The effects of global financial crisis on information asymmetry and stock price of firms accepted in stock exchange in Iran

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Abstract

The global economy has always been encountering different economic crises which have affected financial variables. The global financial crisis started in the United States by the boom in house prices and reached its highest amount when some of the banks encountered bankruptcy in financial markets and then it permeated into Stock Exchanges. Although Iran incurred the least damages at the start of the global crisis due to its status in financial issues, the economic relationships between Iran and foreign countries through exports can lead to the transmission of the dangerous outcomes of the global economic crisis into the country. The goal of the present research is to study the effects of the global financial crisis on information asymmetry and stock prices of 133 companies accepted in Stock Exchanges in Iran after the use of sifting method for the years between 2004 and 2011. The research method is a descriptive one and the variables were tested by using a statistical technique. The findings of the research show that there is a meaningful difference between stock prices and information asymmetry before and after the global economic crisis on firms in different industries in Iran.

Keywords: financial crisis, stock price, information asymmetry, capital market, economic stagnation.

Introduction

Accounting is an information terminal. This terminal is responsible for changing financial data into financial information as the most important subdivision of information systems' management. Financial reporting is one of the most important outcomes of accounting information system which can be represented in certain frameworks for different groups of local and foreign users.

Most business units are usually formed to be active during an unlimited period of time. Thus the logical step to recognize a business unit is to notice it through this fact that in common status the business continues its activities in an unlimited way. The presupposition of the continuation of activities is based on the viewpoint that a business entity will continue its operations until the current commitments are met.

Generally the economic crisis is a concise expression which entails the existence of crisis in most variables of the economic parts of the economy. Financial crisis refers to a set of negative effects of balances in payments, the negative effects on the value of currency of a country, financial debts' crisis, banking crisis (banks' bankruptcies), the crisis in international reservoirs, and the crisis in stock market. It is considered as a strong threat for economic systems due to the negative effect enforced by it on the performance of the real economic part. The currency crisis and banking crisis are among the most common financial crises which are considered as a criterion in recognizing the financial crisis. Although it was started in America, most countries encounter it today. The close relations between global financial and monetary markets have permeated the crisis into global economy (Khorshid, 2011). Although capital mar-

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kets and specifically Stock Exchanges did not have any role in starting the crisis, they have incurred the most from the economic crisis. By the reductions in portfolios of the companies and financial entities, the price of their stocks encountered a great reduction in Stock Exchanges and therefore the investors lost their trust to these markets and transferred their financial resources which have been reduced in stock value into markets with less risk. This created a lot of problems for Stock Exchanges in some countries and generally capital markets were affected by the crisis (Subrahmanyam, 2009).

Literature review

Rajini *et al.* (2012) studied the effect of global financial crisis on accounting convergence. They investigated the important outcomes of global financial crisis on financial reporting and tried to answer this question: "Are the intrinsic problems of international standards of financial reporting considered as obstacles in the direction towards convergence?" The results showed that the financial crisis has not had any effect on the decisions of the countries to have convergence. Behnam *et al.* (2011) showed in their work that sales growth rate and z-score are the best indicators in measuring profitability and balance sheet strength. In that paper, they use z-score and sales growth to distinguish the anomalies existing in Tehran Stock Exchange with applying the time-series regressions. According to result of statistical examinations, they don't have as strong explanatory power in explaining Tehran Stock Exchange. Nazarpour *et al.* (2011) studied the effect of global economic crisis on Islamic banking in the year 2011. Bosoylem and Karimi (2011) showed in their work "Study about the effect of monetary variables on the total index of Tehran Stock Exchange be emphasizing at the financial crisis in 2007" that the variables such as liquidation, foreign currency rates with a period of stop and the bank interest rates for the same period have a direct relationship with the index in Tehran Stock Exchange.

Maleki (2011) studied the effect of global economic crisis on the non-oil exports of our country for isolated two digits codes of the activities of industries and achieved three important accomplishments. First the attentions to the production and export of technological products have been consistent. Second, regarding the variety both horizontal and vertical dimensions have been considered

in support and development of exports. And third, there exists a necessity to devise an interim period package to remove crisis for non-oil exports of our country. Stephan Brown & Hiligist (2008) inferred that a higher amount of financial reporting quality will lead to the reduction of information asymmetry and the increases of stock exchanges (Dallas, 2012).

