European Journal of Business and Innovation Research
Vol.3, No.5, pp.1-12, December 2015
Published by European Centre for Research Training and Development UK (www.eajournals.org)

DO PROFITABILITY AND SIZE AFFECT FINANCIAL LEVERAGE OF JORDANIAN INDUSTRIAL LISTED COMPANIES?

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ABSTRACT: *The main purpose of this study is to investigate the effect of Profitability, and firm's Size as independent variables on leverage as proxy of Debt to Total Assets ratio (leverage) as dependent variable. A sample of 52 Jordanian Industrial listed companies on Amman Stock Exchange (ASE) for the year ended Dec.31, 2013 was selected. The results of the research show that there is a significant effect of profitability in for of ROA , and size on leverage of industrial companies , on the contrary , ROE has not. Therefore, industrial companies may enhance the profitability of their firms by maximizing the profit, and increasing financial assets compared with total assets. So, the study concludes some recommendations that are beneficial to the stakeholders.*

KEYWORDS: Debt ratio, Leverage, Industrial Companies, Jordan.

INTRODUCTION

Various stakeholders benefit from financial data ; Amman Stock Exchange (ASE), investment firms, bank loan officers and knowledgeable business owners all use financial ratio analyses to learn more about a company's current financial health as well as its potential .In financial affairs of companies, profitability is a very important factor in the business sectors working in the developed or developing countries. Financial leverage and profitability are both the two pillars that companies might give them more attention. For this case, optimum level of debt guarantees a firm to meet their short term requirements and the proper management of flow can be promised by a profitable business. The ability of the company to earn profit can be referred to as the profitability of that company. Profit is determined by deducting expenses from the revenue incurred in generating that revenue. The amount of profit can be a good measure of the performance of a company, so we can use profitability as a measure of the financial performance of a company, as well as, profitability is the promise for a company to remain a going concern in the world of business. Effective financial leverage is very important due to its significant effect on profitability of company and thus the existence of company in the market. However, management can face liquidity problems due to underinvestment in working capital due to the scarcity of liquidity. Big firms have more competitive power when compared to small firms in fields requiring competition. Since they have a bigger market share, big firms have the opportunity to profit more. In addition to this, big firms are able to seize the opportunity to work in the fields which require high capital rates since they have larger resources, and this situation provides them the opportunity to work in more profitable fields with little competition (Bayyurt, 2007). When the studies concerning the relation between firm size and profitability are reviewed, mixed results have been found . Saliha and Abdessatar [2011] have found a positive relation between firm size and profitability. On the contrary , Banchuenvijit [2012] has found a negative relation between firm size and profitability. Other than above studies, Whittington [1980] has found that firm size does not have an effect on

profitability. These results cause unclear understanding of the affect of firm size on profitability and also an increase in the interest toward this subject. The study is structured into five sections; Section one is introduction, section two reviews related literature on meaning and other related components of earning management and audit quality , section three explore methodology, section four shows results and discussion of data, and section five dwell on conclusion and recommendations.

RELATED LITERATURE REVIEW

Many researchers have studied leverage, firm size and profitability from different views and in different environments. The following ones were very interesting and useful for our research:

Afza and Hussain [2011] describe that debt is considered as a way to highlight investors' trust in the firm. If a firm issues debt, it provides a signal to the market that the firm is expecting positive cash flows in the future. Thus, the higher level of debt shows the confidence of the managers in future cash flows but another impact of the signaling factor is the problem of under pricing of equity. If a firm issues equity instead of debt for financing its new projects, investors will interpret the signal negatively. Biger *et al.* [2008] collected data from enterprise's census 2002-2003 conducted by the General Statistical Office, Vietnam. Through correlation analysis, they found that financial leverage in Vietnamese firms increases with firm size, and decreases with profitability and with non-debt tax shield. Financial leverage also correlated with industry characteristics. They also found that i) firm's leverage increase with fixed assets and decrease with growth opportunities and ii) corporate income tax has the negative albeit small effect on firm's financial leverage. Abor [2005] collected data from listed firms in Ghana and found a positive relationship between profitability and leverage. Nguyen and Neelakantan [2006] used small and medium Vietnamese firms to collect data and found that leverage is positively related to firm growth and firm size, and negatively related to tangibility.

