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Studying the Relationship between Financial Performance Evaluation Criteria and Q-Tobin Technique of Companies Accepted in Tehran Stock Exchange

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ABSTRACT

By industrial revolution and after development of corporations that leads to separation of management from ownership, need for financial performance measure increased. Owners want to monitor managers' performance and managers like to report their works to owners**.** The following research tries to assess of relation between Tobin's q technique and some financial performance measures of the accepted companies in Tehran Stock Exchange (TSE). The research intends show the reliability for this index in measuring the financial performance measures and helping investors determining the appropriate opportunities for investment. The research method is of correlative type and the study statics community for the research is all companies accepted in TSE Which 70 companies as sample.
Results show that there is a significant relation between Tobin's q technique and financial performance. The relation between Tobin's q technique and "operation leverage", "return of equity", "cash earnings per share", "sales returns" (only in companies with positive operation leverage), "working capital", "debts to assets ratio", "debts to equity ratio" and "market share of firm" is positive in observed companies with both negative and positive operation leverage. Hence, Tobin's q could be used as an index in measuring the financial performance of company and investors could use this index to determine the appropriate opportunities for investment.
KEYWORDS: Tobin's q technique, financial performance, returns of equity, financial performance measures, operating leverage.

INTRODUCTION

Existence of conflict of interests leads to owners' (stockholders) concern to the extent that they take action to review and evaluate managers' performance to assure of optimized allocation of their resources. On the other hand, besides maximizing their own interests, managers have always sought reassuring the owners of the matter that their financial decisions are for their interests.
So, evaluating financial performance is of considerable significance. A short description of some researchers' views regarding the limitations of earnings-based traditional criteria is classified as follow:

1. Extensive manipulation capability cause of continuous use of various accounting methods and different applications of standards;
2. Relying on restrictive principles and methods such as conservativeness principle and promissory method;
3. Lack of a provident view and not paying attention to factors like technology advances and new production technology, new products innovation, time value of money;
4. Ignoring value-creating factors including intellectual capitals and intangible assets;
5. Ignoring the implementation of financing costs through equity [13].

Recently, Q-Tobin ratio has been addressed as an important technique for evaluating managers' performance [13]. The technique is also used in industrial companies for the following goals:

A. Reviewing juncture differences in investments and diversity of decisions;
B. Reviewing the relationship between ownership rights and value of company;
C. Reviewing the relationship between management performance and suggested earnings and investment opportunities;
D. Reviewing financing, dividing earnings, and money payment policies.

This study is mainly aimed at examining the application of Q-Tobin ratio as a criterion for evaluating financial performance of companies accepted in Tehran stock exchange and the relationship between Q-

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Tobin ratio and other performance evaluation criteria (e.g. operational lever, return on equity, earnings per share, return on sales, working capital, liabilities-to-assets ratio, liabilities-to-equity ratio, and market share of the company) so that we can show to what extent investors and also other users of financial statements and companies' appraisers can rely on companies' Q-Tobin information in their financial decision makings.

1 THEORETICAL FRAMEWORK AND PREVIOUS STUDIES

Tobin (1969) used price-to-book value ratio known as "simple Q-Tobin" to evaluate investment projects profitability. He aimed at making a cause-and-effect relationship between Q index and the amount of the investment done. He believed that if Q index calculated for company is >1, there will be high motivation for investment, namely, a high Q ratio is usually a sign of the company's investment and growth opportunities worth; if Q ratio<1, the investment will be stopped.

This measurement criterion of companies' performance was widely used and applied in many studies. As time passed by, criticisms were posed against the index, and researchers [1, 4] widely criticized and reviewed it. Among the criticisms was that book value is used in denominator of the fraction, and that the values (historical values) have a conspicuous difference from current value of investment. Also, intangible assets value is not included in the denominator. As a result, companies with major investment in intangible assets will have an unimaginably high Q.

James Tobin (1977, 1978) made some modifications in his previous model and presented a new pattern of simple Q-Tobin index. In the pattern, Q is gained via dividing company's market value by company's assets replacement value. Then, other researchers [5, 4] presented other patterns of the index by making some modifications in the Q index.

Results of studies by Lindenberg and Ross (1981) on 246 American companies from 1960 to 1977 showed a high correlation between Lindenberg-Ross Q and other Q ratios.

