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"The analysis of the relationship between information asymmetry and Tobin's Q model in evaluation of the chemical and car manufacturing companies as listed corporations in Tehran Security and Exchange Organization (TSEO)"

Ali Pouladi¹, Yaghub Shahniayi², Majid Vaeezzadeh³, Abdolrazagh Beshtar⁴

¹Master of Accounting, Instructor, Faculty Member of Islamic Azad University of Kangan, Iran ²MA of human resources management, Payam-e Noor University of Shiraz ^{3,4}Student of MA of financial management, Islamic Azad University of Qeshm *Received: January 27, 2015*

Accepted: March 31, 2015

ABSTRACT

One of the reasons of managers' failure, who are interested in promoting the function level of their organizations, is the unavailability of a suitable tool for assessing the function of the organizations. Because of some shortcomings which are existed in accounting, economic and market information for assessing the function of the companies, the use of combined data for function assessment has gained attention.

In this direction, various criteria and methods have been introduced, one of which is Tobin's q ratio.

This research studies analytically the relationship between information asymmetry and Tobin's q in the assessment of accepted chemical and car-manufacturing companies within the Tehran securities and stock market.

A period of 5 years (FROM 2002 TO 2006) was considered for doing this research. Also,

Pearson correlation coefficient analysis method was used in it.

The gained results indicated that there isn't significant relationship between information asymmetry and Tobin's q in the assessment of accepted chemical and car-manufacturing companies within the Tehran securities stock market. Moreover, the results showed that there is a significant relationship between EPS and PEPS with Q ratio.

KEYWORDS: information asymmetry, Tobin's q ratio, viable market, information load

INTRODUCTION

The Tehran Bourse Market (TSEO) is deemed as an organized and formal capital market in which the corporate stocks or public partnership bonds and the leading private institutes' securities are purchased and sold under certain disciplines, rules, and regulations. Tehran Security and Exchange Organization (TSEO), on the other hand, is assumed as a center for collection of savings and liquidity from private sector to finance for investment projects as well as a formal body in which the saving holders can transact the surplus funds through the national economic cycle.

Investment in such a market is considered as one of the essential and basic cases in national economic growth and development trend. Alternately, the economic policies of government of Islamic Republic of Iran are directed toward attraction of capitals in private sector and leading them to Tehran Bourse market regarding privatization of public enterprises. The investors in an investment market make every effort as possible in field of supply the capital to lead their financial sources to the direction that is followed by the least risk and maximum efficiency.

The investors in the bourse markets need to reliable and relevant information to make decision about stock purchase or sale. With respect to the time when the published information affects on tock price, the bourse markets are divided into three classes: Low- efficient markets, semi- strong markets, and strong or efficient capital markets.

One of the important related concepts to process of decision making for investment is the efficiency of bonds and securities market and especially stock market. The price of securities is not separated from the economic value that the investors computed for these securities in an efficient market. The economic value is

^{*} Corresponding Author: Ali Pouladi, Master of Accounting, Instructor, Faculty Member of Islamic Azad University of Kangan, Iran.

determined by the expectations for of investor for ratio of return to asset (ROA), risk, and uncertainty. If the market price of securities is diverted from the estimated value then the investors try to adapt these two values to each other. Thus, when the new information is entered in the efficient market it leads to correction and analyze the estimated economic value and its price is determined according to the present data.

The appropriate and relevant information about the subject of decision is one of the effective factors in decision- making. If the required information causes different results about the same subject thus this is the quality of data distribution as important for the decision-maker before the given information that should be accurately evaluated per se. When the rate of information asymmetry is increased regarding the stocks of an enterprise, its intrinsic value will differ from the value, which has been assumed by investors for the given stock in the capital market. As a result, the real value of corporate stocks is different from the expected value of shareholders.

In order to attract the confidence from investors, the corporate performance and eventually their value should be determined for proper and scientific evaluation of their performance. Several methods are employed to evaluate the performance and corporate profitability where in these techniques types of indices are utilized including economic, market, or the combined forms of these parameters. Tobin's Q economic index is one of the most prominent samples of this index.

Q- Tobin ratio was introduced by James Tobin by James Tobin in 1961. This ratio contributes to the investors in evaluation of corporate performance. The enterprises with this ratio greater than one (1) have the higher motive and probability for new investment in comparison to the companies of this ratio smaller than one (1) and they former group is assumed as growing enterprises.

Research goals:

As usual, the investors evaluate the given stocks before buying the stocks from certain enterprise. There are several methods and techniques to evaluate the enterprises like price- to- book value ratio, Price-to-Sale ratio (PSR), and Tobin's Q.

a) *Price- to- Book Value Ratio*: It comprises of the ratio of price to dividend of shareholders. This technique is often employed for evaluation of companies, particularly the financial enterprises. Banks are often assessed by this technique. Whereas their assets possess the same book value and market value thus if the rate of this ratio is one (1), the market value is the same as book value.

b) *Price- to- Sale Ratio (PSR)*: The Price-to- Sale Ratio is a method, which has been recently noticed in evaluation. This ratio is derived through dividing the corporate total market value (stock price is multiplied to number of stocks) to corporate sales. As a result, this technique denotes how much the market can have elasticity to pay for corporate income.

