Reaction to News of Oil and Gas Sector Companies in Kuwait

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Abstract

This paper presents the effect of news on the oil and gas sectors onthe Kuwait Stock Exchange (KSE)for 92 days, and 63 trading days, throughout October, November, and December of 2012, choosing the optimum period with the best reaction to the news. Using classical methods,correlation and at-testwere used to measure and verify significance. The resultsshowed thatgood news indicator and bad news indicator indices affected theoretical predictions and led to a significant improvement,compared to the efforts ofprevious researchers in this domain. There were profound implications for future studies of the behavior of Kuwait's stock markets.

Keywords: Bad news indicator,behavioral finance,good news indicator,Kuwait, oil and gas sector, stock exchange

1. Introduction

Behavioral finance is a concept that has become widely popular in recent years. Although it has only just found its place in the literature, it would not be wrong to say that behavioral finance has had a place in the human subconscious since the times when humankindbegan to engage in investment and consumption activities. The principles of behavior used by behavioral finance in practice are based on psychology and sociology (Kiyilar & Acar, 2009).

This paper uses data from Kuwait, a member of the Gulf Cooperation Council, as a case study of the effect of news on the predictionsmade bythe Kuwait Stock Exchange (KSE).Kuwait is located in the northeastern part of the Arabian Peninsula, at the northwestern end of the Arabian Gulf (Gok, Rodgers, & Al-Enezi, 2006) .The area of the country is 17,818 sq. km, which includes 2,590 sq. km in the Neutral Zone, sovereignty over which is shared with Saudi Arabia, and its population is 3.7m, comprising approximately 1.18m Kuwaitis and 2.51m expatriates at the end of 2011 (Maree, 2012).

Kuwait has a geographically small, but wealthyand relatively open economy, with self-reported crude oil reserves of approximately 102 billion barrels, which is around 9% of world reserves (Central Intelligence Agency, 2013). It is an active and responsible global oil producer, and is fully committed to the development of its crude oil production capacity. Kuwait's total oil production had reached 3 million barrels per day (mb/d) by the second half of 2011, so the country is pursuing its plans to achieve a sustainable crude oil capacity of 3.5 mb/d by 2015, and then 4 mb/d from 2020 onwards(Hussien, 2012).

2. Importance of the oil and gas sectors in Kuwait

Kuwait is a member of the Organization of Petroleum Exporting Countries, and exported the fourth largest volume of oil among the group in 2010. At the same time, Kuwait's economy is one that is heavily dependent on petroleum export revenues, which account for half of its overall gross domestic product, 95% of total export earnings, and 95% of government revenues. Kuwait has an active sovereign-wealth fund (Energy Information Administration, 2013).

In 1938, the Kuwait Oil Co. (KOC) made the initial discovery of oil in Burgan, which is now the world's second largest oilfield. In 1975, the Kuwaiti government decided to nationalize the industry, leading to both BP and Chevron being forced to give up their concession. More recently, Kuwait's oilfields have made headlines, particularly during the 1990 invasion by Iraq and the subsequent 1991 Gulf war, which liberated the country(Kieft & Thasing, 2011).The rise in global oil prices throughout 2010 is reviving government consumption and economic growth, as Kuwait experiences a 20% increase in government budget revenue(Central Intelligence Agency, 2013).

According to the Oil & Gas Journal, Kuwait's territorial boundaries contained an estimated 101.5 billion barrels (bbl) of proven oil reserves, roughly 7% of the global total, as of January 2011(Maree, 2012).With a total confirmed reserve of 63 trillion cubic feet of gas, and a yearly output of 449 billion cubic feet (2008), Kuwait is not one of the biggest gas producers in the region. The majority of its gas reserves consist of so-called 'associated gas', which means it is found and produced in conjunction with oil. However, in 2006, a non-associated gas field was found in Jurassic structures in the north of the country(Kieft & Thasing, 2011).Kuwait began its first commercial production of such gas in 2009, after the 2006 discovery of gas reserves in the Rahiya, Mutriba, and Um Niga, and other fields. Initial gas flows were 175 million cf/d and 50,000 b/d of condensate, but the KOC is planning to raise production to 1 billion cf/d of gas by 2016 (Kieft & Thasing, April 2011).