In a study as "another Q-Tobin approach", Steven Bi Perfect and Kenneth Wiles (1997) discussed and examined Q as a measurement criterion for companies' performance and reviewed various versions of Q. Results of the study showed that median, mean, and standard deviation of Q conventional versions estimations are equal to some extent. Their estimation was resulted from 558 observations of standard Q-Tobin, Lindenberg and Ross Q, simple Q, and modified Q gained from 62 companies. It must be noted that the companies were randomly selected.

In a study as "Is Q-Tobin a performance measurement criterion?", H. Philip and W. Mitch (2010) put that as company's value enhances, company's performance is also shown higher, but we cannot say that Q-Tobin increases as company's performance enhances.

In their study as "economy and social performance methods of company", David et al (2010) studied the effect of social pressure on companies' financial and social performance. To measure companies' social performance (CSP), they have applied Q-Tobin ratio and result of the study shows that there is direct relationship between social pressure and social performance, and reverse relationship between social pressure and financial performance of the companies.

2 METHODOLOGY

The study examines the relationship between Q-Tobin technique and financial performance of companies accepted in Tehran stock exchange and is a theoretical research. Here, it is attempted to test the relationships of those financial performance criteria not compared to Q-Tobin in previous studies. Research method, here, is correlation.

2.1 Research Hypotheses

Gaining the relationship between Q-Tobin and financial performance criteria, we can show to what extent individuals can use the criterion in determining their own investment opportunities. To achieve the objectives of the study, following hypotheses are posed:

Main Hypothesis: applying Q-Tobin technique as a criterion for measuring performance of the companies accepted in Tehran stock exchange is possible.

To achieve the answer of the hypothesis, financial performance variables are used and then the first hypothesis conclusion is addressed. So, statistical population of the companies was divided into two groups with positive and negative operational lever to determine the significance direction of operational lever effect - one of the financial performance variables - on Q-Tobin, that is, positive operational lever leads to Q-Tobin increase and negative operational lever leads to Q-Tobin decrease. Accordingly, other

hypotheses are mentioned based on Wolfe's (2003) article and were tested for both groups of companies with positive and negative operational lever.

First Secondary Hypothesis: there is a meaningful relationship between "operational lever" and "Q-Tobin index".

Second Secondary Hypothesis: there is a meaningful relationship between "return on equity" and "Q-Tobin index".

Third Secondary Hypothesis: there is a meaningful relationship between "earnings per share" and "Q-Tobin index".

Forth Secondary Hypothesis: there is a meaningful relationship between "return on sales" and "Q-Tobin index".

Fifth Secondary Hypothesis: there is a meaningful relationship between "working capital" and "Q-Tobin index".

Sixth Secondary Hypothesis: there is a meaningful relationship between "liabilities-to-assets ratio" and "Q-Tobin index".

Seventh Secondary Hypothesis: there is a meaningful relationship between "liabilities-to-equity ratio" and "Q-Tobin index".

Eighth Secondary Hypothesis: there is a meaningful relationship between "company's market share" and "Q-Tobin index".

2.2 Statistical Population and Sampling Method

Here, statistical population was considered as all companies accepted in Tehran stock exchange from 2004 to 2008.

Finally, 70 companies are chosen based on the following conditions:

1. The company shall be accepted before 2002.
2. End of fiscal year of the company shall be March 19 in each year.
3. The company shall not have any changes in fiscal year in the period under study.
4. The company shall not have exchange stoppage in the period under study.
5. Desirable data of the company shall be available.

2.3 Variables of the Study

2.3.1 Independent Variables

In this study, operational lever, equity, earnings per share, return on sales, working capital, liabilities-to-assets ratio, liabilities-to-equity ratio and market share of the company are considered as independent variables.

There are two main reasons for selection of these ratios as independent variables:

a) Some of the ratios have direct relationship with company's strategy and performance. For instance, all researches addressing companies' performance have chosen "return on equity" as an important measurement criterion and financial performance, and also %60 have used "company's market value" [13].

b) Financial ratios have always been used as one of the major tools in the analysis of financial conditions and the state of a company's financial performance.

In this study, financial ratios are calculated as follow:

1- Operational Lever: plays an important role in calculation of earnings anticipation before interest and tax, and company's risk equal earnings changes divided by sales changes.

In this study, companies are tested based on positivity or negativity of the operational lever, that is, they are separately tested in years with negative operational lever and years with positive operational lever.