c) *Tobin's Q Ratio*: This ratio is an economic index in accounting that also used to evaluate the enterprises and rate of utility of their performance and it is the ratio of market value to replacement value. In normal mode, Tobin's Q ratio should be equivalent to one (1). If Q-Tobin ratio is greater than one this indicates the growth and investment opportunities considered for the given enterprise. As a result, it will be appropriate for investment. Finally, the investors should consider this point in their mind that evaluation is not assumed as less important art than a science estimation of future revenues and earnings is a complex task that may be subjected to error and in some cases it can take place by one or more ways and one can use both techniques for evaluation of stocks to test the authenticity and correctness. As greater number of techniques is available to the investors to evaluate the ordinary stocks, they can acquire better the logical responses. Regardless of this point that which technique is taken, we should notice that that implementation of evaluation methods may be always followed by some errors since the future is always followed by uncertainty and this may lead to occurrence of errors.

Whereas investors analyze Tobin's Q ratio of their enterprise before investment therefore the present study is intended to explore the relationship among Q- Tobin and information asymmetry in the aforesaid enterprises and to give answer to this question that if there is any relationship among these two items and how it can contribute the investors to take better decision. The second goal is to develop the discussion regarding Q- Tobin and information asymmetry and assessment of corporate value and performance under the conditions of information asymmetry.

Types of market efficiency

a- Weak market status

If the information poorly reflected in stock price it may weakly show the market efficiency. Under such condition, the price of security and bond may reflect the historical data, which have already occurred.

In other words, price of securities and bond discloses the historical information about the stocks. At this mode of market, there is an attitude that the study and analysis of historical data have no certain trend. The importance of this form of market in accounting is for this fact that to make the new information immediately available to all of dealers and to reflect the reaction to stock price.

b- Semi- strong market status:

In this form of market efficiency, price of securities and bonds may reflect the historical and or current information that has been available to the public. If the market is efficient in this status, the new information will immediately effect on stock price when it is available to the public. The market efficiency in semi- strong status does not refer to this point that all of investors perceive the new information and they employed these data immediately in their calculations. The conducted studies in this form of market efficiency have shown that the prices are quickly affected by the available existing data and prices behavior shows no certain trend while variations in prices are totally random.

c- Strong market status:

In addition to properties at semi- strong mode, in the strong mode of market if the individuals or investors have access to confidential data about certain stocks, they can acquire excessive stock return more than others since many investors, especially investors in professions, are inclined to achieve further efficiency (return) than others and therefore they will try to acquire certain information that is not available to all of investors and whereas this path is pursued covertly by all of individuals thus it will lead to this fact that the information to be available for a great number of individuals and investors. This trend, in turn, can become public form and as a result it will not be converted into the extraordinary market as it expected by the investors.

As the rate of efficiency is reduced in the market, the independence is decreased to distribute stock price. Under this condition, the predictability of price or return of securities will be increased and one could propose a model for predicting it. According to theory of efficient market in weak status, the prices are exclusively influenced by the previous information. The past and present information may be effective in semi- strong status of market but under strong market status, the price of security and stock is affected by all information and even the confidential data as well.

Most of the succeeding researches (Campbell JY, (1987); Jafe J. Keim D.B (1989); Pesaran MH, Timmermann A, Op cit pp, 1201-28; and Darrat A.F. Zhong M (2000)) indicated that some of great bourse markets such as New York and London are placed at semi- strong and weak level in this ranking. For this reason, stock price and return (efficiency) can be relatively predicted in the given markets.

Of course, recently some of researchers like Rothenstein and Pawelzik (2005) have expressed that the behavior and predictability of stock price could not be the only way to determine efficiency (return) in bourse markets.

The other group such as Campbell JY (2002) has also challenged the efficiency of the market. In any case, any variable may pave the way for explanation of stock return and or price. The resultant findings from the new investigations are not assumed as doubt about the former studies. Perhaps the existing sensitivities regarding the capital market models may be due to overemphasis on Sharpe Model as the only model for interpretation of efficiency in securities and stocks and other capital assets. Hence, in general the market studies tend to discover the effective factors in stock and security price and return and these studies will be also continued with respect to market complexities as well.

Effective factors on information asymmetry

If the investors focus on Earnings Per Stock (EPS) as a key factor to analyze the securities and stocks in an enterprise they should know How EPS has emerged and what it implied.

What is EPS? The investors highly rely on financial statements since these statements may present important data about the enterprises to the investors. The valuable financial ratios can be evaluated and extracted from corporate status through the existing data in balance sheet including (current ratio, liquidity, ratio of liability to total assets, and financial leverages). Most of these analyses are carried out by directors, creditors, and shareholders and other interest groups.

In addition to evaluation of management performances by the aid of profit and loss statement and it can be employed as a guide for future profitability in the given enterprise.

The net earnings after tax deduction are a key item in profit and loss statement for investors so that by dividing it by number of corporate stocks, the EPS (or Earnings Per Stock) is acquired. The earnings from ordinary and continuous operation are usually assumed as criterion to judge in efficiency of rate of corporate achievement and it is disclosed in all of profit and loss reports.

Despite of observance of accepted accounting principles, one of the major problems regarding the reported earnings is in that the reported EPS is not the same and/or identical for various enterprises so that to be easily to be compared at the same time and often EPS ratio in several enterprises could not be compared with each other since various accounting principles are employed to prepare financial statements. The financial statements are often prepared at least in two forms and they lead to something that is called conservative and/or ventured behavior.

