



## Study of the Effect of Published News on Iran Capital Market

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### ABSTRACT

Stock market consists of a formal purchase and sale of shares of firms based on specific rules and regulations. Many factors influence shaping of information views of market agents and firms' stock prices. Some of them are internal factors and others result from variables outside the boundaries of domestic economy. In this context, political and economic news as a strong independent variable can influence many other variables such as stock price index. The primary aim of this study is to investigate the influence of political news (including: Iranian tenth presidential elections 2009(fa.wikipedia.org), parliamentary elections for Islamic Consultative Assembly 2011 and summit of the nonaligned movement2012(www.khorshidonline.com), and economic news (including petrol rationing 2007(www.tebyan.net), decrease in interest rates 2007(www.ghatreh.com), decreased global oil prices and its impacts on the Iranian economy2008(www.farsnews.com), implementation of The Iranian targeted subsidy plan 2009(www.irinn.ir), sharp rise in gold prices2010,(www.alborzonline.com)) on Tehran Stock Exchange (TSE). In this regard hypotheses on the significant effects of news on volatility of TEPIX (TSE's main index) and industry index are tested. With respect to variance Heteroskedasticity particularly in the securities markets, ARCH family models, specifically GARCH one is used to test hypotheses. To this end, weekday time-series data for TEPIX and industry indices has been used since the beginning of March 21th 2007 until the end of March 21th 2012 (Mehrer&Abdoli,2005). Estimation was done using Eviews6. Result showed that political news was a more positive powerful factor than economic news and caused greater volatility in TEPIX. Also political news was a more positive influential factor compared to economic news with respect to its effect on industry indices and caused greater volatility in them.

**KEYWORDS:** Political news, Economic news, Iran Stock Market, Volatility of price index, TEPIX

### INTRODUCTION

Realization of long-term economic growth requires optimal mobilization and allocation of resources at national level and this crucial outcome cannot be obtained without help from financial markets, especially an extensive and efficient capital market (Samadi&Shirani,2005). In a healthy economy, presence of an efficient financial system has a fundamental role in proper distribution of capital and financial resources. If the whole economic system of a country is divided into two real and financial parts, the financial one can be defined as a subset of the economic system in which funds, credit and capital flows from holders of money and capital to demanding parties in the framework of specific rules and regulations. Financial markets provide necessary mobilization to deliver savings of natural and legal persons to others having productive investment opportunities requiring financial resources.

Almost in all cases of these money transfers, financial assets are resulted. In other words, financial markets are markets where financial assets are traded. Financial assets include such assets as stocks, bonds, etc. which their values are dependent upon the products and services offered by the issuing firm. Difference between financial assets and real assets is that real ones such as automobile, real estate and home appliances are of physical nature. One way of investment is to purchase financial assets

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(Hasandoost,2012). The advantage of purchasing financial assets over real ones from an economic perspective is that real assets are consumption products not saving and investment ones. On the other hand purchase of real assets and holding them unused in the hope of rising their prices would create no value added and damage national industries unless they are used in some way. For example a person may purchase an apartment or an automobile and lease them. Some types of financial assets include investments in bank deposits, capital, pension plans provided by the pension funds, various policies offered by insurance companies and securities traded by brokers in stock exchanges. Functions of financial markets can be summarized as attraction and mobilization of the savings and allocation of resources (transfer of funds between economic entities), determining prices of funds and capital and dissemination and analysis of information. Stock Exchange is a formal capital market in which corporate shares or governs mental bonds or issued by other credible private institutions are traded under certain rules and regulations. Important features of a stock exchange include legal protection of capital owners and stagnant capital and imposing legal requirements on capital applicants. Stock exchange being regarded by the economic analysts as the pulse of the economy, on one hand is a source for attraction of savings and on the other hand, is a safe and reliable reference for owners of stagnant capital in which they can find a reliable place for their excess funds and invest them in firms or enjoy a definite and guaranteed earnings by purchasing shares and bonds of governmental entities or other credible institutions. Stock exchange as a coherent and organized stock market is the most significant place for attracting and organizing stagnant financial resources in right ways and trading corporate shares while by empowering the economy by providing capital needed by projects, reducing government intervention in the economy and increasing tax revenues brings about significant economic benefits and also destroys the effects of inflation resulting from presence of extra liquidity in the hands of people. Engine of growth in every economy is financial market (particularly stock exchanges) (Samadi&Shirani,2005). But how can trends and performance of these markets be compared? The answer to this question lies in financial market indices and their importance. In financial markets all around the world price stock indices are seen as one of the most important measures of stock exchange performance and enjoy significant importance and interest. Perhaps the most important reason for this widespread interest is that these indices are formed of aggregated stock price movements of all firms or a certain class of firms on the stock exchange and in this way makes it possible to study the price momentum in the stock market.