I use ROA in this research because all the companies of the sample operate in the same industry. Thus by analyzing the different ROA of the firms I will be able to verify if the profitability is in some way affect the liquidity levels. The ROE would not provide a good comparison because the small and the negative equity levels of some companies would generate distorted indicators of profitability. The ROA is calculated by dividing the net income of each period over the total assets of the companies. Since all related numbers were compiled in form of ratios as they were presented in appendix A. Profitability can be defined as the final measure of economic success achieved by a company in relation to the capital invested in it. This economic success is determined by the magnitude of the net profit accounting Pimentel et al, [2005]. Solvency and liquidity are two concepts that are closely related and reflect upon the actions of company's working capital policy. A low liquidity level may lead to increasing financial costs and result in the incapacity to pay its obligations. Maness & Zietlow [2005] , Thus the Optimal level for liquidity would be obtained by a trade-offs between the low return of current assets and the benefit of minimizing the need for external finance Kim, Mauer, and Sherman, [1998]. Eljelly [2004] examined the relation between profitability and liquidity measured by current ratio and cash gap (cash conversion cycle) on a sample of joint stock companies in Saudi Arabia using correlation and regression analysis. They found a negative relationship between profitability and liquidity indicators, and it was found that CCC had a bigger impact over profitability then Current ratio. Also it was observed that there was great variation among industries with respect to the significant measure of liquidity. Raheman and Nasr [2007] studied the relationship

between Working Capital Management and profitability for 94 Pakistanian companies listed on Karachi Stock Exchange. Between their findings, it was observed a significant negative relationship between companies' liquidity and profitability. According to Raheman and Nasr [2007] Leverage means funds take from outsider parties likes banks, capital market, money market and other financial institutions. If a business is leveraged, we can say that firm takes loans to purchase assets made the research of ninety-four firms listed in KSE and take the results on WCM and profitability. He judged that there is the indirect correlation among profitability and WCM. In addition, they founded that leverage and liquidity have indirect correlation with WCM but size of the firm has direct relationship with profitability. The purpose of this study is to find the factors that influence financial leverage of Jordanian firms. Financial leverage, in the context of this study, is defined as the degree to which a firm utilizes borrowed money. Capital structure choices are the tough choices because higher leverage can lead to risk of bankruptcy. However, this does not mean that financial leverage is always bad. Financial leverage can increase shareholders' return on investment and often there is tax advantages associated with borrowing. Therefore, financial leverage decision is important and a firm can use a specific mix of debt and equity to finance its operations Abor [2005]. Afza and Hussain [2011] describe that debt is considered as a way to highlight investors' trust in the firm. If a firm issues debt, it provides a signal to the market that the firm is expecting positive cash flows in the future. Thus, the higher level of debt shows the confidence of the managers in future cash flows but another impact of the signaling factor is the problem of underpricing of equity. If a firm issues equity instead of debt for financing its new projects, investors will interpret the signal negatively. Afza and Hussain [2011] used pooled data regression model on the sample of 26 firms of Automobile sector of Pakistan and found that capital structure is negatively correlated with profitability and positively correlated with taxes. Gill *et al.* [2009] collected data from American firms and found that leverage is negatively correlated with profitability and collateralized assets. Al-Qaisi [2010] collected data from United Arab Emirates (UAE) and found a negative relationship between profitability and leverage, and a positive relationship between firm size and leverage. Hirigoyen [1985] Assure that the profitability and solvency are necessary condition for the healthy existence of the company and both are conditioned by the strategy adopted in the medium and long term. On his work Hirigoyen was based on three premises, namely:

(1) The profitability ensures the development of the company. However the obsessive quest for profitability may undermine the solvency of the company;

(2) The solvency reduces the total risk of the company, showing that the net working capital can reduce the risk of bankruptcy. However, a very large safety margin restricts profitability;

