# The Effect of Internal Financial Liberalization on Banking Profitability The Case of Algerian Public Banks: Empirical Study (2003-2017).

# L'effet de la libéralisation interne des finances sur la rentabilité des banques Le cas des banques publiques algériennes : étude empirique (2003-2017).

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***Abstract:***
*The Financial liberalization policy, at its internal and external levels, has different effects on the macro and microeconomics variables in the economy.*
*This study aims to determine the effect of internal financial liberalization on profitability of public banks by using least square method during the period from: 2003 to 2017. The study concluded that there is a positive relationship between internal financial liberalization and profitability of Algerian public banks .*
***Keywords:*** *External financial liberalization, internal financial Liberalization, Profitability, Banking Competition.*
***Jel Classification Codes :*** *E44, L51*

**ملخص:**

إن لسياسة التحرير المالي بمستوياتها الداخلية والخارجية أثار مختلفة على المتغيرات الكلية والجزئية للاقتصاد .

تهدف هذه الدراسة إلى تحديد أثر التحرير المالي الداخلي على ربحية البنوك العمومية باستخدام طريقة المربعات الصغرى، وذلك خلال الفترة الممتدة من 2003 إلى 2017. خلصت الدراسة إلى وجود علاقة إيجابية بين التحرير المالي الداخلي والربحية في البنوك العمومية الجزائرية.

**كلمات مفتاحية**: تحرير مالي خارجي، تحرير مالي داخلي، ربحية،تنافسية البنوك.

**تصنيف JEL:**E44, L51

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## 1. *Introduction:*

*In the context of globalization, developed countries, which are represented by their financial institutions such as: the World Bank, International Monetary Fund, and Multinationals claimed to carry out its policies and strategies in developing countries in order to accelerate their economic growth.*

*Financial liberalization is considered as the most important policy that was used in that issue although this term was used as far back as by Walter Bagehot in 1873, who argued that the financial system plays a critical role in transferring better technologies that help to mobilize resources, and encouraging economic growth. However, most studies indicate that the first use of financial liberalization concept in its current sense ,is associated with works of McKinnon and Shaw in 1973, in which they argue that financial repression is a major impediment on economic growth in developing countries.*

*Algeria, as other developing countries, barely inherited financial sector from the colonial era, and it was characterized by the presence of few commercial banks that are initially restricted by central decisions within planned economy framework with a tendency to the socialism paradigm; but, in the early eighties, Algeria faced wide spreading problems in financial field as a result of wasteful use of financial resources then, banks lost their primary function in the economy.*

*These conditions led Algerian authorities to try to make a change and to shift towards new paradigm and start making reforms .thus, The first attempt started in 1986, but the turning point in Algerian financial system is in 1990, with the issuance of the law of credit and money, as a real step for liberalizing financial sector and focusing on banking market as well. It allowed a numerous foreign banks to enter into the Algerian market.*

*The main question we are trying to answer is: What is the effect of financial liberalization on the profitability of Algerian public Banks? On this context, the main hypothesis which has been formulated is: There is a statistically significant positive relationship between internal financial liberalization and the profitability of Algerian public banks.*

***Research Objectives**: The study of the effect of financial liberalization (internal level) has a various aspects on each economy, and it is a quite important to note that it was a subject of a wide debate among economists and policymakers.*

*The research aims to evaluate the relationship between internal financial liberalization and banking profitability, particularly, on Algerian public banks which would normally face a high competition.*

***Research Methodology:*** *The descriptive analytical approach has been adopted in order to understand the different theoretical aspects of the subject under study, and using an Econometric Method to determine bank profitability in the context of internal financial liberalization.*

*In light of this study (statistical side), we will rely on statistics which are available on Bank Scope database, Internal Monetary Fund , and the annual reports issued by bank of Algeria that it covered the period from 2003 to 2017.*

***Previous Studies****: Many studies tried to analysis the impact of financial liberalization on bank profitability, their empirical studies obtained different results which were frequently controversial, some results showed that there was a negative impact on profitability and/or the Performance ( in most studies ), and other results gave a positive impacts:*

*- Study of Hakkimi (2011), which is entitled "Financial Liberalization and Banking Profitability", this study has been relied on nine Tunisian banks, during the period 1980-2009. By using econometric model and depending on Panel data, it concluded that there is a negative relationship between financial LIB and the profitability of Tunisian banks.*

*-Study of Ali SuliemanAlshatti (2016) which is entitled "Determinants of bank profitability", this study has been included thirteen Jordanian banks over the period 2005-2014 by using two profitability indicators, the return on assets (ROA), the return on equity (ROE), the results indicate that variables of capital adequacy, capital and leverage have a positive effect on the banks profitability and the variables of assets quality have a negative effect on the banks profitability.*