### STATEMENT OF PROBLEM

Overall, the market is a mechanism helping people to buy and sell goods and services. Markets need actors and specified schedules. Buyers enjoy sufficient choices in the market and they can choose the best among existing goods and services. Sellers also have access to many buyers and therefore pay less communication cost. Capital markets are similar to any other market, but the most important goods of this market is capital. Capital market is a part of financial markets. Contrary to money markets, capital markets are a place for providing long-term capital to firms. Capital market plays an intermediate role in allocation of long-term funds in order to form capital assets. Source of funds in these markets include individual investors, corporate investors, funds, banks and other holder of financial resources. These funds are used to finance business and development projects of listed firms. In other words, capital markets collect funds from parts of markets having surplus and will direct them to parts needing financial resources. Efficiency of capital markets is an outcome of performance of the actors and competitive forces. In developed countries, capital markets and in particular stock exchanges are the most significant source of financing for businesses and industrial entities. However in less developed countries such as Iran, financing mostly relies upon banking system. Capital markets play an important role in economic development especially in developed countries. Efficient capital markets ensure fair prices for firms issuing shares and other securities as well as individual and institutional investors. This also provides benefits for national economy because allocation of funds and capital is done in an optimal way. It means that critical profit making projects are financed and those with negative value which are not vital for national economy are rejected. In today world national capital markets are combined and form the international capital markets. In this way not only process of national economic growth is accelerated and facilitated but also with globalization of capital, optimal allocation of international capital is in progress (Hasandoost2012).

### THEORETICAL BACKGROUND

In the financial world, there are three types of capital market efficiency:

1. Allocative efficiency

2. Operational efficiency

3. Information efficiency

**Allocative efficiency:** One of the major consequences of market efficiency is that the available resources are utilized in the best forms and in optimal and favorable ways. Markets which finance investment projects with marginal productivity have allocative efficiency. Allocation is optimal when most part of capital is directed towards the most profitable activity.

**Operational Efficiency:** operational efficiency refers to facilitation and acceleration of transactions in the market through which capital markets prepare the grounds for meeting of buyers and sellers. This type of efficiency leads to increased speed of asset liquidation. Markets are considered as operationally efficient when transactions can be conducted at minimal costs.

**Information Efficiency:** in an efficient market, information spreading in the market rapidly affects the price. In such a market price of securities is close to their intrinsic value. The efficient market should be sensitive to new information. If new information is provided to public the prices will change according to new data. Information efficiency itself is divided into three forms: weak, semi-strong and strong.

Weak efficiency represents random walk and no one can get unusual return by tracking historical prices. Therefore technical analysis would not be helpful in the market. In semi-strong form it is assumed that prices always reflect all the available public data. Thus basic analysis of data will not results in unusual returns. Strong form assumes that prices at any time reflect all public and private information and consequently trading based on private data does not lead to unusual profit (Talangy, 2009).

