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**INVESTIGATE THE RELATIONSHIP BETWEEN FINANCIAL STRUCTURE AND
PROFITABILITY OF PUBLIC AND PRIVATE COMMERCIAL BANKS OF IRAN
(2001-2011)**

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ABSTRACT

One of the most important factors affecting the profitability of the bank is financing. Banks need to financial resources to investment, but financial resources and their use needs to be determined until the banks could be profitable, but method of financing should also be consistent with the investment of banking it is also a reasonable level of financial leverage to maximum the value of the bank and avoided the adverse consequences of financial risks through the use of debt. Due to this, in this paper, by using panel data is investigated the relationship between financial structure and profitability of commercial, public and private banks of Iran, within the period of 2001 to 2011. The results show that Herfindal index of bank concentration, has a positive effect on the bank profitability variable. The results also show that the ratio of bank debt to assets, have a positive effect on the profitability of banks variable. The results indicate that macroeconomic variables such as gross domestic product on constant prices and exchange rates have a positive effect on the profitability of the bank and the inflation rate has a negative effect on the profitability of banks. The results also indicate that financial structure variables include the ratio of non-current debt to equity and current ratio of debt to total debt has a negative effect on the profitability of banks.

Keywords: Financial Structure, Profitability of Banks, Herfindal Index

INTRODUCTION

One of the main priorities of any financial institution is providing financing requirements and access to optimum capital structure. Resource requirements can be provided from equity or debt. Given that the financial institutions are always looking for more profits and capital structure can be one of the factors that affecting the profitability of the economic entity and macroeconomic variables can play a role on economic and finance institutions.

The main objective of each economic institution is to make a profit. On this basis, banks as financial institutions are always looking to make more profit. Banks make profits by offering banking services and attract deposits and allocation of resources for payment facilities. So, matter how the bank can benefit from economies of scale profits from this operation will be higher.

The profits is count from important information on economic decisions. Studies done about the profits, forms one of the most voluminous and most research efforts on accounting. Profits as a guide to pay dividend, assessment tool to predict the effectiveness of the management and evaluation of decision making by them is often used by investors, managers and financial analyst (Saghafi, 1984: 16).

It also seems to must create a little incentive to bank until efficient use from limited resources of financial and this advantage appears in the form of increased profitability.

The process that led to the final decision, is determining the capital structure method. Method of determining the financial structure must be carried out according to the main characteristics of each of the types of securities that affected by internal factors related to the company or other external factors.

The purpose of this article is investigate the relationship between the financial structure of commercial, private and public banks sectors and macroeconomic variables (gross domestic product, inflation and exchange rates) of Iran on profitability of Iran commercial banks for the period 2001 to 2011.

In this paper used the data relating to the 12 commercial bank of Iran. This banks are the Melli bank, Sepah bank, Saderat bank, Tejarat bank, Mellat bank, Karafarin bank, Saman bank, Parsian bank, EghtesadeNovin bank, Pasargadae bank, Post Bank and Sina Bank.

Theoretical research literature**A. structure of capital**

The combination of debt and equity is called capital structure (Anvari and Rostami, 1998: 78). Different capital structures caused by the

combination of different sources of financing that this affecting on the unit of capital costs and financial risks. There are several theories about the effect of capital structure on the cost of capital and the value of the profit organization that this theories include net income, net operating income approach, traditional theory, and Modigliani and Miller theory.

Net income approach is based on the fact that enterprise can make use of the debt, reduce its cost of capital. Net operating income theory holds that profit organization unit by using financial leverage are not able to influence the total capital cost and this is due to the increased sensitivity of shareholders to raise debt in the capital structure.

According to the traditional view, firm's cost of capital can be reduced with an appropriate mix of debt and equity. But Modigliani and Miller's theory in this regard is based on the assumptions of perfect competition, the presence or absence of taxation and spending associated with clearing it. They believe that if there is a different tax treatment for different types of securities, along with the highest tax advantage, will be used the maximum amount of debt (**Davis & Sihiler, 1998: 17**).