- Stock return payment method

The stock return is paid seasonally in industrialized countries as usual; namely, it is paid to the shareholders four times a year and also the stock return is usually determined up to the level that could be paid even despite of inappropriate status of corporate income. The enterprises predict their future revenue and ratio of Earnings per Stock (EPS) with respect to the existing investment opportunities and determine payment ratio so that it can be also payable in the future.

- Return management in bourse listed enterprises

Theory of return quality was proposed by financial analysts and bourse agents for the first time since they felt that the reported return might not clearly indicate corporate return power that can be imagined in mind. They found that it is a difficult task to predict future returns based on the reported results. Furthermore, analysts noticed that due to several weak points in measurement of accounting data, it is very difficult to analyze corporate financial statements. The major question is that why the financial analysts do not utilize the reported net earnings or EPS (without adjustment) in their evaluation from the net earnings and they act cautiously. The answer is that not only the quantity of earnings but also its quality should be taken into consideration in determination of corporate value. The quality of earnings (return) refers to the potential background for earnings growth and rate of probability of realization of the future earnings. In other words, value of a stock does not only depend on EPS at current year but it is also dependent on our expectation from corporate future and potential for profitability in the succeeding years and rate of confidence toward the future returns. The financial analysts try to evaluate outlook for corporate return. The earnings outlook refers to the composition of earnings appropriate and adverse features. For instance, the companies with stable elements and items in its profit and loss statement enjoy more earnings than the companies, which lack these items and elements. This allows the analysts to predict it with higher confidence potential.

- Quality of return (earnings)

At time of making decision, the investors are oriented toward the resources with more earnings and least risk and this will be eventually led to optimal appropriation of resources. With respect to the development, which have occurred in today world, the countries, particularly Developing Nations, are exposed to numerous threats and for solving their own economic problems they need to find appropriate strategies to exploit better from their available sources. In this course, expansion and development of investment is deemed as one of these important strategies.

The accounting earnings and its relevant elements are considered as those data, which should be assumed by the individuals upon decision making. This figure is calculated and identified according to accruals. According to accrual approach if income and costs are realized, the earnings can be reported. Whereas according to accrual basis the process of identifying incomes and costs are not necessarily accompanied with reception and payment of funds and at the same time predictions and estimations are also employed thus this question may be raised that to what extent one could rely on this figure at time of making decision. The answer to this question is important since making improper decision due to inadequate and incorrect information causes the resources to be distributed unfairly.

- Stock return (risk and return)

The investment course is usually divided into two parts of analysis on bourse securities and stocks and management of investment system (portfolio). The major task in analysis of securities and stocks is to evaluate financial assets and this value is a function of risk and return. Thus, these two concepts are crucially important in study on investment.

The investors intend to acquire maximum expected earnings with the least investment risk. The return in investment process is the impetus that creates motive and it is assumed as reward for the investors.

The evaluation of return (efficiency) is the only logical way before risk assessment that the investors could do it to compare the alternative and different investment from each other. To perceive investment performance better, it requires measurement of real return (related to the past). In particular, analysis on the past- related return may play essential role in approximation and predication of future returns.

Risk and return are always accompanied to each other in decisions about investment and no one could assume them separately from each other since all decisions are made for investment based on risk and return. The risk denotes the rate of difference among the real return of investment from the expected return.

- Purchase and sale offered price

As usual dealers determine the prices of securities and stocks in the market out of bourse through negotiation with customers and by creating the offered competitive prices. These brokers keep the balance among supply and demand through creating multiple markets for any type of security and bond. This is done by the needed preparation of dealers to purchase certain security and bond from a seller and selling the given bonds to the buyer. The brokers propose the offered price and receive the requested price for any security and bond. The offered purchase price (bid price) is the highest price that is offered by the dealer to buy the bonds and the offered sale price (asked price) is the lowest price that the brokers are ready to sell their own bonds based on that price. The dealers acquire earnings from difference of these two prices. The computer system belonging to Bourse Market Brokers has been equipped with order recording system since 1985 that covers all of the published bonds and securities and all of orders are adjusted to the best existing price in this association.

With respect to the conducted studies inside the country and abroad, the factors, which cause information asymmetry, are as follows:

Composition of shareholders: It is divided into two group i.e. institutional investors and professional investors.

It is inferred from the result of these studies that as the rate of ownership of the professional investors is considered higher in analysis of information data, the ratio of information asymmetry will be lower.

Accounting information: The information asymmetry is caused as a result of unequal distribution of information. This is very higher in period before announcement of earnings than the time after notice of the given earnings to great extent. It is totally obvious that unequal distribution of data will lead to change in quantity of contracts and stock price.

The rate of conservatism in financial reporting: According to domestic studies, rising information asymmetry causes further conservatism in financial reports. It seems that the increase in rate of information asymmetry is mainly point out to information insiders and this leads to further conservatism by information insiders, which consist of reduced motive and potential for manipulation of accounting data.

The protective rules about information: The existing relevant protective rules to administration of corporate affairs and appropriate implementation of these regulations will lead to reduction in information asymmetry. Theory of Tobin- O

One of the important aspects of making decision about investment projects, which are less addressed, is the postponements and project equalization costs. The enterprise that behaves based on rational norm should take these factors into consideration upon selection of quantity and time of investment in the project. Even, the appropriate size of investment should be a function of these constraints.