(3) The profitability and solvency are conditioned by the company's strategy. The company's growth brings with it a progressive increase in financial needs for the operational cycle, leading to a change in the solvency capacity. In summary, I observe the previous literature considers that some of studies showed a positive sign and others presented a negative relationship between leverage and profitability, and this relationship has been tested and confirmed in several studies in different markets. The current study attempts to enhance the knowledge of companies by identifying the ways that industrial companies manage their performance, sales, enlarge their sizes in order to decrease debt. To analyze this problem statement , I have developed objectives of my research, which will hopefully contribute towards a very important aspect of financial management. It is almost

untouched in Jordan or very little research has been done in this area. The main objectives of the current study:

A- To establish a relationship between Profitability (ROA, ROE) and Leverage over a period of one year for the sample of Jordanian Industrial companies listed.

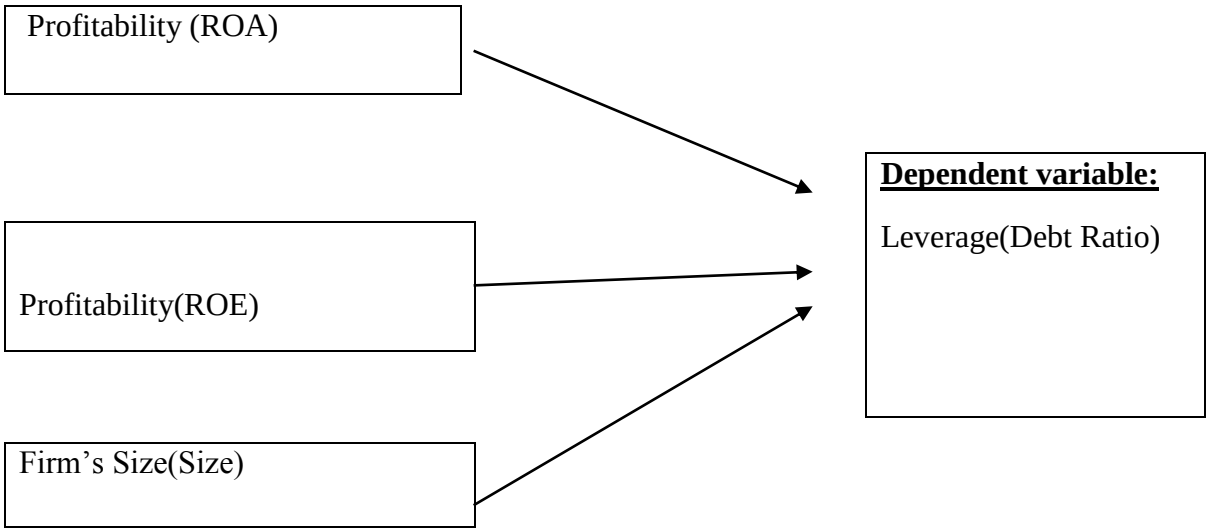
B- To establish a relationship between size and Leverage over a period of one year for the sample of Jordanian Industrial companies listed.

METHODOLOGY

To remain consistent with previous studies, I used cross sectional yearly data and measured the variables as follows:

Variables of the Study:

Independent variables:



Data Collection

Data was built from a selection of approximately 52 financial reports from publicly industrial companies on Dec.31, 2013; all variables were calculated using book value as showed in appendix (A). To examine the data, the following analysis was done. The descriptive statistics of the data is presented in table (1):

Table 2: Descriptive Statistics of Independent, and Dependent Variables

	Leverage	LNASSETS	ROA	ROE
Mean	37.473	16.722	2.885	2.800
Median	35.455	16.529	3.735	2.890
Maximum	107.110	20.829	15.720	89.070
Minimum	0.4900	14.228	-12.410	-78.940
Std. Dev.	22.929	1.397	6.124	19.157
Jarque -Bera	3.313	6.875	6.145	327.544
Probability	0.190	0.032	0.046	0.000
Observations	52	52	52	52