3. Behavioral Finance

Behavioral finance is "the study of howpsychology affects financial decision-making and financial markets", and, according to Thaler (1993) it is "simply 'open-minded' finance'". Endorsed by other disciplines, such as statistics,mathematics, sociology, psychology, and anthropology, behavioral finance attempts to describehow human psychology, and, in particular, human behavior, affects investment decision-making (Konstantinidis, Katarachia, Borovas, & Voutsa, 2012).Therefore, it can be defined as the study of the influence of psychology on the behavior of financial practitioners and the subsequent effects on the market (Boudaoui, 2011).

Behavioral finance has been gathering increasing attention in the last decade, and both academia and practitioners have slowly been starting to accept the fact that psychology influences the financial markets. The theoretical and experimental works of two prominent psychologists, Daniel Kahneman and Amos Tversky, which contributed to psychology literature in the 1970s, served as a foundation, and gave rise to a new paradigm called behavioral financein the 1980s (Sjøberg, 2011).Figure 1 shows the evolution of behavioral finance.

Behavioral finance relaxes the traditional assumptions of financial economics by incorporating these observable, systematic, and very human, departures from rationality into standard models of the financial markets. The tendency for human beings to be overconfident causes the first bias in investors, and the human desire to avoid regret prompts the second (Subash, 2012).

Stock markets were initially associated with human psychology in 1912, when Selder published his work, the "Psychology of the Stock Market". However, the forefathers of behavioral finance are Kahneman and Tversky,who advocated that heuristics and biases affectjudgmentunder uncertainty (1974), and formulated prospect theory in "Analysis ofDecision under Risk" in 1979(Konstantinidis et al.,2012), when they illustrated the value function for gains and losses (see Figure 2), whichincorporates both loss aversion and diminishing sensitivity into the utility function defined over gains and losses inwealth (Rabin, 1998).The role of the news media in the stock market is not, as commonly believed, simply as a convenient tool for investors, who are reacting directly to the economically significant news itself. The media actively shape public attention and categories of thought, and they create the environment within which the stock market events we see are played out(Shiller, Irrational Exuberance, 2001).The news media are naturally attracted to financial markets because, at the very least, the markets provide constant news in the form of daily price changes (Shiller, Irrational Exuberance, 2001).Players in the financial markets are very sensitive to market news (Li, Deng, Wang, & Do, 2010). Many experiments explain an influence of information on future valuation of stocks. For example, (Andreassen, 1987)presented fictitious news and quotations of stocks (positive and negative) for a selected group of investors (Majewski, 2009).The manner in which to grasp the information to make the right decision is a very important issue for short-term investors. However, "good news" and "bad news" contain a large amount of repetitive keywords, thereby decreasing the accuracy of classification (Majewski, Nermend, & Al-augby, 2012).

4. Methodology and data

In this case study, press economic information, taken from Alarabia.net (Business and Technology, 2012) which is a semi-official press agency, and Reuters.com (Business, 2012) which is one of the world's largest international multimedia news agencies,is treated as a source of media noise that has an influence on the value of stock quoted on the KSE for top market capitalization (mark cap) companies of the oil andgas sector. The optimum period to conduct this type of research was October, November, and December 2012. All economic news was categorized into three types of groups: neutral information, positive information, and negative information, after which, another group, called the most tragic news in the economic sense, was created by selecting this type of news from the negative information group. To define the most tragic news,the author selected that which contained words such as "crisis", "fall down", and "deficit" in its title. An indicator of media expansiveness was constructed on the basis of these data (Majewski, 2009). This indicator is a quotient of the number of articles in a chosen information group, and the number of all Alarabia.net and Reuters.com information pieces published one day previously (t-1).

$$BNI = \frac{NBN}{TNN} \cdot 100\% \quad \ldots\ldots\ldots\ldots (1)$$

Where:

BNI: bad news indicator; NBN: number ofbad news; TNN: total number of news.

This indicator was calculated with daily frequency and it means the intensity of the negative information obtained from press coverage. Analogous tragic news indicators, and a good news indicator (GNI), were also calculated.