The second important aspect is that how the related expectations may be formed and formulated about the future costs and returns of project in the future.

Third subject is the risk and evaluation of project by the market. No one has so far explored these three subjects at the same time in practice (Shakeri; 2002:390).

Even, analysis each of these subjects individually and accurate and perfectly is out of the scope this essay but we can propose an attitude about investment here where it has been briefly referred to these complexities. This is a method that has been identified after investigation done by James Tobin and a work by Tobin and William Brinard in this field as Theory of Tobin's Q Ratio (Shakeri; 2002: 391).

Tobin's Q ratio is derived from dividing of corporate market value to assets replacement value. In theory, Tobin's Q ratio is placed in one of three general states:

a) Tobin's Q ratio is set as one (1)

b) Tobin's Q ratio greater than one (1)

c) Tobin's Q ratio smaller than one (1)

When Tobin's Q ratio is equal to one (1), the corporate market value is identical to value of replacement of corporate assets (with historical value in some of equations). Thus, the reflected information in financial

statements is the same as the real data in the market. Hence, decision- making based on information at financial statements perfectly complies with the reality.

But if Tobin's Q ratio is greater than unit (1), it is perfectly clear that the corporate market value is greater than replacement or historical value of corporate assets. At this mode, the market information is not consistent with the data in financial statements. Similarly, it can be concluded that the information of financial statements is not relevant to process of decision making.

Therefore, with expressing this fact that corporate market value is greater than replacement or historical value of corporate assets, Tobin's Q ratio notices this fact to the investors that the given institute or enterprise includes opportunities for investment.

Third status i.e. Tobin's Q ratio is smaller than unit is the reverse form of the previous status. Overall, it can be implied that Tobin's Q is directly related to investment opportunities. Practically, even regardless of statistical variance, the normal value is derived through capitalization of values for leases or exclusive abnormal returns and higher expected value (Salehi, 2001: 45).



Diagram (1): The relationship between Tobin's Q ratio and investment opportunities

It has been emphasized on the final theory of Tobin's Q ratio in financial markets (stock markets) because the individuals or enterprises are free to invest in real sector (investment) or financial sector (bonds and securities) thus investment is closely interrelated to financial markets (Shakeri; 2002: 391).

On the other hand, if Q- ratio in an enterprise is greater than unit (1) then the corporate market value of assets will be higher than their replacement value. If the enterprises are free to enter into the given industry the other enterprises can achieve higher market value than the replacement value by purchase of investment stock of the existing companies in the certain industry and therefore the investment value will be increased for the newcomer companies.

Thus, by assuming lack of the barriers for enter or remaining of the enterprise, Q- ratio will be reduced toward unit (1) with entering of new companies. Of course, a monopoly enterprise may obstruct against entering of other companies and it will acquire the exclusive incomes without planning that will be rather than the ordinary return of the used investment. The market capitalizes these incomes and corporate market value will become greater than the stock replacement value of the investment. As a result, Q ratio will be higher than what it expected (Lang and Stoles, 1994: 1278).

Tobin's Q index

Several important points should be considered at time of making decision regarding investment projects:

- Postponements and costs of project equalization costs in way of formation and formulation of the related costs and project receptions in the futures;

- One of techniques in which it has been referred to the subject of project risk and evaluation by the market, which is method that was implemented after investigation by James Tobin and William Brinard in this field and it has been known as Theory of Tobin's Q.

Tobin's Q is one of the proposed indices for evaluation of corporate performance in which it employs a combination of accounting data and market values for measurement and evaluation of corporate performance. Tobin's Q is a parameter that is defined as the ratio of corporate market value to its assets replacement value:

Q-ratio TotalMarketValueofFirm

TotalAssetValue

The posited theory by James Tobin is the basis for this index according which the market value for all enterprises should be equal to the cost of their replacement since an enterprise never has the value higher than the value of the cost paid for reconstruction and making it profitable and this enterprise will endure in that industry only when the corporate interest and benefits to be higher than the needed level in the given industry.

Based on attitude of this theory, instead of calculation of accounting returns ratio like ROA or ROE etc. Q- index is mainly deemed as a measurement criterion by means of the information about corporate market value. We will express the calculation techniques and historical background of this index and its financial applications and finally the advantages and disadvantages of using this index in the followings.

Advantages and disadvantages of analysis caused by Tobin's Q index

Some of foremost advantages of Tobin's O index in evaluation of corporate performance include the ease of perception for the users and financial analysts, ease of access to the needed data, market information basis and lack of weak points of criteria based on accounting earnings.

The other advantage of Q- index is in that it is free from the existing problems in approximation and calculation of return (efficiency) rates and final cost. It is only adequate to exert the needed care and precision to provide accuracy of this rate in calculation of market value and cost of replacement for corporate assets. To approximate properly the market value of corporate assets, the value of the given securities, which are published by that company, should be also added to the value of the stocks of its bonds.

The calculation of the assets replacement cost is usually more difficult task unless there is market for this purpose. Like the intangible assets, the promotions and research expenses are very difficult valued. Typically, the researchers overlook in acquiring Q- ratio to calculate intangible assets and they delete these items from calculation. For this reason, the given ratio value exceeds from unit (1). Thus, performance of enterprises, which have invested greatly by intangible assets, will be exaggerated. Hence, using this criterion for measurement of performance can be illusive and instead of evaluation of corporate performance it measures its market power without further adjustments.