Descriptive statistics for 52 industrial firms. Standard deviation of different variables with the minimum and maximum values. Mean and median are presented in table 2. The total of observations sums for each variable is 52, for a period of one year. Total ROA have a mean of 2.885, while the median is 3.735. It described that firms have average Return on asset is 280.0 percent. Its standard deviation is 19.157, which show that there is high deviation in Return on asset margin among sampled firms in our analysis. Leverage has a mean of 37.473 and a median of 35.455 , while the maximum and minimum values for ROE are 2.800 and 2.890 respectively , other means and medians for the rest of variables can be observed from the table above .

Hypotheses Testing

Since the objective of this study is to examine the impact of Profitability, and Size on financial Leverage of Jordanian Industrial Firms Listed, the study makes a set of testable hypothesis in form of [H0] versus [H1].

Hypothesis 1:

H01*: There is no significant relationship between Leverage and ROA of Jordanian industrial companies listed in ASE.*

H11*: There is significant relationship between Leverage and ROA of Jordanian industrial companies listed in ASE .*

Hypothesis 2:

H02: *There is no significant relationship between Leverage ratio and ROE*

H12*: There is a significant relationship between Leverage ratio and ROE*

Hypothesis 3:

H03: *There is no significant relationship between size of Jordanian industrial companies and Leverage ratio.*

H13: *There is a significant relationship between size of Jordanian industrial companies and Leverage ratio.*

Model Specifications

Our study uses ordinary least squares, and Pearson correlation matrix. The general form of our model is as follows:

LEV it = β0 + (β_1) (ROA ratio it) + (β_2) (ROE ratio it) + (β_3) (Size it) + μ it , Where b_0 = constant of the regression equation , β_1, β_2, $\beta 3$ = Coefficient of ROA, ROE, and Size respectively.

Table 2 Proxy variables definition, predicted relationship and Abbreviation

Proxy Variables	Definitions	Predicted
Financial Leverage	Total Liabilities Divided by Total Assets	+/-
Firm Size (Ln Assets	Natural logarithm of firm total assets	+/-
Profitability (ROA)	Earnings before interest, tax, and depreciation divided by total assets	+/-
Profitability (ROE)	Earnings before interest, tax, and depreciation divided by total Equity	+/-

Data Analysis and Discussion

First: in addition to descriptive statistics, I applied correlation model, specifically Pearson correlation to measure the degree of association between different variables under consideration. Second: I used Regression analysis to estimate the causal relationships between leverage variable as dependent one, and other chosen independent variables. For this purpose of analysis the E - views software version (7) was used to analyze financial data. In order to find out this relationship between different variables, first Pearson Correlation Coefficients are calculated. As the correlation shows the degree of relationship between dependent and independent Variables, It shows how much strong or weak the relationships between two variables are. Hence, the above data shows

There is a negative weak relationship between return on assets (independent variable), and leverage (dependent variable) which is -0.220. Moreover, the table (2) below shows that there is a positive relationship moderate or weak with ROE , size and dependent variable (leverage) which are 0.032 , and 0.110 respectively . However, the degrees of relationship vary among these variables. The relationship between ROA and leverage is negative, this relationship is moderate or weak with SIZE (0.110), and ROE (0.032), but ROA has inverse relationship with leverage, this relationship is not significant; if ROA ratio increased, the leverage decreased and if leverage decreased, the ROA is respectively increased.

Table 3: Pearson Bivariate Correlation Analysis

		ROA	ROE	LEV	Ln .assets
ROA	Correlation	1			
	Sig. (2-tailed)				
ROE	Correlation	.570**	1		
	Sig. (2-tailed)	(.000)			
LEV	Correlation	-.220	.032	1	
	Sig. (2-tailed)	(.117)	(.820)		
Ln. assets	Correlation	.123	.074	.110	1
	Sig. (2-tailed)	(.385)	(.604)	(.437)	
	N	52	52	52	52

