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The Determinants of Financial Performance in Maghreb Banks.

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ABSTRACT

The purpose of this research is to study and analyze the determinants of commercial banks' Net Interest Margin in Maghreb countries. Both internal factors (bank specific factors) and external factors (macroeconomic factors) are considered. Internal factors selected in this study include Loan to Asset ratio, Government Securities to Asset ratio, Total Debt to Asset ratio, Funds Borrowed to Asset ratio, and Size. Meanwhile external factors included are: Inflation and Economic Growth Rate. This study applies Fixed Effect panel data regression model to 51 Maghreb commercial banks covering the period 2014 – 2017. Fisher's test show that fixed effect model is more appropriate than pooled model. The results show that Net Interest Margin of Maghreb banks is affected only by Size, Loan to Asset Ratio and Funds Borrowed to Asset Ratio. Furthermore, while Economic Growth Rate is significant, the Inflation Rate is not significant.

Keyword: Net Interest Margin, Panel Data, Maghreb Banks, Bank Specific Factors, Macroeconomic Factors.

RÉSUMÉ

Le but de cette recherche est d'étudier et d'analyser les facteurs déterminants de la marge nette d'intérêt des banques commerciales au Maghreb, à la fois des facteurs internes (facteurs propres à la banque) et des facteurs externes (Macroéconomiques). Les facteurs internes sélectionnés dans le cadre de cette étude comprennent le ratio prêt / actif, le ratio titres gouvernementaux / actifs, le ratio dette totale / actif, le ratio fonds empruntés / actif et la taille, tandis que les facteurs externes sont l'inflation et le taux de croissance économique. L'étude a appliqué un model de régression des données du panel à effet fixe à 51 banques du Maghreb couvrant la période 2014 - 2017. Le test de Fisher montre que le model à effet fixe est plus approprié que le modèle réduit. Les résultats révèle que la marge nette d'intérêt des banques maghrébines n'est affectée que par la taille, le ratio prêt / actif et le ratio fonds empruntés / actif à un niveau de signification différent. De plus, bien que le taux de croissance économique soit significatif, le taux d'inflation n'est pas significatif.

Mot-clé : Marge Nette d'Intérêt, Données de Panel, Banques Maghrébines, Facteurs Spécifiques à la Banque, Facteurs Macroéconomiques.

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Introduction:

Commercial banks are one of the economic participants that play a vital role in a country's economy. Especially for a country whose economy still relies on the existence of banks as the main source of funds for economic activities, such as Maghreb, where the financial market is underdeveloped. At the macroeconomic level, banks are one of the means of transmitting monetary policy (transmission belt); at the same time, at the microeconomic level, banks are the main source of financing for enterprises and individuals.

Since the financial intermediary functions performed by commercial banks affect a country's economic growth and economic stability, commercial banks must have good financial performance. On the contrary, poorly performing banks may lead to bank failures, which will trigger a crisis of trust in the banking system and cause economic growth to slow and decline or lead to negative economic growth. Therefore, if the banking industry is healthy and can generate profits, it will be able to withstand shocks and contribute to the stability of the financial system. In a country with a financial sector dominated by commercial banks, any failure in that sector will have a huge impact on the country’s economic growth.

This is due to the fact that any bankruptcy that may occur in the industry has a contagious effect, which may lead to bank runs, crises and bring about overall financial and economic crisis.

If banks effectively perform financial intermediary functions, they will promote a country's economic growth. One of the indicators to measure the efficiency of a bank is that a high net interest margin is usually related to the low efficiency of the bank. The cost of inefficiency is passed on to bank customers by charging high interest rates, especially in developing countries. Lower interest rates indicate lower effective intermediary costs, reflecting the good effects of monetary policy and well-maintained finance Stable and competitive banking system. The high intermediary costs will reduce the incentives for economic actors, which can explain the high net interest margin from two aspects.

First, the high net interest margin reflects the inefficiency of banks and bank market conditions, which is not competitive. Secondly, it is because the high interest margin reflects the lack of banking regulations and high information asymmetry. Conditions of increased competition will encourage speculation in the banking system, which may lead to financial instability. The net interest rate is the difference between the interest income from bank loans and other profitable assets in a certain period of time, minus the interest paid to depositors and bank debt holders divided by the average number of profitable assets during the same period, Interest rate is one of the indicators that can be used to evaluate bank profitability

The other indicators used to measure the profitability of banks are ROA and ROE. Therefore, the higher the interest rate level, the higher the profitability of the bank, and the stability of the bank is well maintained. On the other hand, a high NIM may also reflect the existence of loan practices. The bank should establish a high credit risk for loan loss reserves. This work studies the influence of various variables on bank profitability calculated by net interest rate in a single equation framework. We used data from Maghreb Bank (Algeria, Tunisia, and Morocco) from 2014 to 2017.

Problem statement:

This Thesis seeks to research into the main factors influencing financial performance of the commercial Banks in Maghreb by answering the main question.

What are the main factors that affect financial performance of commercial banks in Maghreb?

Guiding research questions:

To provide a basis to concluding on the problem statement above, the thesis seeks to answer the following research questions:

- What are the bank specific factors determining the profitability of commercial banks in Maghreb?
- What are the external factors that affect banks profitability in Maghreb?

Hypothesis:

- There is a significant effect of the bank size on banks profitability of commercial banks in Maghreb.
- There is a significant effect of total loan to asset on banks profitability of commercial banks in Maghreb.
- There is a significant effect of total debt to asset on banks profitability of commercial banks in Maghreb.
- There is a significant effect of funds borrowed to asset on banks profitability of commercial banks in Maghreb.
- There is a significant effect of government securities to asset on banks profitability of commercial banks in Maghreb.
- There is a significant effect of the external factors on banks profitability of commercial banks in Maghreb.

Significance of the study:

This thesis contributes to a better understanding of the Maghreb banking sector and the key factors that influence profitability within banks.

The findings from this study are beneficial to banks managements and may interest academicians and students as a baseline to further studies.

Limitations of the study:

- The financial statements used in the study included some missing data which may have biased the results.
- The determinants considered in the study may not be the only factors influencing financial performance. There may be other factors as well and if were considered may have influence the result of the study.
- The difficulty of communication and transmission of information.

Construction of the study:

This study is composed of three chapters. The first chapter explains commercial banking in general. It talks about the types and functions as well as the main sources of income in commercial banks. It also presents the history of banking system in each country. The second chapter lays down the theoretical background of the study. It defines the banking industry as presented in financial theory. It also contains a literature review of similar researches realized on the subject in different countries.

The third and final chapter illustrates the empirical case. This study chose to use linear regression along with empirical tests to examine what factors determine banks profitability and the nature of those effects.

Chapter One

The Banking Sector in Maghreb Countries

Introduction:

Banks represent a very important part of every country's financial sector, and this importance lays in its different roles that directly contribute to the economy. This role became more apparent in modern days thanks to the evolution of banks and the diversity of the functions and services they offer. And in this chapter, we pay more attention to the banking sector and its development in Maghreb countries.

This chapter discusses different aspects of the banking sector of each country. It consists of two sections:

Section 1: An Introduction to Banking.

Section 2: Characteristics of Maghreb Banking Sectors.

The first section lays down the different concepts necessary to understand how banks operate. It talks about the different types and functions and the role of these institutions. The second section gives a brief history and a presentation of the banking sector of each Maghreb country (Algeria, Morocco, and Tunisia).

SECTION 1: An Introduction to Banking

1. Role of Commercial Banks in the Economy:

In all countries, banks are seen as the driving force and key player in the economic sector, it plays a key role in:

-Financing major investment projects.

-the creation of job opportunities thus improving the living conditions of individuals

- Formation of wealth

-Contribution to the GDP…etc.

There major role is also being the intermediation between individuals with excess money and those in need of money or loans. Banks are also the mean by which the central banks operates to control the circulation of money within the country, and to direct the monetary market, mainly through policies and regulations and deciding on the interest rates.

Since Gurley and Shaw, who in 1960 proposed a theoretical synthesis on financial intermediation, it is acknowledged that the desire to borrow and lend is often incompatible in their forms, an essential function of financial intermediaries is to transform the characteristics of financial assets. Financial intermediaries ensure a transformation of maturities, risks and returns. More generally the existence of banks is rooted in the imperfection of capital markets.

At the micro-economic level, banks are presented as a totally liquid asset: it does not represent a risk of capital loss; banks are like a supplier that insures liquidity better than the one to be found on the market to depositors.

At the macro-economic level, the power of money creation by the banking system plays a major role in the accumulation of capital, through the financing of major projects which contributes strongly to the creation of new jobs, and the stimulation of countries' economic growth.

2. Types of banks:

In general, banks can be divided into central bank and commercial bank. The central bank also called the bank of banks, has the function of controlling and supervising commercial banks and other economic activities. In the other hand, commercial banks are the ones that provide banking services in order to make profit. There are many types of commercial banks, mainly: deposit banks, merchant banks, investments banks, universal banks.

2.1 Deposit banks:

Deposit banks also called “retail banks” collect monetary resources from their clients and lend them to other clients (households, SMEs, etc.) who need it to finance their economic activities (purchase of goods, consumption, purchase of housing, payment to suppliers or employees, purchase of capital goods...).

2.2 Merchant banks:

A merchant bank is a bank that acts as an intermediary in financial transactions (IPO, capital increase, loan placement, merger and acquisition transaction, etc.). Merchant banks hardly ever lend. They therefore have a lower shareholders' equity than commercial banks. On the other hand, it may take minority or majority shareholdings in industrial businesses, to help them to develop and realize a long-term added value in the form of reclaiming that interest.

2.3 Investment banks:

Investment banks are banks that provide sophisticated services to large companies, in logic of partial or total customization. It offers other services such as access to equity/bond/rate markets (issuance, transaction, hedging, etc.), providing advice on mergers and acquisitions, access to various means of financing, etc.

2.4 Universal banks:

Universal or global banks (Barclays, BNP Paribas, Citigroup, etc.) are large financial conglomerates grouping together the various business lines of retail banking, financial services, corporate and investment banks and asset management banks.

3. Functions of commercial banks

Commercial banks have variety of functions that are generally the same for both developing and developed countries. These functions can be divided into primary function and secondary function.

3.1 Primary functions:

A) Accepting deposits:

Banks accept money deposited from individuals or businesses and charges them for the various services provided, these deposits can generate interest or not according tothetype of service the clients selects. They can also be short term deposits or long term deposits.

B) Giving loans:

Banks offer various loans to their clients, these loans can take many forms according to the needs of the clients, whether it be cash credits, term loans, consumer credits and the most common one being overdraft options where the owner of a current account is allowed to draw over the amount in his account up to a previously agreed limit.

C) Facilitating trade:

Bank deposits are regarded as money. They are as good as cash. They can be used to purchase goods and services and to pay debts. It is a sort of intermediation between suppliers and consumers or between businesses; they offer different ways of payment in forms of credit instruments that are suitable for both parties and most importantly, safer than cash.

D)Promote the Use of Cheques and Modern Payment tools:

Commercial banks render an important service by providing to their customers a cheap medium of exchange like cheques, cards, and even mobile payment. It is found much more convenient to settle debts through these tools rather than through the use of cash.