Research history

In an article titled "The black holes in presentation of financial models", Brinider and Tobin (1997) also posited some critiques about Q- index and explored some the existing problems in proposing ideal financial models. They argued that the financial models are simple and perceivable at theoretical level, but in practice they have some complexities and problems. They tried to find the criteria out of the financial models, which were practically executable. Likewise, they tried to implement financial models with computerized simulations.

Badvaj et al (1999) measured the IT effects on corporate performance by means of Tobin's Q ratio and concluded that there was significant and positive relationship among Tobin's Q ratio and IT; namely, The IT effect on corporate performance can be measured by means of Tobin's Q.

Damestos and Villa Lunga (2000) carried out a study under title of (Ownership structure and corporate performance). In their investigation, they considered corporate performance as independent variable and employed Q- index to measure it. The results implied this fact that there was no significant statistical relation among ownership structure and corporate performance. Similarly, their findings were consistent with this attitude that spreading ownership might increase problems of agency but with improving of returns caused by developing ownership, the created problems could be compensated.

Cevia (2001) examined Tobin's Q as a criterion for measurement of performance in multinational enterprises. The results of his investigation indicated that the companies with Tobin's Q ratio higher than unit (1) would have better performance.

Harney and Tower (2003) tried to predict stock return by means of ratios of Tobin's Q and Price-to-Earnings (P/E). The results derived from this study were similar to findings of Smith and Wright (2000) but they were different from the survey that was conducted by Schiller in 2000. The research findings of this study showed that Tobin's Q- ratio could be more reliable versus P/E in prediction of real return rate.

Return of Interest (ROI) play descriptive role for Tobin's Q and there is fully linear relationship among these two criteria. But Arcluse et al claimed that there is non-linear relationship among Tobin's Q and ROI.

Chine et al (2006) found that there was positive and significant relationship among exclusive ownership (concession), research and development (R&D) rising costs with Tobin's Q ratio. This relationship is more objectified in the effect of rising R&D on Tobin's Q ratio compared to other criteria.

In an investigation done in India under title of "Banking supervision, administrative ownership, and Tobin's Q", Seibel (2007) examined the relationship among banking and the relevant ownership with corporate valuation. The corporate value has been measured by means of Tobin's Q ratio in this survey.

Salehi (2001) conducted a study titled "Analysis on correlation among simple Q- ratio and Lindenberg and Ross Q- index". In addition to exploration in the prevalent versions in this study, he introduced Q- index as one of the best criteria for evaluation of corporate performance.

Also Shariat Panahi (2001) carried out a study titled "The relationship among ownership with corporate performance". In his survey, he also used Q- index as criterion for evaluation of corporate performance.

Kavoosi (2013) examined the relationship among (Tobin's Q ratio and economic value-added) in the enterprises listed in Tehran Security and Exchange Organization (TSEO) during period (1998-2001). His analysis showed that there was relationship among Tobin's Q- ratio with economic value- added.

Research hypotheses:

1- We express research hypothesis as follows:

- There is significant relationship among level of information asymmetry and Tobin's Q ratio in chemical and car manufacturing companies listed in TSEO. This is the hypothesis versus this study.

Minor hypotheses

First hypothesis

There is significant relationship among Predicted Earnings Per Stock (PEPS) and Tobin's Q ratio in chemical and car manufacturing companies listed in TSEO.

Second hypothesis

There is significant relationship among Earnings Per Stock (EPS) and Tobin's Q ratio in chemical and car manufacturing companies listed in TSEO.

Research variable:

There are some dependents and independent variables in any study. In the present research, the level of information asymmetry is independent variable while Tobin's Q ratio for the given enterprises listed in TSEO is assumed as dependent variable.

There are two separate methods to measure independent variable i.e. rate of information asymmetry. The first technique consists of application of Venkatesh and Chiang model as follows:

Speadit =
$$\frac{Ap - Bp}{Ap + Bp/2} \times 100$$

Where in this formula: *I*: the studied enterprise *T*: Time period of study *ASK Price (ap)*: The offered purchase price *Bid Price (bp)*: The offered sale price

The second technique refers to spread among the predicted earnings per stock (EPS) and real earnings of any stock as the symbol of information asymmetry where its calculation procedure is as follows:

Rate of information assymetry=
$$\frac{\text{Predicted EPS}-\text{Real EPS}}{\text{Predicted EPS}}$$

The latter formula has been utilized in the current research.

To measure it Tobin's Q ratio, as an economic index, is used to measure the appropriate efficiency and performance for enterprises and it is equal to market value-to- book value ratio:

Simple Tobin's $Q = \frac{Corporate stock market value + (book) value of settlement of corporate liabilities}{Corporate assets book value}$

Data collection:

The needed information for calculation of variables in this study has been collected as software packs prepared through TSEO magazines and annual journals, the reports of ordinary and extraordinary general meetings of enterprises listed in TSEO and via the companies, which have prepared the financial data from the listed companied in TSEO. The research literature, which is the subject of second chapter of this thesis,

has been gathered by librarian studies. Several domestic and foreign relevant books, theses, and journals to subject of this study have been utilized to write research literature.