## LITERATURE REVIEW

Nizer (2012) in his study arrived at conclusion that published news of companies may cause a considerable impact on prices of a negotiated stock. Fang and Peress (2009) studied the connections between the average stock return of certain firms and their media coverage in a period and found out that there was not a significant relationship between significant stock return and media coverage. Tetlock (2007) used news from Wall Street Journal to measure the relationship between the media and the stock market. He founds that high media pessimism predicts downward pressure on market prices followed by a reversion to fundamentals, and unusually high or low pessimism predicts high market trading volume. Takeda and Yamazaki (2006) took a further step by studying the relations between the stock price of a firm and the exposure of a firm in a NHK TV program. One interesting finding of this study was that a simple report of a firm's old story still had a potentially positive impact on its stock price. Chan (2003) concluded that the monthly stock returns of firms were affected by the headlines of news containing these firms. These studies showed that bad news reports result in a negative drift of the stock market up to 12 months. For example, Cutler et al. (1998) find out that one-third of variance in stock returns is brought by the news articles. Mitchell and Mulherin (1994) point out that the number of Dow Jones announcements has a direct impact on several kinds of securities market activities including trading volume and market returns. These earlier findings reveal the connection of news and movements of stock markets. Later studies exerted more efforts to find patterns of effects of news on stock markets. Early studies of market efficiency by Fama (1965, 1970 and 1991) suggests that at any given time, security prices fully reflect all available information. Thus, no investor has an advantage in predicting a return on a stock price because no one has access to information not already available to everyone else, therefore only unanticipated information can push the prices. By the definition of Fama (1991) the efficiency of a market can be classified into three groups by the type of information reflected by the prices. Weak form efficiency states that all past prices, returns and other technical information of a stock are reflected in securities price (i.e. technical analysis cannot be used to predict and beat a market). Semi-strong form efficiency claims that all public information is reflected in securities' current price (i.e. neither fundamental nor technical analysis can be advantageous to gain abnormal return. The efficient market hypothesis does not argue that abnormal return are obtained when new information comes, but argues that these information can be anticipated, therefore no one can earn higher return than the normal. Known and Pinkerton (1981) concluded that the change of stock returns was caused by the release of news on firm acquisition. Since Keynes brought up the concept of "animal spirits" in 1930's, a large number of researchers are trying to understand the determinants of wild movements in stock market prices. Observing the fluctuation of stock prices accompanied by the news publishing, researchers have devoted substantial attention to explore the power of verbal information on stock market. The earliest research can be traced back to the work of Niederhoffer (1971). It was the first report that the movements of stock market are influenced by the news related with world events in the New York Times.

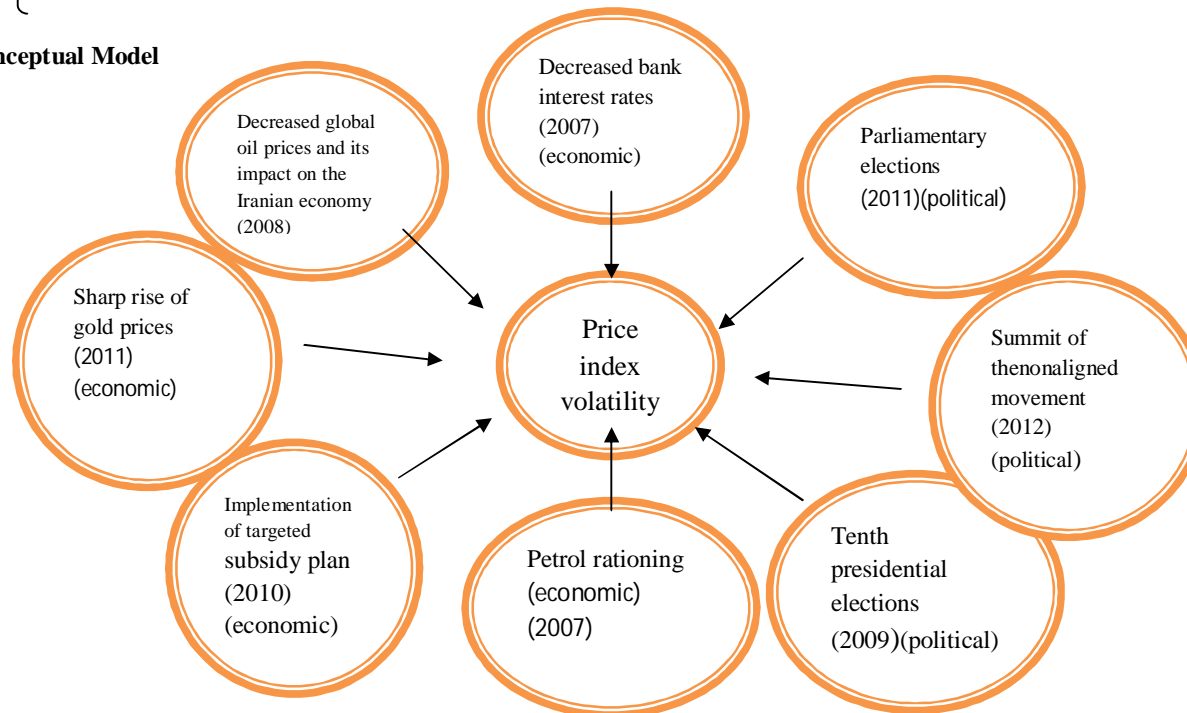
In Iran, Reza Keshavarz Haddad (2010) studied the effect of elections and political news following presidential elections on Tehran Stock Exchange return volatility as a political shock. It showed that stock return volatility increased in the days before the elections because of uncertain conditions prevailing over the market and that turbulence lasted for days after revealing of elections results because of political shocks. Esmail Abunouri (2009) examined effect of news on exchange rate volatility in Iran. Results of this study showed the asymmetric effects of news on exchange rate volatility in Iran. The effect of bad news (negative) on the exchange rate volatility is higher than that of good news (positive). Mehrara and Abduli (2006) studied the effect of good and bad news on the volatility of stock returns. They investigated the relationship between shocks to stock returns or prices (news) and the conditional volatility. Empirical evidence of study showed that effects of negative(bad news) and positive(good news) price shocks on futures price volatility were not statistically different and this means that both good and bad news have effects with equal magnitudes on volatility of condition al returns. Present research tries to study the effect of economic and political news on capital market and explores if good and bad news have the same effects on various industries in stock markets.

