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Analysis of the Impact of Economic Growth and Asymmetric Information of Capital Market on Investors' Confidence

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The stock exchange, as a part of the capital market, in case of necessary conditions, can mobilize national capital and direct it towards economic growth. A secure environment where managers are working towards stockholders for investment and information asymmetry is considered to be the features of a good business. This research seeks to investigate whether information asymmetry of the financial market and macroeconomic growth can affect investors' confidence ration. Our model is estimated using MGARCH for seasonal data of the stock market in Iran and the real GDP during the period from 1991-2016. The findings of the research have shown a significant effect of macroeconomic growth and information asymmetry of the financial market on the investors' confidence. There is also a two-way gradient relationship between the information asymmetry and the confidence of investors in the short run. There is a cointegration relationship between these three variables.

Keywords: Information Asymmetry, Investors' Confidence, Total Stock Price Index, Economic Growth, Multivariate GARCH**.**
JEL Classification*:* D81, E44, G11.

1 Introduction

Achieving economic growth requires optimal mobilization and allocation of resources in the national economy level. Achieving this end without financial markets, especially the transparent and efficient capital market, is not possible. Stock Exchange as a part of capital market can, in case of required conditions, mobilize national capital and direct it towards economic growth. In the capital market, information is a precious asset. The more transparent information in

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the capital market, the more efficient market and the less information asymmetry will be. On the one hand, one of the issues that in recent decades is expanding in the field of economy is information economy. Most of the discussions in this type of economics are about asymmetric information (Gholizadeh et al., 2016). One of the markets that are heavily influenced by asymmetric information is the capital market. The main role of the capital market and stock exchange is attracting and channelizing liquidity into the economy towards capital funding, in such a way that it will result in the allocation of scarce financial resources. Achieving this depends on an established efficient and transparent mechanism, through the creation of competitive conditions in capital market. To create transparency in capital markets, availability and accessibility of information is the most important factor. The more transparent information related to the capital market (so-called symmetric information), the more effective on growth and economic development will be this market (Moghadam et al., 2015). Trying to establish the possibility of equal access to information and information transparency and the rule of competition is considered to be a step towards to create efficiency and optimal allocation of resources in the capital market (Sadri, 2013). Many investment decisions are made with regard to the level of probability of asymmetric information. Information asymmetry can be described a condition by which one party has more access to information. One of the important effects of asymmetric information is disrupting the proper functioning of financial markets. How to enter information is effective on price formation and market, and information asymmetry can cause lower market efficiency or even preventing the formation of a market, depriving the parties of the benefits the exchange (Moshkin, 2015). Economic decisions need information, with the help of which existing and available resources could be assigned desirably. One of the most important factors on the right decisions is having appropriate and relevant information to decide about the subject, that it may not be available or processed correctly that would have negative impacts for the decision-maker. In the capital market, relevant information forms primary base of exchanges, and this is why they consider information as the worthiest assets in capital market. Usually when new information on the status of companies is released in the market, this information will be analyzed by analysts, investors and other users, and based on which, a decision to buy or sell shares will be made. The information, and how to react to it will have impact on behaviors of users, especially those of potential and actual shareholders, resulting in increased or reduced prices and shares exchange amounts. Because, how to treat new information by people

will fluctuate and volatile prices, in case of dissemination of confidential and heterogeneous information, we will see different responses from investors in the capital market, which will lead to inaccurate and misleading analyzes about the current situation of market. What should be taken into consideration in capital markets is that many people, who proceed to invest, are ordinary people, who the only way of accessing important corporate information for them is by the announcements which are published by companies in the form of accounting reports and financial statements. Although the ultimate goal of accounting is also meeting the information needs of accounting service users. Given that in the first paragraph of theoretical principles and financial reporting in Iran Accounting Standard, the main objective of releasing accounting information is helping the individuals' economic decisions, itself can suggest its significance. It should be noted that in situations where access to information is costly, investors are forced to shape their analysis about the company's future profitability, cash flow and so on, through their subjective assessment. As a result, the people who are in a more favorable position in terms of information than others can reach better estimates, and due to this information position can influence market supply and demand, resulting in volatility of stock prices (Vakili Fard et al., 2008). Availability of appropriate and relevant information is the most important factor to gain the confidence of investors. Hence, in this study, with the help of regression analysis we seek to answer to the question that what effect information symmetry in Iran's capital market (specifically, in Iran's Stock Exchange) has on gain investors' confidence and in return, economic growth? And, are there any convergence between these three variables? The hypotheses examined in this study as follows:

- There is a positive relationship between Information symmetry in the financial markets and confidence index of investors.
- -There is a long term equilibrium relationship between the three variables of information symmetry in the financial market, economic growth, and investor's confidence index.

