conclude that higher interest rates result in lower net worth and this is because investment are discounted by interest rates and higher interest leads to lesser long run profitability. Also in large banks having high levels of loan increases the risk of default decreasing profitability and thus net worth. Looking at competition, we note that lesser competition leaves large banks with lower risks and therefore they will need lesser levels of capital, similarly liquidity is negatively related to net worth as higher liquidity leads to lesser profits and thus lesser net worth. In large banks, higher money supply shows that banks have higher levels of business activity increasing their profits and net worth. We also not that growth in Coincident Indicator show an increase in consumer confidence which results in higher profits and net worth in banks.

Testing NIM on small banks, we note that past profitability doesn't affect short run profits. Higher amounts of loans will both lead to higher defaults risk and higher levels of interest revenue; moreover, higher amount of liquidity is negatively related to banks as the higher the amount of liquidity the lesser their interest revenues. Also we note that Interest rates are positively related to small bank's profits whereas lesser competition lead to higher profits. In addition, the better the operating efficiency is, the higher the profitability and the higher the growth in asset is, thus the higher the profits. Looking at the external factors we note that increase in MS and in interest rates variability decreases the NIM due to increase in interest expenses and adjustment costs.

Testing Net worth on small banks, we note that interest rate were negatively related to NW and it is the same with competition between banks, the lesser it is, the lower the risk on banks, therefore banks are not required to keep higher levels of capital. In terms of loans, the higher they are, the higher the risk on banks will be; therefore, banks are required to keep higher levels of capital. In terms of operating efficiency and return on assets, the better they are the better the NW is. We also note that increase in interest rate variability show that banks have high cost of adjustment and they are also exposed to interest expenses. On the other hand, banks are positively related to coincident indicator which shows that as there is more consumer confidence in the market, small banks have higher levels of profits and thus net worth.

From the above mentioned conclusion we deduce the following mathematical models:

For All Sampled Banks:

$NIM_{it} = \alpha + 0.12MI_{it} + 0.46ROA_{it} - 0.0019LDR_{it} + 0.0053CAR_{it} + 0.0012Comp_{it} - 0.022\ LIQ_{it} + 0.02MPR_{it} - 0.029BOPO_{it} - 0.3SigmaT\text{-}bill12_{it} + 0.082GrowthA*T\text{-}bill12_{it} - 0.003MS_{it} + \varepsilon_t$

$NW_{it} = \alpha - 22.13MI_{it} + 15.62ROA_{it} + 0.13LDR_{it} - 4.88Sigma\ T\text{-}bill12_{it} - 0.78Comp_{it} + 0.46MS_{it} + 5.0MPR_{it} - 0.57BOPO_{it} + \varepsilon_t$

For large banks:

$NIM_{it} = \alpha + 0.099MI_{it} + 0.31ROA_{it} - 0.003MS_{it} - 0.24SigmaT\text{-}bill12_{it} + 0.067GrowthA*T\text{-}bill12_{it} - 0.053\ BOPO_{it} + \varepsilon_t$

$NW_{it} = \alpha - 19.01MI_{it} + 74.23ROA_{it} + 1.91LDR_{it} - 1.1LIQ_{it} - 1.3Comp_{it} + 0.39MS_{it} - 3.13MPR_{it} + 1.27BOPO_{it} + 22.69Growth\ in\ CI_{it} + \varepsilon_t$

For small banks:

$NIM_{it} = \alpha + 0.18MI_{it} + 0.39ROA_{it} - 0.003MS_{it} - 0.31SigmaT\text{-}bill12_{it} - 0.001LDR_{it} - 0.31BOPO_{it} - 0.003LIQ_{it} + 0.002COM_{it} + \varepsilon_t$

$NW_{it} = \alpha + 0.42LDR_{it} + 8.9ROA_{it} - 0.44BOPO_{it} - 60.29MPR_{it} - 0.79Comp_{it} - 5.7Growth\ in\ assets_{it} - 17.22\ MI_{it} + 20.57Growth\ in\ CI_{it} + \varepsilon_t$

4.5 RECOMMENDATION

- I would recommend large banks to expand their assets to improve short run profitability.
- I would recommend small banks to use liquidity to give away loans to increase their short run profits.
- I would recommend all banks to increase their borrowing when interest rates are increasing to increase their short run profits, as deposit rates are sticky and not sensitive to interest rates movements while lending rate are sensitive to interest rates.
- I would recommend banks to enhance their operating efficiency for higher short and long run profitability.
- I would recommend banks to increase their LDR for higher long run profitability.
- I would recommend large banks to keep lower levels of liquidity to improve their long run profitability.
- I would recommend small banks to efficient utilization of their assets to improve short and long run profitability.
- I would recommend banks to forecast well interest rates variability to reduce costs of adjustment.
- I would recommend banks to forecast monetary policies as it improves long run profitability.