### Hypotheses

Research Hypothesis is divided into four hypotheses involving two main hypotheses and two sub-hypotheses. These hypotheses were analyzed using GARCH model.

- Main hypotheses: { published economic news have positive effect on TEPIX.  
Published Political news have negative effects on TEPIX.
- Sub-hypotheses: { published economic news have the less effect on all industry index of capital market.  
Published political news have the more effect on all industry index of capital market.

### 1-1-Research Conceptual Model



**News:** Now with respect to the above-mentioned we can define news in a more comprehensive way: news is representation of an objective event including one or more informational values and it is influenced by intra-organizational and extra-organizational factors

**TEPIX:** it is an abbreviated form of TSE Price Index and it is the main price index of Tehran Stock Exchange, which is calculated according to the Laspeyres formula.

**Data:**

In this study, daily time series data for weekdays (five days a week) were used. Data comprised daily closing prices associated with TEPIX and Industry index in Tehran Stock Exchange since the beginning of March 21th 2007 until the end March 21th 2012. In this study all of the industries is used to in tse, except 5 industries that had limited information. Thus they were excluded from the study. List of industries addressed in this study are as follows: medical devices, automobile, computers, petroleum products, essential metals, sugar, ceramics and tiles, machinery and equipment, wood products, leather products, chemical products, metal products, paper products, textiles, pharmaceuticals, food stuffs excluding sugar, non-metallic minerals, metal ores, bulk storage, multidisciplinary industries, construction, stone coal, other financials, other minerals, investment, technical-engineering, communicational equipment, furniture, agriculture, transportation equipment, publishing and printing, fiscal and monetary intermediaries. Variables used in present study included economic news and political news. Political news included presidential elections, parliamentary elections, and summit of the nonaligned movement and economy news included petrol rationing, decreased interest rates, decline in global oil prices and its effect on the Iranian economy, implementation of targeted subsidy plan and sharp rise in gold price.