As follows, the present research at the first proceeds to review experimental studies. In the third section, theoretical principles and the literature will be discussed, and in the fourth section, the research methodology will be described. In the fifth section, the findings from the econometric model estimation and in the final chapter, conclusions, and suggestions for future researches are offered.

2 Research Background

Expressing previous experiences in the field of study, while clarifying the various concepts and dimensions of the research, enables us to make good use of the achievements of past research. Information asymmetry in the capital market has attracted the intention of many scholars, and various studies have been carried out on the inside and in the broader manner, external to it, which some examples of these studies are offered as follows.

Molaee et al. (2016), in their empirical analysis, investigated price jump and asymmetric information in Tehran's Stock Exchange. They simulated the stock price index using stochastic differential equations such as geometric Brownian motion with jumps and geometric Brownian motion with random fluctuations. Using daily price index data of 50 top companies and those of 30 large companies in Tehran Stock Exchange in the period between March 2010 to February 2015, they concluded that the probability of a price jump in the price index for large companies is more than that of top companies in the stock. In the mentioned period, the good news had the most significant impact on the total stock price index and the price index of top companies.

Khodarahmi et al. (2016) examined the impact of information asymmetry on the risk of falling stock prices. Once achieving a direct link between information asymmetry and the risk of falling stock prices, they suggest that in the situation of information asymmetry, management enjoy more abilities and more opportunities not to disclose bad news and to expedite the disclosure of good news.

Motameni (2008) in research examined the relationship between financial development and economic growth in Iran. He based on Granger causality method using Iran GDP data and nonpublic sector debt to banks from 1961 to 2005 tried to examine this relationship. The results of this research show that in Iran’s economy, economic growth will improve financial development, while the statistical evidence does not approve the inverse causal relation. Although the research results indicate improvements in financial development in recent years, the situation of Iran's financial growth is not favorable in comparison to other countries in the region.

Chinzara (2011) examined the uncertainty relationship between macroeconomic variables (oil price, gold, and currency) and stock prices using VAR_GARCH models for South Africa. His findings indicate a two-way relationship between these variables. The uncertainty of macroeconomic variables also has a significant effect on stock market volatility.

Chiara (2016), in an article entitled "The effect investor’s confidence on monetary policy transmission mechanism a Multivariate GARCH approach,"

investigates the financial stability's effect on the monetary policy transmission mechanism. The results showed that a positive correlation between money growth's and PEG's volatility and positive co-movements between the proxy for macroeconomic uncertainty with both the proxies for monetary risk and investors' confidence volatility.

In research entitled "When the stock market reacts to macroeconomic news," Medovikov (2016) examined the relationship between macroeconomic news and US stock market returns during the period from 1999 to 2013. In this research, Copula's approach has been used to analyze the results. The results of this study indicate that economic news has nonlinear and asymmetric impacts on stock returns and that lousy news has the highest impact on the stock market.

Avazzadeh Fath and colleagues (2015), in a study with the help of multivariable linear regression, examined the relationship between information asymmetry and liquidity risk of stocks of companies listed on the Tehran Stock Exchange for the period 2009-2012 and 112 companies as the statistical sample of research. According to their results, there is no significant relationship between information asymmetry and liquidity risk in stock markets. However, there is a positive and significant relation between liquidity risk of a company's stocks and information asymmetry. According to the authors, the more stocks have liquidity risk, the more information asymmetry will they have.

Chien Chung et al. (2009), in an article entitled "Impact of Asymmetric Development of Financial Intermediaries on Economic Growth," analyzed the effect of asymmetry of financial intermediary on the range of distribution of growth with the use of quantile regression model and instrumental variables. Their results are based on a sample of seventy-one countries in the period from 1960 to 1995, and shows that differences in the development of financial intermediation cause differences in growth distribution quantiles, so financial development has a positive impact on overall distribution of growth, however, the degree of the effect is higher in the countries with higher levels of growth.

Ljungwall (2007) discussed the issue of financial sector development, foreign direct investment, and economic growth in China. In this study, he made the use of Generalized Moments Method (GMM) for 28 provinces of China in the period 1986-2003. The results showed that the interaction between foreign direct investment and financial index, improve economic growth.