4.6 SUMMARY OF CONCLUSION

- In Conclusion, we found that Internal and external factors affecting commercial banks do impact the short run profitability and long run profitability on the Lebanese banks on different levels of significance and for certain independent variables mentioned in the summary of results of this research.
- We also conclude that there is a significant difference between the impact of external and internal factors on large and small banks for certain independent variables mentioned in summary of results of this research.

4.7 LIST OF REFERENCES

- Abdul Aziz, N. (2009) "The impact of non-performing loans (NPL) towards profitability performance (ROA, ROE, & NPM)" Maizura binti Isa @ Kamaruddin I/C NO. 791026016224 STAFF 10 NO. 222493
- Abreu, M., & Mendes, V., 2003. Do Macro-Financial Variables Matter for European Bank Interest Marginsand Profitability, Financial Management Association International
- Ahmet, U., & Hakan, E., 2010. Determinants of the Net Interest Margins of Banks in Turkey, Journal ofEconomic and Social Research, 12 (2), p. 101-118.
- Almazari, A. (2014) "Impact of Internal factors on Bank profitability: comparative study between Saudi Arabia and Jordan." Journal of Applied Finance & Banking, vol. 4, no. 1, 2014, 125-140 ISSN: 1792-6580 (print version), 1792-6599 (online) Scienpress Ltd, 2014
- Albertazzi U. and Gambacorta L. (2006), "Bank Profitability and Taxation", mimeo, Bancad"Italia. 2. Boulier, J. F., Huang, S. J., &Taillard, G. (2001). Optimal management under stochastic interest rates: the case of a protected defined contribution pension fund. International Journal of Accounting and Financial Reporting ISSN 2162-3082 2014, Vol. 4, No. 1 www.macrothink.org/ijafr 153 Insurance: Mathematics and Economics, 28(2), pp.173-189. Angbazo, L. (1997), *Commercial Bank Net Interest Margin, Default Risk, Interest Rate Risk and Offbalancesheet Banking*. Journal of Banking and Finance 21, 55-87.
- Angbazo, L. 1997. "Commercial bank net interest margins, default risk, interest-rate risk, and Off-balance sheet banking", Journal of Banking and Finance, Vol.21: 55-87.
- Anna P. I. Vong and Hoi Si Chan., 2009., Determinants of Bank Profitability in Macao. Macao Monetary Research Bulletin.
- Athanasoglou, P. (2006) "Determiants of bank profitability in the South Eastern European Region." BANK OF GREECE Economic Research Department – Special Studies Division
- Barajas, A., Steiner, R., Salazar, N. (1999), *Interest Spread in Banking in Colombia 1974-96*, IMF Staff Paper, 46, 196-224.
- Berger, A. (1995). The relationship between capital and earnings in banking. *Journal of Money, Credit and Banking*27, 432-456.
- Berument, H. (1999) "The impact of inflation Interest Variability on interest rates in the UK." European Journal of Business and Management ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online) Vol.5, No.26, 2013
- Bordeleau, E. and Graham, C. (2010) "The Impact of liquidity on Bank profitability." Bank of Canada Working Paper 2010-38 December 2010
- Bourke, P. (1989). "Concentration and Other Determinants of Bank Profitability in Europe, North America and Australia," Journal of Banking and Finance 13, 65-79 Credit and Banking, Vol.27:404-31
- Boulier, J. F., Huang, S. J., &Taillard, G. (2001). Optimal management under stochastic interest rates: the case of a protected defined contribution pension fund.