**. Correlation is significant at the 0.01 level (2-tailed).

Regression Analysis

A test for multicollinearity was performed showed that regression model has the variance inflation factor (VIF) < 5, this is a tool to verify whether one independent variable has a high correlation with the remaining independent variables ranging between 1.015 and 1.496, which is less than 5 (Berenson & Others 2002), thereby demonstrating that no Multicollinearity exists between independent variables in the regression model, and tolerance coefficients is not very close to 0, model is considered to be free from multicollinearity problem (Gujarati, 1995). And Durbin-Watson statistic (1.253480) has been used in the model to test if there is autocorrelation of the first degree. Durbin-Watson statistics usually show no autocorrelation (Kalaycı, 2009: 267). The model has pretty good VIF and tolerance values. There are no multicollinearity problems and autocorrelation in the model and this shows soundness and reliability of the model.

I used the Debt ratio as a proxy for leverage; it shows a significant negative relationship with the independent variable (profitability) , which means that, when ROA of the firm increases, it will adversely affect its leverage, the results of this regression indicate that the coefficient of profitability (ROA) ratio is negative (-1.386) and is highly significant (0.031) at ά. = 5%. It implies that the increase or decrease in accounts of leverage will affect profitability of the firm, which confirms our first alternative hypothesis that says "there *is a significant relationship between profitability and Leverage ratio of Jordanian industrial companies listed in ASE" , Figure 1 plots the Average* , but this relationship has an proportionate manner. In case of ROE, it has no significant relation with profitability. It reflects that if this ratio increases the leverage may decrease or not, this ratio has a positive coefficient with profitability, the coefficient is 0.279 which confirms our second null hypothesis that "There *is no significant relationship between ROE and leverage ", Figure 2 plots the average.* Similarly Ln assets proxy for size of a company shows a significant positive relationship with profitability which means that bigger growth in assets have more leverage compared to firms of smaller growth. Which confirms our third alternative hypothesis*: There is no significant relationship between size of Jordanian*

industrial companies and Leverage ratio. All the variance inflation factor (VIF) coefficients are less than 2.

Table 4: Regression Estimates on Factors Influencing ROA

Variable	Coefficient	Std. Error	t-Statistic	Prob.	VIF
C	2.647	37.758	0.070	0.944	-
Ln. assets	2.275	2.259	1.007	0.319	1.015
ROA	-1.386	0.626	-2.216	0.031	1.496
ROE	0.279	0.199	1.403	0.167	1.015
R-squared	0.104	Durbin-Watson stat		2.173	-
F-statistic	1.865	Prob.(F-statistic)		0.148	-

According to Table 04, the results of regression model may be shown mathematically as below:

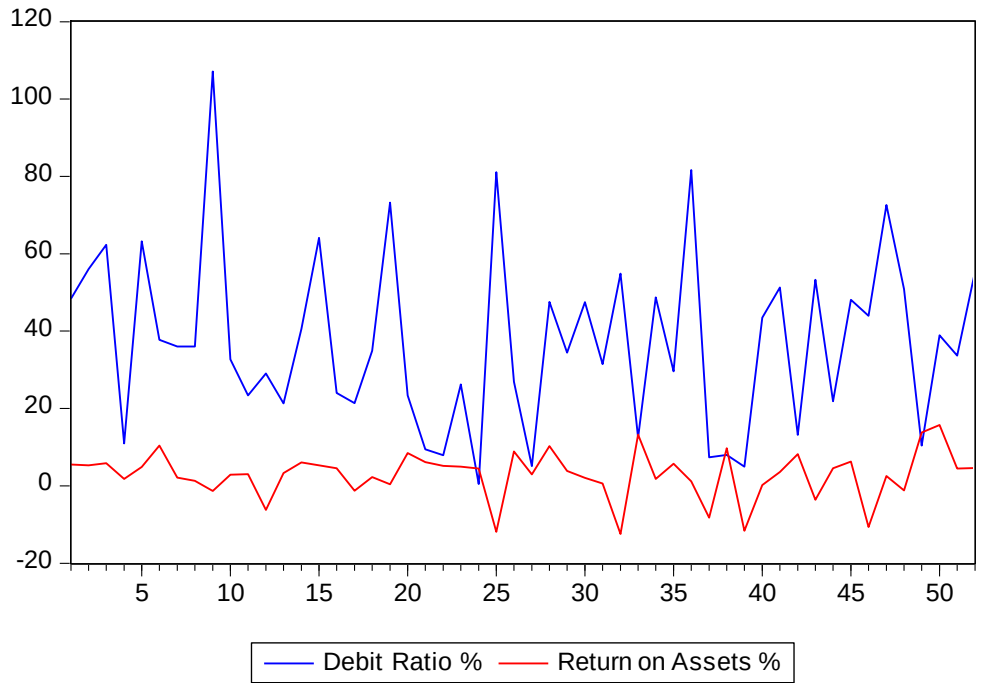
ROA it= (2.647**) – (**2.275**) (Size ratio) + (**-1.386***) ROA ratio + (***0.279***)(ROE)+* **µit**