*- Study of AlinMaruisAndries, Bogdan Capraru (2013) which is entitled "Impact of financial liberalization on banking sectors performance from central and eastern European countries", through sample of 17 countries, during the period of 2004-2008, depending on two-stage empirical model. The results indicate that banks from CEE countries with high level of liberalization are able to increase cost efficiency and to offer cheap services and non–member countries in CCE are less cost efficient but experienced much higher in total productivity growth level; large sized banks are much more cost efficient than medium and small banks, however, small sized banks shows the highest growth in terms of productivity.*

*-Study of RachidaBenahmed –Daho,(2015) which is entitled "liberalization of financial services and performance of commercial banks in Algeria", by using three varieties of a panel data regression model and a sample of ten Algerian commercial banks, during the period of 1998-2012, the results show a negative and a significant impact of financial liberalization on Algerian banking performance.*

*-Study of Andrew MuntophaLipunga (2014) which is entitled "Determinants of profitability of listed commercial banks in Developing Countries: Evidence from Malawi", this study included a sample of commercial banks and it is focused on Malawi ones, during the period from 2009-2012, depending on regression analysis, the results show that bank size, liquidity and management efficiency have a significant impact on ROA ( as a first index for measuring the profitability); however, a capital adequacy has a no significant adequacy on ROA, and for the Earning yield (second index that used for measuring profitability) , banks size and capital adequacy has a significant impact, whereas liquidity has no significant impact.*

## 2. Theoretical Background

### 2.1-definition of financial liberalization:

There are many definitions of financial liberalization, but generally, it is commonly defined as the process of breaking away from a state of financial repression. (Hanson & Ramachandran, 2005, p. 209).As financial repression has most commonly been associated with government fixing of interest rates and its adverse consequences on the financial sector as well as on the economy, financial liberalization, in turn, has come to be most commonly associated with freeing of interest rates, (E.Murat).

By external financial liberalization we mean policy actions that increase the degree of the ease with which residents can acquire assets and liabilities denominated in foreign currencies and non-residents can operate in national financial markets . (Yilmaz, 1993, p. 95)

Financial liberalization is the set of procedures that are working on the development of financial markets, which are taken by the State to eliminate or mitigate the degree of restrictions on the financial system, and this in order to enhance the level of efficiency and reform entirely, by opening the financial and capital markets to foreign companies (Fouzi & Belbel, 2015, p. 23)

### 2.2 –The evolution of financial liberalization:

The shift of policies differed in timing, content and speed from country to country and included many reversals, broadly (Hanson & Ramachandran, 2005, p. 205):

- African countries turned to financial liberalization in the 1990s, often in the context of stabilization and reform programs supported by the International Monetary Fund and World Bank, as the costs of financial repression became clear.

-In East Asia, the major countries liberalized in the 1980s, though at different times and to different degrees. For example, Indonesia, which had liberalized capital flows in 1970, liberalized interest rates in 1984, but the Republic of Korea did not liberalize interest rates formally until 1992.

- In South Asia, financial repression began in the 1970s, with the nationalization of banks in India (1969), and Pakistan (1974).Interest rates and directed credits controls were subsequently imposed and tightened, but for much of the 1970s and 1980s real interest rates remained reasonable. Liberalization started in the early 1990s with a gradual freeing of interest rates; a reduction in reserve, liquidity, and directed credit requirements; and liberalization of equity markets.
- In Latin American, episodes of financial liberalization occurred in the 1970s, but financial repression returned, continued, or even increased in 1980s, with debt crises, high inflation, government deficits and the growth of populism. In the 1990s, substantial financial liberalization occurred, although the degree and timing varied across countries.
- In the transition Economies, financial liberalization took place fairly rapidly in the 1990s, in the context of reaction against communism.

The earliest policy changes generally focused on interest rates. In many instances governments raised interest rates with a “ stroke of the pen “, to mobilize more of the resources needed to finance budget deficits and to enable the private sector to play a greater role in development. (Some interest rate increases, designed to curb capital flight, were intended more for stabilization than for liberalization). New financial instruments were introduced new domestic and foreign banks and, in some cases, nonbank intermediaries.

**Table 1.** Date of Financial Liberalization in Some Countries

| Region | Country | date of financial liberalization |
|---|---|---|
| **African countries** | Egypt | 1992 |
| | Morocco | 1997 |
| | Tunisia | 1994 |
| | Nigeria | 1987 |
| | Algeria | 1990 |
| **Asian countries** | Indonesia | 1989 |
| | Republic of Korea | 1992 |
| | Philippines | 1991 |
| | India | 1992 |
| | Thailand | 1988 |
| **Latin American countries** | Mexico | 1989 |
| | Peru | 1993 |
| | Chile | 1992 |
| | Brazil | 1991 |
| | Argentine | 1989 |
| **East European and middle east countries** | Republic of Czech | 1991 |
| | Slovak federal Republic | 1991 |
| | Jordan | 1995 |
| | Saudi Arabia | 1998 |
| | Qatar | 1995 |

**Source**: Chipeta, Chimwemwe. (2012). Financial Liberalization and the Capital Structure of Firms Listed on the Johannesburg Stock Exchange. Thesis submitted for the degree of PhD, University Van Pretoria, and South Africa. P77.