International Journal of Accounting and Financial Reporting ISSN 2162-3082 2014, Vol. 4, No. 1

- Bourke, P. (1989). "Concentration and Other Determinants of Bank Profitability in Europe, North America andAustralia," Journal of Banking and Finance 13, 65-79 Credit and Banking, Vol.27:404-31.
- Brigo, D., &Mercurio, F. (2006). Interest rate models: theory and practice: with smile, inflation, and credit: Springer Verlag. Brock, P., & Suarez, L.R., 2000. Understanding Interest Rate Spreads in Latin America, Journal of Development Economics, 63, p. 113-134.
- Brock, P., Suarez, L. (2000), *Understanding the behavior of bank spreads in Latin America,* Journal of Development Economics, 63, 113–134.
- Buiter, W. H., &Panigirtzoglou, N. (2003). Overcoming the zero bound on nominal interest rates with negative interest on currency: gesell's solution*. The economic journal, 113(490), pp.723-746.
- Caruntu, G.A., Romanescu, M.L. (2008), *The Assessment of Banking Performances-Indicators of Performance in Bank Area*, MPRA Paper No. 11600.
- Chirwa, E. W. T., 2001. Market Structure, Liberalization and Performance in the Malawian Banking Industry.AERC, Research Paper, No. 108, Nairobi.
- Claeys, S., & Vander Vennet, R., 2007. Determinants of Bank Interest Margins in Central and Eastern 208 *Daniel K. Tarus et al. / Procedia Economics and Finance 2 (2012) 199 – 208*
- Claeys S, Vander Vennet R (2008): Determinants of Bank Interest Margins in Central and EasternEurope: A Comparison with the West. *Economic Systems*, 32:197–216.
- Daley, D. (2012) "Market Interest rate and Commercial banks profitability: An Empirial study" American Charter of Economics and Finance Vol. 1 No. 1
- DELIS, M. D. & KOURETAS, G. P. 2011. Interest rates and bank risk-taking. Journal of Banking & Finance, 35, 840-855.
- Demirgüç, A., Laeven, L., & Levine, R., 2004. Regulations, Market Structure, Institutions and the Cost of Financial Intermediation, Journal of Money, Credit and Banking, 36 (3), p. 593-622.
- Demirgüç, A. & Huizinga, H., 1999. Determinants of Commercial Bank Interest Margins and Profitability:Some International Evidence, World Bank Economic Review, 13, p. 379-408.
- DeYoung, R. & Rice, T. (2004). Non-interest income and financial performance at US Commercial Banks. Financial Review 39(1): 101-127. doi:10.1111/j.0732-8516.2004.00069 Ernest and Young (2013) "Tanzania Banking survey" visited on www.google.co.tz, accessed on 22 September2013
- Drakos, K. (2002), *The Dealership Model for Interest Margins: The Case of the Greek BankingIndustry*, Journal of Emerging Finance 1, 75-98.
- Einav, L., Jenkins, M., & Levin, J. (2008). "The Impact of Information Technology on Consumer Lending: Working paper."
- ENGLISH, W. B. 2002. Interest rate risk and bank net interest margins. BIS Quarterly Review, 10, 67-82.228
- Farlex Financial Dictionary, (2009): *Retrieved 13 June 2011.*