Sun Painder (2003) reported that there is a negative relationship between the extent of exchanges and the range of the suggested price for exchanges. He showed that while the suggested price for purchase and sales is affected by the exchange, the activity level of exchange will be concurrently affected by the amount of the suggested price rage for purchase and sales (Peihani, 2008).

Dittmann (2008) studied the effect of the controlling rights of the stockholders on the ownership structure of the companies in a research carried out in Germany. The main part of macro purchases in stock investments in Germany is carried out regarding the stocks along with having the right to vote because the most important advantage of this stock is that the stockholder has the capability to control and observe the company. Ditman found out in his research that the amount of right to vote in the ownership structure of the company depends on its main exchanging activities. It means that if the advantages of the right to vote are low, the share for the managers in main investments will decrease. On the contrary if the special advantages of stock controlling with vote right is high, the ownership structure will tend towards earnings management structure. In other words the share of managers in ownership structure of the company increases.

Schich(2010) studied time asymmetry of earnings, the ratio of market value to book value and conservatism in reporting. The results showed that the correlation between the ratio of market value to book value in a point of time and the time asymmetry are measured regarding the period through which time asymmetry has happened and also it depends on the time span for measurement of MBT.

The Framework for theoretical concepts and research hypotheses

Financial crisis
Financial crisis generally refers to a comprehensive expression which entails the existence of crisis in most variables of the economic part of the economy. The financial crises refer to a set of negative

effects of balances in payments, the negative effects on the currency of a country, the crisis of financial debts, banking crisis (banks' bankruptcies), the crisis in international reservoirs and crisis in stock market (Khorshid, 2011). The independent variable of the present research is the effects of global financial crisis and a virtual variable has been used to recognize it. It has been equal to 0 during the years between 2004 and 2007 although there has been a global financial crisis and it equals 1 from 2008 to 2011 in the presence of global financial crises.

Information asymmetry

One of the most important factors in proper decision making is to have appropriate and related information because if it is not prepared and processed properly there would be negative effects for the decision maker. On the other hand, it is important to know how to access information. If the information needed is distributed asymmetrically among the people different results will be achieved for the same issue. Thus, income statement is one of the most important financial statements used by managers to inform the market from the firm's performance. The goal of revealing the information is to reduce the inappropriate distribution of information about decision making in capital market.

If information is distributed inappropriately one of the groups will have more information and this will lead to conditions which end with inappropriate decision makings by the group with less information and will result in their incorrect selection, in other words. The inappropriate selection refers to the condition where a person or a group has information advantages over other groups or persons in exchanges in the market.

One of the potential applications of the information published by the companies is to reduce the gap between the expectations of the investors, information advantage of some investors and thus the reduction of the effects of information asymmetry on capital cost. Information asymmetry creates some costs due to inappropriate selection. If information is distributed inappropriately, the group with more information will be called the informed dealers. This situation will create conditions where a group with less information will make inappropriate decisions. In other words, it will lead to their incorrect selection (Amina *et al.*, 2011).

When information asymmetry increases regarding the stocks of a company its intrinsic value will be different from the value considered by the investors in capital market and therefore the real value of the stocks of a company will be different from the expected value. Thus, the existence of information asymmetry in capital market endangers the capital of ordinary people in this market. Therefore, the study of the existence of information asymmetry in capital market and strategies to reduce it seems to be necessary (Amina *et al.*, 2011).

Therefore, in researches about information asymmetry the gap between the prices suggested for exchanges is utilized as the criterion for information asymmetry (Brummer, 2010).

Regarding what has been stated earlier we can predict that 1) the more information asymmetry among the investors will lead to enforce more conservatism in supplying financial statements f the companies, 2) changing information asymmetry among investors will lead to change the amount of conservatism.

Considering the concepts posed above, the following hypothesis is suggested:

Main hypothesis 1: There is a meaningful difference between information asymmetry in financial statements before and after financial crisis.

Stock price: financial statements are the main products of financial reporting systems. Studying the determinative factors of the changes in stock price in recent decades has been taken into consideration broadly by researchers in accounting and financing. The price posed by the marketer to purchase bonds is the proposed purchasing price and the price with which he sells bonds is entitled the proposed sales price. The liquidation of bonds depends on the smoothness of the market. The proposed exchange price gap of the marketers in a smooth market is less than the gap of the proposed price in a stagnated market because in smooth markets there is a high volume of exchanges and the risk is less in these markets.