## 2.3- Financial Liberalization Procedures:

Financial liberalization consists of procedures that divided into two: Internal and external, in which, the first one typically includes a set of measures; each country allows for it in varying degrees, the most important procedures include: (Ghosh, 2005, p. 2)

### 2-3-1 - Internal financial liberalization:

- The reduction or removal of controls on the interest rates or rates of returns charged by financial agents. Of course, the central bank continues to influence or administer that rate structure through adjustments of its discount rate and through its own market operation. But deregulation typically removes interest rate ceilings and encourages competition between similarly placed financial firms aimed at attracting depositors on the one hand and enticing potential borrowers to take on debt on the other.

- the withdrawal of the state from the activity of financial intermediation with the conversion of the " development banks " into regular banks and the privatization of publicly owned banking system, on the grounds that their presence is not conductive to the dominance of market signals in the allocation of capital. This is usually accompanied by the decline of directed credit and the removal of requirements for special credit allocations to priority sectors, whether they be government, small-scale producers, agriculture, or other sectors seen as priorities for strategic or developmental reasons.

-the easing of conditions for the participation of both firms and investors in the stock market by diluting or doing away with listing conditions, by providing freedom in pricing of new issues , by permitting greater freedoms to intermediaries, such as brokers, and by relaxing conditions with regard to borrowing against shares and investing borrowed funds in the market;

- the reduction in control over the investments that can be undertaken by financial agents and specifically, the breaking down the " Chinese wall " between banking and non-banking activities; most regulated financial systems sought to keep to keep separate the different segments of the financial sector such as banking, merchant banking, the mutual fund business and insurance agents in one segment were not permitted to invest in another for fear all conflicts of interest that could affect business practices adversely . The removal of the regulatory walls separating these sectors leads to the emergence of "universal banks" or financial supermarkets. This increases the interlink ages between and pyramiding of financial structures.

**2-4- Benefits of financial liberalization:**

Despite the negative effects of financial liberalization which, according to Stieglitz (1988),was the results of insufficient institutional infrastructure in emerging countries, which make it vulnerable to external shocks, (Bouaichi & Yaici, 2014, p. 92) for instance, in most developing countries, the banking sector dominates the financial system and securities markets are not well developed. Restrictions on bank behavior imposed by the government often result in negative real interest rates and an excess demand for credit, requiring banks to ration their lending. Consequently, credit is allocated to favored sectors and firms by administrative decision, rather than by market mechanisms. Following financial liberalization, market determination of interest rates should result in modestly positive real interest rates. These, in turn, will increase the resources available to the financial system, since bank deposits offering a competitive return will attract savings that were previously held outside the formal financial sector (possibly as excess inventories of intermediate goods). Moreover, positive real interest rates will provide an incentive for borrowers to invest in more productive activities, thereby improving the productivity of the economy as a whole. Consequently, financial liberalization should lead to an increase in both the quantity and the quality of financial intermediation by the banking system. Financial liberalization can therefore stimulate economic development through a variety of channels. Since the financial system performs the vital function of raising funds for, and channeling funds to, productive investment, successful financial liberalization is usually an important component of a country's strategy for economic growth. (Pill & Pradhan, 1997, p. 8)

**3-The banking system in Algeria:**

During the seventies, Algerian people lived in what was called "TheGolden Age", wherein the socio-economic indicators were good. After that, and during the eighties Algeria faced huge economic difficulties. in 1986, the Algerian economy has had a brutal crisis to the drastic fall in oil prices, which led to the contraction of the exportation revenue, and economic growth rate, which registered negative values, and led to the collapse of the currency reserve and to increase the level of the external debt and the debt service. In light of these facts, there has been a necessary to make set of reforms that involve the majority of economic sectors including the banking sector. (Hasini & Dahou, 2018, pp. 150-151)

**3-1- the most important laws in the context of financial liberalization:**

-The law n°86-12 of 1986, concerning the banking and credit regime, was the first text used to regulate banking and finance; this first regulation brought a little innovation. Indeed; it renewed the principle according to which the banking system would constitute an instrument to implement the national policy of financing. In this perspective, there has been a need to ensure the allocation of financial resources and monetary ones as well as a part of implementation of the national credit plan with the objectives of the national development plans (Algeria Bank, 2012, p. 10).

-The law n°90/10 of 14/04/1990, on money and credit, included elements and provisions of the banking law, as it replaced the previous banking law of 1986, which has not been implemented; this law laid the foundations for a common legal framework among all banks and financial institutions, after reforms taken microeconomic nature, which are mainly focused on the autonomy of the public enterprise, and brought some adjustments on banking system, such as: Ending the old denomination of Bank of Algeria, as a central bank of Algeria, which had accompanied it since December 1962,and the establishing of the council of money and credit, which acts as a trustee of Bank of Algeria as well, in terms of organization and regulations applicable in banks and financial institutions it regulates and (Rekiba, 2016, p. 125).