## METHODOLOGY

Time series econometric tools are mostly used in modeling the conditional mean of random variables while most economic theories have been designed to work with conditional variance or process volatility. Volatility of financial markets has directed researchers towards using applied models for measurement and prediction of the volatility of stock returns and stock market price indices. Several models have been developed for analysis of volatility of stock returns and price indices. For the first time, Autoregressive Conditional Heteroskedasticity (ARCH) model was proposed by Engel (1982) for modeling and forecasting volatility and describing conditional variance as an autoregressive process. Using ARCH models, time series analysis requires longing interruptions and large number of estimated parameters. The solution for this problem is to use generalized ARCH or GARCH (p, q) model its relations indicated below. This model was introduced in 1986, by Bollerslev (Samadi&Shirani 2007). GARCH model can remove variance Heteroskedasticity problem by estimation of conditional volatilities. General simple equations of GARCH model include:

$$Y_t = X_t \beta + \varepsilon_t \quad (1)$$

$$\sigma^2 = \omega + \sum_{i=1}^p \alpha_i \varepsilon_{t-i}^2 + \sum_{i=1}^q \beta_i \sigma_{t-i}^2 \quad (2)$$

In(1)  $Y_t$  represents stock market returns,  $X_t$  is the column vector of explanatory independent variables, and  $\beta$  is the column vector of coefficients (Abounoori&Motameni 2006). Also constraints such as  $\beta_j \geq 0$  ( $j = 1, 2, \dots, p$ )  $\alpha_i \geq 0$ ,  $\alpha_0 > 0$ ,  $q \geq 0$ ,  $p > 0$ , and ( $j = 1, 2, \dots, q$ )  $\sum_{i=1}^p \alpha_i + \sum_{i=1}^q \beta_i < 1$  reflect returns volatility period

### Data Analysis

One of the major problems in analysis of economic data is presence of unit root which reflects data non-stationary and this leads to some problems with respect to validity of tests. Until 1980s, this concept had not been given much attention in the economic data. At this time some economists particularly Granger showed that lack of attention to this concept caused spurious regressions because trends are available in most time series of economic variables and these trends lead to high explanatory degree of variables and  $R^2$  after doing regression while this regression is a spurious one. Variables of time series should have random walk property and in the case of lack of stationary, this property is obtained by conducting a subtraction on the variable. So at first we examine variables stationary. GARCH model (GARCH) has been used in this study for determination of the type of return process in various industries. Estimation of the model enables researchers to extract series of volatilities but before modeling volatilities GARCH-type process of the variable should be determined. In order to determine process type, it should be determined based on mean and also based on volatility of process. Mean-based process is determined based on combination of order and degree of the variable in ARMA part and with respect to volatility also an appropriate combination of

degree and order of the variable should be determined in GARCH part of the model. Appropriate criterion to determine appropriate GARCH-type process is Akaike Information Criterion (AIC) which minimum value of it is preferred. With respect to this fact ARMA (1,1)-GARCH(1,1) process was selected for study of returns in TSE and the results are reported below. ARMA process has been set according to correlation diagrams and AIC. In following tables Political variable is dummy variable related to political news and Econo variable is dummy variable related to economic news. (Keshavarz & Babaei, 2011)

#### Data Analysis with GARCH Model

In present study dependent variable was TEPIX volatility and independent variable was the effect of a number of political and economic news on TEPIX. Of course present study examined two sub-hypotheses i.e. the effect of political and economic news on industrial index. Z-statistic indicates validity and significance of intended coefficient. If z-statistic is less than 5 percent, then significance of coefficient of independent variable is confirmed.  $R^2$  statistic is determination coefficient and shows how well a regression model fits the data and how well independent variables explain dependent variable. Durbin-Watson Statistic is used to explore presence of first-order autocorrelation in the model. When its value is close to 2, then independence of residuals is confirmed. If its value is more than 2, then lack of autocorrelation in residuals is confirmed. Schwarz criterion and Akaike criterion are two information criteria for residual sum of squares (measures of difference between the actual value of the dependent variable and fitted value of variable and the less the better). F-statistic shows significance of the whole model or regression slope validity. If its value is lower than 5% then the model validity is demonstrated. At first we studied variables stationary to determine the effect of economic and political news on the TEPIX and industry index. Thus returns are calculated and with respect to the fact that Dickey Fuller statistic values of all return variables were higher than statistic value at 99 percent critical level, therefore all variables were significant at level of 99 percent. It is seen that TEPIX return variable was also significant at 95 and 90 percent levels and this was predictable with respect to acceptable significance of variable at 99 percent level. Results showed that variable had a zero-degree stationary at 99 percent level and therefore no subtractions were needed. Results on the effect of economic news on TEPIX return volatility showed that economic news had positive effect on stock exchange returns volatility. Results showed that effect of economic on returns volatility had a positive coefficient in such a way that economic news led to increased vitality in the exchange. Also value of this coefficient was small and this showed that economic news had a small positive effect on stock exchange. This was also the case for the effect of political news and this variable caused increased volatility of stock exchange. Also value of this coefficient was small and this showed that political news had a small positive effect on stock exchange. Effects of political news and economic news on other industries were similar to the above and they are not repeated here. However their results are provided below.