- Fabozzi, F.J. and Modigliani, F. (2003): Capital Markets; "Institutions and Instruments", 3rdEdition, *published by Prentice Hall,* pp. 35-38.
- Flannery, M. (1983) "Interest Rate & bank profitability" The Journal of Finance Vol 36, No. 5 (Dec. 1981) pp.1085-1101
- Flannery, M. (1981), "Market Interest rates and commercial bank profitability: An Empirical investigation. Journal of Finance, Vol XXXVI No 6
- Fry, M.J. (1995), *Money, Interest and Banking in Economic Development*, Second ed., John Hopkins University Press.Gelos, R. (2006), *Banking Spreads in Latin America*, IMF Working Paper WP/06/44, International Money Fund. Gounder, N., Sharma, P. (2012), *Determinants of Bank Net Interest Margins in Fiji, A Small Island Developing State*, Applied Financial Economics, 22, 1647-1654.
- Fungacova, Z., Weill, L. (2010) "How Market power influences bank failures evidence from Russia." University of Strasbourg Pole European de Gestion et D'economie
- Gelos, R. (2006) "Banking spreads in Latin Amercia." 2006 International Monetary Fund
- Godspower – Akpomieme, E. (2012) "Market interest rate fluctuation: Impact on the profitability of commercial banks" Journal of Master of Management in Finance & Investment, Faculty of commercial law and management wits Business School at the Unviersity of the Witwatersrand.
- Goedhuys, D.W. (1982): Money and Banking. *Published by McGraw-Hill Book CompanyJohannesburg*. pp.84-107.
- Goddard, J., Molyneux, P., and Wilson, J.O.C. (2004). The profitability of European banks: A cross sectional anddynamic panel analysis. *The Manchester School,* 72 (3), 363–381.
- Hadad, M.D., Santoso, W, Dwityapoetra, S.B. (2003), *Intermediation Cost Study of Some Banks in Indonesia: Is Interest Credit Banks overpriced?*, Bank Indonesia Working Paper. 14-16.
- HANCOCK, D. 1985. Bank profitability, interest rates, and monetary policy. Journal of Money, Credit and Banking, 189-202.
- Hanweck, G. A and Ryu, L. (2005). The sensitivity of bank net interest margins and profitability to credit, interestrate, and term-structure shocks across bank product specializations. *Working paper*, retrieved from http://www.fdic.gov/bank/analytical/working/wp2005/WP2005_2.pdf.
- Hanweck, G.A. and Kilcollin, T.E. (1984): "Bank Profitability and Interest Rate Risk". *Journal of Economics and Business* 36, pp. 77-84.
- Harward, P. and Upton, A. (1991). *Introduction to Business Finance*. New York; Mc Graw Hill.
- Hassan, M. Kabir and Abdel-Hameed M. Bashir., 2003., Determinants of Islamic Banking Profitability. Paper presented at the 10th Annual Conference, Marrakesh.
- Hellmann, T., Murdock, K.C., Stiglitz, J.E. (2000), *Liberalization, Moral Hazard in Banking, and Prudential Regulation: Are Capital Requirements Enough?*, American Economic Review, 90(1),
- Hill, R.C., Griffiths, W.E. & Judge, G.G. (2001). Undergradute econometrics. Prentice Hall, Upper Saddle River,New Jersey.

- Hirtle, B and Christopher M (2004).“The Evolution of U.S. Bank Branch Networks: Growth, Consolidation, and Strategy.” Federal Reserve Bank of New York current issues in economics and finance. june 2004.
- http://www2.accaglobal.com/documents/interest_rates.pdf
- IMF Working Paper WP/06/44, International Money Fund. Gounder, N., Sharma, P. (2012), *Determinants of Bank Net Interest Margins in Fiji, A Small Island Developing State*, Applied Financial Economics, 22, 1647-1654.
- Joni Tamkin Borhan dan Hedenan bin Towpek (2006), Untung Dalam Sistem Perbankan Islam (Theory of Profit in Islamic Banking System) Kuala Lumpur: Department of Publication University of Malaya.
- Kasman, S., Vardar, G., Tunç, G. (2011): “The impact of interest rate and exchange rate volatility on banks' stock returns and volatility” *Economic Modelling* 28, pp. 1328-1334.
- Kaufman, H. (1986): Interest Rates, the market, and the new financial world, *Published byI.B Tauris & Co. LTD, London,* pp.19-144.
- Khan, W. (2014) “Impact of Interest rate changes on the profitability of four major commercial banks in Pakistan.” Volume 4 No 1 (2014)
- Khrawish, H.A. (2011), *Determinants of Commercial Banks Performance: Evidence from Jordan*,International Research Journal of Finance and Economics, Zarqa University, 5(5), 19-45
- Koch, T.W., Mac Donald, SS. (2000), *Bank Management*. Fourth Edition. Orlando. The Dryden Press.Harcourt Brace College Publishers.*International Journal of Economics and Financial Issues, Vol. 4, No. 2, 2014, pp.295-308*308
- Kohn, M. (2004): Financial Institutions and markets, 2nd Edition, *Published by oxford*
  University Press, New York. pp. 28-194.
- Laatsch, F. and Klein, D. P. (2003): “Nominal Rates, Real Rates, and Expected Inflation”.*The Quarterly Review of Economics and Finance* 43, pp. 405-417.
- Lebanese Republic, presidency of the council of ministers national accounts mission.
- Levine, R. (1997), *Financial Development and Economic Growth*, Journal of Economic Literature.35(2), 688-726.
- Laubach, T. (2009). “New evidence on the interest rate effects of budget deficits and debt.” Journal of the European Economic Association, 7(4), pp.858-885. International Journal of Accounting and Financial Reporting ISSN 2162-3082 2014, Vol. 4, No. 1 www.macrothink.org/ijafr 154
- Madura, J. (1989): Financial Markets and Institutions. *West Publishing Company, New York,*pp. 22-39.
- Malik, M. (2014) “Interest rate and its effect on banks profitability” ISSN: 2090-4274 Journal of Applied Environmental and Biological Sciences
- Mantach, M., Blom invest Bank (2014) “The banking sector in Lebanon: Rising up the challenges of a conflict zone.” BLOM INVEST BANK
- Martinez, P., Soledad, M., Mody, A. (2004), *How Foreign Participation and Market ConcentrationImpact Bank Spreads: Evidence from Latin America,* Journal of Money, Credit and Banking, 36(3),