The second type of data was the daily rates of return of stock exchange (R_t),β risk coefficient, mark cap, price to earnings (P/E) ratio,price to book value (P/BV) ratio (P/B), anddividend yield (DY)ratiothat were published on KAMCO, corresponding to the same time period (Reports, 2012).We should mention some of these useful definitions; the first of which is the P/E ratio which is the ratio of share prices to earnings. The P/E ratio of a stock is equal to the price of a share of the stock, divided by per share earnings of the stock (Shen, 2000). The P/E ratio is a function of expected changes in future profitability (Fairfield, 1994).

The second term is the P/BV, or the market to book ratio, which is calculated as market price per share, divided by the book value per share (Khan, 2009). The P/B ratio is a function of the expected level of future profitability (Fairfield, 1994). The third term is mark cap, which refers to the share price multiplied by the number of shares outstanding for all listed companies. Listed companies are those domestically incorporated companies that are listed on the country's stock exchanges at the end of the year. Such companies do not include investment companies, mutual funds, or other collective investment vehicles (Garonfolo, 2011).

The rate of return on invested capital is a central concept in financial analysis. Economic performance can be understood as a real rate of return earned on a completed project, where all cash outlays and receipts are expressed in monetary units of equivalent purchasing power (Feenstra & Wang, 2000). In finance, the βrisk coefficient of a stock or portfolio is a number describing the relationship of its returns with that of the financial market as a whole (Levinson, 2006).βis a measure of a share's price volatility, relative to the average volatility of the national stock market. A share with a β of 1.0 will, on average, move in tandem with the market average; a share with a β of 1.5 can be expected to rise (or fall) 1.5% when the market rises (or falls) by 1%. A share with a negative βmoves, on average, in the opposite direction from the market (Levinson, 2005). The final term is DY, or dividend-price ratio.In empirical finance, the dividend-price ratio, defined as the ratio between a given period's dividend payments per share and the end-of-period stock price per share, is often, explicitly or implicitly, used as an indicator of whether stock prices are (too) high or (too) low (Nielsen & Olesen, 2000).In the present study, we used methods of correlation and regression analysis to identify the behavioral character of the dependency between the analyzed variables. Since this research was conducted over a short time period, statistical verification of the significance of correlations is highly important. The level of confidence was set as 0.05. First, the correlation coefficients between rates of return of indices of the chosen securities were presented.

One of the most important problems is that ofhow to choose the optimum time period (window) for correlation analysis. We used one of most popular distance measures;the Euclidean. In mathematics, the Euclidean distance between points p and q is the length of the line segment that ($\overline{pq}$) connects the two points (Deza & Deza, 2009).In one dimension, the distance between two points on the real line is the absolute value of their numerical difference. Therefore, if x and y are two points on the real line, then the distance between them is computed as (Nikam, Kadam, & Meshram, 2011):

$\sqrt{(x-y)^2} = |x-y|$ …… (2)

Asin Cartesian coordinates, if $p = (p_1, p_2,...,p_n)$, and $q = (q_1, q_2,..., q_n)$ are two points in Euclidean n-space, then the distance from p to q, or from $q$to p, is given by:

$d(p,q) = d(q,p) = \sqrt{(q_1-p_1)^2 + (q_2-p_2)^2 + \cdots . + (q_n-p_n)^2} = \sqrt{\sum_{i=1}^{n}(q_i-p_i)^2}$… (3) (Deza & Deza, 2009).

5. Empirical results

We analyzed the correlation between GNI, BNI, and NNI and the changes in the rates of return of the stock exchange indexes R_t, mark cap, P/E, P/B, β, and DYfor the same period of time (92 days and 63 trading days) atthe KSE (on which the top trading companies of the oil and gas sector are listed). We observed changes in correlation coefficientsthat were the results of companies.

Table 1 presents the correlation between the GNI and R_t, mark cap, P/E, P/B, β, and DYof trading companies in the KSE and shows that P/E is the most effective by GNI. The Table clearly shows that the highest positive value of the correlation coefficient is 0.4535. Table 2 presents the correlation between the BNI and R_t, mark cap, P/E, P/B, β, and DY of trading companies in theKSE, and shows that R_t is most affected by BNI. We can see that the highest value of the correlation coefficient is (0.2355).

Figure 3 and Figure 4 show the P/EandGNI for October-December 2012 for IKARUSPetroleum Industries Co. (IKARUS), and R_t and BNI from October-December 2012 for Burgan Co. for Well Drilling (ABAR), respectively.In Fig.3 the trend of P/E movement is directly proportional to GNI. A positive correlation was found between P/E and GNI.

