THE EFFECT OF FINANCIAL STRUCTURE ON THE RELATIONSHIP BETWEEN INCOME VARIATION AND EFFICIENCY OF BANKS ACCEPTED IN TEHRAN STOCK EXCHANGE

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Abstract. The purpose of this study was to investigate the effect of financial structure on the relationship between income variation and efficiency of banks accepted in Tehran Stock Exchange. This research is descriptive-correlative method and is of applied research type. The statistical population of the study is all banks accepted in the Tehran Stock Exchange during the years 2012 to 2016, in which 15 banks have been active throughout the entire period of the research in the stock market. The research data were extracted from financial statements of banks and analyzed using regression models using combination data. The research findings showed that there was a significant and inverse relationship between income variation and bank efficiency, while the capital structure of banks did not have a significant effect on this relationship.
Keywords: Financial Structure, Income Variation, Efficiency.

1. Introduction

Due to the collapse of the financial and financial sectors of the banks during the financial crisis in Asia, domestic bank partners were not able to engage in reinvestment in banks. As a result, Asian governments used foreign ownership limited to joint venture capital (Arbabian and Safari Gerayli, 2009). Given the recent wave of financial liberalization, financial institutions have been encouraged to expand new products to meet the demands of market expansion, increased competitiveness, and diversification. The research that has been done so far on banking activities in Asian countries is very limited, but they are important because banks are permeable sources of financing for businesses. Asian banks have different organizational arrangements, including financial markets, legal traditions, bankruptcy and corporate ownership structures (Barnea et al., 1980). Countries such as Australia, Bangladesh, Colombia, India, Malaysia, Maldives and Singapore are equally in line with their banking practices and governance. The desirable idea of all of them is to achieve diversification in banking with different financial systems (Delatorah and Schmuckler, 2006). Due to the collapse of the financial and financial sectors of the banks during the financial crisis in Asia, domestic bank partners were not able to engage in reinvestment in banks. As a result, Asian governments use foreign ownership limited to joint ventures(Mashayekh and Shahrokhi, 2006). Reforms and financial structure in the banks' sectors will lead to a lot of costs to encourage banks to internalize the costs of risky activities. The international banking law framework to create liquidity and capital of the highest quality should enable organizations to cope better with crises (Ling and Jav, 2006). Therefore, the financial structure will lead to greater competitiveness, and all this can lead to the help of diversified banks. Different definitions of financial structure are presented. The financial structure of a company is a combination of short-term debt, long-term debt and equity, through which the company's assets are funded. In other words, the composition of debts and equity is the financial structure of the company, which includes items on the left of the balance sheet (Yahyazadehfar et al., 2010). In the context of sustainable development of countries, paying attention to the growth of organizations is one of the policies of all managers. Banks are no exception to this. In modern banking, there are several components that affect the process of equipping the monetary resources of banks and financial institutions and, consequently, the performance of banks. It is important to identify and determine the extent of the impact and type of relationship between these components with the success of banks. Today, the situations of financial institutions and banks are not the same, and the components that affect the performance of banks may be different even for each branch of a banking group. On the other hand, the question about whether income diversity in activities can improve performance or risk remains unanswered in the research. According to past research, the relationship between efficiency and diversity in different countries varies according to the financial structure. In this regard, the main question of the present research is: "Is there a relationship between income variation and efficiency among banks and, if so, is the financial structure of financial institutions affecting this relationship?"

2. History of research

- Sheykh et al. (2014) examined the effect of business diversification on financial performance of Tehran Stock Exchange companies. In this study, we used parametric tests such as t-test, k-s test, Kolmogorov-Smirnov simple nonparametric test and Mann-Whitney test to compare independent and dependent variables. The collected data were

analyzed for three financial periods, the results of which show that there is no relationship between business diversification and financial ratios.

- Nourani et al. (2012) examined the relationship between causality between bank capital and profitability, with an emphasis on the regulatory aspect of capital structure. In this paper, the relationship between capital structure and capital returns for eighteen Iranian banks during the period from 2003 to 2009 has been investigated. The results of model estimation by regression models with panel data indicate that there is a positive relationship between financial leverage and return on investment. An analysis has also been developed to determine the relationship between asset efficiency and capital structure. Evidence supports the hypothesis that there is a positive relationship between asset efficiency and capital structure. Other research results also show a positive relationship between debt ratio and profitability criteria. It is worth noting that profitability is defined as a twofold asset return and capital efficiency ratio.