E)Financing Internal and Foreign Trade

The bank finances internal and foreign trade through discounting exchange bills. Sometimes, the bank gives short-term loans to traders on the security of commercial papers. This discounting business greatly facilitates the movement of internal and external trade.

3.2 Secondary functions

a- Agency Services:

Banks also perform certain agency functions for their customers. The agency services are of immense value to the people at large. The various agency services provided by banks are: Collection and Payment of Credit Instruments, Purchase and Sale of Securities, Collection of Dividends on Shares, it also often acts as a correspondent or a representative of their clients and even as a trustee and executor

b- General Utility Services:

In addition to agency services, the modern banks provide many general utility services for the community such as Locker Facility, traveler's cheque and credit cards, giving letters of credits, collecting statistics, Accepting Bills of Exchange on Behalf of Customers…etc.

SECTION 2: characteristics of Maghreb Banking Sectors

1. The Algerian Banking sector:

1.1 History of the Algerian banking sector:

-December 1962: The creation of the central bank of Algeria; the entity that controls the banking sector in Algeria, and is in charge of the emission and the management of the fiduciary money within the country.

-From 1964 to 1967: The establishment of various public banks, starting with CNEP in 1664, BNA and CPA in 1966, and finally BEA in 1967, each of these banks had a specific purpose and was assigned different missions in the industry, all decided by the government.

-From 1970 to 1986: In 1970, major reforms were made by the political authorities of the country implying the reorganization of all of the financial structure of the country, and a few years later, BADR and BDL were created to suit the new system.

-From 1986 to 1990: in 1986 the first ever Algerian banking law was published but it was not put to work due to the situation of the country, and until 1990, banks continued to play a passive role in the industry.

-1992: On maw 1992 a major financial reform was adopted, imposing new strict laws on banks and also removing the distinctions between public and private and between national and foreign.

-2003: the largest private bank in Algeria; **"Al-khalifa"** took part of a major fraud trial and collapsed. This led to the downfall of other banks such as BCIA. And the authorities ended up making new and stricter requirements and regulations for the establishment of new banks. This incident is the major reason why all private banks in Algeria are foreign owned.

1.2 Characteristics of the Algerian banking sector:

The Algerian banking Sector is made of 20 banks, (6 public and 14 private foreigners).

- **<u>Public Banks:</u>**

-La Banque Nationale d'Algérie BNA ;

- La Banque Extérieur d'Algérie BEA ;

- Le Crédit Populaire d'Algérie CPA ;

- La Banque d'Agriculture et du Développement Rural BADR ;

- La Banque du Développement Local BDL ;

- La Caisse Nationale d'Epargne et de prévoyance (CNEP-BANQUE) ;

❖ **PrivatBanks:**

- Al Baraka Banque Algérie ;
- Al Salam Bank-Algeria;
- Arab Bank Corporation-Algeria ;
- Arab Bank PLC-Algeria ;
- BNP Paribas AL Djazair ;
- Calyon Algérie ;
- Citibank Algérie ;
- Fransabank El DjazairSPA ;
- Gulf Bank Algeria ;
- HSBC Algérie ;
- Natixis Algérie ;
- Société Générale Algérie ;
- The Housing Bank for Trade and Finance-Algeria ;
- Trust Bank Algeria.

The sector is characterized by a strong public concentration and weak competition.

In 2017, the concentration ratio was around 0.58, (the three largest banks based on total assets were BEA, BNA and CPA) and the 6 public banks covered over 85% of the sector's total assets. Despite the reforms and the efforts done by the government; public banks still dominate the sector.

In 2014 an IMF report stated that "the Algerian state plays a contradictory role in relation to the public banks. This leads to a weakening of the role of banking sector intermediation".

2. The Moroccan banking sector:

2.1 History of the Moroccan banking sector:

-From 1906 to 1943: In 1906, 12 European countries agreed on opening the Moroccan state bank, which was later on created in 1907 in "Tanger" . and next in 1912, many European banks (mainly French) were installed in the country. During this period there were no laws or regulations guiding the sector.

-From 1943 to 1955: on March 21st 1943, the first ever law on the regulation and organization of the banking profession was made by order of the minister of finance. And it was modified and supplemented by orders of 1954 and 1955.

-1956: after the independence of the country, the morrocan state bank was replaced by "La Banque du Maroc" which became the central bank.

-1959: The creation of many banks and financial organisms to support the development of the sector (CDG, FEC, CEN, BNDE and BMCE).

-1967: A new royal decree defining banks activities and the sector's specificities in depth.

-From 1993 to 2003: This period witnessed countless reforms and the adaption of the new concept of "universal bank". Therefore, many changes were made in order to adapt and fit the international standards.

-2014: Morocco adopts a new banking law. A new surveillance system was implemented (following the financial crisis of 2007). This year has also known the creation of the "Coordination and Surveillance Committee of Systemic Risk".

2.2 Characteristics of the Moroccan banking sector:

The Moroccan banking sector is composed of 19 banks of which 7 are foreign, 5 are public and 7 are private.

- **Public banks :**

- Al Barid Bank ;
- Caisse de Dépôt et de gestion (CDG capital) ;
- Crédit Immobilier et Hôteleir (CIH) ;
- Crédit Agricole du Maroc ;
- Fonds d'Equipement Communal ;

- **Private national banks :**

- Attijariwafabank ;
- Crédit Populaire du Maroc ;
- Banque Marocaine du Commerce Extérieur (BMCE Bank) ;
- Média finance;
- Bank Al Amal ;
- Union Marocaine de Banques;
- Casablanca Finance Markets (CFM);

- **Forgeinbanks :**

- Arab Bank ;
- Banco Sabadell ;
- BMCI (Banque Marocaine pour le Commerce et l'Industrie) ;
- Caixa ;

- Citi Bank Maroc ;

- Crédit du Maroc ;

- SociétéGénéraleMaroc ;

According to the IMF 2016 report, Moroccan banks have considerably developed at both national and regional levels since the 2007 financial crisis. For example, banks have broadened their product range, which has increased the level of banking intermediation.

Total Moroccan banking assets represent 13% of total bank assets of the entire African continent in 2011.[1]

Concentration ratio: In 2017, The three biggest banks in morocco (Attijariwafa, BanquePopulaire du Maroc, BMCE) detained over 75% of banks total assets in the country.

3. Tunisian banking sector:

3.1 History of the Tunisian banking sector:

-From 1956 to 1986: right after the independence, the sector was composed of many French banks subsidiaries. The government attempted to take control over the banking sector again, and for this National Banks were created (STB and BanqueNationaleAgricole and another investment bank).

-From 1986 to 1994: the Tunisian Financial crisis of 1986 represents a major turning point for the entire banking system. This period focused on the implementation of a structural plan advocated by the IMF with the aim of integrating the Tunisian economy in the global economy.

-From 1994 to 2000: This period focused on encouraging investments and implementing the culture of debt, loans and deposits in the culture of individuals.

-2001: a new law was published replacing the 1967 law, it brought many changes including the creation of "universal banks" and also grouping and changing g the status of many banks.

-2006: new law with strict rules strengthening transparency and protecting the interest of clients, it also introduces new applicable management standards and solvency rules.

3.2 Characteristics of the Tunisian banking sector:

The sector is composed of 21 banks:

- Union Internationale des Banques ;

- Banque de Tunisie ;

[1]Saïdane Dhafer, « Les système financiers d'Afrique du Nord », Techniques financières et développement, Édition Epargne sans frantière, n° 121, 2015 /4. pp. 71-78.

- Banque de l'Habitat ;
- Union Bancaire pour le Commerce et l'Industrie ;
- Amen Bank ;
- Arab Tunisian Bank ;
- Banque Tunisienne de Solidarité ;
- Banque Nationale Agricole ;
- Société Tunisienne de Banque ;
- Attijaribank ;
- Banque Internationale Arabe de Tunisie ;
- Banque de Tunisie et des Emirats ;
- BanqueTunisoKoweitienne ;
- Tunisian Qatari Bank ;
- StusidBanque ;
- Arab Banking Corporation;

The sector is considered of a small size compared to the other two coutries ; " The total assets of all Tunisian banks are equivalent to that of Morocco's Attijariwafa Bank, about USD 40 billion in 2012". [2]

However, this small banking system ranks Tunisia 40th (ahead of Morocco and Algeria) in terms of overall competitiveness according to the World Economic Forum's 2012 Competitiveness Report.

Concetration ratio: as of 2017, the three largest banks in Tunisia (based on total assets) are BIAT, Banque nationale agricole and Banque de l'habitat. They own over 40% of the sector's total assets.

Conclusion:

Banks have been playing a significant role in the economy since they were established. The banking system is a crucial element that contributes a lot into economy domestically as well as internationally. The process of production, distribution, exchange and consumption has become easier due to the banking system globally. Nowadays, the modernized banks play an important role in utilizing the resources of the economy of a specific country. Commercial banks are considered not merely as dealers in money but also the leaders in economic development. They are not only the store houses of the country's wealth but also the reservoirs of resources necessary for economic development. They play an important role in the economic development of a country. Commercial bank's functions differ from one bank to the other but all commercial banks have two principal roles: creation of credit and acceptance of deposits.

[2]Jedlane N. &Saidane D., op-cit. p 118

This sector differs from each Maghreb country to the other, but it had a major contribution to the economic development of all countries despite them having each their own structure, history and characteristics.

Chapter two
Financial Performance of Banks

Introduction:

Banks financial performance is a topic that has been subject of study for many analysts throughout the years. And to be able to do such studies, we have yet to be familiar with concepts like: measures of financial performance, determinants of financial performance, have a general idea of the theoretical background of this subject, and more importantly, highlight the previous major studies and analysis on banks financial performance.

This chapter discusses the different aspects of financial performance. It consists of three sections:

Section 1: measures and determinants of financial performance in banks.

Section2: Theoretical background of banking performance.

Section 3: Review of literature.

The first section lays down the major measures and both internal and external determinants of financial performance of banks and the way they affect it. The second section introduces a brief explanation of banking performance in the theory of finance. And the third section presents similar research elaborated about this topic, and their findings.

SECTION 1: Measures and Determinants of Financial Performance of Banks:

1. Measures of Financial Performance:

Financial performance analysis is defined as the process of identifying the financial strengths and weaknesses of a selected firm by properly establishing the relationship between the items of its balance sheet and profit and loss account. Financial performance analysis helps in short-term and long term forecasting to be used in establishing short and long term plans, it can also help identifying growth in the firm and even identifying growth opportunities. In order to do a financial analysis, analysts proceed by analyzing and studying the financial statements of this firm. This analysis will help them gain a better understanding of the firm's position and performance. The process of financial performance analysis can either be done within the firm by its own management or finances departments, or by external parties mainly owners, creditors and investors for them to have a clear image of the financial state of the company they're working with or investing in.

Many different mathematical measures can be used to evaluate how well a company is using its resources to make a profit. Common examples of financial performance measures include Return on Assets, Return on Equity, and Net Interest Margin.

1.1 Net Interest Margin: NIM

NIM is a measure that focuses on the two main activities of the bank which are accepting deposits and giving loans and the profit generated by it which is presented in the form of "net interest". It is a measure of the difference between the interest income generated by banks through the loans they've given and the amount of interest paid out to their lenders, relative to the amount of their (interest-earning) assets.