The Algerian government has reviewed banking regulations by the promulgation of ordinance n°:03-11 of August 26, 2003 relating to the money and credit that repeals the law n °: 90-10 of April 14, 1990. While keeping the principles of financial liberalization, order no° 03-11 has come for reinforce the conditions of installation and control of banks and establishments financial (Aboubekr, 2016, p. 252).

Two other ordinances were issued, the first one, was in 2009 to complete the shortcomings that appeared in the 2003 ordinance, in particular to reduce the monetary policy imbalances and to renew the international banking system, while law n°:17-10 of October 26, 2017 relating to the money and credit, it was issued particularly to contribute in help cover the treasury needs and to finance the domestic debts and national investments fund by purchasing public treasury bunds.

**3-2 –Overview of Algerian internal financial liberalization:**

Algerian monetary authorities have generally adopted a progressive policy of liberalization of each of interest rate, credit ceiling and reserves, privatization as follows:

**3-2-1- Liberalization of interest rates, Credit, Mandatory Reserves:**

Commercial bank deposits rate were liberalized in May 1990, but commercial bank lending rates still remained subject to 20 percent ceiling per year, so that both types of rates remained negative in real terms during the period: 1993-1994, since they were not allowed to reflect the increasing inflationary pleasures arising from the substantial relaxation of demand management policies that occurred in 1992-1993. An important step taken under the 1994 reform program was, therefore, the abolition of the ceiling on commercial banks lending rates to the Domestic. It was accompanied by the temporary imposition of a cap of 5 percentage points on commercial bank interest rate spreads, with a view of preventing an excessive increase of lending rates as a result of possible collusion among the five commercial banks .This cap on banks spreads was eliminated on December 1995.

The deregulation of interest rates, together with the deceleration of inflation brought about by tighter demand management policies, eventually led to the emergence of positive real interest rates since the beginning of 1996. (Lafromboise, Alonso-Gamo, Feler, Bazzoni, & Nashashibi, 1998, p. 33).According to data taken from world bank database, The interest rates on deposits show a continuous decline, it was about 5.26% in 2003, and then decrease to 1.94% in 2005, and continued to decline at the rate of 1.75% , during the period from 2006 to 2017.

Obligatory reserves is a percentage of deposits that banks must curry in current account at the central bank, it was established in 1913 in the United State for a prudential purpose: to ensure the security of depositors and to reduce the scale of the liquidity crises, (Achouch & Mizialoua, 2011, p. 63)In 1992, the bank of Algeria ceased to impose credit ceilings on commercial banks lending and stared relying on central bank refinancing of the economy. In 1994, the bank of Algeria introduced a remunerated reserve requirement on commercial banks, (Iradian, Bazzoni, & Joly, 2000, p. 40) Representing 3 percent of bank deposits (excluding foreign currency deposits) and remunerated 11.5 percent –a substantial level, considering that in some neighboring countries, reserves were not remunerated at all . (Lafromboise, Alonso-Gamo, Feler, Bazzoni, & Nashashibi, 1998, p. 33)

**3-2-2- Liberalization of banking competition:**

In the early 1990s, the banking sector was characterized by banking organization that designed for the logic of that time and limited a primary number of five banks ( BNA,BEA,BDL, CPA, BADR) and two specialized ones (CNEP ,BAD)

The first signs of Banking liberalization appeared with the enactment of law of 1990, and the first entry of private banking institutions (public and foreign), that were supposed to strengthen public banks and improve banking intermediation. (Rekiba, 2016, pp. 125-126)

In addition, to attract the private capital, the regulation n°93-01 of 03/09/93 facilitates the establishment of several national mixed banks and foreign private equity banks as well, which generally are subsidiaries of major international banking groups represented in :( Citibank, Society General, Natexis, Cetelem, Credit Lyonnais, Amman ABA Arab Banking, PNB Paribas, AGB Gulf Bank, Fransa Bank, Trust Bank, The Housing Bank for Trade and Finance), due to the lack of capital adequacy compared to their commitments, and non-compliance of liberalization to capitalization in cash and the lack of provision; the council of money and credit removed the approvals over the period between 2003 to 2006, and set banks such as: Union Bank, lamouna Bank, Arco Bank, AIB, El Rayen Bank, CAB, bankruptcy of Khalifa Bank and BCIA. (Bouzar & Benhalima, 2011, p. 58)

At the end of 2017, the number of banks and financial institutions operating in Algerian banking system has exactly been 20 banks, included six public banks, including the national fund for saving and foresight, and 14 private banks (Banque d'algerie, 2017, p. 68).