3.3.2. Dependent Variable: dependent variable (Q-Tobin) is simple and calculated from the following formula [4].

$$Q_s = \frac{VOCS + EMVOPS + BVLTL + BVCL}{BVTA}$$

Where:

VOCS= market value of common stock at the end of year

EMVOPS= market value of premium stock at the end of year

BVCL= book value of current liabilities at the end of year

BVLT= book value of long term liabilities at the end of year

BVTA= book value of total assets at the end of year

2.4 Data Collection Procedure

To collect data and information in this study, two library and field methods are applied. In library part, theoretical principles of the study are collected from Persian and Latin books and technical journals, and data required for hypotheses testing is collected from sample companies by referring to Tehran stock exchange website and deriving required information from financial statements, interpretive notes, weekly and monthly reports of the stock exchange and using Denasahm, Sahra, and Tadbirpardaz software's.

3 Results Analysis

3.1 Inferential Statistics

Kolmogorov-Smirnov test was used to show data normalization and the result is 1.23, so data are normal.

3.2 Inferential Statistics Analysis

After descriptive statistics, hypotheses were analyzed and tested using inferential statistics. Accordingly, companies were divided into two groups regarding positive and negative operational lever, and model variables were tested regarding the condition. First, companies with positive operational lever and then companies with negative operational lever were tested. See table 1 for more details.

Table 1

Company type	No.
Companies observed with positive operational lever	249
Companies observed with negative operational lever	101
Total	350

Company types

3.3 Companies with Positive Operational Lever

3.3.1 Results related to the first secondary hypothesis testing: relationship between "operational lever" and "Q-Tobin index"

According to test significant level result, there is a meaningful relationship between "operational lever" and "Q-Tobin index". See table 2 for detailed results.

Table 2

		Operational lever
Q-Tobin	Pearson correlation coefficient (r)	0.416
	Significance level (sig)	0.001
	Sample number	249
	Determination coefficient	0.173

Results of the first secondary hypothesis correlation testing

3.3.2 Results related to the second secondary hypothesis testing: relationship between "return on equity" and "Q-Tobin index"

According to test significant level result, there is a meaningful relationship between "Return on equity" and "Q-Tobin index". See table 3 for detailed results.

Table 3

		Return on equity
Q-Tobin	Pearson correlation coefficient (r)	0.231
	Significance level (sig)	0.001
	Sample number	249
	Determination coefficient	0.11

Results of the second secondary hypothesis correlation testing

3.3.3 Results related to the third secondary hypothesis testing: relationship between "earnings per share" and "Q-Tobin index"

According to test significant level result, there is a meaningful relationship between "Earnings per share" and "Q-Tobin index". See table 3 for detailed results.

Table 3

		Return on equity
Q-Tobin	Pearson correlation coefficient (r)	0.231
	Significance level (sig)	0.001
	Sample number	249
	Determination coefficient	0.11

Results of the second secondary hypothesis correlation testing

3.3.4 Results related to the forth secondary hypothesis testing: relationship between "return on sales" and "Q-Tobin index"

According to test significant level result, there is a meaningful relationship between "Return on sales" and "Q-Tobin index". See table 4 for detailed results

Table 4

		Earnings per share
Q-Tobin	Pearson correlation coefficient (r)	0.45
	Significance level (sig)	0.001
	Sample number	249
	Determination coefficient	0.202

Results of the third secondary hypothesis correlation testing

3.3.5 Results related to the fifth secondary hypothesis testing: relationship between "working capital" and "Q-Tobin index"

According to test significant level result, there is a meaningful relationship between "Working capital" and "Q-Tobin index". See table 5 for detailed results.

Table 5

		Return on sales
Q-Tobin	Pearson correlation coefficient (r)	0.541
	Significance level (sig)	0.001
	Sample number	249
	Determination coefficient	0.293

Results of the forth secondary hypothesis correlation testing

3.3.6 Results related to the sixth secondary hypothesis testing: relationship between "liabilities-to-assets ratio" and "Q-Tobin index"

According to test significant level result, there is a meaningful relationship between "liabilities-to-assets ratio" and "Q-Tobin index". See table 6 for detailed results.

Table 6

		Working capital
Q-Tobin	Pearson correlation coefficient (r)	0.343
	Significance level (sig)	0.001
	Sample number	249
	Determination coefficient	0.118

Results of the fifth secondary hypothesis correlation testing

3.3.7 Results related to the seventh secondary hypothesis testing: relationship between "liabilities-to-equity ratio" and "Q-Tobin index"

According to test significant level result, there is a meaningful relationship between "liabilities-to-equity ratio" and "Q-Tobin index". See table 7 for detailed results.