NIM is usually expressed as a percentage of what the financial institution earns on loans in a time period minus the interest paid on borrowed funds divided by the amount of the assets on which it earned income in that time period. The formula for NIM is:

NIM= (interest received-interest paid)/Total assets

For most banks, the net interest margin is by far the most important source of income. By contrast, from the perspective of the real economy, the bank's net interest margin is considered to be the cost of financial intermediation.

1.2 Return on asset ROA:

Return on asset, also referred to as "return on investment" indicates how profitable a company is relative to its total assets. It gives an idea about the management efficiency of the company in using its assets to generate earnings.

Return on asset is the company's net income divided by its average total assets; ROA is displayed as a percentage. The formula for return on assets is:

ROA =Net income/total assets

The formula looks at the ability of a company to utilize its assets in order to gain profits. Net income in the numerator of the ROA formula can be found on an income statement. Average total asset on the denominator of the ROA formula is found on a company‘s balance sheet. The average of total assets should be used based on the period of the evaluation.

1.3 Return on equity ROE:

Return on Equity is a very important and predominant measure of performance in the banking industry. ROE is considered a measure of how effectively the management is using a company’s assets to create profits. The use of ROE as a measure started because of the risk management approach to banking and the belief that equity is costly and should be minimized. The formula for ROE is:

ROE= Net income/ Shareholder’s equity

Just like ROA, the information needed for its calculations are found on the balance sheet and income statement of the company.

2. Determinants of the financial performance of banks:

There are many categories of banks financial performance determinants; we can split them into two main categories, external determinants and internal determinants. The first ones are related to the external environment of the company and all of its components that affect the bank or interact with it. And internal determinants: related to the management of the company and its objectives that influence the situation of the bank and its results.

2.1 External determinants:

2.1.1 Gross domestic product:

GDP is an inflation-adjusted measure that reflects the value of all goods and services produced in a given year, expressed in base-year prices, often referred to as "constant-price". Some studies revealed negative impact of Gross Domestic Product (GDP) on Return on Assets (ROA. Others like an empirical study by Damena (2011), on the profitability determinants of Ethiopian commercial banks confirm positive effect of GDP.[3]

[3]ChijukaIfy Michael, The impact of macroeconomic variables on the profitability of listed commercial banks in Nigeria, European Journal of Accounting Auditing and Finance Research Vol.2,No.10, pp.85-95, December 2014

2.1.2 Inflation

Inflation is an increase in the general price level and is typically expressed as an annual percentage rate of change. Inflation depreciates the value of money. An inflation rate of 2% means that the monetary unit falls in value at an annual rate of 2% in terms of the goods it will buy.[4]

Inflation is an important factor for banks because they typically deal in nominal financial instruments denominated in fixed monetary unit amounts. For example, when a bank makes a loan, it accepts nominal financial instruments (notes, mortgages, and other financial securities) as evidence of the debtor‘s obligation to the bank. When a bank borrows, it issues nominal financial instruments to creditors (deposit, liabilities, acceptances and debentures) as evidence of its obligation. While nominal financial instruments differ from one another in many aspects, they share one important characteristic: their payments are fixed in nominal value that is in terms of monetary units. Nominal instruments make up the bulk of banks assets and liabilities. Furthermore, banks are typically net creditors in nominal instruments because their nominal assets exceed their nominal liabilities. [5]

2.1.3 Market Structure

The relationship between performance and market structure on the banking industry is based on the development of the theory in the industry organization. There are two competing hypotheses as to the relationship between profitability and market structure as discussed in the literatures. The first is the traditional market structure- conduct-performance (SCP) or collusion hypothesis following the work by Bain (1951) which postulates that market structure influences conduct of firms through prices or investment policies and this in turn translates into performance. This hypothesis asserts that the setting of prices that are less favorable to consumers (lower deposit rates and higher loan rates) in more concentrated market as a result of competitive imperfections in these markets. On the other hand, the traditional hypothesis was challenged by the efficient market hypothesis, which by some authors is referred to as the efficient structure hypothesis. The hypothesis is following the works of Demsetze (1973), which postulates that market concentration is not a random event but rather the result of the superior efficiency of the leading firms. Firms possessing a comparative advantage in production become large and obtain a high market share and, as a consequence, the market becomes more concentrated. [6]

[4] http://www.investopedia.com/terms/i/inflation.asp. date visited 07/06/2015

[5] _ G.J. Santoni, The effect of inflation on commercial banks , March 1986,p 15 https://research.stlouisfed.org/publications/review/86/03/Effects_Mar1986.pdf

[6] Tesfaye borulelissa,op-cit, p54

2.2 Bank specific determinants:

2.2.1 Size:

The size of a bank, usually measured in terms of assets, affects the bank through the economies or diseconomies of scale. Larger firms are able to provide services at a lower cost through economies of scale, and lower costs directly lead to higher profits. In addition, banks with bigger assets have the ability to expand geographically to various regions, thus attracting more depositors leading to higher chances of reinvestments and giving more loans. Also, larger banks are more likely to invest in technology and innovation which would improve their services and products and help increase their efficiency.

"Researchers have not been able to agree on whether size actually influences performance of commercial banks. Goddard et al. (2004) identified only slight relationship between the size of a bank and their financial performance. Another study by Goddard, et al. (2004) showed that there is a significant and positive relationship between the bank's size and its financial performance. This is associated with the fact that the bigger the size of the bank the lower the cost of raising capital for that bank and thus the higher the profitability ratios. Other studies by Bikker and Hu (2002) and Goddard et al. (2004) agree with the previous study and they note that an increase in the bank's size has a positive influence on the financial performance of that bank due to the fact that the cost of seeking capital for that bank is reduced significantly."[7]

2.2.2 Capital:

The relation between a bank's financial performance and its capital is a bit complex, and banks are demanded to meet their optimal capital ratios to balance the effect of capital that could be both negative and positive.

Researchers argue that banks with higher levels of capital have better financial results than those who have less capital at their disposal. Staikouras and Wood (2003) claim that "there exists a positive link between a greater equity and financial performance among EU commercial banks". Abreu and Mendes (2001) also show that there is a positive impact of the equity level of a commercial bank on the financial performance of that bank. Goddard et al. (2004) supports the prior finding of a "positive relationship between capital/asset ratio and bank's earnings". A less popular view states that having a higher capital is seen as more costly for banks due to market imperfections and Tax advantages of debt.

2.2.3 Liquidity:

Another firm specific factor that was found to have a major influence on bank's financial determinants is Liquidity. Insufficient liquidity usually leads to bank's failure when they're Unable to meet the obligation of clients, but in the other hand disposing of a lot of liquid assets means the loss of many investment opportunities through the reallocation of these assets. Therefore, banks are demanded to find an optimum point to help them meet both of these objectives at the same time.

[7]Charles B. Murewa , Determinants of Banks' Financial Performance In developing Economies: Evidence From Kenyan Commercial Banks, Summer 2015.

"It is noted from the various studies that there is a positive relationship between liquidity and the performance of commercial banks although it is also noted that during times of instability in the business environment, commercial banks will tend to increase their cash reserves (holdings) as a way of mitigating themselves against risks. It is therefore clear that there is a negative correlation between the level of liquidity and the financial performance of commercial banks. Other researchers adopt a different perspective where they note that a commercial bank that has high liquidity (high amounts of cash reserves) is able to carry out its basic functions smoothly. These functions include to offer cash for withdrawals as well as to lend to borrowers. Such basic functions ensure that the commercial bank is earning more money in terms of fees charged on withdrawals as well as other bank charges and also in terms of the interest earned on the loans extended to customers. A bank with high liquidity is therefore preferable due to its ability to execute these functions and thus make more money (Athanasoglou, et al., 2008)."[8]

2.2.5 Management Efficiency

Management Efficiency is one of the key internal factors that determine the bank profitability but appears to be one of the complex subjects to capture with financial ratios. However, different authors try to use financial ratios of the financial statements to act as a proxy for management efficiency. The most used ratios to measure management quality are operating profit to income ratio and the ratio of costs to total assets. In whatever way the argument goes, measuring the management efficiency requires to get deep into evaluation of the management systems, organizational discipline, control systems, quality of staff, and others.[9]

banks can be measured by many financial ratios: return on asset, return on equity and net interest margin are the most widely used in academic research.

[8]Charles B. Murewa ,Determinants of Banks' Financial Performance In developing Economies: Evidence From Kenyan Commercial Banks, Summer 2015.

[9]TesfayeBoruLelissa, The Determinants of Ethiopian Commercial Banks Performance, European Journal of Business and Management, Vol.6, No.14, 2014, p 47

SECTION 2: Theoretical Background of Banking Performance

Many works and articles have been dedicated to the study of the performance of banks. Researchers showed interest in this subject because it plays a major role within banks and enterprises in general.

Through this section, we will briefly go through parts of the literature that attempted to explain banks performance and the different theories of banking and bank's profitability.

Profit maximization:

A key assumption in much of the literature is that banks are profit maximizers. Economic theory tells us that in a perfectly competitive situation, profit maximization is equivalent to cost minimization. In practice however, maximization of profits and/or minimization of costs is not necessarily observed. But why do banks maximize profits? Standard theory tells us that a bank's shareholders are claimants for its profits and it is thereby in their interest to maximize these profits. They maximize their return on investment by maximizing revenue and by minimizing costs.

Depending on the market power of the bank in input and output markets respectively, it may be able to increase output prices or decrease input prices. Bank management can select the mix of inputs and outputs by which profits are maximized. In this section, we consider four issues related to profit maximization: (a) The role of diversification and risk preferences; (b) Principal agent problems between shareholders and bank management; (c) Imperfect competition; (d) Inefficient use of inputs and outputs.[10]

1.1 Risk and diversification:

A first consideration relating to bank profit maximization concerns the concepts of risks and diversification. Shareholders balance their appetite for maximizing expected profits and minimizing costs against the amount of risk they are willing to take. Abstracting from speculative motives, shareholders are generally assumed to be indifferent to the distribution of profits, receiving a return on their investment in the bank either through an increase in the bank's share price or through dividends received.

If all banks share the same risk-return preferences, or if the risk-return relationship can be described by some relatively simple homothetic continuous function, then there is no serious problem with the fact that we do not know how to control a bank's risk preferences. This is different, however, in a situation where some banks (e.g. cooperative banks) are highly risk averse and not well diversified. Such banks have different preferences, forego high-risk, high-return opportunities and optimize towards an altogether different maximum profit.Although control variables aimed at proxying for this risk attitude are frequently used in the literature, comparatively little work hasbeen done on modeling banks 'risk-return trade-off.[11]

[10]J.A Bikker, J.W.B Bos bank performance: a theoretical and empirical framework for the analysis of profitability, competition and efficiency, routledge international studies in money and banking, 2008, p26
[11]J.A Bikker, J.W.B Bos bank performance, op-cit, p 63

1.2 Incentive structures:

A second consideration relating to banks profit maximization concerns incentive structures. Even risk-neutral shareholders who are well diversified may have problems translating their claim on profits into the actions required to maximize revenue and minimize costs. In the absence of complete information, principal–agent theory states that shareholders are unable to adequately monitor bank management and that the resulting managerial discretion may induce suboptimal behavior, i.e. profits are not maximized and/or costs are not minimized. As long as shareholders cannot monitor and penalize bank management, the latter may show expense-preference behavior or – if it is highly risk averse – any other strategy that reduces profits. This means that the information asymmetry between principal and agent that was once used by Diamond (1984) to explain the existence of banks from the reduction in audit costs for lenders to non-financial firms now helps explain why banks themselves may also suffer from moral hazard and other incentive problems.