**Table 2.**Some Characteristics of Public Banks

| **Banks** | **Date of Creation** | **Number of branches** | **Main business Areas** |
|---|---|---|---|
| BEA | 1967 | 88 | Large corporations and oil industry |
| BNA | 1966 | 214 | Large corporations and SMEs |
| BADR | 1982 | 293 | Rural Customers ( Farm credit, equipment credit), large corporations, SME |
| CNEP | 1964 | 212 | Very wide range of savings products , and housing credit solutions, retail Markets |
| BDL | 1985 | 155 | General Banking, Business Markets, SMEs and retail Market, Self-employed professionals, Pawn broking |
| CPA | 1966 | 139 | General Banking, Business and retail Market, SMEs |

**Source:**(Smahl, 2013, p. 75)

The public banks predominate the overall activity of the sector, they represent about 92.7% of total assets, in which the first bank represents 24.4% of the whole total assets of the sector, and the second one represents 18.6%, (Banque d'algerie, 2003, p. 3)According to the annual report of Bank of Algeria 2017, total assets of the public banks decreased compared to the share of private banks although they still own more than 85.6% of total assets, and the public banks network remains predominant with 1145 branches against 364 branches owned by private banks . (Banque d'algerie, 2017, p. 54)

## 4. Methods and Materials

For testing the relationship between internal financial liberalization and banking profitability, by depending on studies which are mentioned in the section of previous studies for selecting our variables, we can use the least ordinary square Method, and formulate the following model:

$PROF = \alpha + B_1 LIBint + B_2 RISK + B_3\ LIQ + B_4\ CONST + B_5\ INF + B_6 GDP + \acute{\varepsilon}$

In which:

PROF: Measurement of Profitability.

LIB: index of financial liberalization.

RISK: Measurement of risk.

LIK: Measurement of liquidity.

CONS: Measurement of banking concentration.

INF: Measurement of inflation.

GDP: Measurement of Gross Domestic Product per Capital.

α: constant.

$B_i$: coefficients to be estimated.

έ: Error term.

**-Definitions and measurements of variables:**

**The variable of Internal Financial Liberalization**: Internal financial liberalization can be measured by dividing private sector loans on total current gross domestic product, we refer to this variable in our model by LIBint.

**The variable of profitability:** There are many profitability indicators such as: Return on Assets, Return on Equity. Due to the availability of statistics, we will use the ROE indicator which can be measured as follows: ROE=Net Profit/Total Net Capital

**The variable of Credit Risk:** Granting of loans is always accompanied with the risk of inability to recover it in its maturity date, the most significant index that widely used to measure the credit risk in the most studies, especially in cases of developing countries; we can use the following ratio: RISK =Total credit / total assets.

**The variable of liquidity:** Bank liquidity is an Indicator of the ease, cost and time required for a bank to meet demands for liquidity from its liability, equity and off-balance sheet costumers, which can be done by reducing its assets and/or increasing its liabilities. It is measured as follows: Liquidity index=Total Loans / Total Deposits.

**The variable of concentration:** Concentration is known as the degree to which the financial sector is controlled by the bigger institutions, as defined by market shares; for example, the bank concentration ratio measures the market share of the top three banks in the system in terms of assets, deposits or number of branches.

(Algoz, Serdar Akilin, & Ceylan, 2015)

**The variables of control:**

*-Inflation is generally known as the rate at which the average price level of a basket of selected goods and services in an economy increases over some period of time.

*-GDP per Capital is a measure of a country's economic output that accounts for its number of people, and it is measured by dividing the country's gross domestic product over its total population.

## 5. RESULTS AND DISCUSSION:

By using E-views program, we estimate the model by depending on annual data spanning from 2003-2017, we have the following model:

**Prof**=109.07 +4.25**Libint–** 0.67**RISK -** 0.6**LIQU -** 0.87**CONST+** 0.55**INF -** 0.65 **GDP**

(0.00) (0.02) (0.19) (0.21) (0.01) (0.94) (0.51)

$R^2 = 0.7500$ , N=15 , Prob (F) =0.00 , DW=2.60

**Table 3.**Statistical evaluation of the model

| variable | Coefficient | Probability | Statistical significance | Observation |
|---|---|---|---|---|
| C | 109.0702 | 0.0041 | Significant at 5% | Accept $H_1$ |
| LIBint | 4.259290 | 0.0245 | Significant at 5% | Accept $H_1$ |
| RISK | -0.673877 | 0.1976 | Insignificant at 5% | Accept $H_0$ |
| LIQU | -0.602460 | 0.2115 | Insignificant at 5% | Accept $H_0$ |
| CONST | -0.870133 | 0.0152 | Significant at 5% | Accept $H_1$ |
| INF | 0.551486 | 0.4960 | Insignificant at 5% | Accept $H_0$ |
| GDP | -0.655821 | 0.5104 | Insignificant at 5% | Accept $H_0$ |

**Source**: Generated using Eviews 9 output.

-Prob (F) =0, it means that the model is wholly acceptable, there is at least one explanatory variable to reflect the relationship between financial liberalization and banking profitability

- (DW) =2.6indicates that there is no autocorrelation of errors, considering that (DW) tabular values at N=15, with 6 explanatory variables are: (DL=0.303, Du=2.42), and (DW) value takes place between (Du) and (4-Du).