B - Bank Financial Structure

Bank financial resources include:

1. Equity which is included of capital and retained earnings.
2. liabilities, which include deposits (Current deposits, savings, investment term), loans from the Central Bank, borrowing from the banking system, managed funds, bills payable, bills receivable and acceptable and is underwritten.

C – Profitability

"The profits Caused from changes in equity or changes in net assets of an enterprise during a financial period, more precisely, profits represents all changes in equity during a fiscal period, except for changes resulting from investments by owners and distribution of resources among them "(Alivar, 1996: 18).

Factors influencing the profitability of banks are divided into two internal and external categories.

Internal factors are factors that are under the control of bank management.

Some of them include: financial structure, credit risk management, liquidity management, cost management, combined liabilities (deposits), the combined assets (facilities).

External factors are factors beyond the control of the Bank's Management. Some of these factors include: inflation, central bank policy, business cycles, gross domestic product, the

market share of all banking network, exchange rates.

Studies conducted

Namazi and Shirzadeh (2004) in their study examines the impact of capital structure on profitability of listed companies in Tehran Stock Exchange in different industries. The sample consists of 108 companies from various industries which information about average ratio of debt to assets and equity collected during the 5-year period as a centralized and annually and then tested. Followed by information about the average ratio of debt to assets and return on assets ratio (ROA) collected during the 5-year period and tested. In order to test the hypotheses, were used simple regression and correlation coefficients. The results suggest that the in general, there is a direct relationship between capital structure and profitability of the company, but this relationship is statistically weak. The relationship between capital structure and profitability is dependent on the industry and optimal capital structure can be determined in a variety of industries.

Mohammadi (2009) in his study examines the impact of management on corporate profitability of listed companies on the Stock Exchange of Tehran. In this study, from ratio of gross profit to total assets as a measure of

corporate profitability and from debt receipt period, Inventory cycle, deposit of creditors and cash conversion cycle as a measure of working capital management and from firm size, sales growth, the ratio of financial assets to total assets and the ratio of debt to total assets was used as a control variables. The result of this study show that between corporate profitability ratios, debt collection period, inventory turnover period, creditors deposit and the cash conversion cycle, there was a significant inverse relationship. In other words, managers can reduce the debt collection period and inventory turnover period to reasonable and increase the profitability of their companies.

Saghafi and Seif (2005) in an article titled "identification and measurement of financial ratios and fundamental economic variables affecting the health and stability of the banking system in Iran" States that in this research, by the theoretical basis and fundamental concepts and evaluation mechanism of banking supervision in both developed and less developed economic and the theories and rules presented in international forums such as the World Bank, International Monetary Fund, Basel and etc. , have been identified the criteria representing the health and stability of the banks. Through the implementation of surveys and study and

view the evidence objectively of 10 State Bank, Over 12 years, the data were collected. The research hypotheses in measured the meaningful statistical relation among the sixty-eight financial ratios defined in the field of seven major factor influencing in evaluating the health and stability of the bank, formulated and tested. Seven key factors examined included capital adequacy, asset quality and banks' financial structure, management stability, profitability, liquidity, sensitivity to market risk and other standards are essential to the operation. Research result shows that this seven factors in the environment Iran banking is efficient in evaluating the health and stability of the banks; but ranking and importance of it is different to developed countries. Also ranking of 10 state bank of Iran in terms of the health and stability of the Bank during the period of 10 years, On the basis of the financial and economic variables in each of the seven basic elements, show considerable volatility in interbank and in each successive year the bank.

Asgari et al (2009) in an article titled "Evaluation of the relationship between financial structure with profitability of companies with comparative approach between strategic and non-strategic industries of Iran Stock Exchange" states that assets

may be fixed or current, tangible or intangible; Debt may also be short-term or long-term, fixed or floating, without the risk or at risk. In ideal conditions, assets and liabilities should be consistent (**Hussey, 1999, p: 69**). In this article are discussed the evaluation of the relationship between financial structure and profitability of companies, with comparative approach between the two categories of strategic and non-strategic industries during the years 2001 to 2008.