Johannsen (2004), in a study entitled "The statistical and economic role of jumps in the pattern of interest rates," has addressed the importance of jump

in the economy. In this study, at first, a test was carried out to determine the interest rate jump then using a nonparametric approach, the diffusion equation was estimated. The results showed that the unexpected news about macro economy would lead to a jump in interest rates. The data of this research has covered of three-month treasury bills from 1965 to 1999 for USA.

3 Theoretical Principles

According to the theories of macroeconomics, the accumulation of physical capital is considered one of the necessary conditions for the growth of the national economy. Many economic studies have confirmed that in the case of lack of enough capital, economic growth will get into serious trouble. Many developing countries are facing with the great problem of capital shortage. Since the accumulation of capital is regarded as one of the most important sources of continuing economic growth, through financial markets, this process of capital generation can be accelerated. One of the features of an efficient financial market is the high level of information symmetry. Therefore, investors save their money with full confidence in those markets. The more efficient capital market, the more prices reflect the full available information. As a result, market security and the confidence of investors in the market will be more. It will result in attraction of wandering capitals and directing them towards output and increase in output and domestic outcomes and ultimately, improve in economic conditions. Financial development is a multidimensional process that is formed by new capital financial markets, introduction of new financial instruments and financial future competition. (Hosseini et al., 2014). Financial sector development effectively increases opportunity cost for informal sector activities by lowering barriers, which in turn encourages the entrepreneurs to move towards formal sector where they can have generative investment (Berdiev and Saunoris, 2016). Studies have shown that the level of development of financial markets, especially the stock market and banks, and the impact that they have on financing of companies, eventually leave a great impact on economic growth (Taghavi et al.,2011). Financial markets due to their major role on collecting resources through great and little saving existing in national economy, optimizing turnover of financial resources and directing them towards expenditures and investment needs in generative economic sectors in under interest. The positive effects of the stock market on economic development includes increased incentives to invest by reducing risk, and facilitate liquidity risk and mobilization of deposits. According to some economists, the difference between developed and developing economies is in the existence of integrated, active, extensive and

developed financial markets, not in their advanced technology. Advanced financial markets control a significant amount of financial capital of a country's economy. These markets play an important role in accelerating economic growth by raising investors' confidence. In the new theories, the emphasis is placed on high solidarity between economic growth and innovation that this innovation of financial markets takes place with introducing new means of financial development in the real sector of the economy by introducing new goods. With the introduction of financial intermediaries in growth models, with introducing new financing tools such as risk reduction, increasing capital efficiency through savings mobility and optimal allocation of resources is used, which leads to the long-term development of economic growth. The financial markets in which capitals find the opportunity to have effective presence and growth are divided into two parts of money market and capital market. The capital market refers to the market for trading financial instruments with maturity over one year and non-maturity assets. This part of the financial market plays a more important role in the collection of savings resources and the supply of investment needs of manufacturing units. The capital market is much wider than the money market and has more diversified instruments. One of the assumptions of the full competition market is the existence of complete information. It means that all market participants have full access to all relevant prices and information, and firms know the prices of all goods that they are likely to produce and the technology of producing these goods, as well as the price at which they can supply the necessary inputs. On the other hand, all people are also aware of the purchase prices of all the goods and the prices that they can sell their resources, and particularly, their workforce. In these circumstances, prices are determined by supply and demand, and finally the difference price is rapidly diminished, and across all the market for one commodity only one price is offered, which is the equilibrium point of the market, and at this price, the situation of consumer and manufacturer is better. The phenomenon of information asymmetry in the market is a fact that is not considered by traditional classical theories. The basis of the idea of invisible hands activities in the full competition market is that the market actors have the same information about the characteristics of the traded goods, but when this assumption is violated, potential resources appear in an exchange and light of additional information, and this, has become a fundamental and controversial topic. Consequences of information asymmetry today are visible in most markets, and in the recent years extensive studies have been conducted to examine these consequences in various markets (Shakeri, 2007, vol. 2, p. 456).