A vast amount of literature exists on ways to minimize the negative effects of these principal–agent problems. A vast amount of literature deals with ways to minimize the negative effects of these principal–agent problems. A detailed discussion is beyond the scope of this study. Pecuniary and non-pecuniary incentives and yardstick competition are ways to reduce managerial slack while keeping managerial discretion intact. Price and non-price competition, the substitutability of a bank‘s products and the contestability of its markets may also serve to ensure a bank‘s optimal performance by putting competitive pressure on its management, provided management compensation is performance-based. A similar role may be played by signaling devices such as ratings. Finally, it is important to note that although we emphasize incentive problems between bank management and debt holders, the same type of problems – if to a lesser extent – also exist for shareholders. Second, to the extent that the principal–agent relationship results in moral hazard conflicts, it is only problematic as long as the principal (i.e. the shareholder) cannot insure himself against excessive risk-taking by the agent.

1.3 Imperfect competition:

Banks’ performance is related to changes in their environment and the behavior of their competitors. Therefore, a third consideration relating to banks’ profit maximization concerns market power. Economic theory also tells us that in a perfectly competitive situation, profit maximization is equivalent to cost minimization. In practice however, we do not necessarily observe maximization of profits and/or minimization of costs. Of course, exogenous factors such as regulation or economic shocks can cause suboptimal performance. To the extent that such factors do not have similar effects on both cost minimization and profit maximization, they can drive a wedge between the two. Imperfect competition causes a situation where profits are maximized at an output level where average costs are no longer minimized. It can thus be used to explain changes in profitability over time as well as between banks.

1.4 Different use of inputs and outputs:

A bank may produce at lower costs and with a higher profit than other banks if it makes better use of its inputs and transforms them into outputs in the cheapest possible way. In the long run, every bank has to produce efficiently in order to survive. The fourth considerationrelating to banks’ profit maximization therefore concerns efficiency It plays an important role in

explaining the forces behind bank performance. Furthermore, it can aid in measuring and interpreting the sources driving bank performance.[12]

SECTION 3: Review of Literature

Numerous studies have examined bank performance in an effort to determine the factors responsible for differences in profitability in between banks. Most of these studies examine the impact of regulatory, macroeconomic or structural factors on overall bank performance.

Determinants of bank profitability are divided into internal and external determinants. Internal determinants of bank profitability are defined as those factors that are controlled by the banks management decisions and policy objectives. External determinants of bank profitability are those factors whichare outside the influence of the bank and out of its control. In this section, we review some of the researches that treated this topic.

Kenya:

The paper of Vincent OkothOngore and GemechiBerhanuKusa, investigate the determinant of Kenyan banks' performance considering bank specific and macro-economic variable on banks profitability.

The study uses both descriptive and econometric techniques on a sample that includes all commercial banks (panel data) in Kenya over the period 2001-2010.

The research uses regression analysis to find the fundamental determinants of bank performance measured by ROA, ROE and NIM.

The variables tested in the study include Capital adequacy ratio, Total Capital to Total Asset, asset quality ratio, Non-performing loans to total loans, management efficiency ratio Total Operating Revenue to Total Profit, liquidity management ratio, Total Loans to Total Customer Deposit, Ownership Identity, GDP Growth Rate and Inflation Rate. To estimate their impact on ROA, ROE and NIM.

The result shows that all bank specific variables affect the performance of commercial banks in the three models except for ownership identity that was insignificant, and for the two external determinants only Inflation was significant for the three models while, GDP Growth Rate was significant only with NIM.

This empirical study showed that bank specific factors (factors under the control of managers) are the most significant determinants of the financial performance of commercial banks in Kenya. This evidence supports and is in line with the Efficiency Structure theory, which states that enhanced managerial efficiency leads to higher performance.

[12]J.A Bikker, J.W.B Bos bank performance, op-cit, p 63

Bangladesh:

The paper of FadzlanSufian&Muzafar Shah Habibullah seeks to examine the performance of the Bangladeshi banking sector over the period 1997– 2004 on 37 banks, which is characterized as a time of significant reform in the country's banking sector.

The research uses linear regression model to identify the determinants of bank profitability with the main measures of financial performance witch presented through three models: return on asset (ROA), return on equity (ROE) and net interest margin (NIM).

The study tested both banks specific variables and macro-economic ones. The bank specific variables included in the test are total loans over total assets, Natural logarithm of total assets, Loan loss provisions over total loans, Non-interest income over total assets, Non-interest expenses over total assets, Total book value of shareholders equity over total assets, and for external factors, we find Natural logarithm of gross domestic products and Inflation rate.

The result of the study show that bank specific characteristics, in particular loans intensity, credit risk, and cost have positive and significant impacts on bank performance, while non-interest income exhibits negative relationship with bank profitability. During the period under study, the results suggest that the impact of size is not the same across the various measures employed. The empirical findings suggest that size has negative impact on return on average equity (ROAE), while the opposite is true for return on average assets and net interest margin. As for the impact of macro-economic indicators, we conclude that the variables have no significant impact on banks' profitability, except for inflation, which has negative relationship with Bangladeshi banks profitability.

The empirical study showed that the financial reforms significantly affected the banking system.

MENA region:

The paper of SubikaFarazi, Erik Feyenand Roberto Rocha investigate ownership trends and assessing the role of ownership and bank performance in MENA.

The sample includes 600 bank-year observations of about 120 banks in 9 countries for the period 2001-2008. The banks are from Algeria, Egypt, Jordan, Lebanon, Libya, Morocco, Tunisia, Syria, and Yemen.

The research used two processes, the first one is a standard two-group comparison to test and assess whether statistically significant differences exist between state banks versus private ones. The second one is a regression analysis to analyze bank characteristics while including ownership structure, county and time fixed effects on banks performance.

The dependent variables used in this paper are 13 variables: return on asset, return on equity, net interest margin, Interest Income to Assets, Interest Expenses to Assets, Total Securities to Assets (All Countries), Total Securities to Assets (Excluding Lebanon),Overheads to Assets, Personal Expenses to Assets, Employment to Assets, Wage (Personal Expense), Wage (Overheads), Loan Loss Provisions to Gross Loans.

The independent variables used are Lag Total Assets (Log), Non-Interest Income to Assets, Deposits to Assets, Loans to Assets and three dummy variable: listed and public, private ownership.

The result of the two-group comparison shows that state banks are significantly larger than private banks and private banks are significantly more profitable than public banks.

The result of the 13 regressions shows that state banks are on average less profitable than private ones.State banks generate smaller net interest margins vis-à-vis private domestic banks, state banks in MENA tend to hold larger portfolios of government securities. State banks have higher cost ratios after controlling their larger size, which helps explain their lower profitability, state banks pay considerably lower wages to their employees, relative to their private counterparts, a result that reflects their lower skills base.

Middle East, Indian subcontinent and Africa:

The paper of Abdul Hadi A.R., Hussain H.I., Suryanto T and Yap T.H tend to find the key determinant of banks financial performance within the framework of credit creation theory of banking.

The study uses pooled OLS regression analysis and random effect models measured by return on asset (ROA) on a sample of financial data from 93 banks from Middle East, Indian sub-continent and Africa over the period 2009-2016.

the variable tested in this study are Liquidity Coverage Ratio(Total of Highly Liquid Assets/Total Assets), Default Risk Premium(Total Amount of Default Loans/Total Loans), Loan Growth (New Loan Created/Total Assets), Amount of Non-Performing Loans/Total Loans and Capital Adequacy Ratio.

The empirical results imply that there are statistically significant relationships between Liquidity Coverage Ratio, Loan Growth and bank's profitability as measured by ROA. Liquidity Coverage Ratio and ROA have a significant negative relationship. As for Loan Growth, its relationship with ROA is found to be significantly positive.

From the empirical results of pooled OLS and random effect models, there is a statistically significant relationship between bank's profitability and its loan growth. As such, it is worth noting that growth in bank asset classes significantly influence bank's profitability.

Europe:

A number of studies on banks'profitability determinants were conducted in European countries.

Saunders and Schumacher (2000) analyzed the determinants of interest margins in six countries of the European Union during the period 1988–95. They found that macroeconomic volatility and regulations have a significant impact on bank interest rate margins. Their results also suggest an important trade-off between ensuring bank solvency, as defined by high capital to asset ratios, and lowering the cost of financial services to consumers, as measured by low interest rate margins. Athanasoglou, et al.(2006) study the profitability behavior of the south eastern European banking industry over the period 1998–02. The empirical results suggest that the enhancement of bank profitability in those countries requires new standards in risk management and operating efficiency, which, according to the evidence presented in the paper, crucially affect profits. A key result is that the effect of market concentration is positive, while the picture regarding macroeconomic variables is mixed.

Athanasoglou, et al. (2006b) apply a dynamic panel data model to study the performance of Greek banks over the period 1985–2001, and find some profit persistence, a result that signals that the market structure is not perfectly competitive. The results also show that the profitability of Greek banks is shaped by bank-specific factors and macroeconomic control variables, which are not under the direct control of bank management. Industry structure does not seem to significantly affect profitability.

Conclusion:

Bank‘s performance became an essential concern for researchers and investors in recent years. it can be measured by various financial tools and influenced by many factors including internal determinants such as size, capital, and liquidity or external ones like inflation and GDP.

The determinants of bank performance have attracted the interest of researchers as well as financial markets and bank supervisors. The literature review supports that many different determinants all have influence on banks’ financial performance.. However, these factorsmay differ depending on the soundness of the economy, the region and the period of the study.

Chapter three :

Empirical Part.

Introduction:

This work concerns the study of the determinants of interest margin of North Africans banks. We consider both bank characteristics and environmental factors including major macro-economic variables. We analyze a panel of 51 banks observed during the period of 2014 to 2017.

The chapter consists of three sections as follows:

Section 1 : Variables description

Section 2 : Data description

Section 3: Regression results

The first section describes the dependent and independent variables of the study. The second section is about trend analysis through descriptive statistics and correlation. It also explains the expected effects of the dependent variables on financial profitability. Finally, the third section presents the regression results and the findings of the research.

SECTION 1: Variables Description

1.1-Data sources

The data used in the empirical work is obtained from the financial statements of the commercial banks. The sample includes a panel of 51 commercial banks operating in Algeria, Tunisia and Morocco over the period 2014-2017 which represents 204 observations, and for external variables, the data is collected from World Bank indicator website.

1.2- Variables:

The variables used in our study were mainly chosen by an intuitive manner, based on our reviews of previous works studying similar matters, and it was also bound to the amount of data we could obtain.

1.3-Dependent Variable:

The dependent variable in this study is Net interest margin (NIM). It is defined as interest income minus interest expenses over total asset. This ratio is a measure of profitability of banks. It reflects the success of financial institution's intermediation decision.

1.4-Independent variables:

The independent variables consist of bank specifics and external factors.