For statistical preparing processes at first by Kolmogorov-Smirnov test the normality and for the test of presence or absence of correlation in the residuals, is used Durbin Watson test. Based on the results of tests conducted there is a direct relationship between variables that represents the financial structure of companies and the ratio of return on investment ROI, confirmed as an indicator of corporate profitability. Also, approved despite the differences between the financial structure and strategic industries in the non-strategic industries. The results of this study indicate that in both categories of industries whatever company's debt equity ratio is higher, are expected to benefit more companies. In fact, profitability is a function from ratio of equity to debt. In summary, the results show that the there is a relationship

between financial structure and profitability of corporations. Also between two categories of strategic and non-strategic industries there are differences in financial structure and these differences also affect the profitability of each of the two industries.

Agbolade (2011) in an article entitled "Information and communication technologies and profitability of banks in Nigeria." stated that the role of information in achieving organizational goals cannot be considered too trivial. The contemporary business environment. Highly dynamic and with experience due to rapid changes with regard to creativity, innovation, technological change, increasing our understanding. Business organizations, in particular, the banking industry is incarcerated in a competitive environment which is constantly changing conditions and economically, it is unpredictable and with the development of Information and communication technologies (ICT) is constantly changing. In this paper, the authors attempted to by using data obtained through questionnaires in the selected banks in South West Nigeria and econometric methods, to review the nature of the relationship between bank profitability and information and communication technologies. The analysis results showed that between Information and communication

technologies and profitability of banks In Nigeria, there is a positive correlation. This implies that little change in the level of investment and adoption of Information and Communications Technology in the banking industry, leads to a proportional increase in the level of profitability.

Flamini and McDonald and Schumacher (2009) in an article titled "Factors affecting the profitability of commercial banks in the South Africa" found, profit for banks in the South Africa compared to other regions will be smaller. This paper uses a sample of 389 banks in the 41 countries of South Africa to study the factors affecting bank profitability and examine the influence of variables such as credit risk, return on assets, bank size, diversity and private ownership on the profitability of the activity. Bank efficiency is affected by macroeconomic variables shows that macroeconomic policies in the effect of inflation leads to development and strengthening of credit and the results showed that higher efficiency leads to an increase in equity and therefore, according to the results of this paper in this area in order to strengthen the financial stability need for additional capital.

Miller and Modigliani in 1958 by providing the opinions expressed under certain assumptions, including the existence of

perfect competition, no income tax, no bankruptcy costs, and no agency costs and there was no information asymmetry between capital market participants and replacement sources of internal financing with external financing, managers cannot simply due to a change in the mix of funding sources, change the value of the company. In other words, the value of the firm is independent of its capital structure (**Bagherzadeh, 2003: 24**).

Lara J.E and Mesquite (2003) in his research by using multivariate regression model, is investigate the relationship between capital structure and profitability of companies in Brazil and found the following results: according to the independent variables used in the study which includes coefficients of short-term debt and long-term and also equity, the results indicate a direct relationship of profitability with short-term debt and shareholders' equity and inverse relationship with long-term debt, respectively. In his analysis of the results to high rate of interest in Brazil and point to volatility of its exchange policy and believe that this situation has led that local industry remains in a state of suspension and fail to make timely management decisions to implement and also avoid the use of debt from accepting any advanced policies.

Ralph Alsace and David Flvryzak (2008) on his paper was conducted by aims to assess and summarize the capital structure of German companies and as that even after 50 years from original research, Miller and Modigliani, still not the ideal choice of optimal capital structure and it is also a major challenge. In this study,

Equity declared as impacting positively on the capital structure and long-term debt shows the reverse mode of the above. Also in his research, notes to other external factors affecting on the capital structure decisions and factors such irrational decisions, some managers and panel data (combined) as the factors affecting the capital structure.

Vishnu and Nagavara (2007) in this paper, empirical evidence has shown that there is a relationship between the pricing, dynamics of the industry, type of industry and capital structure and value and performance has a correlation with the ratio of corporate debt. Assessment methodology to compare performance with the industry average, which is now in a present. The results of this study also supported from reduce avoidable costs in a times of emergency hypotheses.