#### Regression between Return Volatility and Economic News

Variable	Coefficient	Std. Deviation	z-statistic
C	0/0001	0/0001	6/64
Economic	0/0003	0/0006	5/22

Durbin-Watson stat: 1.97,  $R^2$ : 0.35 F-statistic: 52.43(0.00)

#### Regression between Return Volatility and Political News

Variable	Coefficient	Std. Deviation	z-statistic
C	0/0001	0/000002	6/81
Political	0/0004	0/000001	4/42

Durbin-Watson stat: 1.95,  $R^2$ : 0.35, F-statistic: 52.36

#### CONCLUSIONS

In the following table, effects of economic and political news on TEPIX were compared. Results showed that effect of political news on TEPIX was greater than that of economic news and political news caused more volatility in industry indices in TES but direction of the effects were the same.

### Comparisons of effects of economic and political news on TEPIX

Variable	Economic news	Political news	Comparison of volatility between two types of news
TEPIX	Positive significant	Negative significant	Economic is greater

### Comparison of the effects of economic and political news on industry indices

Variable	Economic news	Political news	Comparison of volatility between two type of news
medical devices	Positive significant	Negative significant	Economic is greater
Automobile	Positive significant	Negative significant	Economic is greater
Electricity	Positive significant	Positive significant	Economic is greater
Computers	Positive significant	Negative significant	Economic is greater
Cement	Positive significant	Positive significant	Economic is greater
Petroleum products	Negative significant	positive significant	Political is greater
basic metals	Negative significant	Negative significant	Political is greater
Sugar	Negative significant	Positive significant	Political is greater
Ceramics and tiles	Negative significant	Positive significant	Political is greater
machineryand equipment	Positive significant	Negative significant	Political is greater
wood products	Negative significant	Positive significant	Political is greater
chemical products	Positive significant	Positive significant	Economy is greater
metal products	Negative significant	Positive significant	political is greater
paper products	Positive significant	Positive significant	Economic is greater
Textiles	Positive significant	Positive significant	Economic is greater
Pharmaceuticals	Positive significant	Negative significant	Economic is greater
Metal minerals	Negative significant	Positive significant	Political is greater
non-metal licminerals	Positive significant	Negative significant	Economic is greater
food stuffs excluding sugar	Insignificant	Negative significant	-
Construction	Positive significant	Positive significant	Economic is greater
Multidisciplinary industries	Positive significant	Positive significant	Economic is greater
Stone coal	Insignificant	Positive significant	Political is greater
other financials	Positive significant	Positive significant	Political is greater
other minerals	Insignificant	Positive significant	Political is greater
Venture capital	Positive significant	Positive significant	Political is greater
Technical-Engineering	Insignificant	Positive significant	Political is greater
Communicational equipment	Insignificant	Positive significant	Political is greater
Furniture	Positive significant	Positive significant	Political is greater
Agriculture	Negative significant	Positive significant	Political is greater
Transportation equipment	Positive significant	Negative significant	Economic is greater
Publishingand printing	Positive significant	Insignificant	Economic is greater
Industrial contraction	Insignificant	Negative significant	-
fiscal and monetary intermediaries	Insignificant	Negative significant	-

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