In Figure 4 it is apparent that R_t is reversely proportional to BNI, and that there is a significant difference in response between the two figures.

T-tests were used to analyze the statistical significance of the relationship between GNI, BNI and R_t, mark cap, P/E, P/B, β, and DY. The correlationanalysis and t-test were used to estimate theoptimumperiod of time that could give the best reaction of the market movement to the (BNI and GNI) indications. According to the Euclidean distance method we concluded that the optimum period of time was 25days, as illustrated in Table 3, with a minimum Euclidean distanceof 2.4551. We decided to use such diagnostic variables asan average of the statistical significance of the correlation coefficient (for all observed stocks), and maximum and minimum levels for GNI and BNI. These variables are all stimulants. We also used an empirical pattern to compare distances, and this pattern included only maximal values of used variables. For a normalization procedure we used a standardization formula.The correlation between GNI and marketcapitalization and the correlation between BNI and βfor ABAR,indicate the tendency of the market movement reaction to the good news, as shownin Figures 5 and 6.

T Alfa for 63 day is 1.670 and for 25 days is 1.714.

Figure 5 presents calculations of correlation coefficients for the ABAR stock in the observed period of time for GNI and mark cap. The tendency of the markcap movement was reversely proportional to good news, and this was reduced day by day. This situation was caused by the disturbance in the political situation that took place in the parliament of Kuwait (Majlis Al-Umma) at this time, and means that there is a relationship between the movement of the stock market and the news.

Figure 6 presents calculations of correlation coefficients for ABAR stock in the observed time period for BNI and β risk coefficient. There is no clear tendency, but we observed that this relationship is primarily negative. Levels of values of correlation coefficients led us to the conclusion that there was no significant relationship. It could be a signal that β is not an adequate risk measure for this market.

6. Conclusions

The purpose of the current study was to determine the effectiveness of the influence of news when describing the behavior of KSE trading and to ascertain the optimum timeperiod in which market trading gives the best reaction to news. The results of this study indicate that:

1. Table 1 shows that the most affected index is P/E and the highest correlation value between it and GNI is0.4535 forthe Contracting & Marine Services (MARIN) Company, whileTable 2 shows that the most affected index is markcap, with the highest correlation value between it and BNI being-0.2398 forthe Gulf Petroleum Investment (GPI)Company.
2. These findings imply that both GNI and BNI should be considered when studying the effectiveness of news in stock trading changes.
3. According tothe Euclidean distance method, the time that gives the best reaction of market movement to GNI is 25 days.
4. From Figure 5 we can conclude that trading movement isreversely proportional to GNI.That gives us an indication that there is a relationship between stock market movement and news expansiveness.
5. According to the calculation presented in Figure 6, we can conclude that the β is not a genuine risk factor for this market.

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Figures and tables

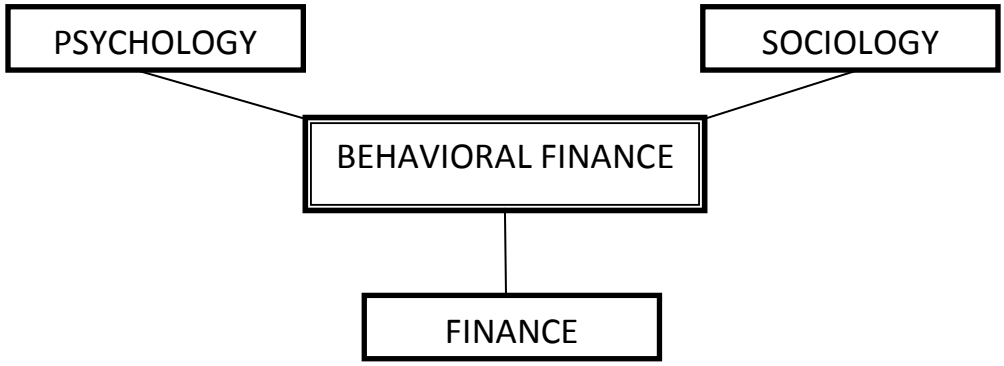

Figure 1. Evolution of Behavioral Finance

Source: Schindler, M. (2007). *Rumors in Financial Markets: Insights into Behavioral Finance*. West Sussex, UK: John Wiley & Sons Ltd.