Information asymmetry raises questions about market equilibrium. Since the assumption of equilibrium suggests that individuals are aware of the requirements, inventory levels, and market prices at any given time, while economists admit that most markets are in incomplete competition. Walras equilibrium, based on the availability of complete information in market is imaginary and fanciful, hence finding solutions to reduce information asymmetry and bringing the market closer to equilibrium can close the incomplete competition market to a full competition market, resulting in participants' satisfaction and increased transaction efficiency (Saleh Nia et al., 2017). The foundations of the financial market structure under the conditions of asymmetric information in the 1970s were established by the great economic scholars, George Akerlof, and Joseph Stiglitz. They concluded that the development of financial structure in a transparent economic environment would fully take place under the assumption of a competitive market, namely, the symmetry of information. This assumption is based on the fact that all participants in the market are fully aware of all prices and all the information, but if the market is not able to maintain its main task and therefore becomes inefficient due to asymmetric information for parties to exchange, market failure will occur. In economic literature, the issue of asymmetry is usually divided into two main groups: unfavorable selection and behavioral risk. The former are the issues in which one party to the exchange is unaware of the information of the other party, which could affect him/his decision. This category is known as Hidden Information, which leads to unfavorable selection phenomenon. The latter category relates to situations in which one of the parties to take actions that the other party is not aware of, but it affects the welfare of the second party. This category is referred to as hidden action that can lead to behavioral risk. Many studies have shown that a strong relationship between active financial markets in the context of information asymmetry not only can induce business volatility but also can help to expand them. Therefore, it can be said that there is a positive relationship between the symmetry of information and the rate of economic growth (Zicchino, 2002). Based on theoretical analyses and empirical evidences, increase of asymmetry or inequality of information is associated with a decrease in investor confidence, followed by a decrease in the number of traders, increased transaction costs, lower liquidity of securities, and a decrease in trading volume and, in general, will result in reduced social benefits gained from a trade. The success of a financial market means that prices constantly reflect the new information generated by transactions. Therefore, in an efficient market, information processing can be done continuously. In an efficient

market, prices at any given time represent an accurate assessment of available information (Beaver, 1981).

4 Research Methodology

In this paper, the Multivariate GARCH model is used. This estimator models simultaneous variability of two or more variables. ARCH and GARCH models have been widely used because of the heterogeneity of conditional variance, but their interactions have been less widely considered. For this purpose, the typical GARCH (single variable) model is generalized to a multivariate GARCH model. This multivariate model requires more clarification for two reasons:

1) This model should be flexible enough to show the dynamism of conditional variances and covariances. But, since the number of parameters increases exponentially as the dimensions of the model increases, this specification should have sufficient details to make it possible to estimate fairly easy the model and comfortable interpretation of parameters.
2) The matrix of variance-covariance should be definite or have positive precision, which this goal is achieved by limiting the parameters of the model.

By using multivariate GARCH estimator, this study demonstrates the relationship between investors' confidence index, economic growth, and the level of information asymmetry in Iranian stock market. Asset risk-reward criteria are the best option to describe the shocks of stock market. This criterion has shown the unpredictable changes in stock market index due to changes investors' confidence index in a summarized manner. According to Puhan's (2011) idea, the ratio of price-earnings (PE) is a good and useful factor for the stock market trading volume. PE ratio is a financial statistic for recognition and is used when the value of company stock index evaluated to be high (low). Because decrease in PE ratio means a drop in investors' confidence in corporate growth. The ratio of price to earnings or PE is a relative value for the stock valuation of companies through which the value of the current stock of the company is measured relative to the earnings per share. This rate can be calculated as follows:

$$PE = \frac{\text{Market Value per Share}}{Earning\ or\ earning\ per\ share} \quad (1)$$

Earnings per share are often the last profit reported by the company's financial information. In this paper, price-earnings to earnings growth (PEG)

index, which is a better index than the PE index, will be used. This index, considering the growth potential of companies, reflects the lifeblood of investors more because it uses several revenue-generating factors, such as brand, human capital, and expectations and barriers to entry to computing this index, data of the price-earnings ratio and the Earning Growth ratio are collected from Tehran stock exchange. Chiara Guerello (2016), in his paper, used the PEG Index to ivestigates the financial sustainability effect on the monetary policy transmission mechanisms in the US economy. Log real GDP, the logarithm of the real GDP growth rate is considered as an indicator for macroeconomics. The level of asymmetry of information in the market is not directly visible. Therefore, researchers have used some of the alternative variables to measure it. In financial literature, several criteria have been proposed to measure the level of asymmetry of information on the market. The importance of the concept of asymmetry of information as well as the necessity of introducing it into models and its estimation has led to the introduction of various criteria for its measurement by economists in the recent years. In econometrics, also, the asymmetric impact of news on returns and volatilities in stock prices has been expressed in form of GARCH models. The logarithm of the standard deviation of total stock price index logSQRTI is used in the proposed model as an approximation to show the level of information symmetry in the financial market. The overall stock price index represents the total price changes in stock market, which is calculated as a weighted average. The following factors are used to calculate:

P_{it} The price of the ith company at time t

q_{it} The number of shares issued by the i^{th} company at time t

D_t is the base number at time t, which is equal to $\Sigma P_{i0} q_{i0}$ at the time of $t = 0$.