-The adjusted coefficient of determination :( $R^2 = \%75$) : it means that there is a strong correlation between the dependent variable “ profitability” and the explanatory variables included in our econometric model, thus , 75% of changes can be explained by these variables, and 25% of changes due to other variables which are not used within this model.

-The variable of financial liberalization (LIB) is correlated positively and significantly with the dependent variable of the profitability; however, inflation is correlated positively and insignificantly with the profitability.

-The variables of: CREDIT RISK, LIQU, GDP are correlated negatively and insignificantly with the dependent variable, Profitability;

however, the variable of CONST is correlated negatively and significantly with the dependent variable Profitability.

To interpret the variables which are correlated positively with the dependent variable, we start with variable of Inflation (INF), it correlates positively and not significantly with the Banking profitability.

Financial liberalization policies lead banks to expand their lending operations to each of public and private sectors, which obviously lead to increase the profitability; by the same way, Inflation raises interest rates, therefore, higher interest rates provide more opportunity for banks to build in a profit margin.

To interpret the variables which are correlated negatively with the dependent variable "profitability", when bank finances each project or distribute credits, it is always associated with risk of payment inability at maturity dates, therefore, it can finally be classified as non-performing loans, statistics brought from International Monetary Fund indicates that ratio of non-performing loans decreased from 40.7% in 2003 to 20.5% in 2010, and then to 19.9% in 2017 (see the appendix n°:01)

The variable of liquidity (LIQ) is correlated negatively with profitability, and fits with economic theory, and many studies achieved the same results.

The variable growth of GDP per capita affect negatively with banking profitability following the literature based on the fact that if money supply grows at a rate less than money demand, excess money supply will decrease lowering inflation; therefore, income rises " GDP" and inflation decrease and vice versa .

Variable of concentration (CONST) is correlated negatively with dependent variable "Profitability", it assumed to be positive because the concentration affects directly on competition, it is therefore, it affects on influenced the profitability; for instance, high concentration leads to less competition, so the bank makes more profits, but in our study, this result refers that liberalization shows another result, which can be explained by the fact that the Algerian banking sector has a high concentration rate in favor of public banks ( top 3 banks), and any change in the concentration rate will only make just are distribution of assets, deposits or loans that will be moved only to another public banks that led to much more profitability among those public banks

Some variables do not explain the dependent variable because they do not have a statistical significance; therefore, we can delete it and the model becomes:

**Prof=104.75 + 4.73LIBINT - 1.30RISK - 0.84CONS**

(0.00) (0.00) (0.00) (0.00)

$R^2 = 0.75720$ , N=15 , Prob (F) =0.00 , DW=2.28

**Table 4.**Statistical evaluation of the model

| **Variable** | **Coefficient** | **Probability** | **Statistical significance** | **Observation** |
|---|---|---|---|---|
| C | 104.7574 | 0.0004 | Significant at 5% | Accept $H_1$ |
| LIBint | 4.733129 | 0.0026 | Significant at 5% | Accept $H_1$ |
| RISK | -1.306472 | 0.0003 | Significant at 5% | Accept $H_1$ |
| CONST | -0.843861 | 0.0024 | Significant at 5% | Accept $H_1$ |

**Source**: Generated using Eviews 9 output.

-Prob (F) =0, it means that the model is wholly acceptable and there is at least one explanatory variable that can reflect the relationship between financial liberalization and banking profitability.

- (DW) =2.28indicates that there is no autocorrelation of errors and(DW) tabular values at N=15, with 3 explanatory variables are: (DL=0.814, Du=1.75), and (DW) value takes place between (Du) and (4-DL).

## 6. Conclusion:

*According to the results of our study, the effect of financial liberalization on the banking profitability Lead to different results that obtained in other countries. Financial liberalization, at its internal level, increased the profitability in Algerian public banks and any change in the banking liberalization that represented by loans to private sector on Gross Domestic Product will significantly make a change in the banking profitability which is represented by return on equity.*

*-According to our study, which concluded that financial liberalization had a positive effect on profitability of public banks, the government should work for more liberalization particularly at the external level because this operation is still restricted by local regulations.*

*-as long as the internal financial liberalizations process requires to provide loans to the private sector without putting any restrictions, banks must take into consideration all risks related to loans for reducing the average of non-performing loans.*

*- Monetary Authorities must pursuit the evolution of money supply in order to control inflation rates as a result of banks expansion in granting loans.*