The market in which the proposed exchange price of the marketer is closer to the equilibrium price is deeper and the changes in these markets are continuous. But in less deep markets the changes in prices are sudden and temporary. Changing prices in deep markets is less than changes in prices in less deeper markets. Thus the risk of marketers in less deep markets is less than other markets. If the market is deep the bonds will have more capability to return (Amina *et al.*, 2011).

Usually when new information is published in the market about the companies, the information is analyzed by analysts, investors and other users

and the decisions about purchasing or selling the stocks will be made based on it. The information and the reactions towards them will affect the behavior of users and specifically the potential and current stockholders and will increase or decrease the volume of exchanges of the stocks because the type of treatment of the people with the new information will form the fluctuations in prices. Therefore, if information is published confidentially and divergently, different reactions will be observed on the part of the investors due to the existence of information asymmetry in capital market (Subrahmanyam, 2009).

Regarding the concepts of financial crisis and stock price, the second hypothesis would be posed as follows:

Main hypothesis 2: There is a meaningful difference between stock price before and after financial crisis.

Methodology

Measurement of research variables
How to measure information asymmetry

To measure information asymmetry among investors, we have used the model designed by Venkatesh and Chiang to determine the range of price for stock exchanges. This model has been used in different researches. In Iran, Ghaemi and Watanparast, Ahmadpour and Rasaeeyan have utilized this model to measure information asymmetry.

The model mentioned is as follows:

$$SPREADit= (AP-BP) *100/(AP-BP)/2$$

Where SPREAD is the difference range of the price proposed for exchanging the stocks, t is the year investigated, and BP is the average proposed price for purchasing the stocks of firm I during the period t.

According to the model above, the greater amount of the range of the difference of the prices proposed for stock exchanges will represent higher information asymmetry (Lo, 2012).

Stock price: the price for which the marketer (marketers, specialists, persons or entities which dare to exchange bonds to achieve earnings) buys bonds id the proposed purchase price and the price for which he sells the bonds is called the proposed sales price (Ghaemi, & Watanparast, 2008) and also the data in the website of the Stock Exchange market of Iran were extracted to be processed. In this research we have used sales price (the sales price of the stocks of the companies above were extracted from the bourse website).

The independent variable of the present research is the effects of global financial crisis for which we have used virtual variables to recognize and it was equal to 0 during the years between 2004 and 2007 presupposing that there is not any global financial crisis and it was equal to 1 through the years 2008 and 2011.

Statistical society

The present research has been done on firms accepted in Iran Stock exchange during the time periods between 2004 and 2011 which have presented their information to the bourse organization. The companies which could be included in this list were deleted from the society by using the systematic deletion and finally 133 companies were tested.

- Companies which had gone out of the bourse during the time period
- Companies which had entered the bourse during the time period
- Companies which had changes in their fiscal year during the time period
- A number of companies which were included in investing and financial intermediary and holding (due to lack of relatedness with our research topic)
- Those companies which have had more than 3 months of exchange quits during the study time period (inactivity of bourse)
- The number of companies whose fiscal year didn't end 21st of March (convergence) (due to the same financial years regarding their activities)

Testing the hypotheses

The descriptive statistics of data

In descriptive methods we try to present tables and use the descriptive statistical tools such as concentration and scattering indexes to describe the research data and this will help the transparency of the issue.

The descriptive statistics of the research variables include stock price, information asymmetry before and after the global financial crisis which are shown in table 1.

Regarding the fact that we have used the integrative method for time series and temporary data to test the research hypotheses, the number of year-company observations based on equilibrium integrated data was done before and after the global fi-

nancial crisis. Due to the descriptive statistics, we can divide the indexes above into central, scattering and other indexes. The central indexes are the average indexes, scattering indexes are criterion deviation indexes and other indexes are minimum and maximum indexes presented in table 1.

Table 1. The descriptive statistics of the variables before and after global financial crisis.

Variable	The descriptive statistics of the variables before global financial crisis		The descriptive statistics of the variable after global financial crisis	
	stock price	information asymmetry	stock price	information asymmetry
Number of observation	532	532	532	532
Average	15835.83	0.0877	15835.83	0.0877
Criterion deviation	184849.214	0.1047	184849.214	0.1047
Mean	4258.41	0.0579	4258.41	0.0579
Permeability	22.752	3.326	22.752	3.326
Minimum	0.00	0.00	0.00	0.00
Maximum	4254094.00	0.9904	4254094.00	0.9904

Testing the normality of data

Testing the data hypotheses of 1064 year-companies before and after the global financial crises studied for the years between 2004 and 2011 was done through SPSS software. The starting point of testing is determining the normality of each of the variables. To study the normality of variables and residuals we have used Kolomogorov-Smirnov's test. If the amount of the probability related to this test is bigger than 0.05, we can approve the normality of the distribution of the variables with an assurance level of %95 and vice versa. The results of this test in table (2) show that all variables have a normal distribution because the meaningfulness of variables has a normal distribution of more than 0.05.