- Mayo, H. B. (1989): Finance; An Introduction, *The Dryden press, New York.* pp. 30-101.
- Molyneux, P., Thorton, J. (1992): "Determinants of European Banks Profitability". *Journalof Banking and Finance,* pp. 1173-1175.
- Mburu, G., S. (2013) "Interest Rates and profitability of commercial banks" A RESEARCH REPORT SUBMITTED TO MAKERERE UNIVERSITY IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF BACHELOR OF COMMERCE
- Molyneux, P., Thorton, J. (1992): "Determinants of European Banks Profitability". *Journalof Banking and Finance,* pp. 1173-1175.
- Murthy, Y., Sree R. (2003), *A Study on Financial Ratios of major Commercial Banks*, Research Studies, College of Banking & Financial Studies, Sultanate of Oman.
- Naceur, S.B., 2003., The determinants of the Tunisian Banking industry profitability: panel evidence, Universite Libre de Tunis Working papers.
- Nwankwo, G.O. (1991). *Bank Management, Principles and Practice*, Malthouse Press Ltd. Lagos.
- Olalekan A. (2013) Captial adequacy and banks profitability: An Empirical evidence from Nigeria." American International Journal of Contemporary Research Vol. 3 No. 10; October 2013
- Ongore, V.O., Kusa, G.B. (2013), *Determinants of Financial Performance of Commercial Banks in Kenya*, International Journal of Economics and Financial Issue, 3(1), 237-252.
- Pasiouras, F. and Kosmidou, K. (2007). Factors influencing the profitability of domestic and foreign commercial banksin the European union, *Research in International Business and Finance,* 21(2): 222-237.
- P. A. Samuelson. "The Effect of Interest Rate Increases on the Banking System." *AmericanEconomic Review* 35 (March 1945).
- Pastory, D. and Swai, P., J. (2013) "The relationship between bank growth and profitability Empirical evidence from Eac: Panel Data Analysis" European Journal of Business and Management ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online) Vol.5, No.26, 2013
- Paul, A. Samuelson (1945). "The effects of interest rate increases on banking system." The American economic review, Vol.35, No. 1, pp. 16-27.
- Ponce T (2010) what determines the profitability of banks in spain? Visited at http://www.aeca.es/pub/on_line/comunicaciones_xvicongresoaeca/cd/75b.pdf, retrieved on 23/09/2013
- Poverty Reduction and Economic Management departement (2012) Republic of Lebanon
- P.P.Athanasouglau, S.N.Brissimis, and M.T.Delis, "Bank-Specific, Industry-Specific and Macroeconomic Determinants of Bank Profitability", *Working Paper*, Bank of Greece, (25) (2005), 1-37.