Table 7

		liabilities-to-assets ratio
Q-Tobin	Pearson correlation coefficient (r)	0.38
	Significance level (sig)	0.001
	Sample number	249
	Determination coefficient	0.114

Results of the sixth secondary hypothesis correlation testing

3.3.8 Results related to the eighth secondary hypothesis testing: relationship between "company's market share" and "Q-Tobin index"

According to test significant level result, there is a meaningful relationship between "Company's market share" and "Q-Tobin index". See table 8 for detailed results.

Table 8

		liabilities-to-equity ratio
Q-Tobin	Pearson correlation coefficient (r)	0.219
	Significance level (sig)	0.001
	Sample number	249
	Determination coefficient	0.048

Results of the seventh secondary hypothesis correlation testing

3.4 Companies with Negative Operational Lever

3.4.1 Results related to the first secondary hypothesis testing: relationship between "operational lever" and "Q-Tobin index"

According to test significant level result, there is a meaningful relationship between "Operational lever" and "Q-Tobin index" in companies with negative operation level. See table 9 for detailed results.

Table 9

		Company's market share
Q-Tobin	Pearson correlation coefficient (r)	0.458
	Significance level (sig)	0.001
	Sample number	249
	Determination coefficient	0.21

Results of the eighth secondary hypothesis correlation testing

3.4.2 Results related to the second secondary hypothesis testing: relationship between "return on equity" and "Q-Tobin index"

According to test significant level result, there is a meaningful relationship between "Return on equity" and "Q-Tobin index" in companies with negative operation level. See table 10 for detailed results.

Table 10

		Operational lever
Q-Tobin	Pearson correlation coefficient (r)	0.199
	Significance level (sig)	0.046
	Sample number	101
	Determination coefficient	0.040

Results of the first secondary hypothesis correlation testing

3.4.3 Results related to the third secondary hypothesis testing: relationship between "earnings per share" and "Q-Tobin index"

According to test significant level result, there is a meaningful relationship between "earnings per share" and "Q-Tobin index" in companies with negative operation level. See table 11 for detailed results.

Table 11

		Return on equity
Q-Tobin	Pearson correlation coefficient (r)	0.797
	Significance level (sig)	0.001
	Sample number	101
	Determination coefficient	0.635

Results of the second secondary hypothesis correlation testing

3.4.4 Results related to the forth secondary hypothesis testing: relationship between "return on sales" and "Q-Tobin index"

According to test significant level result, there is no meaningful relationship between "return on sales" and "Q-Tobin index" in companies with negative operation level. See table 12 for detailed results.

Table 12

		Earnings per share
Q-Tobin	Pearson correlation coefficient (r)	0.378
	Significance level (sig)	0.001
	Sample number	101
	Determination coefficient	0.143

Results of the third secondary hypothesis correlation testing

3.4.5 Results related to the fifth secondary hypothesis testing: relationship between "working capital" and "Q-Tobin index"

According to test significant level result, there is a meaningful relationship between "working capital" and "Q-Tobin index" in companies with negative operation level. See table 13 for detailed results.

Table 13

		Return on sales
Q-Tobin	Pearson correlation coefficient (r)	-0.225
	Significance level (sig)	0.024
	Sample number	101
	Determination coefficient	0.051

Results of the forth secondary hypothesis correlation testing

3.4.6 Results related to the sixth secondary hypothesis testing: relationship between "liabilities-to-assets ratio" and "Q-Tobin index"

According to test significant level result, there is a meaningful relationship between "liabilities-to-assets ratio" and "Q-Tobin index" in companies with negative operation level. See table 14 for detailed results.

Table 14

		Working capital
Q-Tobin	Pearson correlation coefficient (r)	0.265
	Significance level (sig)	0.007
	Sample number	101
	Determination coefficient	0.070

Results of the fifth secondary hypothesis correlation testing

3.4.7 Results related to the seventh secondary hypothesis testing: relationship between "liabilities-to-equity ratio" and "Q-Tobin index"

According to test significant level result, there is a meaningful relationship between "liabilities-to-equity ratio" and "Q-Tobin index" in companies with negative operation level. See table 15 for detailed results.

Table 15

		liabilities-to-assets ratio
Q-Tobin	Pearson correlation coefficient (r)	0.427
	Significance level (sig)	0.001
	Sample number	101
	Determination coefficient	0.183

Results of the sixth secondary hypothesis correlation testing

3.4.8 Results related to the eighth secondary hypothesis testing: relationship between "company's market share" and "Q-Tobin index"

According to test significant level result, there is a meaningful relationship between "company's market share" and "Q-Tobin index" in companies with negative operation level. See table 16 for detailed results.