Table 2. Kolomogorov-Sminov's test to test the normality of data before and after global financial crisis.

Variables	Before global financial crisis		After global financial crisis	
	stock price	information asymmetry	stock price	information asymmetry
Number	532	532	532	532
Average	15835.83	0.0877	4594.20	0.1573
Criterion deviation	184849.214	0.1047	184849.214	0.1047
Kolomogorov-Sminov's Z	1.182	1.037	1.387	1.224
Meaningfulness level (sig.)	0.108	0.131	0.084	0.098

Results

The results of testing the first hypothesis

Main hypothesis 1: there is a meaningful difference between stock price before and after global financial crisis.

H0: μ1 = μ2

There is not a meaningful difference between the stock price before and after global financial crisis.

H1: μ1 ≠ μ2

There is a meaningful difference between the stock price before and after global financial crisis.

Table 3. The results of t test to study the relationship between global financial crisis and stock price.

Inde-pendent variable	Number		Average		Criterion devia-tion		t statis-tics	Free-dom degree	Mean-ingful-ness level	Difference between averages
Global financial crisis	after crisis	before crisis	after crisis	before crisis	after crisis	before crisis	1.8	531	0.022	–11241
	532	532	4594	15835	13520	184849				

According to table 3 and regarding that in F 6.146 the meaningfulness level is below %5, the equality of the variances of the two groups is not approved. Therefore, we have used the independent t test with adjusted freedom degrees. In the next step we will also study the lack of equality of averages of the meaningfulness level. Since the amount of t statistics equals 1.8 and the meaningfulness is less than %5, we can claim with a %95 assurance level that the averages of the two groups are not equal. In other words, the price of stock before financial crisis and the price of stocks after global financial crisis have a meaningful difference.

Main hypothesis 2: there is a meaningful difference between information asymmetry before and after global financial crisis.

H0: μ1 = μ2

There is not a meaningful difference between information asymmetry before and after global financial crisis.

H1: μ1 ≠ μ2

There is a meaningful difference between information asymmetry before and after global financial crisis.

Table 4. The results of t test to study the relationship between global financial crisis and information asymmetry.

Indepen-dent vari-able	Number		Average		Criterion devia-tion		t sta-tistics	Freedom degree	Mean-ingful-ness level	Difference between averages
Global financial crisis	after crisis	before crisis	after crisis	before crisis	after crisis	before crisis	7.680	531	0.00	0.0696
	532	532	0.1573	0.0877	0.1804	0.1047				

In table (4) and regarding that in F 72.138 the meaningfulness level is below %5, the equality of the variances of the two groups is not approved. Therefore, we have used the independent t test with adjusted freedom degrees. In the next step we will also study the lack of equality of averages of the meaningfulness level. Since the amount of t statistics equals 7.680 and the meaningfulness is less than %5, we can claim with a %95 assurance level that the averages of the two groups are not equal.

Conclusions

In other words, information asymmetry before financial crisis and information asymmetry after global financial crisis have a meaningful difference. Regarding the results gained we can tell that:

1) The stock price before global financial crisis was more than that one after global financial crisis in firms accepted in Tehran Stock Exchange during the years between 2004 and 2011.

2) Information asymmetry before global financial crisis was less than that one after global financial crisis in firms accepted in Tehran Stock Exchange during the years between 2004 and 2011.

The financial crisis in west has caused the reduction of the gross of national product of Iran directly and thus it has increased borrowings from the government and this in turn can increase the rate of inflation. Therefore using preventive strategies is better than cure and in every field prevention should be in considered prior to the crisis. In this case using the experiences of the western countries and also the independence of the central bank in Iran to

create trust in economy can change the threats into opportunities to absorb the wandering global capitals in Iran.

Thus the results of the research show that the world financial crisis has reduced the operating profit and increased the information asymmetry of companies listed in Iran Stock Exchange.

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