- Raharjo, P. (2014) "The Determinants of Commercial banks Interest Margin in Indonesia: An analysis of Fixed effect Panel Regression." International Journal of Economics and Financial Issues Vol. 4, No. 2, 2014, pp.295-308
- Randall, R. (1998), *Interest Rate Spread in the Eastern Caribbean*, IMF Working Paper 98/59. International Monetary Fund, Washington.
- Rasiah, D., 2010. Theoretical Framework of Profitability as Applied to Commercial Banks in Malaysia.European Journal of Economics, Finance and Administrative Sciences*,* Vol. 19, p. 74-97.
- Rengasamy, D. (2014) "Impact of Loan Deposit Ratio (LDP) on profitability: Panel Evidence from commercial banks in Malaysia." Proceedings of the Third International Conference on Global Business, Economics, Finance and Social Sciences (GB14Mumbai Conference) Mumbai, India. 19-21 December 2014 ISBN: 978-1-941505-21-2 Paper ID: MF498
- Rengasamy, D. (2014) "Impact of Loan to Deposit Ratio (LDR) on Profitability: Panel Evidence from Commercial Banks in Malaysia" Proceedings of the Third International Conference on Global Business, Economics, Finance and Social Sciences (GB14Mumbai Conference) Mumbai, India. 19-21 December 2014
- Rose, P.S., and Kolari, J.W. (1995): Financial Institutions; "Understanding and managingfinancial services", 5th Edition, *Published by Richard D. Irwin, Chicago.* pp. 10-20, 309-419.
- Saha, A., Subramarian, V., Basu, J., Mishara, A. K. (2009): "Net worth Exposure to Interest Rate Risk: An Empirical Analysis of Indian Commercial Banks". *European Journal ofOperational Research* 193, pp. 581-590.
- Samy Ben Naceur., 2003., The Determinants of the Tunisian Banking Industry Profitability: Panel Evidence. http://www.mafhoum.com/press6/174E11.pdf
- Saunders, A., Cornett, M.M. (2003): Financial Institutions Management; "A Risk Management Approach". 4th Edition, P*ublished by McGraw-Hill/Irwin, New York.* pp. 138-516.
- Saunders, A., Schumacher, L. (2000), *The Determinants of Bank Interest Rate Margins: anInternational Study*, Journal of International Money and Finance 19, 813–832.
- Shah, S.G., 1979.,. Bank profitability: The real issues. *The Journal of the Indian Institute of Business*, (59)3.
- Shetty, A.G., Macgrath, F.J., Hammerbacher, I.M. (1995): Finance; "An Integral Global
  Approach". *Published by Richard D. Irwin, Inc., New York*. pp. 35-40.
- Sidabalok, L. R. and, Viverita, C. (2011): "The Determinants of Net Interest Margin in theIndonesian Banking Sector" *Working Paper, SSRN*. pp. 1-23.
- Smith, M. L. (1991). "Meanings of test preparation."
- Syahru Syarif., 2006., Aanalisis Pengaruh Rasio-Rasio Camels Terhadap Net Interest Margin (Study Empiris Pada Bank-bank yang Listed di Bursa Efek Jakarta Periode Tahun 2001 – 2004), Diponegoro University institutional Repository (UNDIP – IR).

- SUFIAN, F. 2011. Profitability of the Korean banking sector: panel evidence on bank-specific and macroeconomic determinants. Journal of Economics and Management, 7, 43-72.
- Tarus, D. (2012) "Determinants of Net interest Margins of Commercial banks in Kenya: A panel study" Procedia Economics and Finance 2 (2012) 199 – 208
- The association of the Lebanese banks archives.
- Thomas S. Y. Ho & Saunders, A. (1981). The determinants of bank interest margins: Theory and empiricalevidence. *The Journal of Financial and Quantitative Analysis*, 16(4).
- 12. J. Morrison and D. Pyle. "What Have We Learned About Bank Regulation Over the Economic'*'This specification assumes that of does not affect earnings on net new investahle assets. This empirical approximation is based on evidence that of has no statistically significant effect on bank Website: http//www.Bankdata.com
- Website: http//www.bdl.gov.lb (Banque Du Liban website)
- Website: http//www.cas.gov.lb (Central administration of statistics)
- Website: http//www.imf.org (International Monetary fund)
- Werner, K. and Mourmann, J. (2009) Efficiency and profitability of Europen banks – How important is operational efficiency." Frankfurt School of Finance and Management Bankakademie HFB.
- Bank Data
- Wong, K.P., (1997): "The determinants of bank Interest margin under credit and Interest Rate Risk". *Journal of Banking and Finance,* pp. 251-271.