*- despite the profits achieved by public banks, the Algerian banking market remains in need for a true competition among public banks or between public and private banks as well to improve the quality and prices of services granted to customers.*

## 8.Bibliography List :

*Aboubekr, A. (2016, 07). impact de la politique de la liberalisation financiere sur la croissance economique cas de lalgerie. magister en marketing . tlemcen, université Aboubekr Belkaid Tlemcen, algerie.*

*Achouch, M., & Mizialoua, L. (2011). les reserves obligatoires: a taux differencies et modulations de loffre de monnaie en algerie(2000-2008). les cahier des CREAD (97), pp. 63-92.*

*Algeria Bank. (2012). guide des banques et etablissement financieres en Algerie. alger: KPMG.*

*Banque d'algerie. (2003). rapport annuel. alger.*

*Banque d'algerie. (2017). rapport annuel. alger.*

*Banque d'algerie. (2017). rapport annuel. alger.*

*Bouaichi, N., & Yaici, F. (2014). liberalisation financiere et developpement financier: approche comparative entre lalgerie, le maroc, et la tunesie. revue science economique et scince de gestion (14), pp. 89-108.*

*Bouzar, C., & Benhalima, A. (2011). la bancarisation dans le context de liberalisation financiere en algerie. les cahiers des CREAD (95), pp. 53-79.*

*Chipeta, C. (2012). Financal Liberalization and the Capital Structure of firms listed on the Johannsburg Stock Exchange (PHD Degree). Van Pretoria, South Africa.*

*d'algerie, b. (2003). rapport annuel 2003. alger.*

*E.Murat, U. (s.d.). Notes on Financial Liberalization: Key issues. Consulté le February 10, 2020, sur www.Citeseeres.ist.*

*Fouzi, A., & Belbel, H. (2015). The Impact of Financial Liberalization on the stability of financial system in Emerging Markets. Mediterranean Journal Social Sciences social , 6 (6), p. 23.*

*Ghosh, J. (2005). The Economic and social effects of financial liberalization:Working paper. (4) . Newyork, USA: DESA-United Nations.*

*Hanson, J., & Ramachandran, S. (2005). Economic Growth in the 1990s, Learning from a decade of reform. Washington DC: World Bank.*

*Hasini, I., & Dahou, K. (2018). The evolution of Algerian banking system. Management dynamics in the knowledge economy Journal , 06 (01), pp. 145-166.*

*Iradian, G., Bazzoni, S., & Joly, H. (2000). Algeria: Recent economic development. International Monetary Fund. Washington DC: IMF.*

*Lafromboise, N., Alonso-Gamo, P., Feler, A., Bazzoni, S., & Nasha*

*shibi, K. (1998). Algeria: Stabilization and Transition to the market. International Monetary Fund. Washington DC: IMF.*

*Lqbal, Z. (2001). Macroeconomic issues and policies in the Middle east and North Africa. Washington DC: International Monetary fund.*

*Pill, H., & Pradhan, M. (1997). Financial Liberalization in Africa. Finance and Development , 34 (2), pp. 7-10.*

*Rekiba, S. (2016). le system bancaire algerien: etat des lieux, degree de liberalisation et problems dinadaptation avec les regles de A.G.C.S. Communication science et technologie , 18, pp. 212-135.*
*Smahl, A. (2013). Government ownership of banks in Algeria. Revue Européenne du droit social , XXI (4), pp. 53-79.*
*Yilmaz, A. (1993). Financial Liberalization:Key Issues. Geneva: UNICTAD.*

## *9. Appendices*

**1- The variables:**

| **Year** | **DCSP** | **ROE** | **RISK** | **LIQ** | **CONS** | **INF** | **GDP** | **NPL** |
|---|---|---|---|---|---|---|---|---|
| 2003 | 9.3 | 3.32 | 55.49 | 56.35 | 86,36 | 4.27 | 5,841 | 40.7 |
| 2004 | 9.24 | 3.93 | 56.36 | 57.93 | 74,3 | 3.96 | 2,935 | 40.5 |
| 2005 | 10.12 | 5.63 | 58.12 | 52.83 | 83,82 | 1.38 | 4,438 | 38.2 |
| 2006 | 10.32 | 17.41 | 52.83 | 46.41 | 84,44 | 2.31 | 0,215 | 37.5 |
| 2007 | 10.29 | 23.64 | 46.41 | 48.04 | 76,24 | 3.68 | 1,808 | 38.7 |
| 2008 | 9.81 | 25.01 | 48.04 | 56.35 | 74 | 4.86 | -0,738 | 28.5 |
| 2009 | 12.26 | 27.9 | 58.55 | 58.54 | 70,99 | 5.74 | -0,135 | 23.6 |
| 2010 | 11.42 | 29.8 | 54.26 | 54.26 | 71,02 | 3.91 | 1,747 | 20.5 |
| 2011 | 10.02 | 26.1 | 53.18 | 53.18 | 71,07 | 4.52 | 0,98 | 16.1 |
| 2012 | 10.46 | 22.7 | 59.01 | 59.09 | 69,56 | 8.89 | 1,402 | 12.4 |
| 2013 | 12.15 | 18 | 66.13 | 66.13 | 66,87 | 3.25 | 0,762 | 11.4 |
| 2014 | 13.59 | 25.1 | 71.36 | 71.36 | 66,81 | 2.92 | 1,71 | 9.7 |
| 2015 | 16 | 21.8 | 77.98 | 77.98 | 63,03 | 4.78 | 1,6 | 9.9 |
| 2016 | 17 | 19 | 87.63 | 87.63 | 62,8 | 6.40 | 1,105 | 12.4 |
| 2017 | 18.29 | 18.7 | 87.56 | 87.55 | 66.96 | 5.59 | -0,75 | 19.9 |