The adjusted $R^{(2)}$, also called the coefficient of multiple determinations, is the percent of the variance in the dependent explained uniquely or jointly by the independent variables and is 10.4%. The C is the constant, where the regression line intercepts the y axis, representing the amount the dependent y will be when all the independent variables are 0. Here C is 2.647; the probability of the coefficient is not significant. The F statistic is used to test the significance of R. Overall; the model is significant as F-statistics is 1.865 with Prob. (F-statistic =0.148. The results of regression model suggest that managers can decrease the debt by increasing the ROA, and/ or decreases the ROE.

CONCLUSIONS, IMPLICATIONS AND FUTURE RESEARCH

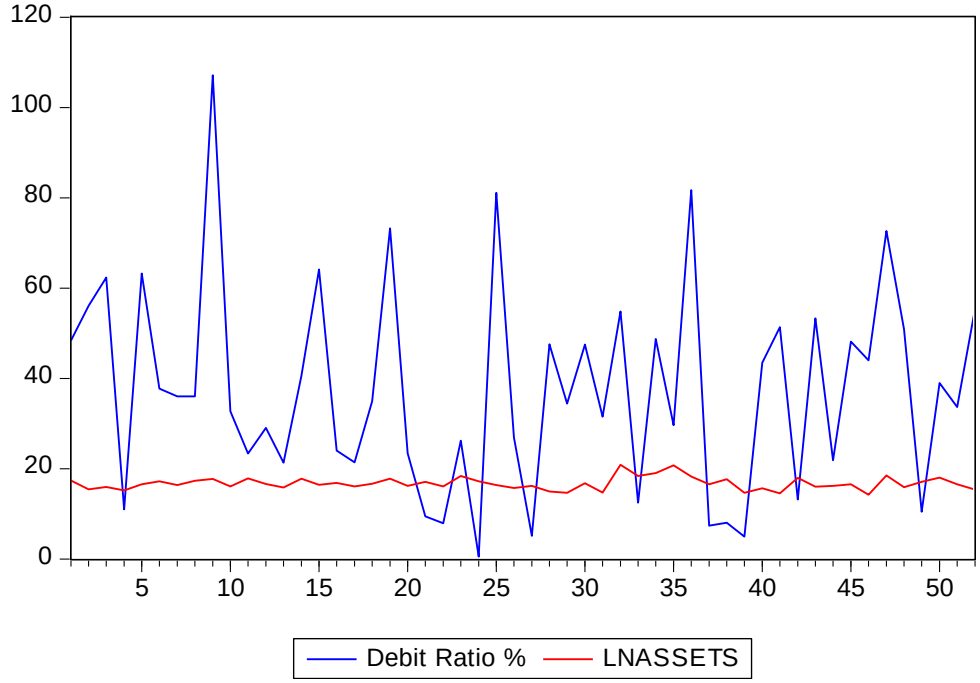
The regression analysis results show that leverage (dependent variable) is positively related to firm size but is not significant. This finding is similar to the findings of Biger *et al.* [2008]. The leverage also negatively related to ROA of the Jordanian industrial companies. This finding is similar to the findings of Afza and Hussain, [2011], and Al-Qaisi [2010]. The finding of this study is contradicted to the findings of Abor [2005]. Moreover, Profitability (ROE) is positively related to leverage of the Jordanian industrial companies .The More generally, this paper marks a first attempt to empirically address the relationship between Financial leverage in form of (debt / total assets) ratio as dependent variable , ROE, ROE , and size. In interpreting the estimation results, it should be kept in mind that profitability (ROE) debt ratio has positive effect on, in addition to size, both two independent variables have no any significance, while other variable (ROA) has negative effect, this effect is significant. The current paper serves as an initial step, highlighting an important, if elementary, relationship, relevant to the regulation of companies. So it is concluded that profitability affect the leverage. There is only one limitation that the data is only of one year due to availability of data constraint and this study is limited to a sample of Jordanian industrial companies. Therefore, findings of this study could only be generalized to industrial firms similar to those that were included in this research. In addition, the sample size is small. Future research should investigate generalization of the findings beyond the Jordanian industrial companies and service sector. There is a need for further research in this area of describing the variables effecting leverage because there might