1.4.1-Bank specific variables:

-LTA: Ln Total assets: measures the size of the bank

-TDTA: Total Debt/ total assets:

Is a ratio representing capital adequacy in banks. Capital adequacy ratio is directly proportional to the resilience of the bank to crisis situations. It has also a direct effect on the profitability of banks by determining its expansion to risky but profitable ventures or areas.[13]

-TLTA: Total loans/ total assets:

Is ratio measuring asset quality in banks, is a proxy measure of loans intensity. The bank's asset is variable that affects the profitability of a bank. The bank asset includes among others current asset, credit portfolio, fixed asset, and other investments. More often than not the loan of a bank is the major asset that generates the major share of the banks income. Loan is the major asset of commercial banks from which they generate income. The quality of loan portfolio determines the profitability of banks. The loan portfolio quality has a direct bearing on bank profitability. The highest risk facing a bank is the losses derived from delinquent loans.[14]

-FBTA: Funds borrowed/ total assets:

Represents management efficiency even ifit is one of the complexes subject to capture with financial ratios. The performance of management is often expressed qualitatively through subjective evaluation of management systems, organizational discipline, control systems, quality of staff, and others. Yet, some financial ratios of the financial statements act as a proxy for management efficiency. The capability of the management to deploy its resources

[13]Sangmi and Nazir, 2010.
[14]Dang, 2011

efficiently, income maximization, reducing operating costs can be measured by financial ratios.[15]

-GSTA: Government securities/total assets:

Is a ratio of liquidity management. Liquidity refers to the ability of the bank to fulfill its obligations, mainly of depositors. It is known that adequate level of liquidity is positively related with bank profitability. [16]

1.4.2-External variables:

-INFL: Inflation rate

-EGT: Economic growth rate

SECTION 2: Data Description

2.1-Descriptive statistics:

Down below reports the mean, standard deviation, minimum and maximum of each variable in the sample.

2.1.1-Descriptive statistics of bank specific variables:

Summary of descriptive statistics of each bank specific variable for the entire sample used in this study can be seen in the table down below.

Table1: descriptive statistics of bank specific variables.

	N	Min	Max	Mean	std deviation
Net Interest Margin	204	-0,0165	0,0409	0,015	0,0126
ln Total assets	204	12,0864	24,1203	17,2727	3,7468
Govt. Securities/Total assets	204	-0,0162	0,794	0,1223	0,1446
Total Debt/Total Assets	204	0,2144	0,9358	0,7886	0,1192
Total Loan/ Total Assets	204	0,0648	0,9702	0,6884	0,1533
FundsBorrowed/Total Asset	204	0	0,8887	0,1215	0,1568
N valide (liste)	204				

The average net interest margin in the sample is 1.5%, the highest NIM is 4.09% and the lowest is -1.6% in other word there is a bank that has more deposit that loans. The average of bank size (LN total asset) is 17.25; the average of government securities to total asset is

[15]Rahman et al. in Ilhomovich, 2009; Sangmi and Nazir, 2010

[16]Dang (2011).

12.23%. The mean of Total Debt/Total Assets is 78.86%. The average of Total Loan/ Total Assets is 68.84% and the average of Funds Borrowed/Total Asset is 12.15%.

2.1.2-Descriptive statistics of external variables:

Down below we review the descriptive statistics of external factor during the years of study for each country.

Algeria:

Table 2: Descriptive Statistics of Algeria

	N	Min	Max	Mean	Stddeviation
Inflation	4	2,917	6,398	4,9225	1,490549
Economic Growth	4	1,3	3,79	3,0375	1,17984
N valide (liste)	4				

Morocco:

Table3 : Descriptive statistics of Morocco

	N	Min	Max	Mean	Stddeviation
Inflation	4	0,442	1,635	1,0975	0,591031
Economic Growth	4	1,06	4,54	3,12625	1,602661
N valide (liste)	4				

Tunisia:

Table4 : Descriptive statistics of Tunisia

	N	Min	Max	Mean	Stddeviation
Inflation	4	3,629	5,309	4,50025	0,691126
Economic Growth	4	1,19	2,97	1,81	0,82312
N valide (liste)	4				

From the table above we clearly see that the Moroccan country has the lowest inflation rate with 1.09% and the highest economic growth rate with 3.12% in average.

2.2- Correlation between variables:

In order to understand relations between variables and how they affect one another, we used Pearson's correlation matrix to show the existing relations between variables and determine its type.

Table5: correlation between variables

	ln Total assets	INFLATION RATE	economicgrowth rate (values)	Govt. Securities/Total assets	Total Debt/Total Assets	FundsBorrowed/Total Asset	Total Loan/ Total Assets	NIM
ln Total assets	1							
INFLATION RATE	,248**	1						
economicgrowth rate (values)	,419**	-,246**	1					
Govt. Securities/Total assets	,600**	,324**	,248**	1				
Total Debt/Total Assets	-,197**	-0,037	-,242**	-,443**	1			
FundsBorrowed/Total Asset	-,556**	0,042	-,323**	-,459**	,338**	1		
Total Loan/ Total Assets	-,317**	0,083	-,227**	-,550**	,599**	,439**	1	
NIM	-,523**	-,324**	-0,127	-,320**	0,129	,201**	,423**	1
**. The correlation is signifcant at level 0.01								

From the table above we can see that the total loan to asset ratio has the strongest positive correlation with NIM with 42.3% and the size has the strongest negative correlation with NIM with -52.3%.

2.3-Expected effect of independent variables

The table below illustrates the expected effect of independent variables.

Table 6: expected effect of independent variable.

Variables	Expected effects
ln Total assets	+/-
INFLATION RATE	+/-
economic growth rate (values)	+/-
Govt. Securities/Total assets	+
Total Debt/Total Assets	+/-
Funds Borrowed/Total Asset	+/-
Total Loan/ Total Assets	+
Dummy variables	+/-

SECTION 3 : Regression Results

Introduction:

This study uses a multiple linear regression model as a statistical instrument to analyze the impact of the chosen variables on banks profitability measured by net interest margin, we focused on the principal activity of banks which is the flow of funds from savers to borrowers even if it represent approximately two thirds of the PNB.
This method uses multiple explanatory variables to predict values of a single dependant variable. This method has been used by many researchers in their studies on the subject. Along with the dependent variables, dummy variables were introduced to separate the effects of each different bank. A dummy variable is a variable that can only have values of 0 or 1.
SPSS software is applied to obtain the regression results. It is among the most widely used programs for statistical analysis in academic research, And Student test is used to evaluate the significance of each variable.

Hypothesis Development:

Our aim is to analyze the behavior and the impact of factors that influence the net interest margin. To achieve this goal we tested some hypothesis that are:

- **H01:** there is a significant effect of the bank size on banks profitability of commercial banks in Maghreb.
- **H02:** there is a significant effect of total loan to asset on banks profitability of commercial banks in Maghreb.
- **H03:** there is a significant effect of total debt to asset on banks profitability of commercial banks in Maghreb.
- **H04:** there is a significant effect of funds borrowed to asset on banks profitability of commercial banks in Maghreb.
- **H05:** there is a significant effect of government securities to asset on banks profitability of commercial banks in Maghreb.
- **H06:** there is a significant effect of the external factors on banks profitability of commercial banks in Maghreb.

The hypotheses from H01 to H05 were tested with student test and the last hypothesis was tested with fisher test.

3.1-Choosing the model :

In order to find the most suitable model for the regression, we proceeded by suggesting two different models, testing them and selecting the more accurate one using F-test

Pooled model:

Includes net interest margin (NIM) as a dependent variable, and all the independent variables listed above (section1).

Fixed effect model:

Includes both the independent variables and dummy variables.

Here are the regression results for both models:

- ✓ **Pooled model:**

ANOVA :

Table 7: Anova of Pooled Model

	Sum of Squares	DF	Mean Squares	F	Sig.
Exeplained	0,016	7	0,002	28,936	,000[b]
Unexplained	0,016	196	0		
Total	0,032	203			

Coefficients:

Table8: coefficient of pooled model.

	COEF	Standard Error	t	Sig.
(Constant)	0,035	0,006	5,644	0
Govt. Securities/Total assets	0,027	0,007	4,057	0
Total Loan/ Total Assets	0,051	0,006	8,588	0
FundsBorrowed/Total Asset	-0,013	0,005	-2,507	0,013
Total Debt/Total Assets	-0,018	0,007	-2,654	0,009
ln Total assets	-0,002	0	-7,204	0
INFLATION RATE	-0,003	0	-5,484	0
economicgrowth rate (values)	0	0,001	-0,21	0,834

- ✓ **Fixedeffectmodel:**

ANOVA

Table 9: Anova of fixed effect model**.**

	Sum of Squares	DF	Mean Squares	F	Sig.
Explained	0,03	57	0,001	45,995	,000[b]
Unexplained	0,002	146	0		
Total	0,032	203			

Coefficients

Table10: coefficient of fixed effect model.

	COEF	Std.Error	t	Sig.
(Constante)	0,028	0,016	1,714	0,089
Govt. Securities/Total assets	0,001	0,008	0,154	0,878
Total Loan/ Total Assets	0,014	0,007	1,961	0,052**
FundsBorrowed/Total Asset	-0,016	0,01	-1,712	0,089*
Total Debt/Total Assets	0,001	0,006	0,219	0,827
ln Total assets	-0,001	0,001	-2,015	0,046**
INFLATION RATE	0	0	-1,592	0,114
Economic Growth Rate	0,001	0	2,65	0,009***
SGA	-0,005	0,003	-1,7	0,091*
AGB	-0,002	0,003	-0,767	0,444
ABC	0	0,003	-0,077	0,939
Trust	-0,009	0,004	-2,551	0,012**
Al salam	0	0,004	-0,041	0,968
Al baraka	-0,011	0,003	-3,216	0,002***
Housing	0,016	0,004	4,013	0,000***
Fransbank	-0,001	0,004	-0,301	0,764
AB plc	0,012	0,003	3,604	0,000***
HSBC	0,005	0,003	1,321	0,188
Calyon	0,003	0,005	0,594	0,554
BNP	-0,003	0,003	-1,1	0,273
NATIXIS	-0,003	0,003	-0,945	0,346
Citybank	0,003	0,003	0,883	0,379
BNA	-0,015	0,003	-5,587	0,000***
BADR	-0,011	0,003	-4,388	0,000***
BDL	-0,015	0,003	-5,829	0,000***
CPA	-0,011	0,003	-3,886	0,000***
CNEP	-0,023	0,003	-8,406	0,000***
Attijariwafa	0,012	0,005	2,602	0,010***
banque populaire de maroc	0,015	0,005	3,041	0,003***
Bmce	0,016	0,005	3,137	0,002***
bmci(bnp)	0,019	0,006	3,355	0,001***
Cdgk	-0,011	0,009	-1,275	0,204
Cfgbank	-0,021	0,008	-2,484	0,014**
credit agricole du maroc	0,004	0,006	0,733	0,464
credit de maroc	0,013	0,006	2,236	0,027**
CIH	0,011	0,006	1,921	0,057*
Citibankmaroc	-0,011	0,007	-1,547	0,124
ABC BANK	-0,003	0,008	-0,321	0,748
AL BARAKA BANK	0	0,008	-0,048	0,962
AMEN BANK	0	0,007	-0,046	0,963