Research statistical population and selection of sample:

The statistical population of the present study is the chemical and car manufacturing companies listed in TSEO since 1) we needed to some information including monthly stock price to calculate Tobin's Q ratio from enterprises; 2) Due to reliability of the information from the companies listed in TSEO, which they act under supervision of important economic organizations like Ministry of Finance (MEFA) and Central Bank of Iran (CBI).

As a result, despite of some defects compared to the other listed data in financial statements of these companies, the financial figures and data of the listed enterprises in TSEO that was published by Bourse Market are more reliable.

Therefore, collection of data from all members of the statistical population is time-and cost- consuming and often impossible task. Thus, sampling of population can facilitate this problem. Alternately, sampling may reduce the confidence to provide research findings for statistical population. Hence, the findings might be generalized to statistical population at certain error level. Principally, some factors like quantity of members as well as distribution of population, range, and accuracy of estimation may be effective on sample size. Therefore, number of these enterprises was 60 (2010) at time of conducting this study. Thus, among these enterprises, 41 companies have been selected according to the following qualifications where these conditions are as follows:

- Their stock should be transacted at least for one time in all of the studies enterprises in order to have access to market price.

- The end of financial period of the given company should be 21st March of the next fiscal year.

- None of enterprise should change their fiscal year during implementation of this study.

- The enterprises should have been active constantly in bourse market during time period (2002-2006).

- The perfect information from these enterprises should be available.

The method of sampling in this study is of deletion technique. As a result, all of the qualified enterprises as members of this statistical population are included as participant in this sample.

METHODOLOGY

The methodology of this study is of applied descriptive technique based on field studies. Namely, according to the collected data from TSEO Organization, the correctness and falsehood of tested research hypotheses will be generalized to all of the given population (inductive- deductive). This study is intended to determine relationship the quantitative rate of variances of Tobin's Q ratio as dependent variable and change in information asymmetry as the independent variable.

We will utilize descriptive and inferential statistics to test research hypotheses. The descriptive will be used to determine the condition of the studied subject including frequency tables, frequency histogram, distribution ratios. The descriptive statistics, which are employed for variable of Tobin's Q, include variable range, median, variance, coefficient of skewness and kurtosis in order to depict normality of Tobin's Q variable. And after their calculation by means of SPSS software, their histogram chart will be drawn as well. All of these descriptive statistics will be computed for research independent variable including information asymmetry and the predicted earnings as well.

After descriptive analysis of data by means of SPSS software, Pearson's Correlation Coefficient is employed as a statistical method to test major and minor hypotheses and at the same time Pearson's Correlation Coefficient is also adapted to confirm the given results of this test.

Analysis of statistical distribution of PEPS and EPS

Of the important variables, which have been analyzed, one could refer to predicted earnings per stock (PEPS) and the real earnings per stock (ESP). The related statistics of these two variables are summarized in Table (1).

Masiable	N	Papao	Moan	Std. Doviation	Skewnes	Kurtosis
v ariable	IN	nange	Wear	Sid. Deviation	3	Kuitosis
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
PEPS	41	2958.2	832.1	610.95	.255	.577
EPS	41	2746.	809.	673.76	077	452
Valid N	41					

 Table (1): Descriptive statistics of the related data to PEPS and EPS

In the above table, range of variance, median, standard deviation, coefficients of skewness and kurtosis are the important statistics, which are given for PEPS and EPS in this study. Data of these two variables have been calculated for 41 enterprises during 5- years of study. Negative sign in both skewness and kurtosis coefficients for EPS signifies the left side deviation in skewness and shorter statistical distribution of data in this variable in comparison to normal distribution. Of the other hand, positive sign in both skewness and kurtosis coefficients for PEPS suggests the deviation of skew toward right side and longer skewness in statistical distribution of data for this variable compared to the normal distribution.

Statistical distribution of other research data

The related statistics of other collected data in this study such as market value, sum of assets, sum of liabilities and capital and for the studied enterprises during five years of study have been summarized in Table (20) as well.

	N	Range	Mean	Skewness		Kurtosis	
Variable		()			Std.		Std.
	Statistic	Statistic	Statistic	Statistic	Error	Statistic	Error
Market value	41	17021068.40	1789535.4453	2.948	.369	8.468	.724
Total Asset	41	47029565.60	2868696.8000	4.824	.369	25.828	.724
Total Debt	41	40025158.40	2154808.8585	5.276	.369	30.373	.724
Capital	41	3596737.20	367496.0927	3.312	.369	10.901	.724
Valid N	41	1 '	1 1				1

Table (2): Descriptive statistics of other collected research data

Statistical test of research hypotheses

In this part, we test the research hypotheses by means of statistical analysis and by the aid of SPSS-19 software.

Testing of Major Hypothesis:

The research main hypothesis is "There is significant relationship among information asymmetry and Tobin's Q ratio".

In other words:

 H_0 : There is no significant relationship among information asymmetry and Tobin's Q ratio in chemical and car manufacturing companies listed in TESO organization.

 H_1 : There is a significant relationship among information asymmetry and Tobin's Q ratio in chemical and car manufacturing companies listed in TESO organization.