P_{i0} The stock price of i^{th}company at the time of $t = 0$

q_{i0} The number of shares issued by i^{th} company at the time of $t = 0$

nThe number of companies covered by the index

The formula for calculating this index is as follows:

$$\frac{\sum_{i=1}^{n} P_{it} q_{it}}{D_t} \times 100 = total\ stock\ price\ index \qquad (2)$$

As can be seen, the total stock prices index includes all companies admitted to the stock exchange. The higher number of companies admitted to the stock exchange will be positively affected by the overall stock price index. Since companies are required to provide transparent information at short intervals (monthly, seasonally, or quarterly, etc.), therefore by increasing the number

of companies listed into the stock exchange, the volume of information on the stock exchange increases significantly. As this information increases, the transaction prices become closer to their actual state, and accordingly, economic transparency increases. Therefore, it can be said that calculation of standard deviation of total stock price index, which shows the dispersion of the price index over a period of time, can be used as a relative criteria for symmetry of information in a financial market, and statistically, the more$n$ increases,the less standard deviation of total stock price index. It means that the dispersion of information lowers and therefore has a positive effect on economic growth (Sameti et al., 2012). Since the asymmetry of the information of a hidden variable is not observable directly consequently, it is necessary to introduce the value based on the relevant variables. Ghalibaf Asl and Valizadeh (2016) believe that information asymmetry is a qualitative concept therefore, numerical illustration needed a model to show the quantity. There are several approaches to quantify information symmetry in the trade units using the stock price volatility criterion. Regarding this criterion, Cormier et al. (2010) argue that lower information asymmetry indicates a smooth price fluctuation. Therefore, stock price volatility is expected to be associated with increased information asymmetry.This measure is equal to the moving standard deviation of the stock price. In this study, to obtain standard deviation of the total stock price index, the 4-quarter mobile standard deviation formula is used, which is as follows:

$$\text{Moving standard deviation} = \sqrt{1/4 \sum_{j=0}^{3} \left(X_{i,t-j} - \sum_{k=0}^{3} 1/4 X_{i,t-j}\right)^2} \qquad (3)$$

X=total stock price index

The under-study period in this study is from the beginning of 1991 to the end of 2016 in the form of quarterly data. GDP and consumer price index (CPI) are used in this study in the base year of 2011. The above variable initially will be in the real form and then logarithmically will be entered into the econometric model. The used model evaluates PEG investor's confidence effect on GDP economic growth and the level of symmetry of Iran's stock market SQRTI.

5 Research Findings

M_GARCH analysis is based on several underlying assumptions, which should first be investigated. Among the most critical assumptions are the assumptions regarding the normality of variables, the lack of self-correlation

between components of model disturbance, the normality of disturbance terms, the non-correlation of independent variables with each other, the non-heterogeneity of variances, and also, stationarity of time series.

5.1 Statistical Population

To investigate general and the characteristics of the variables used to estimate the model and their detailed analysis, descriptive statistics estimation related to them are required. Table 1 shows descriptive analysis of the main variables data used in this research. The proximity of the median and mean variables indicate that they are normal. Jarcque-Bera statistics also confirm the normality of the under-study time series.

Table 1
Descriptive Statistics of the Studied Variables

variable name	Jarqcue-Bera statistics (Significance level)	Middle	Average	Minimum	Maximum	Standard deviation
logPEG	3.23 (0.20)	-5.50	-5.44	-6.72	-3.52	0.65
logrealGDP	2.70 (0.26)	10.49	10.58	8.77	13.45	1.15
logSQRTI	3.47 (0.18)	6.18	6.63	2.62	9.78	1.91

Source: The research calculations

5.2 Stationarity Test on Data

Before estimating the effect of investor confidence on economic growth and the level of financial market information symmetry, it is necessary to test the stationarity of all variables examined in the estimation. Because non-stationarity of time series variables causes the problem of false regression. The results of Phillips-Peron's unit root test are summarized in Table 2. Regarding the non-stationarity of the logrealGDP and logSQRTI and logPEG variables at the level, we repeat the test by taking the first differences. To use variables on the surface, the cointegration test should be performed. The results of the Johansen cointegration test are shown in Table 3. The results of Table 3 show that despite non-stationarity of variables at surface, the resultant of the study variables at surface have cointegration. Three variables have a long-term equilibrium relationship.