Table 17

		Company's market share
Q-Tobin	Pearson correlation coefficient (r)	0.402
	Significance level (sig)	0.001
	Sample number	101
	Determination coefficient	0.162

Results of the eighth secondary hypothesis correlation testing

4 DISCUSSION AND CONCLUSION

As explained, based on the results of the above hypotheses, we conclude upon the first hypothesis which is the same main hypothesis of the study.

Main Hypothesis: using Q-Tobin technique as a performance measurement criterion in the accepted companies, except return on sales of companies with negative operational lever - there is a positive and significant relationship between other independent variables of financial performance and Q-Tobin technique. So, it can be concluded that there is also a positive and significant relationship between Q-Tobin and financial performance (of course, except the time when we set return on sales as the criterion in companies with negative lever). Then, to evaluate stock exchange companies' performance, investors can use Q-Tobin ratio as a good criterion considering stock market value, as well. Results are in accordance with the results of the study by Marck et al (1988), Lang and Stulz (1994), Sauaia (2001) and Wolfe (2003).

4.1 Suggestions

1. Investors better invest in companies with a higher Q-Tobin ratio, because if Q-Tobin ratio>1, the company has more investment opportunities.
2. When buying stock, investors must consider whether operational lever is positive or negative so as to achieve their desirable return and earnings better; because usually companies with positive operational lever perform better.
3. To use the results of the study and also contribute to clarify the effect of Q-Tobin on companies' performance and different investments, following further researches are also suggested:

1- Studying the relationship between Q-Tobin technique and non-open cash flows

2- A comparative study between Q-Tobin and manpower exploitation and their effect on companies' financial performance

3- Studying the effect of companies' financial performance on dividing earnings between general and specific stockholders.

REFERENCES

1. Chung, Kee H. and Pruitt, Stephen W., 1994. *"A Simple Approximation of Tobin's Q"*. **Financial Management**, Vol. 23, No. 3. Available at SSRN: http://ssrn.com/abstract=957032
2. David, P, Maretno, A. and Hoje, Jo., 2010. *"The Economics and Politics of Corporate Social Performance"*. **Journal of Economics and Business**, Vol.57, NO. 2, 110-133.
3. Lang, L. and R. Stulz, 1994. *"Tobin 'q, Corporate Diversification, and Firm Performance"*, **Journal of Political Economy**, 1248-1281.
4. Leewillen, W. G. and S. G. Badernet, 1997. *"On the Measurement Tobin q"*, **Journal of Financial Economics**, Vol. 44, Issue. 1, 117-122.
5. Lindenberg, E. B. and S. A. Ross, 1981. *"Tobin's q Ratio and Industry Organization"*, **Journal of Business**, Vol. 54, No. 1, 1-33.
6. Marck, R., Shleifer, A. and R.W. Vishny, 1988. *"Managerial Ownership and Market Valuation: An Empirical Analysis"*, **Journal Financial Economics**, Vol. 20, Issue. 44, 293-315.
7. Philip, H. and Mitch, W., 2010. *"Is the Tobin's Q Measure Performance? Theory, Empirics and Alternative Measures"*. **American Business Research,** Vol. 24, Issue 2. 82-89.
8. Sauaia, A. C. A., 2001. *"Evaluation of Performance in Business Games of Financial and Non Financial Approaches"*. **Developments in Business Simulation and Experiential Learning**. Vol. 28. 210-215.
9. Steven, B. P. and W. W. Kenneet., 1997. *"Alternative Construction of Tobin's Q: An Empirical Comparison"*, **Journal of Empirical Financial**, Vol. 1, 313-341.
10. Tobin, J., 1969. *"A General Equilibrium Approach to Monetary Theory"*, **Journal of Money, Credit and Banking**, Vol. 1, 15-29.
11. Tobin, J., 1978. *"Monetary Policies and the Economy: the Transmission Mechanism"*, **Southern Economic Journal**, Vol. 37, 421-431.
12. Tobin, J. and Brainard, M., 1977, *"The Holing Dark on the Financial Models"*, **Journal of Financial Economics**, Vol. 12, 133-139.
13. Wolf, j., 2003. *"The Tobin's q as a Company Performance Indicator"*, **Developments in Business Simulation and Experimental Learning,** Vol. 30, 155-160.