Arabe tunisien bank	-0,002	0,007	-0,362	0,718
Attijaribank	0,005	0,007	0,836	0,405
banque de l'habitat	0,001	0,007	0,102	0,919
banque de tunes	0,009	0,007	1,396	0,165
BANK TUN EMIRATES	-0,001	0,008	-0,124	0,901
Bank tun Koweït	0,001	0,008	0,104	0,917
banktun LIBIENNE	-0,001	0,009	-0,085	0,933
Bank zitouna	0,01	0,007	1,431	0,155
BIAT	0,007	0,006	1,192	0,235
Bank nat agricole	0,008	0,006	1,194	0,234
BTS	0,01	0,011	0,906	0,367
CITIBANK TUN	-0,001	0,008	-0,094	0,926
QATAR NAT BANK TUNIS	0,012	0,009	1,349	0,179
STB	0,003	0,007	0,485	0,629
STUSID BANK	-0,002	0,008	-0,259	0,796
Tun.Int.BANK en dollars	-0,012	0,008	-1,376	0,171
UIB	0,011	0,007	1,613	0,109
UBCI	0,01	0,007	1,419	0,158

Note:* significance at p<0.10; ** significance at p<0.05; *** significant at p<0.01

F test:

-The first model is a reduced model (pooled model) MR

-The second model is a fixed effect model MC

-$\alpha 1$, $\alpha 2$, $\alpha 3 \ldots \alpha k$ are the coefficients of dummy variables used in the second model

The null and Alternative hypothesis are:

H0: there exists an insignificant impact of the dummy variables

H1: There exists a significant impact of the dummy variables

H0: $\alpha 1 = \alpha 2 = \alpha 3 \ldots = \alpha k = 0$

H1: at least one a is different from 0

Table 11: fisher test result

N		204
Pc	Number of variables of model 2	57
Pr	Number of variables of model 1	7
SCR (MR)	error of model 1	0,015743659
SCR (MC)	error of model 2	0,001688745
F calculated		24,31
F table		1,498

Since F calculated > than F table, then we refuse the null hypothesis and accept the alternative hypothesis.

Therefore, the second model is more suitable to present our data and be used for the regression".

3.2-Model

The model retained is represented as follows:

$$\prod it = c + \beta 1LTAit + \beta 2TDTAit + \beta 3TLTAit + \beta 4FBTAit + \beta 5GSTAit + \gamma 1INFLt + \gamma 2EGTt + \sum_{i=0}^{i=49} \alpha iBANKi + \varepsilon it$$

Where:

- $\prod it$ = performance of bank i at time t presented by net interest margin
- c = intercept
- $LTAit$ = Logarithm of total asset of bank i at time t
- $TDTAit$ = Total debt to total asset of bank i at time t
- $TLTAit$ = Total loan to total asset of bank i at time t
- $FBTAit$ = Fund borrowed to asset of bank i at time t
- $GSTAit$ = Government security to asset of bank i at time t
- $INFLt$ = Inflation at time t
- $EGTt$ = Economic growth rate at time t
- $BANK$ = Dummy variable that capture ownership identity and country location
- β = Coefficient parameter of bank specific factors
- γ = Coefficient parameter of external factors
- α= Coefficient parameter of dummy variables
- εit= Error term where i is cross sectional and t time identifier

Table12**:** fisher test result for macroeconomic factors.

N		204
Pc	Number of variables of model 2	52
Pr	Number of variables of model 1	50
SCR (MR)	error of model 1	0,00205
SCR (MC)	error of model 2	0,00189
F calculated		8.077
F table (2-150)		19.49

The results show the effect of bank specific and macroeconomic factors on the performance of Maghreb commercial banks.

The first objective of this study was to answer whether bank specific factors affect the performance of Maghreb commercial banks or not. At the beginning, it was hypothesized that bank specific factors significantly affect the performance of commercial banks. We found that only size, Asset quality ratio and management efficiency ratio affect the performances of commercial banks with a minimum of 90% confidence level. The above results thus lead to the acceptance of Hypothesis H01, H02 and H04. However, the liquidity management ratio

and capital adequacy ratio are one of the bank specific factors, which are positively related with bank performance, have no significant effect on the financial performance of commercial banks in Maghreb. Witch led us to reject the hypothesis H03 and H05.

The second objective of this study was to examine whether macroeconomic variables affect the performances of commercial banks in Maghreb. It was hypothesized that macroeconomic factors have a significant effect on the financial performances of commercial banks in Maghreb. After the fisher test we did we found that F calculated was inferior to F table witch lead us to reject the hypothesis H06 that claims that there is a significant effect of macroeconomic factor on bank profitability in Maghreb. Even from the Table above the regression output shows mixed results. The effect of Economic growth rate with NIM is significant. While the effect of inflation on bank performance is not significant with NIM.

3.3-Discussion of results:

The overall objective of this study was to examine the effects of bank specific factors and macroeconomic factors on the performance of commercial banks in Maghreb. The effect of determinants on the profitability of banks as expressed by NIM was evaluated. It was found that only size; Asset quality ratio and management efficiency ratio affect the profitability of commercial banks in Maghreb. For instance, the correlation coefficient of Asset quality ratio (Total loan to total asset) with NIM was 0,014 with 95% confidence level. These shows that Asset quality ratio has a positive and significant effect on bank performance.

Management efficiency ratio (Funds borrowed to total asset) is also significantly related to financial performance of bank expressed by NIM with -0,016 at 90% confidence level. As can be seen the relation was negative.

The size (logarithm of total asset) has a negative and significant effect on NIM with -0.001 at 95% confidence level.

The other determinants were the liquidity management ratio (government security to total asset) and capital adequacy ratio (total debt to total asset) were found to have no significant relationship with bank performance expressed by NIM.

The relationship of macroeconomic variables with bank performance was analyzed and it was found that Inflation had no correlation with NIM. The relationship was not significant even at 90% confidence level. However, Economic growth rate has significant positive relationship with financial performance of commercial banks in Maghreb. It had 0.001 coefficients with NIM with 99% significance level. The relationship was found to be positive. This shows that economic growth rate has a positive effect on the performance of commercial banks in Maghreb.

3.4-Conclusion:

This empirical study showed that asset quality, management efficiency and size significantly affect the performance of commercial banks in Maghreb. However, the effect of capital adequacy ratio and liquidity management ratio on the performance of commercial banks is not strong. The relationship between bank performance and size and management efficiency was found to be negative and for asset quality, the relationship was positive. The positive relationship between asset quality and profitability lead us to conclude that banks with high asset quality and low non-performing loans are more profitable than the others. The negative relation of size on profitability indicate that bigger banks are less profitable than little ones, this negative impact of size suggest that bigger banks tend to lower interest margin. The other bank specific factor such as liquidity management ratio and capital adequacy ratio were found to have no significant effect on the performance of commercial banks in Maghreb. This shows that performance is not about keeping high liquid asset or good capital adequacy; rather it is about asset quality, perfect size, better management efficiency and others. However, this does not mean that liquidity and capital adequacy of banks have no effect at all. It only means that they have lesser effect on performance of commercial banks in the study period. The effect of macroeconomic variables on the performance of commercial banks in Maghreb was insignificant during the period of the study.

General Conclusion:

Banks contribution to the economy shows how important it is to have a high performing banking sector. Without an effective banking sector, the economy can't function, especially in countries where banks predominantly control the financial sector. When the banking sector fails, it automatically puts the entire economy at risk.

The performance of banks is affected by many factors. These factors include both internal and external factors. This study aims at identifying some factors that affect the financial performance of Banks in Maghreb Countries.

Algeria, Morocco, and Tunisia have been making great efforts to restructure their financial and banking sectors to be in line with international standards. These countries together, from the same region, share similar historical backgrounds, similar environments, and culture. They completely reformed their banking sectors and are now more aligned with international standards.

Our study concerns the determinants of the financial performance of banks in these countries. We use the Net Interest Margin as a measure of bank performance, to focus on the main activity of a bank which is collecting and lending funds.

The main findings of our study are as follows:

-The fixed effect model is more appropriate than the Pooled model according to the Fisher Test.

-The Size of the bank was found to have a negative significant effect on NIM, thus confirming our first hypothesis H01.

-The Total loan to total asset ratio (representing the asset quality) has a positive significant effect on NIM confirming the second hypothesis H02.

-Management efficiency ratio (Funds borrowed to total asset) was also found to be significantly related to NIM, but the relation was negative. This confirms the fourth hypothesis H04.

- H03, H05 and H06 were all rejected; the liquidity management ratio and capital adequacy ratio have no significant effect on NIM. And according to the fisher test, macroeconomic factors are of no significant effect either.

Our study thus concludes that during our time period of 2014 to 2017, the financial performance of banks in Maghreb countries is determined by the size of the banks, the asset quality of these banks, and their management efficiency.

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List of Annexes:

Annex 1: Concentration Ratio of the Algerian Banking Sector

Bank	Total assets 2017
BEA	3 122 177 721 501,36
BNA	2 828 633 272 000,00
CPA	1 922 533 695 000,00
CNEP	1 421 683 523 000,00
BADR	1 347 945 605 996,12
BDL	902 282 090 000,00
SGA	353 324 247 000,00
AGB	256 860 825 000,00
BNP	255 812 988 000,00
AL BARAKA	248 632 693 000,00
CITIBANK	171 572 636 000,00
NATIXIS	159 864 273 000,00
HOUSING BANK	112 513 973 663,48
ABC	91 563 183 000,00
AL SALAM	85 775 329 000,00
AB PLC	71 865 250 000,00
HSBC	68 898 673 000,00
TRUST	65 178 879 852,78
FRANS BANK	47 907 042 000,00
CAYLON	19 269 251 000,00
total	**13 554 295 151 013,70**
Concentration ratio:	**0,58087452**

Annex 2: Concentration Ratio of the Moroccan Banking Sector

Bank Morroco	Total assets 2017
Attijariwafabank	475 660 126,00
banque populairedumaroc	383 545 335,00
Bmce	313 343 867,00
credit agricole du maroc	97 450 815,00
bmci(bnp)	65 722 171,00
CIH	53 616 662,00
credit du maroc	52 513 909,00
Cdgk	9 636 438,00
Citibank	5 952 799,00
Cfgbank	4 591 401,00
Total	**1 462 033 523,00**
Concenration ratio	**0,80**

Annex 3: Concentration Ratio of the Tunisian Banking Sector

Bank	**Total assets 2017**
BIAT	14 179 166,00
BANK NAT AGRICOL	11 031 353,00
Banque de lhabitat	10 875 578,00
STB	9 089 384,00
AMEN BANK	8 662 590,00
Attijari Bank	8 496 398,00
Arabe tunisien bank	6 489 359,00
Banque de Tunisie	5 629 391,00
BANK ZITOUNA	2 823 631,00
BANK TUN KOWEÏT	1 582 603,00
AL BARAKA BANK	1 519 543,00
QATAR NAT BANK TUNIS	1 340 059,00
BTS	1 284 271,00
BANK TUN EMIRATES	1 037 690,00
STUSID BANK	851 743,00
BANK TUN LIBIENNE	678 247,00
ABC BANK	611 492,00
CITIBANK	502 822,00
Total	**86 685 320,00**
Concentration ratio	**0,42**