Table 2
Unit Root Test

Result	significance level	Critical values			Computational statistics	Variable
		0.1	0.05	0.01		
I(1)	0.000	-2.58	-2.89	-3.49	-11.445	logPEG
I(1)	0.000	-2.58	-2.89	-3.49	-13.834	logrealGDP
I(1)	0.001	-2.58	-2.89	-3.49	-4.124	logSQRTI

Source: Research calculations

Table 3
Johansen Cointegration Test Results

Result	significance level	trace Statistics	Critical value	Hypothesis
rejected	0.03	37.63	35.19	With no relation (r=0)
Accepted	0.08	18.79	20.26	Max with one Relationship (r≤1)

Source: Research calculations

5.3 Pearson Correlation Coefficient

In table 4, the correlation coefficient of understudy variables is summarized, as shown in Table 4. The correlation coefficient between the two variables of the investor confidence index and the financial information symmetry level is -0.685. Therefore, there is a relatively strong correlation between the two variables of investor confidence and information asymmetry in the stock market of Iran. The correlation coefficient between investors' confidence index and macroeconomic growth is 0.732, showing a relatively strong correlation between investor confidence and macroeconomic growth.

Table 4
Pearson Correlation Coefficients between Variables

Correlation t-statistic	logPEG	logSQRTI	lograelGDP
logPEG	1.000 000		
logSQRTI	-0.685 -9.224	1.000 000	
lograelGDP	0.732 10.535	-0.901 -20.400	1.000 000

Source: Research calculations

5.4 Analysis of the Relationships between Variables

In Table 6, the results of estimating the regression model using a multivariate GARCH estimator are summarized. As the data in Table 6 show, all regression coefficients of the model are statistically significant at the 95% level. In other words, independent variables of the model affect the dependent variable. Based on understudy model, the results show that investors' confidence index is affected by macroeconomic growth as well as the symmetry index of financial market information. The estimation results also show that there is a meaningful positive relationship between investor confidence and production growth. As macroeconomy in Iran grows by one percent, investors' confidence index grows by 0.38 percent. Therefore, economic growth and stability can be an essential component in attracting investor confidence. Also, according to the model estimation results, if the standard deviation of the total price index of seasonal stock increases by one percent, while maintaining other variables and conditions, the investor confidence index is reduced by an average of 0.074%. Given that the coefficient of the variable of logarithm of standard deviation for total stock price index is negative and significant, which its larger values indicate more dispersion of information and less symmetry, therefore, it can be said that the reduction of asymmetric information has a positive effect on the growth of investor confidence index in Iran. . In other words, by increasing the standard deviation of the total stock price index, the growth of investor confidence index will reduce, which is consistent with empirical studies and existing theories in the economy. Based on the coefficients of variables and their significance and according to the coefficient of model determination, explanatory variables considered in the model explain about 52.4% of the changes in investor confidence growth. Hence, the conditional variance equation of the estimated model is as follows:

$$\sigma_t^2 = 0.006 - 0.116U_{t-1}^2 + 1.053\text{GARCH}(-1) \quad (4)$$

Where the estimated coefficients provide the necessary and sufficient condition for GARCH model based on its theoretical foundations because the necessary and sufficient condition for the GARCH model to be reliable and weak is that the sum of the coefficients of the model is smaller than one. Figure 1 shows the residual regression model. To analyze the normality status of model residuals, Jarque-Bera test has been used. The result of the estimation of this statistic is equal to 4.53, which is smaller than the critical value of chi squire distribution with two degrees of freedom at a significant level of 0.05. Therefore, with 95% confidence, the distribution of econometric model residual of our study is normal.

Table 5
Estimates of the Research Model (dependent variable: investors' confidence)

The total regression modelR^2	significance level	Z statistics	coefficient	Variable
0.524	0.000	-22580.65	-8.942	intercept
	0.000	56876.90	0.381	Logarithm of real GDP
	0.000	-13.916	-0.074	Logarithm of standard deviation of total stock price index
		Conditional Variance Equation		
0.524	0.003	2.974	0.006	intecept
	0.084	-1.729	-0.116	U_{t-1}^2
	0.000	13.996	1.053	GARCH(-1)

Source: Research calculations

5.5 Examination of Heteroscedasticity

After estimating the model, heteroscedasticity of will be examined, so such this test should be performed. The white test was used to test the heteroscedasticity of the model. The results of the White heteroscedasticity test are shown in Table 5. As the data in Table 5 show, considering that the test statistic in our model is significant at 95% level, the assumption of homoscedasticity of error terms is not confirmed. Therefore, the use of a stochastic fluctuation estimator is confirmed.