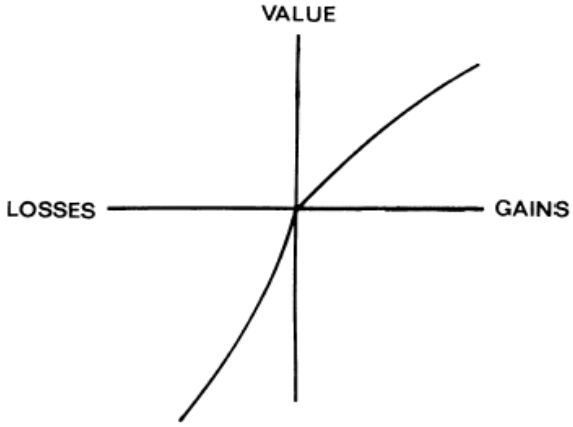

Figure 2.Prospect theory value evaluation

Source: Rabin, M. (1996).*Psychology and Economics.*Department of Economics University of California, Berkeley.

Table 1. Correlation coefficients with good news indicator

Name of company	β	R_t	Mar Cap	P/E	P/B	DY
IKARUS	-0.1877	0.1338	0.4056	-0.3486	0.4464	-0.4027
MARIN	0	0.0137	0.2827	0.4535	0.3105	0
IPG	0	0.1516	0.1936	-0.3943	0.3205	0
NAPESCO	0.3033	0.0172	-0.3046	-0.1383	-0.1642	0.3050
AREFENRGY	0.3140	0.0417	0.2762	0	0.2279	0
GPI	-0.3310	0.0737	0.0068	0.4084	0.1011	0
ABAR	0.3010	-0.2051	-0.1884	-0.2498	-0.1456	0

Source: own calculationLegend: Bolded values are the highest values.

Table 2. Correlation coefficients with bad news indicator

Name of company	β	R_t	Mar Cap	P/E	P/B	DY
IKARUS	-0.2332	0.0004	-0.0312	-0.0834	-0.0218	0.0413
MARIN	0.0000	0.0551	-0.0345	0.0478	-0.0296	0.0000
IPG	0.0000	0.1117	-0.1169	-0.0729	-0.0488	0.0000
NAPESCO	0.0186	0.0329	0.0399	0.0696	0.0632	-0.0308
AREFENRGY	-0.0596	-0.1346	0.1006	0.0000	0.1006	0.0000
GPI	-0.0824	-0.1420	-0.2398	-0.0188	-0.2349	0.0000
ABAR	0.0320	0.2355	-0.0244	-0.0354	-0.0140	0.0000

Source: own calculationLegend: Bolded values are the highest values.