GulandIrshad and Zaman (2011) in an article entitled "Factors influencing the profitability of banks in Pakistan, "were evaluated to examine the relationship between

specific banks and macro-economic features on the profitability of banks using data from 15 commercial banks in a Pakistan during the period 2005 to 2009. In this study examine the impact of assets, loans, stocks, bonds, economic growth, inflation and capital market on the main profitability indicators, namely, return on assets (ROA), return on equity (return on Equity ratio), return on capital employed (ROCE) and experimental results based on the available evidence detected the internal and external factors that more influence on the profitability. The results of this study is useable for both academics and policy makers.

Research Methods

The present study in terms of the type of data used and subject matter is a types of quantitative research and in terms of method of data collection (research projects) are correlated. This article about a financial system on profitability of commercial, public and private banks of Iran has placed. The study period was from 2001 to 2011 and statistical methods was used is the panel data approach.

Introduce the model and research variables

The model used in this paper are as follows:

$$I = F(B \cdot GDP \cdot P \cdot ER \cdot S)$$

I: profitability of banks variable

B: bank variables include bank concentration (Herfindal index) and the leverage of bank i.

Macroeconomic variables such as gross domestic product on constant prices GDP, inflation rate P and exchange rate ER.

S: financial structure variables includes non-current liabilities to equity, current debt to total debt.

In this paper, by using panel data and use the banks of Iran data for the period 2001-2011, by using EViews software is estimate the model presented in the chapter. Statistics and information about it is extracted from World Bank and the Central Bank and the Bank's balance sheet.

Estimation model

Before estimating the model, it is necessary to test the stability of variables.

The results (**Table 1**) show that the null hypothesis is rejected and therefore show that all of the variables is stationary at levels.

The estimated model is as follows (Table 2):

The coefficient of determination showed the good fit of the model and variables used in it show the extent of 82% explanatory power of the model which according to the method used is panel data is a good number. Durbin Watson also indicates the absence of autocorrelation is and shows number of 1.87.

F statistics in this estimation rejected that coefficients is equal to zero. Sign of coefficients are all consistent with the theory and theoretical that is presented and given the probability of coefficients reflects the influence of all variables used in this study and they are significant. According to **Table 3** results were categorized as follows:

Banking concentration (Herfindal index) have shown a positive and significant impact on profitability indicators, so that for every one percent change in this variable profitability in the bank increase about 0/32.

Leverage of bank i have shown a positive and significant impact on profitability indicators, so that for every one percent change in this variable profitability in the bank increase about 0/42.

Exchange rate have shown a positive and significant impact on profitability indicators, so that for every one percent change in this variable profitability in the bank increase about 0/02.

Gross domestic product have shown a positive and significant impact on profitability indicators, so that for every one percent change in this variable profitability in the bank increase about 0/31.

Inflation have shown a negative and significant impact on profitability indicators, so that for every one percent change in this variable profitability in the bank decrease about 0/09.

Non-current liabilities to equity have shown a negative and significant impact on profitability indicators, so that for every one percent change in this variable profitability in the bank decrease about 0/22.

Current liabilities to total liabilities have shown a negative and significant impact on profitability indicators, so that for every one percent change in this variable profitability in the bank decrease about 0/21.

One of the assumptions of classical regression models, is residual variance consistency that considered from underlying assumptions of any relationship. To evaluate the variance consistency assumed in this study is used ARCH- LM test. Summary of tests for this study relationship presented in the following table:

H0: Variance of the error values are consistence.

H1: Variance of the error values are not consistence.

Table 1: Results of stationary of variable

Variable	Symbol	Levin Lin Chu statistics	Probability	Results
DEP	Leverage of bank i	-99.9205	0.0001	I(0)
GDP	gross domestic product	-2.0792	0.0188	I(0)

HHI	Banking concentration (Herfindal index)	-1.63235	0.0513	I(0)
IN	Inflation	-11.1967	0.0001	I(0)
ROE	profitability	-3.53264	0.0001	I(0)
RS	Exchange rate	-6.35136	0.0001	I(0)
S1	Non-current liabilities to equity	-21.3092	0.0001	I(0)
S2	Current liabilities to total liabilities	-2.98884	0.0014	I(0)