Annex 4: DATABASE

Y	BANK	ln Total assets	NIM	Inflation Rate	economicgrowth rate	Total Debt/Total Assets	Govt. Securities/Total assets	Total Loan/ Total Assets	FundsBorrowed/Total Asset
1	SGA	21,74	0,00503	2,917	3,79	0,81384	0,33253	0,61840	0,00017
2	SGA	21,56	0,00632	4,784	3,76	0,79733	0,20112	0,74734	0,00002
3	SGA	21,71	0,00684	6,398	3,3	0,81452	0,23139	0,68121	0,00017
4	SGA	21,85	0,00248	5,591	1,3	0,82500	0,21955	0,64585	0,03695
1	AGB	21,42	0,01836	2,917	3,79	0,76814	0,34063	0,57260	0,00001
2	AGB	21,22	0,00537	4,784	3,76	0,77398	0,27819	0,64284	0,00000
3	AGB	21,26	0,00533	6,398	3,3	0,78059	0,15600	0,71930	0,00000
4	AGB	21,53	0,00296	5,591	1,3	0,81950	0,23922	0,65618	0,00000
1	ABC	20,24	0,01503	2,917	3,79	0,60618	0,14035	0,79596	0,02119
2	ABC	20,19	0,01576	4,784	3,76	0,64467	0,20993	0,73041	0,01481
3	ABC	20,27	0,00851	6,398	3,3	0,65067	0,18896	0,70716	0,01733
4	ABC	20,50	0,00724	5,591	1,3	0,64420	0,21156	0,57950	0,01592
1	TRUST	20,05	0,00715	2,917	3,79	0,52685	0,12575	0,69906	0,00426
2	TRUST	19,93	0,00598	4,784	3,76	0,54760	0,14098	0,71950	0,00292
3	TRUST	19,90	0,00192	6,398	3,3	0,56283	0,10119	0,74327	0,02137
4	TRUST	20,16	-0,00114	5,591	1,3	0,65237	0,08949	0,77983	0,05398
1	Al Salam	19,84	0,01405	2,917	3,79	0,53571	0,30905	0,62277	0,00000
2	Al Salam	19,75	0,01131	4,784	3,76	0,58373	0,39067	0,52622	0,00000
3	Al Salam	19,98	0,00965	6,398	3,3	0,64989	0,35635	0,55717	0,00000
4	Al Salam	20,43	0,00757	5,591	1,3	0,75381	0,40625	0,53981	0,00019
1	Al Baraka	21,34	-0,00130	2,917	3,79	0,77275	0,45867	0,49694	0,00009
2	Al Baraka	21,31	-0,00075	4,784	3,76	0,79854	0,46475	0,49828	0,00007
3	Al Baraka	21,36	-0,00097	6,398	3,3	0,80892	0,42741	0,52633	0,00007
4	Al Baraka	21,49	-0,00433	5,591	1,3	0,83635	0,40066	0,56178	0,00021
1	Housing	20,29	0,02923	2,917	3,79	0,45630	0,35707	0,40113	0,00004
2	Housing	20,30	0,02582	4,784	3,76	0,38675	0,29892	0,34848	0,00430
3	Housing	20,40	0,02235	6,398	3,3	0,40242	0,29507	0,34668	0,01110
4	Housing	20,70	0,01443	5,591	1,3	0,53295	0,38096	0,33367	0,00004
1	FBANK	19,45	0,01157	2,917	3,79	0,47339	0,28104	0,53406	0,00008
2	FBANK	19,37	0,01021	4,784	3,76	0,51401	0,33221	0,53532	0,00003
3	FBANK	19,61	0,01021	6,398	3,3	0,58580	0,20672	0,62488	0,00004
4	FBANK	19,85	0,00816	5,591	1,3	0,66746	0,33233	0,55292	0,00018
1	AB PLC	20,19	0,02976	2,917	3,79	0,66437	0,16257	0,78463	0,00323
2	AB PLC	20,22	0,02463	4,784	3,76	0,71331	0,18431	0,77336	0,00507
3	AB PLC	20,03	0,02792	6,398	3,3	0,66219	0,18897	0,75089	0,00417
4	AB PLC	20,25	0,01814	5,591	1,3	0,72572	0,33120	0,61555	0,00833
1	HSBC	21,07	0,01446	2,917	3,79	0,81236	0,46189	0,48702	0,01329
2	HSBC	20,56	0,01564	4,784	3,76	0,72010	0,18519	0,79533	0,00097
3	HSBC	20,31	0,01681	6,398	3,3	0,66610	0,26509	0,71639	0,00034
4	HSBC	20,21	0,01484	5,591	1,3	0,70753	0,51985	0,46575	0,00066
1	Calyon	19,83	0,01489	2,917	3,79	0,68195	0,71474	0,28156	0,03536
2	Calyon	19,16	0,02092	4,784	3,76	0,48367	0,36303	0,63182	0,08021
3	Calyon	18,93	0,00503	6,398	3,3	0,38515	0,79403	0,19865	0,00278
4	Calyon	18,94	0,00607	5,591	1,3	0,41403	0,59575	0,39962	0,00725
1	BNP	21,79	0,00897	2,917	3,79	0,81060	0,14546	0,78251	0,01796
2	BNP	21,58	0,00764	4,784	3,76	0,78041	0,19119	0,73305	0,01695
3	BNP	21,53	0,00670	6,398	3,3	0,81274	0,22549	0,66121	0,01735
4	BNP	21,52	0,00592	5,591	1,3	0,80402	0,20236	0,65709	0,01879
1	NATIXIS	21,18	0,00837	2,917	3,79	0,82015	0,39322	0,56751	0,00000
2	NATIXIS	20,92	0,00802	4,784	3,76	0,79616	0,27859	0,67716	0,00000
3	NATIXIS	20,95	0,00587	6,398	3,3	0,79921	0,43507	0,52377	0,00000
4	NATIXIS	21,05	0,00439	5,591	1,3	0,81024	0,30446	0,49379	0,00000
1	Citibank	21,32	0,01233	2,917	3,79	0,77835	0,49769	0,41103	0,00833
2	Citibank	21,03	0,01288	4,784	3,76	0,73982	0,41244	0,52901	0,01476
3	Citibank	21,09	0,00979	6,398	3,3	0,77145	0,21668	0,51115	0,01892
4	Citibank	21,12	0,00796	5,591	1,3	0,79668	0,25396	0,42016	0,00799
1	BNA	24,12	-0,00870	2,917	3,79	0,73419	0,09165	0,74978	0,06212
2	BNA	23,95	-0,00867	4,784	3,76	0,79838	0,11983	0,74231	0,15433

3	BNA	23,97	-0,00889	6,398	3,3	0,78224	0,10753	0,54573	0,18854
4	BNA	23,93	-0,01309	5,591	1,3	0,71055	0,10566	0,67153	0,05621
1	BEA	24,11	0,00322	2,917	3,79	0,82879	0,20028	0,63200	0,00076
2	BEA	23,91	0,00782	4,784	3,76	0,81426	0,14055	0,67379	0,00064
3	BEA	23,87	0,01074	6,398	3,3	0,81852	0,17824	0,65258	0,02948
4	BEA	24,03	0,00463	5,591	1,3	0,81510	0,23996	0,62755	0,00073
1	BADR	23,48	0,00015	2,917	3,79	0,92017	0,17868	0,69396	0,02244
2	BADR	23,22	-0,00247	4,784	3,76	0,91282	0,23771	0,63292	0,02242
3	BADR	23,16	-0,00441	6,398	3,3	0,87237	0,15675	0,71272	0,01857
4	BADR	23,19	-0,00534	5,591	1,3	0,85828	0,14221	0,71170	0,01351
1	BDL	22,81	-0,00777	2,917	3,79	0,87141	0,17570	0,70613	0,05214
2	BDL	22,74	-0,00505	4,784	3,76	0,82875	0,16613	0,69249	0,02678
3	BDL	22,75	-0,00477	6,398	3,3	0,81995	0,10576	0,76857	0,00211
4	BDL	22,78	-0,00598	5,591	1,3	0,84391	0,07078	0,84088	0,05035
1	CPA	23,57	-0,00305	2,917	3,79	0,89318	0,21613	0,69690	0,11005
2	CPA	23,47	-0,00334	4,784	3,76	0,88168	0,20209	0,71230	0,07063
3	CPA	23,45	-0,00396	6,398	3,3	0,86923	0,13833	0,75018	0,13532
4	CPA	23,54	-0,00615	5,591	1,3	0,86307	0,17564	0,68781	0,15059
1	CNEP	23,39	-0,01653	2,917	3,79	0,92492	0,12635	0,54361	0,00274
2	CNEP	23,24	-0,01631	4,784	3,76	0,90077	0,14019	0,58755	0,00252
3	CNEP	23,26	-0,01545	6,398	3,3	0,89631	0,10222	0,64132	0,00302
4	CNEP	23,24	-0,01600	5,591	1,3	0,89608	0,04281	0,65448	0,00394
1	Attijari	17,58	0,02744	0,442	2,67	0,78506	0,02200	0,68276	0,10295
2	Attijari	19,74	0,02773	1,558	4,54	0,78337	0,03060	0,66678	0,07949
3	Attijari	17,58	0,02708	1,635	1,06	0,76262	0,03298	0,68628	0,06634
4	Attijari	17,78	0,02714	0,755	4,235	0,76903	0,03831	0,65446	0,07936
1	bpm	17,32	0,03234	0,442	2,67	0,84820	0,02489	0,70333	0,10491
2	bpm	19,52	0,03190	1,558	4,54	0,84205	0,02940	0,69906	0,08015
3	bpm	17,39	0,02959	1,635	1,06	0,83681	0,04180	0,64180	0,09794
4	bpm	17,56	0,02721	0,755	4,235	0,82699	0,02909	0,64657	0,11213
1	bmce	17,09	0,03132	0,442	2,67	0,85070	0,04031	0,69254	0,13405
2	bmce	19,35	0,03057	1,558	4,54	0,86051	0,03723	0,69519	0,18315
3	bmce	17,25	0,03022	1,635	1,06	0,83368	0,03973	0,65701	0,16249
4	bmce	17,36	0,03088	0,755	4,235	0,83173	0,04946	0,66697	0,14348
1	bmci	15,77	0,03873	0,442	2,67	0,82421	0,02819	0,80232	0,08955
2	bmci	17,86	0,04093	1,558	4,54	0,81134	0,02366	0,81553	0,08280
3	bmci	15,69	0,03788	1,635	1,06	0,81194	0,03112	0,80290	0,09436
4	bmci	15,80	0,03621	0,755	4,235	0,81521	0,02981	0,78893	0,05851
1	cdgk	13,48	0,00049	0,442	2,67	0,71453	0,00116	0,20094	0,12270
2	cdgk	15,68	0,00122	1,558	4,54	0,61787	0,02545	0,18790	0,12562
3	cdgk	13,27	0,00272	1,635	1,06	0,47731	0,00561	0,16552	0,09366
4	cdgk	13,88	-0,00089	0,755	4,235	0,21440	0,02978	0,06476	0,21440
1	cfgbank	12,09	-0,00167	0,442	2,67	0,66665	0,01929	0,42919	0,00961
2	cfgbank	14,42	-0,00595	1,558	4,54	0,74968	0,01139	0,30175	0,00823
3	cfgbank	12,69	-0,00438	1,635	1,06	0,76225	0,01960	0,40400	0,00396
4	cfgbank	13,14	0,00549	0,755	4,235	0,83959	0,02515	0,46434	0,00157
1	CAM	16,02	0,01517	0,442	2,67	0,89704	0,02267	0,74208	0,09978
2	CAM	18,21	0,01532	1,558	4,54	0,88285	0,02639	0,73937	0,10490
3	CAM	16,04	0,02816	1,635	1,06	0,87275	0,02208	0,74509	0,07998
4	CAM	16,19	0,02986	0,755	4,235	0,85741	0,02783	0,73482	0,08229
1	CDM	15,47	0,03428	0,442	2,67	0,86063	0,03189	0,84341	0,02687
2	CDM	17,66	0,03369	1,558	4,54	0,86482	0,02750	0,81055	0,04837
3	CDM	15,47	0,03380	1,635	1,06	0,84384	0,04004	0,78061	0,04116
4	CDM	15,57	0,03270	0,755	4,235	0,84012	0,02021	0,80863	0,02629
1	CIH	15,34	0,03239	0,442	2,67	0,84890	0,04850	0,77971	0,09565
2	CIH	17,52	0,03241	1,558	4,54	0,82593	0,04873	0,77763	0,06229
3	CIH	15,39	0,03090	1,635	1,06	0,81628	0,03310	0,78567	0,05450
4	CIH	15,59	0,02874	0,755	4,235	0,82725	0,02487	0,79165	0,04215
1	Citibank	13,07	0,00003	0,442	2,67	0,76793	0,00990	0,68059	0,04617
2	Citibank	15,31	0,00002	1,558	4,54	0,78667	0,00102	0,58954	0,07253
3	Citibank	13,18	0,02030	1,635	1,06	0,79994	0,02306	0,50506	0,06433
4	Citibank	13,40	0,01778	0,755	4,235	0,64618	0,00661	0,81619	0,05111
1	ABCB	12,44	0,01845	4,626	2,97	0,76023	0,02357	0,90976	0,11692