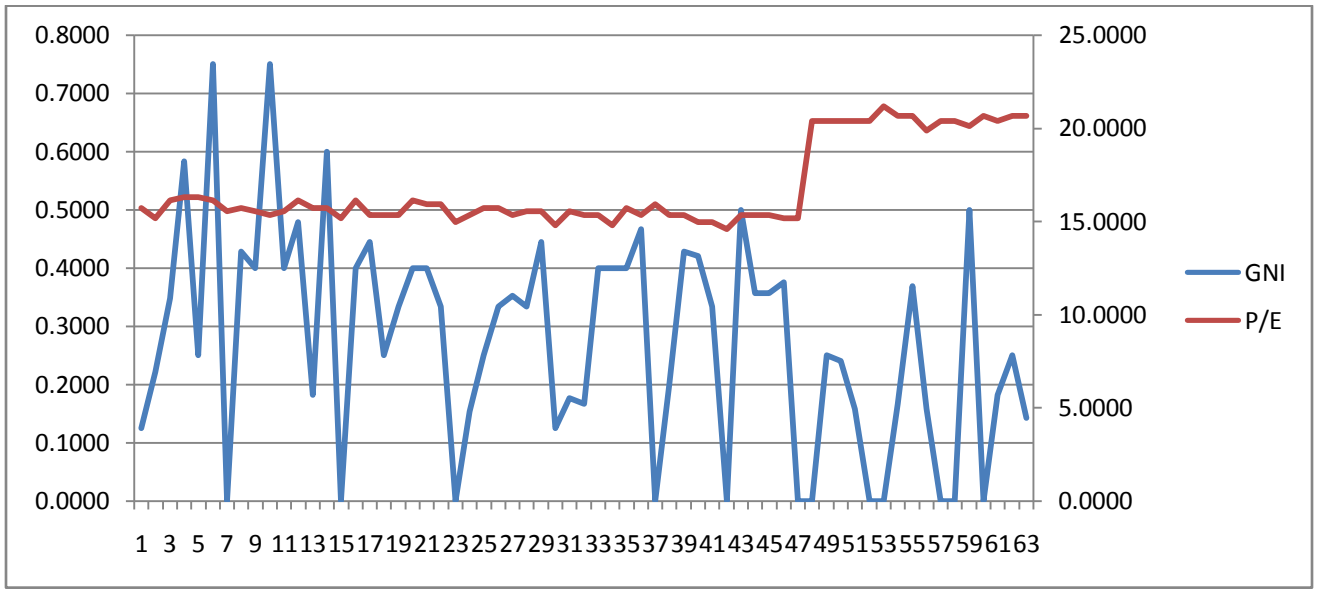

Figure 3.P/Eand good news indicatorfrom October to December 2012 for IKARUS.

Source: own research

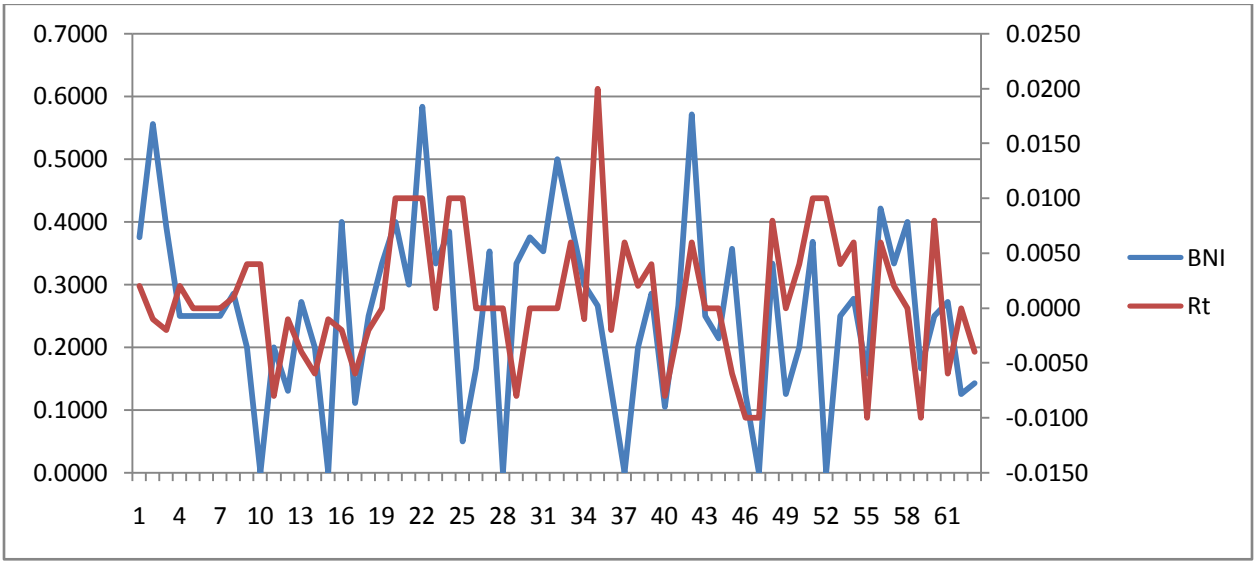

Figure4.$R_t$and bad news indicator fromOctober to December 2012 for ABAR.