- Lee et al. (2014) examined the effect of the financial structure on the relationship between the income diversification and the performance of banks in Asia, and found that banks' performance improved with respect to income diversification. As a result, due to different financial systems, the relationship between income diversification, financial structure and performance of banks has multiple dimensions.

- Maliesx and Yip (2013) examined the relationship between income diversification and the performance of Islamic banks in Malaysia. The results of their research showed that the higher the income variation in the banks, the greater the volatility of profits and the negative impact on performance.

2.1 Research hypothesis

1 There is a significant relationship between the income variation and efficiency of the banks accepted in Tehran Stock Exchange.

2. Financial structure has a significant effect on the relationship between the income variation and efficiency of the banks accepted in the Tehran Stock Exchange.

3. Methodology

The methodology of this research is correlation between nature and content, which uses correlated data from the financial statements of accepted banks in Tehran Stock Exchange. This research will be carried out within the framework of deductive-inductive reasoning. The reason for using the correlation method is to discover the correlation relations between variables. Correlation research is one of a kind of descriptive research. On the other hand, the present study is post-event (semi-experimental), which is based on the analysis of past and historical information. This research is also a library and analytical-casual study. The research is considered as an applied and descriptive method.

Society and statistical sample

Since the realm of this research is from the beginning of 2012 to the end of 2016, the statistical society includes all banks active in the Tehran Stock Exchange during the period that the final sample size is determined after the following restrictions are imposed:

- The information needed to calculate the operational variables of the research is available to them.
- At least from 2012, they will be admitted to the Exchange and will be active until the end of the Bourse.
- The end of their fiscal year is March 29th.
- There are no more than three months of trading breaks.

According to the above indicators, the number of banks whose financial information was available during the full time period of the research (2012-2016) and were not withdrawn from the exchange, 15 banks including banks: Ansar, Mellat, Pasargad, Parsian, Saderat Iran, Tejarat, Karafarin, Eqtesad-e Novin, Khavarmianeh, Shahr bank, Tourism bank, Post Bank, Iran Zamin, Saman and Sina have been studied in this research.

Method of data collection

In this research, a library method has been used to collect data and information. Also, the theoretical foundations of the research have been collected from Persian and Latin specialized books and journals.

Variables

Bank Performance: In this research, the Return on Asset Rate (ROA) is the ratio of net income to total assets (Lee et al., 2014).

Banks' income variation: To measure this variable, use the following equation:

$$= 1 - ((\text{———})^2 + (\text{———})^2 + (\text{———})^2 + (\text{———})^2)$$

This index is between 0 and 0.75, which is closer to 0.75, indicating the high income of the bank. This factor is measured based on the following five sub-indicators:

TOR: The ratio of total operating income to bank assets;

INT: Income ratio before interest and tax deduction for bank assets;

COM: Net income attributable to deposit profits to bank assets;

TRAD: net income attributable to other business activities to bank assets;

OTH: The ratio of other earnings to bank assets (Lee et al., 2014).

Financial structure: In order to measure the financial structure of banks in this research, according to the definition of financial structure of Yahyazadehfar et al. (2010), the ratio of total liabilities to total assets of the company has been studied.

Research model

The theoretical model of the research is based on the research of Lee et al. (2014) with regard to the research hypothesis as follows.

$$_{,} = {}_0 + {}_1 \quad {}_{,-1} + {}_2 \quad {}_{,} + {}_3 \quad {}_{,} + {}_4 \quad {}_{,} + {}_5 \quad {}_{,} + {}_6 \quad {}_{,} + {}_7 \quad {}_{,} + {}_8 \quad {}_{,}$$
$$+ {}_9(\quad {}_{,} \times \quad {}_{,}) + {}_{,}$$

4. Research findings

Descriptive Statistics

A summary of the status of descriptive statistics relating to the variables of the model is presented in Table 1.

Table 1: Descriptive statistics of the research variables

Variable	Symbol	Average	Middle	Standard deviation	Skidding	Elongation
Asset returns	ROA	0.125	0.127	0.039	-0.140	3.172
Income variation	DIV	0.256	0.228	0.123	1.575	6.028
Operating income ratio	TOR	0.358	0.361	0.027	-0.605	2.931
Ratio of income before interest fraction	INT	0.228	0.222	0.059	0.102	2.397
Net income attributable to deposit profits	COM	0.188	0.190	0.034	0.051	2.419
The ratio of earnings	TRAD	0.259	0.257	0.021	0.388	2.450
The ratio of other earnings	OTH	0.071	0.071	0.009	0.314	3.487
Financial structure	LEV	0.660	0.643	0.076	0.275	2.708