2	ABCB	12,32	0,01976	4,437	1,19	0,81930	0,14185	0,78147	0,17252
3	ABCB	12,29	0,01832	3,629	1,26	0,81737	0,02698	0,82278	0,17442
4	ABCB	12,42	0,01771	5,309	1,82	0,84682	0,02655	0,85622	0,24051
1	BarakaT	13,52	0,01720	4,626	2,97	0,87497	0,01007	0,70221	0,21647
2	BarakaT	13,52	0,01508	4,437	1,19	0,88340	0,01174	0,69746	0,22544
3	BarakaT	13,43	0,01578	3,629	1,26	0,88882	0,02613	0,67962	0,23875
4	BarakaT	13,34	0,01886	5,309	1,82	0,88637	0,05186	0,69065	0,15592
1	AMENB	15,27	0,01715	4,626	2,97	0,87582	0,02430	0,79032	0,19902
2	AMENB	15,19	0,01334	4,437	1,19	0,87282	0,01357	0,77031	0,24296
3	AMENB	15,08	0,01358	3,629	1,26	0,87721	0,01301	0,73268	0,26772
4	AMENB	15,08	0,01475	5,309	1,82	0,87786	0,01965	0,72436	0,29183
1	ATB	14,82	0,01128	4,626	2,97	0,88265	0,01865	0,64658	0,18807
2	ATB	14,79	0,01495	4,437	1,19	0,88624	0,01945	0,67627	0,16936
3	ATB	14,67	0,01461	3,629	1,26	0,87983	0,01658	0,72520	0,13679
4	ATB	14,79	0,01334	5,309	1,82	0,88701	0,02994	0,70989	0,16726
1	AttijariT	14,93	0,02596	4,626	2,97	0,87120	0,03899	0,77154	0,08014
2	AttijariT	14,98	0,02238	4,437	1,19	0,87853	0,07096	0,73591	0,13184
3	AttijariT	14,98	0,02083	3,629	1,26	0,87462	0,04867	0,75061	0,13911
4	AttijariT	15,06	0,02132	5,309	1,82	0,87533	0,06802	0,73360	0,16743
1	BHT	15,09	0,02342	4,626	2,97	0,90931	0,02582	0,77097	0,21778
2	BHT	15,10	0,02076	4,437	1,19	0,89212	0,01581	0,76980	0,25149
3	BHT	15,15	0,00945	3,629	1,26	0,85386	0,01906	0,73230	0,26797
4	BHT	15,30	0,00880	5,309	1,82	0,84534	0,02264	0,75816	0,30040
1	BT	14,66	0,02816	4,626	2,97	0,71693	0,02036	0,77874	0,07475
2	BT	14,65	0,02621	4,437	1,19	0,73722	0,02734	0,77247	0,15073
3	BT	14,59	0,02607	3,629	1,26	0,74566	0,04059	0,75864	0,14111
4	BT	14,64	0,02683	5,309	1,82	0,75330	0,03478	0,76888	0,15918
1	BTE	12,96	0,01798	4,626	2,97	0,82694	0,03830	0,81813	0,23467
2	BTE	13,01	0,01401	4,437	1,19	0,83977	0,01905	0,82960	0,21037
3	BTE	12,95	0,02004	3,629	1,26	0,85283	0,02244	0,82939	0,24874
4	BTE	12,95	0,01933	5,309	1,82	0,85803	0,01769	0,84407	0,34003
1	BTK	13,62	0,02312	4,626	2,97	0,86585	0,01932	0,88208	0,30794
2	BTK	13,63	0,02366	4,437	1,19	0,88036	0,01651	0,86941	0,33693
3	BTK	13,47	0,01446	3,629	1,26	0,91402	0,02280	0,86007	0,39152
4	BTK	13,38	0,01093	5,309	1,82	0,88133	0,02315	0,85257	0,34954
1	BTL	12,83	0,01624	4,626	2,97	0,80999	0,04022	0,83955	0,42165
2	BTL	12,69	0,01508	4,437	1,19	0,80127	0,00768	0,85425	0,42683
3	BTL	12,73	0,01500	3,629	1,26	0,83419	0,01203	0,86126	0,48381
4	BTL	12,53	0,01627	5,309	1,82	0,78737	0,08544	0,76169	0,37550
1	BZitouna	13,47	0,03136	4,626	2,97	0,88345	0,08808	0,83972	0,01301
2	BZitouna	13,69	0,03225	4,437	1,19	0,87371	0,07421	0,85511	0,02188
3	BZitouna	13,79	0,03276	3,629	1,26	0,88114	0,06376	0,87662	0,02779
4	BZitouna	13,95	0,03294	5,309	1,82	0,86426	0,06468	0,86663	0,02969
1	BIAT	15,44	0,02596	4,626	2,97	0,80527	0,04343	0,70593	0,02682
2	BIAT	15,46	0,02476	4,437	1,19	0,81941	0,04938	0,70219	0,06074
3	BIAT	15,45	0,02233	3,629	1,26	0,82538	0,04279	0,71194	0,08449
4	BIAT	15,57	0,02350	5,309	1,82	0,83461	0,04705	0,71990	0,10573
1	BNagrico	15,34	0,02770	4,626	2,97	0,83265	0,01256	0,79943	0,15671
2	BNagrico	15,28	0,02449	4,437	1,19	0,83114	0,00979	0,77649	0,12589
3	BNagrico	15,26	0,02234	3,629	1,26	0,84528	0,02501	0,76037	0,13886
4	BNagrico	15,32	0,02319	5,309	1,82	0,83998	-0,01617	0,78590	0,15463
1	BTS	13,07	0,02155	4,626	2,97	0,92805	0,00336	0,95634	0,85721
2	BTS	13,12	0,02131	4,437	1,19	0,93580	0,00248	0,97023	0,88866
3	BTS	13,07	0,02114	3,629	1,26	0,92462	0,00167	0,96544	0,85917
4	BTS	13,17	0,02014	5,309	1,82	0,93227	0,00477	0,96504	0,87139
1	CitibankT	12,37	0,01642	4,626	2,97	0,90025	0,23253	0,73743	0,16700
2	CitibankT	12,26	0,01747	4,437	1,19	0,89025	0,12788	0,70991	0,02289
3	CitibankT	12,20	0,02345	3,629	1,26	0,90646	0,10001	0,80393	0,08803
4	CitibankT	12,23	0,02512	5,309	1,82	0,88798	0,17735	0,67217	0,07894
1	QNBT	13,20	0,02083	4,626	2,97	0,86096	0,01671	0,75807	0,54384
2	QNBT	13,22	0,03090	4,437	1,19	0,88254	0,00898	0,76544	0,53211
3	QNBT	13,11	0,02463	3,629	1,26	0,90749	0,00939	0,82774	0,46843
4	QNBT	13,21	0,02930	5,309	1,82	0,84564	0,01992	0,84351	0,39170

1	STB	15,19	0,02209	4,626	2,97	0,90468	0,02642	0,78337	0,17833
2	STB	15,15	0,01978	4,437	1,19	0,79670	0,02983	0,72483	0,10976
3	STB	15,10	0,01686	3,629	1,26	0,84837	0,03399	0,69271	0,19793
4	STB	15,12	0,01740	5,309	1,82	0,86703	0,03189	0,69782	0,20851
1	StusidB	12,88	0,01297	4,626	2,97	0,73172	0,01370	0,68616	0,23001
2	StusidB	12,80	0,01376	4,437	1,19	0,72449	0,02083	0,66660	0,20787
3	StusidB	12,67	0,01768	3,629	1,26	0,71520	0,02235	0,69246	0,17787
4	StusidB	12,76	0,01897	5,309	1,82	0,73908	0,02505	0,68931	0,16683
1	TIB	12,65	0,00458	4,626	2,97	0,80533	0,02151	0,78848	0,29837
2	TIB	12,52	0,00466	4,437	1,19	0,79311	0,01786	0,73479	0,29954
3	TIB	12,35	0,00656	3,629	1,26	0,77375	0,07652	0,67515	0,30422
4	TIB	12,34	0,00763	5,309	1,82	0,76183	0,05093	0,71843	0,29100
1	UIB	14,60	0,03184	4,626	2,97	0,89536	0,04848	0,89100	0,12136
2	UIB	14,54	0,03328	4,437	1,19	0,88967	0,01497	0,92509	0,07738
3	UIB	14,52	0,03020	3,629	1,26	0,87953	0,04467	0,88777	0,10125
4	UIB	14,62	0,02916	5,309	1,82	0,88493	0,03011	0,91390	0,13403
1	UBCI	14,30	0,03096	4,626	2,97	0,77505	0,03949	0,80882	0,12564
2	UBCI	14,24	0,02995	4,437	1,19	0,76741	0,02063	0,78773	0,15569
3	UBCI	14,21	0,02486	3,629	1,26	0,78570	0,03225	0,74844	0,14833
4	UBCI	14,30	0,02458	5,309	1,82	0,80639	0,04367	0,73868	0,20225

Source: financial Statements of banks