Source: own research

Table 3. The Euclidean distance method calculation with Euclidean distances

Days	Average of statistical significant of correlation coefficient.	Max GNI	Min GNI	Max BNI	Min BNI	Euclidean distance
25	5.6777	0.4532	0.5699	0.4250	0.4631	2.4551
26	5.4511	0.4523	0.5542	0.4120	0.4762	2.7305
27	5.9846	0.4532	0.5516	0.3413	0.4811	2.4836
28	6.1508	0.4322	0.5356	0.3354	0.4685	2.9574
29	6.5306	0.4412	0.3696	0.3246	0.4309	3.9760
30	6.9328	0.4224	0.3542	0.3252	0.4372	4.3931

Source: own research

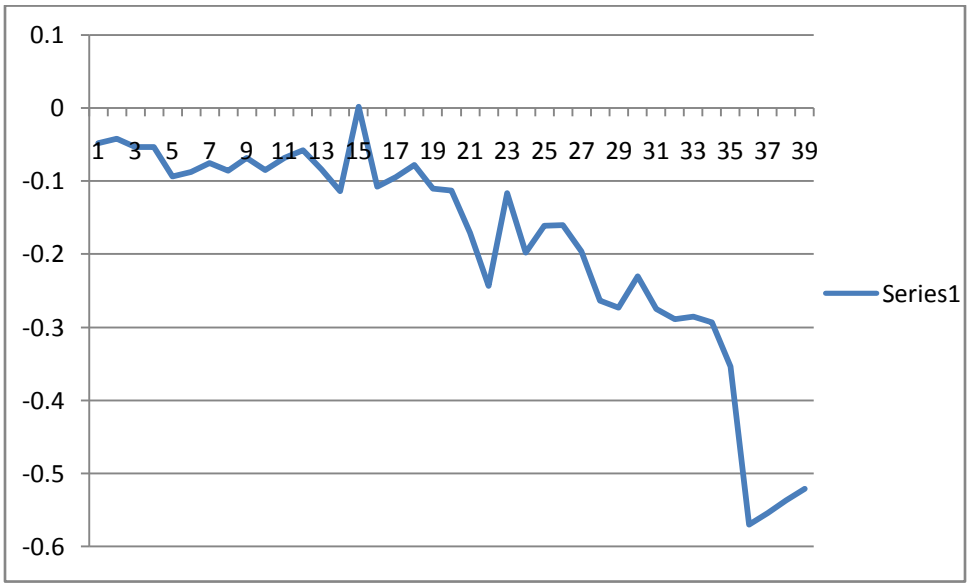

Figure 5.The correlation between good news indicator and market capitalization for ABAR

Source: own research

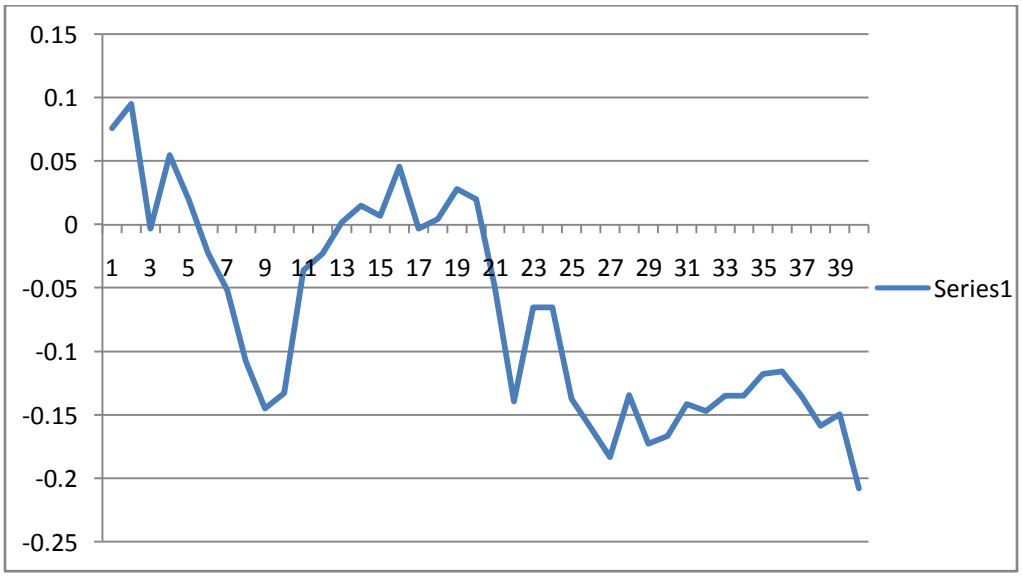

Figure 6.The correlation between bad news indicator and β for ABAR

Source: own research