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Effect of oil price changes on the price of Russian and Chinese oil shares

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Abstract

Do changes of oil prices have an effect on the stocks of oil companies in emerging markets? Do the shares of oil companies of emerging markets react to the price news in a similar way as those of the Western companies? This paper aims to answer these questions utilising various event study techniques. As expected, the results of both parametric and non-parametric tests suggest that the fluctuations of oil price have an effect on the stock prices. However, an interesting result is that the responses of stocks of Chinese and Russian oil companies are considerably different from the shares of their Western counterparts.

Keywords: Event studies, abnormal return, parametric t-test, non-parametric rank test, oil companies.

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Introduction

Do changes of oil prices have an effect on the stocks of major emerging economy oil companies? The answer to this question seems rather obvious. Yes, there must be a connection between the oil price changes and stock returns of oil companies' shares. However, do the shares of oil companies of emerging markets react to the price news in a similar way as Western companies? This study intends to provide answers for both questions with particular emphasis on the latter utilising event study methodology.

The event study methodology investigates the impact of news on security prices. Depending on the type of information, announcements increase or decrease the value of stock on the market. It involves estimating the normal return for a security and calculating the direction and size of the excess return attributable to unanticipated information. Econometric techniques used in event studies are provided by Ball and Tourus (1988), Bartholdy et al (2007), Brown and Warner (1980, 1985), Campbell et al (1997), Corrado (1989), Corrado and Zivney (1992), Dyckman et al (1984), Jain (1986), Kritzman (1994) and McWilliams and Siegel (1997). The theory is still growing and the number of economists researching in this area is increasing, along with the sophistication of studies.

However, despite this development, to the best of our knowledge, there are no empirical event study investigations on oil companies of Western and emerging markets and oil prices. Our paper aims to fill this gap. The analysis is thus performed on twelve major oil companies. The companies represent the four key markets:

(a) those in well established western economies such as the USA and Europe; and

(b) those in emerging economies such as Russia and China.

The remainder of this article is organised as follows. Section 2 presents the design for the derivation of abnormal returns and cumulative abnormal returns. In this Section, two tests are presented: the parametric t-test and the nonparametric rank test. The results of this research and an explanation are given in Section 3. Finally, Section 4 concludes.

Theoretical Backgrounds

There are a large number of models that can be used to investigate event studies. These models consist of identifying the event and testing for excess profit. Tests are constructed in such a way that they detect abnormal performance. There are two broad approaches in conducting the tests: parametric and non-parametric. The former approach is usually based on a standard t-test. In the case of event studies, standard t-tests check whether the residuals are statistically different from the normal student t-distribution. The numerator of the t-test represents the abnormal returns for a particular date while the denominator scales the top part by the level of dispersion or the standard deviation of a given time series. The parametric test used in the paper is based on a traditional t-test (Brown and Warner, 1980, 1985). This test is conducted for cumulative abnormal return (MacKinley, 1997) of individual companies. In addition, a hypothetical portfolio consisting of oil companies has been extensively analyzed.

The parametric test deals directly with the residuals. However, the non-parametric test has a different approach to detect abnormal performances. Despite that, the test has a parametric distribution it does not assume that the returns have a normal distribution. For example, the nonparametric sign test, unlike the standard t-test, does not check the abnormal returns but the respective signs of their residuals. The probability of a negative and a positive sign in this test is assumed to be equal. Another approach to testing the presence or lack thereof of abnormal performances of stocks is the nonparametric rank test. This test ranks the residuals in the time series and tests the rank of the return for abnormal performance.

To measure the abnormal return, we use two statistical models. These are the constant mean model and the market model. As previously mentioned, despite their relative simplicity, these models can be effectively used in the event studies methodology. These two models are presented below.

$$R_{it} = \mu_i + \varepsilon_{it} \qquad 1$$

$$E(\varepsilon_{it}) = 0 \text{ and } Var(\varepsilon_{it}) = \sigma^2$$

where R_{it} represents the returns of security *i* at time *t*, μ_i is the mean return for asset *i* and ε_{it} is the error term for security *i* at time *t* with mean equal to zero and variance, σ^2.

The second model utilised in this article is that of the market model. This model is a statistical model relating security returns to market movements and is popular due to its ability to capture market movement in security returns.

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \qquad 2$$

$$E(\varepsilon_{it}) = 0 \text{ and } Var(\varepsilon_{it}) = \sigma^2$$

where R_{it} and R_{mt} are security and market returns at time *t*, respectively. α_i and β_i are the coefficients of the market model. Following MacKinley, (1997), the Standard & Poor's Index is used.

To detect the abnormal return, one needs to define the event time [1], t. In this study, the event date is defined, as $t = 0$, the event window is represented by $t = T_{1+1}$ to $t = T_2$ and, finally, $t = T_0 + 1$ to $t = T_1$ is the estimation window. The length of the event window and the estimation window is given by the following equations: $L_2 = T_2 - T_1$ and $L_1 = T_1 - T_0$, respectively. The post event window is $t = T_2 + 1$ to $t = T_3$ .The length of the post event window is $L_3 = T_3 - T_2$. This can be shown by the following figure:

[1] The derivation of an estimation period i.e., estimation window, the event window and the post event window, is taken from MacKinley (1997, p. 19).