Source : This results was calculated by depending on Statistics of Bank of Algeria and International Monetary Fund.

**2- Estimation of first modal (6 variables)**

DependentVariable: PROF

Method: Least Squares

Date: 03/22/20 Time: 08:23

Sample: 2003 2017

Includedobservations: 15

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 109.0702 | 27.45410 | 3.972819 | 0.0041 |
| LIBINT | 4.259290 | 1.540543 | 2.764798 | 0.0245 |
| RESK | -0.673877 | 0.479522 | -1.405310 | 0.1976 |
| LIQU | -0.602460 | 0.443595 | -1.358132 | 0.2115 |
| INF | 0.551486 | 0.773203 | 0.713249 | 0.4960 |
| GDP | -0.655821 | 0.952072 | -0.688835 | 0.5104 |
| CONST | -0.870133 | 0.282702 | -3.077916 | 0.0152 |

| | | | |
|---|---|---|---|
| R-squared | 0.857163 | Meandependent var | 19.20267 |
| Adjusted R-squared | 0.750036 | S.D. dependent var | 8.524653 |
| S.E. of regression | 4.262022 | Akaike info criterion | 6.042089 |
| Sumsquaredresid | 145.3187 | Schwarz criterion | 6.372513 |
| Log likelihood | -38.31567 | Hannan-Quinn criter. | 6.038570 |
| F-statistic | 8.001333 | Durbin-Watson stat | 2.603523 |
| Prob(F-statistic) | 0.004902 | | |

**3- The model after removing: Inflation, GDP, Liquidity:**

DependentVariable: PROF

Method: Least Squares

Date: 03/22/20 Time: 08:25

Sample: 2003 2017

Includedobservations: 15

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 104.7574 | 21.03797 | 4.979442 | 0.0004 |
| LIBINT | 4.733129 | 1.224379 | 3.865737 | 0.0026 |
| RESK | -1.306472 | 0.253216 | -5.159520 | 0.0003 |
| CONST | -0.843861 | 0.215017 | -3.924627 | 0.0024 |

| | | | |
|---|---|---|---|
| R-squared | 0.809246 | Meandependent var | 19.20267 |
| Adjusted R-squared | 0.757222 | S.D. dependent var | 8.524653 |
| S.E. of regression | 4.200308 | Akaike info criterion | 5.931371 |
| Sumsquaredresid | 194.0685 | Schwarz criterion | 6.120185 |
| Log likelihood | -40.48529 | Hannan-Quinn criter. | 5.929360 |
| F-statistic | 15.55530 | Durbin-Watson stat | 2.287040 |

| | |
|---|---|
| Prob(F-statistic) | 0.000285 |

**4- Heteroskedasticity Test**

HeteroskedasticityTest: ARCH

| | | | |
|---|---|---|---|
| F-statistic | 1.444226 | Prob. F(1,12) | 0.2526 |
| Obs*R-squared | 1.503929 | Prob. Chi-Square(1) | 0.2201 |

Test Equation:

DependentVariable: RESID^2

Method: Least Squares

Date: 03/22/20   Time: 08:12

Sample (adjusted): 2004 2017

Includedobservations: 14 afteradjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 18.29833 | 6.075862 | 3.011643 | 0.0108 |
| RESID^2(-1) | -0.325062 | 0.270488 | -1.201759 | 0.2526 |

| | | | |
|---|---|---|---|
| R-squared | 0.107423 | Meandependent var | 13.86154 |
| Adjusted R-squared | 0.033042 | S.D. dependent var | 18.36144 |
| S.E. of regression | 18.05554 | Akaike info criterion | 8.756346 |
| Sumsquaredresid | 3912.030 | Schwarz criterion | 8.847640 |
| Log likelihood | -59.29442 | Hannan-Quinn criter. | 8.747895 |
| F-statistic | 1.444226 | Durbin-Watson stat | 1.043597 |
| Prob(F-statistic) | 0.252637 | | |

**5- Residuals distributions**