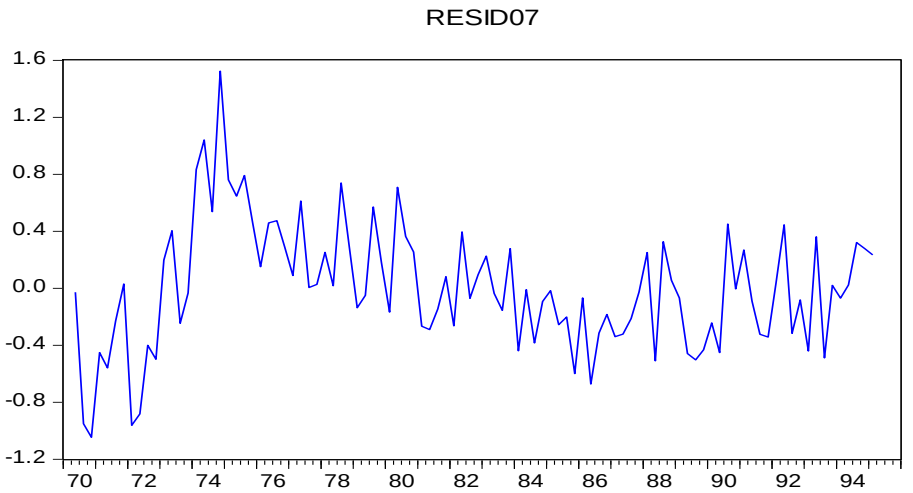

Figure 1. The Residuals of Regression Model

Table 6
White Heteroscedasticity Test (dependent variable: logPEG)

significance level	Statistics	Variables
0.000	$F = 3.80$ $nR^2 = 16.76$	logrealGDP logSQRTI

Source: Research calculations

5.6 Granger Causality Test

Causality is one of the fundamental issues in the analysis of the relationship between economic variables. Moreover, to determine the direction of causality, the variables are used for which there are no clear theoretical foundations. The conventional method for investigating causality is known as the Granger causality test. The results of this test on the research variables pair wisely are summarized in Table 7. As the data in Table 7 show, the symmetry of financial market information in the first and second periods has a Granger relationship with the investors' confidence index. In the short and long term (first to fourth quarters), increased investors' confidence has contributed to the growth of real GDP. That is, increasing investor's confidence increases capital accumulation in financial markets, which increases production growth. In the short run (first quarter), there is a two-way Granger relationship

between the stock market information symmetry and the investors' confidence index. According to theoretical foundations, the return of investment increases with the reduction of financial market information asymmetry. According to the findings of Black & Liu (2007) and Kim et al. (2011) a positive relationship between return of investment and the risk of falling stock prices in companies with high information asymmetry relative to those with less information asymmetry is more intense. These results are in agreement with the research findings for the short term (at least three months) in the Iranian stock market. According to the present research findings, in the short and medium-term, symmetric information has a Granger relationship with real GDP growth.

Table 7
Granger Causality Test

F (prob)	lag	logPEG	logSQRTI	logrealGDP
logPEG	1		*(0.012)6.60	(0.371)0.805
	2		*(0.05)2.98	(0.650)0.432
	3		**(0.08)2.36	(0.643)0.56
	4		*(0.019)3.098	(0.364)1.094
logSQRTI	1	* (0.002) 10.04		*(0.024)5.215
	2	(0.369)1.01		*(0.05)2.93
	3	(0.384)1.03		(0.219)1.502
	4	(0.506)0.835		(0.215)1.479
logrealGDP	1	*(0.000)22.12	(0.940)0.006	
	2	*(0.002)6.59	**(0.07)2.67	
	3	*(0.013)3.76	(0.256)1.372	
	4	*(0.032)2.751	(0.279)1.291	

Source: Research calculations

6 Conclusions and Suggestions

Investment is the driving engine of economic growth. It is one of the critical discussions in the capital market so that its proper management can affect the value of the company. Investment is the sum of money saved at current time in the hope of obtaining more resources from its current consumption (Badavar Nahandi and Taghizadeh, 2013). Due to limited resources, in addition to investment development, increasing investment efficiency is one of the essential issues in gaining investors' confidence. One of the most important economic challenges is the optimal allocation of investors' savings in investment opportunities.