be some more variable effecting the leverage of the business .To examine the relation between past ROA and financial leverage, Figure 1 plots the average.



To examine the relation between past profitability ROE and financial leverage, Figure 2 plots the average:

To examine the relation between size and financial leverage, Figure 3 plots the average



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APPENDIX A

Selected Sample Data for the Year Ended Dec.31, 2013

Code	ROA	ROE	Lev.	Size.	Code	ROA	ROE	Lev.	Size.
1	5.52	10.52	48.35	17.370	28	3.87	5.9	34.41	14.622
2	5.31	1.61	56.06	15.405	29	2.04	2.65	47.48	16.747
3	5.87	9.63	62.32	15.920	30	0.63	0.2	31.48	14.711
5	1.78	1.97	10.97	15.176	31	-12.41	-35.89	54.84	20.830
6	4.88	-0.83	63.24	16.531	32	13.22	14.74	12.46	12.43
7	10.42	13.78	37.73	17.203	33	1.8	0.51	48.71	19.051
8	2.14	1.18	35.99	16.360	34	5.71	7.07	29.61	20.736
9	1.29	-1.02	36.03	17.333	35	1.19	-3.82	81.66	18.238
10	-1.34	89.07	107.11	17.744	36	-8.22	-8.87	7.39	16.528
11	2.87	1.74	32.69	16.060	37	9.75	10.21	8.02	17.658
12	3.03	2.56	23.37	17.815	38	-11.59	-12.2	4.94	14.646
13	-6.24	-9.32	29.05	16.591	39	0.22	0.32	43.48	15.655
14	3.32	2.64	21.31	15.823	40	3.6	0.43	51.31	14.521
15	6.04	7.43	40.57	17.779	41	8.23	9.48	13.19	17.929
16	5.33	11.57	64.14	16.442	42	-3.6	-9.58	53.31	16.028
17	4.53	5.64	23.98	16.827	43	4.51	5.77	21.85	16.195
18	-1.25	-1.79	21.38	16.046	44	6.25	9.86	48.12	16.553
19	2.26	1.13	34.92	16.629	45	-10.64	-21.79	43.98	14.228
20	0.37	1.09	73.21	17.757	46	2.52	-6.28	72.61	18.475
21	8.46	10.94	23.41	16.198	47	-1.19	-5.49	50.85	15.895
22	6.14	6.77	9.43	17.043	48	13.79	15.15	10.44	17.060
23	5.17	5.61	7.89	16.087	49	15.72	22.41	38.95	18.019
24	4.94	6.69	26.2	18.374	50	4.46	5.2	33.65	16.511
25	4.45	4.47	0.49	17.219	51	2.97	3.13	5.1	14.234
26	-11.87	-78.94	81.1	16.380	52	10.27	16.35	47.53	14.969
27	8.88	8.02	26.92	15.718					