According to the indicators presented in Table 1, the average return on assets of banks is equal to 0.125 and the income diversion ratio is an average of 0.256. The ratio of the banks' operating income is on average equal to 0.358, the ratio of pre-deductible profits and taxes to the average of 0.228, the net income attributable to the interest on deposits with an average of 0.188 and the ratio of income from business activities it also equaled 0.259. Also, the ratio of other bank revenues is 0.71 and their average financial structure is based on debt ratio of 0.66. Also, in the case of slip and elongation indices, it should also be noted that the proximity of the data slope to zero and the proximity of the elongation values to 3 are indicative of the normal distribution of the experimental data. With regard to the estimation of these indices for the research variables, it is seen that the values of small skewness and elongation values, except for the variable of income, are close to 3, and it can be concluded intuitively that the research data were normal. But with regard to income diversification, the results did not emphasize the normalization of the data of this variable.

Model diagnostic test results

Prior to estimating the regression model, the diagnostic tests were performed to determine the significance of the cross-sectional effects of the model. Table 2 shows the findings for these tests.

Table 2: The results of diagnostic tests in the diagnosis of cross-sectional effects of the model

Test	statistic	df	prob
Chow Test	1.955608	(40,36)	0.0197
Hausman Test	-	-	-

Considering the significant level of Chow test to determine the significance of cross-sectional effects in the regression model of the research, which is less than the type error of 0.05, the assumption zero of this test is based on the lack of significance of cross-sectional effects in the research model and it can be accepted that the regression model of this section should be estimated in the form of compilation data. Since the individual and group effects were not significant in the model, Hausman's test was not necessary.

5. Discussion and conclusion

In this section, the model for model estimation is firstly determined and then the model of the research is estimated and the results are interpreted. As a result of fitting the model, the results of the research hypotheses are presented.

The first hypothesis test results: Considering the significance level for measuring the effect of income diversification (DIV) on the return on assets of the bank and its comparison with the type error of 0.05, it can be seen that the income variation of the banks has had a reciprocal and significant effect on the bank's return on assets. Therefore, there is a significant relationship between the income diversity and the performance of accepted banks in Tehran Stock Exchange and the first hypothesis of the research is confirmed at the error level of 0.05.

The second hypothesis test results: The significance level of the interactive effect of income diversification and capital structure (LEV*DIV) on bank returns has not been meaningful. Therefore, it can be concluded that the capital structure has not affected the relationship between income diversification and the performance of banks. Therefore, the second hypothesis of the research is rejected at the error level of 0.05.

Table 3: Results of the estimation of the regression model of the research with the dependent variable of return on assets

Independent variable	Beta	std.	t-stat	prob.	VIF
ROA(-1)	-0.169	0.088	-1.932	0.057	1.135084
DIV	-0.024	0.003	-7.270	0.000	6.356281
TOR	0.211	0.364	0.581	0.563	9.244817
INT	0.199	0.057	3.515	0.001	1.129688
COM	0.308	0.105	2.947	0.004	1.165247
TRAD	0.449	0.159	2.828	0.006	1.087017
OTH	0.319	0.335	0.951	0.345	1.018911
LEV	-0.090	0.114	-0.786	0.434	8.779702
LEV*DIV	-0.059	0.048	-1.320	0.060	7.102106
C	-0.054	0.107	-0.507	0.614	-
Adjusted R-squared	0.449433				
F-statistic	8.981686				
Prob(F-statistic)	0.000				

The results of goodness of fit: Based on goodness indicators, the fit of the model shows that the significance level of the F-analysis of variance analysis is less than the type-1 error of 0.05 and indicates the significance of the regression model. Also, the correction coefficient of the model also shows that 44.94% of the changes in the banks' asset returns are explained by the independent variables of this model.

Suggestions

✓ It is suggested that the Bank's investment and operating policies be tailored to centralize activities in specific areas and the small share of other activities in other sources of income.
✓ It is suggested that the structure of the bank's capital and its debt ratios should be considered by the managers in order to adjust the investment and operational plans of the bank.

Whatever the research, though comprehensively, in terms of some material and material constraints, both temporally and temporally, cannot cover all aspects of the subject and deal with it in various ways. This research has not been an exception to this, so for some research in line with this topic as well as its development, the following suggestions are presented for further research and future researchers:

✓ It is proposed to study the role of macroeconomic indicators in the relationship between income diversification and bank performance.

✓ It is suggested that the impact of corporate governance mechanisms on the relationship between income diversification and bank performance should be studied.

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