Meanwhile, factors such as information asymmetry lead to turmoil in the performance of the capital market. Reducing the information asymmetry of companies listed on the stock exchange will increase investors' confidence. If the market fails to fulfill its primary task due to the information asymmetry for both the parties to exchange and as a result, it acts inefficiently, and market failure will occur. Information in today's world and stock trading are the core of market efficiency. On the other hand, the propagation speed and the symmetry of information play a significant role in market efficiency. Therefore, the more efficient market, the more symmetrical is information, the more market security, and higher economic growth can be achieved by directing investors towards production.

The purpose of this study is to investigate the effect of investors' confidence on economic growth and information symmetry. The data used in seasonal series is from the period 1991 to the end of 2016. Based on the results obtained, there is a long-term equilibrium relationship between the three variables studied: investors' confidence, economic growth, and information symmetry. In the short term, there is a positive two-way Granger relationship between information symmetry and the investors' confidence index. In the short and long term, economic growth will have a positive effect, and at 95% significant level, it will increase investors' confidence. According to research findings, with a one percent increase in macroeconomic growth, an increase of about 0.38% of investors' confidence will occur. That is, the gaining of investors' confidence will lead to financial development. Motameni (2008) by exploring the association of financial development and economic growth in Iran concluded that in Iran's economy, economic growth leads to improve in financial development, which it is consistent with the findings of our study. This conclusion is also consistent with the findings of the research by Taghavi et al. (2011, pp. 39-39), where it has been shown that the level of development of financial markets, especially the stock market, and the banks, and the

impact that they have on the financing of companies, ultimately have a significant impact on economic growth. In exploring the impact of shocks (good and bad news) on investors' confidence index, regression analysis shows that our under-study model is asymmetric, meaning that positive and negative news cannot have same impact on Iran's Stock Exchange. Also, γ is negative and significant, which shows that the effect of negative shocks on the stock market is less than that of positive shocks. The reasons for the intense reaction of investors and financial market executives to negative economic shocks are newspapers and television. Because negative shocks will increase newspaper profits and increase the audience of television channels. As a result, these media, more and more with spreading such news, will increase the sense of uncertainty and risk of investors, which itself, stimulates the sale of shares in the financial market. But positive shocks are not much covered by mass media. Therefore, positive shocks do not have much impact on the financial market. The negative effect of a phenomenon is psychological, such that people pay more attention to negative news and phenomena than to positive news (Fiske, 1980). After the publication of negative news in the financial market, investors proceed to sell some of the assets that the news may hurt them, and indeed, investors are adjusting their investment portfolio. According to the results of empirical studies, the publication of negative news about the economic situation of consumers leads to stock price volatility. However, release of good news does not have much impact on stock prices. Economic news has an asymmetric effect on stock market returns (Akhtar et al., 2012). The standard deviation coefficient of the total stock price index, which is used as an approximation to show the level of information symmetry (to quantify the asymmetric information variable) in the financial market. According to the research findings, there is a negative correlation between the investor's confidence and the standard deviation of the total stock price index at the 95% significance level. It means that, with one percent increase in the standard deviation of the total stock price index, the investors' confidence ration is reduced by about 0.07 percent. Therefore, in the Iranian stock market, investors' confidence index is affected by the information asymmetry index. In other words, with the increase in the standard deviation of the total stock price index, the growth of the investors' confidence ration is reduced, which is consistent with empirical studies and existing theories in the economy. One of the impacts of asymmetrical information is dysfunction in markets. The more asymmetrical information exists in a market, the less the market is functional and efficient, and the less the index in number of successful exchanges in it (Zarei & Azimi Khaneghah, 2016). From the findings of the

present study, it is evident that there is a relatively strong and negative correlation between information asymmetry and economic growth. This result is consistent with the findings of the research by Samty and Ranjbar (2012). They concluded that information asymmetry has a negative and significant effect on economic growth. Hence, our findings show that the information symmetry of the capital market in Iran is relatively low because financial markets did not have such growth in obtaining, gathering and processing of information. In developed countries, the collection and processing of information to channel investable funds between investors are more that it provides the necessary field for higher returns and thus leads to further increase in economic growth. Therefore, it is suggested:

1) Stability in economic growth leads to gain investors' confidence in investments. Therefore, to achieve economic growth, it is necessary to equip and allocate resources at the national level.
2) Given the fact that information symmetry through creating convergence in stock prices and markets leads to increase of capital efficiency, hence it is recommended to provide the field of economic growth of Iran by creating the space of information symmetry in the capital market and attracting investors' confidence.
3) To increase information symmetry and economic growth, we need to make more significant efforts to improve the efficiency of financial markets to realize more efficient allocation of resources and increase investment efficiency. Accordingly, create a secure environment for investors.

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