Whereas both information asymmetry and Tobin's Q ratio are quantitative with interval scale thus to determine significant relationship among them we should use Pearson's correlation coefficient test for them. The summary of results of this test is seen in Table (3).

Pearson Correlation Test	N	VALUE	(Significance level)Sig.
Q2BIN and INFORM.	41	085	.598

Table (3): Results of testing research major hypothesis

Based on the output of above table since Significance value is greater than 0.05 thus H_0 (null hypothesis) is verified and research major hypothesis is rejected. Therefore it can be claimed that there is no significant relationship among information asymmetry and Tobin's Q ratio in chemical and car manufacturing companies listed in TSEO organization. On the other hand, very low and negative correlation value derived among these two variables also denotes the lack of significant relationship among these two variables. Of course, in terms of financial and accounting analyses the following cases can be assumed as some reasons to reject the research major hypothesis:

a) The corporate book value is deemed as one of the effective criteria in calculation of Tobin's Q ratio in Iran. However, this criterion has not shown significant relations among the book value and stock price in the conducted domestic researches. On the other hand, ignoring the inflation factor may also overshadow the calculated book value as well and this issue has a lot of significant effect in this country.

b) The factor of information asymmetry is a qualitative concept and it could not be only evaluated by calculation of variances of the predicted and real earnings. Therefore, it requires conducting more studies in order to achieve more accurate criteria for measurement of the rate of information asymmetry.

Testing of research first minor hypothesis

The research first minor hypothesis has been defined as follows:

"There is significant relationship among Predicted Earnings Per Stock (PEPS) and Tobin's Q ratio."

In other words, the null hypothesis and research hypothesis could be defined as follows:

 H_{θ} : There is no significant relationship among Predicted Earnings Per Stock (PEPS) and Tobin's Q ratio in chemical and car manufacturing companies listed in TESO organization.

 H_1 : There is significant relationship among Predicted Earnings Per Stock (PEPS) and Tobin's Q ratio in chemical and car manufacturing companies listed in TESO organization.

Whereas both variables of Predicted Earnings Per Stock (PEPS) and Tobin's Q ratio ate quantitative with interval scale thus to test this hypothesis we should adapt Pearson's correlation coefficient test. After conducting the given test by means of SPSS-19 software, its output was given as it shown in Table (4).

Table (4): Results of testing research first hypothesis by means of Pearson's correlation coefficient test

Pearson Correlation Test	N	VALUE	(Significance level)Sig.
Q2BIN and I	41	.472	.002

Based on this output since Sig-value is smaller than 0.05 and it is 0.002 thus it can be claimed that the H0 is reject. In other words, there is significant relationship among these two variables. On the other hand, the among of correlation coefficient is 0.472 and this indicates positive relationship among Predicted Earnings Per Stock (PEPS) and Tobin's Q ratio. Therefore, it can be implied that there is significant relationship among Predicted Earnings Per Stock (PEPS) and Tobin's Q ratio. Therefore, it can be implied that there is significant relationship among Predicted Earnings Per Stock (PEPS) and Tobin's Q ratio in chemical and car manufacturing companies in TESO organization.

Testing of research second minor hypothesis

The research second minor hypothesis has been defined as follows:

"There is significant relationship among real Earnings Per Stock (EPS) and Tobin's Q ratio."

In other words, the null hypothesis and research hypothesis can be defined as follows:

 H_0 : There is no significant relationship among real Earnings Per Stock (EPS) and Tobin's Q ratio in chemical and car manufacturing companies listed in TESO organization.

 H_1 : There is significant relationship among real Earnings Per Stock (EPS) and Tobin's Q ratio in chemical and car manufacturing companies listed in TESO organization.

Whereas both real Earnings Per Stock (EPS) and Tobin's Q ratio are quantitative with interval scale thus to test this hypothesis we should adapt Pearson's correlation coefficient test as well. After conducting the given test by means of SPSS-19 software, its output will be as Table (5).

 Table (5): Results of testing research second minor hypothesis by means of Pearson's correlation coefficient test

Pearson Correlation Test	N	VALUE	(Significance level)Sig.
Q2BIN and	41	.437	.004

According to the results of this test whereas Sig-value is smaller than 0.05 and it is 0.004 therefore H_{θ} (null hypothesis) is rejected and there is significant relationship among real Earnings Per Stock (EPS) and Tobin's Q ratio in chemical and car manufacturing companies listed in TESO organization. Similarly, Pearson's correlation coefficient has been calculated 0.437. And this signifies positive relationship among real Earnings Per Stock (EPS) and Tobin's Q ratio chemical and car manufacturing companies listed in TESO organization.

- Other statistical findings

In addition to description of research statistical data and statistical testing of research hypotheses, one could also examine and analyze the correlations among important variables of this study. Whereas research important variables include Tobin's Q ratio, information asymmetry, predicted earnings per stock (PEPS) and real earnings per stock (EPS) for enterprises therefore; for example, one could conduct correlation analysis for Tobin's Q ratio and information asymmetry during five years study. Table (6) indicates correlation

coefficients among Tobin's Q ratio during years 2002-2006 and also Table (7) shows the correlation coefficients for information asymmetry during period (2001-2006).