Table 2: Results of combined regression estimation for the years 2001 to 2011

Variables	coefficient	S.E.	tStatistics	Probability
c	-0.215	0.11023	-1.95426	0.081
Banking concentration (Herfindal index)	0.322	0.15146	2.12305	0.042
Leverage of bank i	0.421	0.21927	1.921569	0.073
ER	0.022	0.00512	4.20135	1E-04
GDP	0.315	0.16370	1.92135	0.05
Inflation	-0.096	0.02976	-3.21356	0.006
Non-current liabilities to equity	-0.222	0.06663	-3.32654	0.006
Current liabilities to total liabilities	-0.214	0.09647	-2.21356	0.051
D.W. Statistics: 1.78			0.82	R ²
F Statistics: 72.9			0.76	Adjusted R ²
Probability of F Statistics: 0.01				

Table 3: Test results for residual variance consistency

Null hypothesis and opposite	F statistics	Obs*R-squared	p-value	Test Results
H0: variance consistency	1.53	17.16	0.34	Accept the null hypothesis (Consistency of variance)
H1: variance un consistency				

In this test the null hypothesis indicated that there is consistency of variance and according to **Table 3**, the p-value obtained from the test ARCH- LM for estimated relationship is 0/34, that resulting number, is higher than 0/05 significantly levels, ($p\text{-value} \geq 0.05$), as a result, null hypothesis (no consistency of variance) is accepted and indicates that there is no hetero-scedasticity.

RESULTS

- The results show that bank concentration (Herfindal index) has a positive effect on bank profitability

variable. In other words, whatever market concentration will be more and market become more monopoly, will increase bank profits. Therefore, banks have an incentive to go towards monopoly.

- The results show that bank leverage has a positive effect on profitability banks at the level of confidence of 90%. This means that banks by create debt for yourself collects capital and the accumulation of capital through the creation of debt, increases the

profitability index. In fact, create liability for banks is as a source of financing and important for banks and can increase profitability index.

- The results suggest that macroeconomic variables, including gross domestic product at constant prices GDP and exchange rate ER have a positive effect on bank profitability and Inflation P has a negative effect on banks profitability.
- The results also indicate that financial structure variables, including non-current liabilities to equity, current liabilities to total liabilities had a negative effect on the banks profitability. This result suggests that the non-current liabilities to equity, current liabilities to total liabilities increased bank risk and will reduce the luck of shareholders to the bank stocks.

SUGGESTIONS

According to the results of the study the following suggestions are offered:

- According to results of research showing that the banking concentration (Herfindal index) has a positive effect on bank profitability variables and banks have an incentive to go to the monopoly, Therefore,

recommended monitoring the banking system and the pursuit of competitiveness of the banking system from the Central Bank.

- Due to the fact that there are various incentives for banks which increase their concentration in the banking market, it is suggested that central bank policy based on the increase in the number of banks and floating and competitive the interest rates, for the better the competitiveness of banks, arise to prevent monopoly and concentration in the banking system.
- Based on the results of the study that indicates bank leverage has a positive effect on bank profitability variable at confidence level of 90%, implies which create liability for banks as a source of financing is convenient and profitable. It is important that some bank managers, turning to the system financed through debt, it should be noticed that increasing the proportion of debt can be characterized by the accumulation of capital ultimately increase profitability indicators and finally, be a suitable funded system.
- Also according to results suggest that macroeconomic variables such as gross domestic product at the constant

prices GDP and exchange rate ER had a positive effect on the banks profitability, Therefore to increase banking profit of the banking system, recommended policies based on economic growth, exchange rate appreciation by the Central Bank.

- Also according to results suggest that from macroeconomic variables inflation P has a negative effect on banks profitability, therefore to increase banking profit of the banking system, recommended policies to control inflation from the Central Bank.
- The results also indicate that financial structure variables includes non-current liabilities to equity, current liabilities to total liabilities has a negative impact on profitability of banks, policies based on decrease non-current liabilities to equity, current liabilities to total liabilities recommended to reduce the risk of bank.

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