<u>`</u>				_	-	
	Variable	Q2BIN81	Q2BIN82	Q2BIN83	Q2BIN84	Q2BIN85
Q2BIN81	Pearson	1	.727	.680	.529	.303
	Correlation					
	Sig. (2-tailed)		.000	.000	.000	.054
	N	41	41	41	41	41
Q2BIN82	Pearson	.727	1	.726	.560	.323
	Correlation					
	Sig. (2-tailed)	.000		.000	.000	.039
	N	41	41	41	41	41
Q2BIN83	Pearson	.680	.726	1	.840	.696
	Correlation					
	Sig. (2-tailed)	.000	.000		.000	.000
	N	41	41	41	41	41
Q2BIN84	Pearson	.529	.560	.840	1	.875
	Correlation					
	Sig. (2-tailed)	.000	.000	.000		.000
	N	41	41	41	41	41
Q2BIN85	Pearson	.303	.323	.696	.875	1
	Correlation					
	Sig. (2-tailed)	.054	.039	.000	.000	
	N	41	41	41	41	41

Table (6): The analysis of correlation of Tobin's Q ratio for the studied enterprises

As it observed in above output, all of correlation coefficients of Tobin's Q ratio in the studied enterprises have been positive sign (direct correlated) during five years and except correlation between years 2002 and 2006; other coefficients are significant at level 0.01 and or 0.05. The strongest correlation belongs to the years 2005 and 2006 with values 0.875 while the weakest correlation is attributed to years 2002 and 2005 with value of 0.303 (Of course, as it mentioned this correlation is not significant).

	Variable	InformAsy.81	InformAsy.82	InformAsy.83	InformAsy.84	InformAsy.85
InformAsy.81	Pearson Correlation	1	.074	.684	.597	.394
	Sig. (2-tailed)		.645	.000	.000	.011
	N	41	41	41	41	41
InformAsy.82	Pearson Correlation	.074	1	.618	.290	416
	Sig. (2-tailed)	.645		.000	.066	.007
	N	41	41	41	41	41
InformAsy.83	Pearson Correlation	.684	.618	1	.580	161
	Sig. (2-tailed)	.000	.000		.000	.316
	N	41	41	41	41	41
InformAsy.84	Pearson Correlation	.597	.290	.580	1	.045
	Sig. (2-tailed)	.000	.066	.000		.779
	N	41	41	41	41	41
InformAsy.85	Pearson Correlation	.394	416	161	.045	1
	Sig. (2-tailed)	.011	.007	.316	.779	
	N	41	41	41	41	41

Table (7): Analysis of correlation of information asymmetry for the studied enterprises

The above output also indicates correlation analysis for information asymmetry in the studied enterprises for the five years of investigation. It is clear that correlation of information asymmetry between years 2003 and 2006 and also among years 2004 and 2006 are reverse with values of -0.416 and -0.161 and the rest are positive and significant. On the other hand the correlation for years (2002, 2003), (2003, 2005), (2004, 2006), and (2005, 2006) is not significant. The strongest correlation belongs to years 2002 and 2004 with value of 0.684.

Conclusion:

In this study in which its findings were proposed the relationship among level of information asymmetry and Tobin's Q ratio was analyzed and hypotheses were tested by means of Pearson's coefficient method and SPSS-19 software where since the significance level (Sig.) is greater than 0.05 thus H_0 was approved and the major hypothesis was rejected. Namely, no significant relationship was observed among information asymmetry and Tobin's Q ratio in the aforesaid enterprises. On the other hand, a very low ad negative correlation value given among these two variables (-0.085) also suggests lack of significant relationship among these two variables. The following reasons may justify lack of such a relationship:

1- The corporate book value is one of the effective criteria in calculation of Tobin's Q ratio in Iran while this criterion has not shown significant relationship among book value and stock price in the conducted domestic researches. Alternately, ignoring of inflation factor may also overshadow value of the calculated book value and this issue has been followed by a lot of significant impacts in the country.

2- The value of information asymmetry includes qualitative concept and it could not be evaluated only by calculation of variances of PEPS and EPS. Thus, it necessitates conducting further studies to acquire more accurate criteria for measurement of rate of information asymmetry.

The research minor hypotheses were confirmed by means of statistical tests and there was significant relationship among predicted earnings per stock (PEPS) and real earnings per stock (EPS) with Tobin's Q ratio.

If there is smaller difference among rate of predicted earnings per stock and the real earnings per stock this indicates lack of information asymmetry or equality of data distribution. As a result, the investor may purchase and sell stock of the given enterprise with more confidence and this will also cause improving the given stock and increase in that stock price in the market.

The estimated value of Tobin's Q is small in Iran like most of countries and it enjoys little distributive potential in relation to corporate investment.

Future suggestions:

1- Analysis of relationship between versions of Tobin's Q ratio with earnings per stock (EPS)

2- Analysis of relationship between versions of Tobin's Q ratio Return of Assets (ROA)

3- Analysis of relationship between versions of Tobin's Q ratio and refined economic value-added in evaluation of corporate performance

4- Analysis of using versions of Tobin's Q ratio as criterion for determination rate of directors' reward (bonus) and its effect on corporate performance

5- Analysis of relationship between versions of Tobin's Q ratio and its variance in systematic and nonsystematic risk of stock

6- Analysis of relationship in version of Tobin's Q ratio with stock price

7- Comparison of information content of Tobin's Q ratio version in relation to stock return

8- The relationship among information asymmetry and Tobin's Q ratio in other industries

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