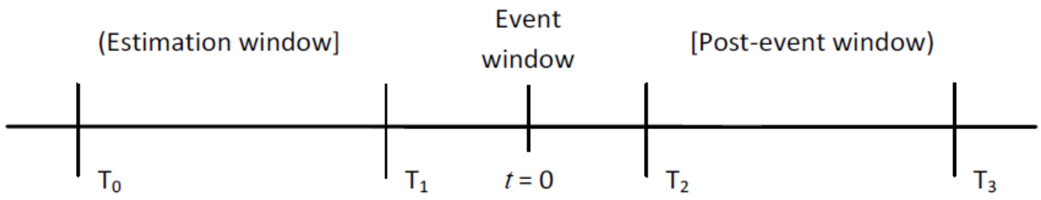

Figure 1: Time line for event study (Source: MacKinlay, (p. 20,1997),)

The estimation of the parameters of the market model (MacKinley, 1997) for the i^{th} firm at the event time involves identifying the beta, alpha and variance of the model. Computation of the abnormal return in the case of the constant mean model is given by the following equation

$$AR_{it} = R_{it} - \mu_i \qquad 3$$

where AR_{it} is the abnormal return of the i^{th} security at time *t*, R_{it} is the return of the i^{th} security at time *t* and μ_i is the mean return of the analysed security.

Using the parameters obtained by OLS from the market model, it is possible to estimate the abnormal return. Residuals in such cases represent excess returns. The expected return according to Bartholdy et al is given by the following equation

$$E(R_i) = \mu_i = \hat{\alpha}_i - \hat{\beta}_i R_{mt} \qquad 4$$

The discrepancy between the actual return and the expected return, adjusted for market movements over the analysed period, is the abnormal return.

$$AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt} \qquad 5$$

In the above, the AR_{it} is the abnormal return or, in other words, the residual for security *i* at time t. R_{it} is the return for security *i* a time t, R_{mt} is the market return and α_{it} and β_{it} are parameters of the OLS regression. The abnormal return is thus the surprise term of the market model.

In both cases, the constant mean model and the market model, the test statistic relies on the assumption of a normal distribution for returns. Under the null hypothesis the distribution of the abnormal returns is given by:

$$AR_{it} \sim N(0, \sigma^2(AR_{it})) \qquad 6$$

The null hypothesis, H_0, tests that the event does not have an impact on the abnormal return.

To detect that the event has an impact on the abnormal performance in the case of the securities portfolio, the excess returns of securities have to be aggregated. Aggregation for abnormal returns of the securities can be made through securities and then through time (MacKinlay, 1997). In this paper, the aggregation is made through the securities at the same event dates. Doing this, one obtains the average abnormal return across securities. This aggregation is given by the following:

$$\overline{AR} = \frac{1}{N}\sum_{i=1}^{N} AR_{it} \qquad 7$$

And the variance of the aggregated abnormal returns in this case is:

$$Var(\overline{AR}) = \frac{1}{N^2}\sum_{i=1}^{N} \sigma_{\varepsilon}^2 \qquad 8$$

After calculating the abnormal return for the securities, one can aggregate it over the event window to find the overall impact of the event. Cumulating the abnormal returns through the event time is needed in order to detect the excess returns.

The cumulative abnormal return (CAR) is the sum of the securities' abnormal returns. In order to find the CAR, the following equation is used:

$$CAR(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{it} \qquad 9$$

where $T_1 < t_1 \leq t_2 \leq T_2$. The variance of the CAR is:

$$\sigma_i^2(t_1, t_2) = (t_2 - t_1 + 1)\sigma_\varepsilon^2 \qquad 10$$

It is assumed that the distribution of the cumulative abnormal return under the null hypothesis is:

$$CAR_i(t_1, t_2) \sim N(0, \sigma_i^2(t_1, t_2)) \qquad 11$$

The aggregation of cumulative abnormal return can be also done across securities and has similar stages:

$$\overline{CAR}(t_1, t_2) = \sum_{t=t_1}^{t_2} \overline{AR}_t \qquad 12$$

The variance for above equation in such condition is:

$$Var(\overline{CAR}(t_1, t_2)) = \sum_{t=t_1}^{t_2} \text{var}(\overline{AR}_t) \qquad 13$$

The cumulative abnormal return for the portfolio of securities is:

$$\overline{CAR}(t_1, t_2) = \frac{1}{N} \sum_{i=1}^{N} \overline{AR}_{it} \qquad 14$$

and variance is:

$$Var(\overline{CAR}(t_1, t_2)) = \frac{1}{N^2}\sum_{i=1}^{N} \text{var}(\overline{AR}_{it}) \quad 15$$

Testing for the significance of the abnormal returns can be performed along two broad avenues: parametric and nonparametric.

The parametric tests rely on the assumption of normal distribution. Lehman, (Higgins, 1998) states that the t-test is optimal when the distribution of the returns is normal. Thus, assuming that the residuals are normally distributed, it is possible to conduct a t-test such that under the null hypothesis, the test statistic shows no abnormal return, i.e.,

$$\Im_1 = \frac{\overline{AR_i}}{\text{var}(\overline{AR_i})^{1/2}} \quad 16$$

where $\overline{AR_i}$ is the average abnormal return at a particular event and $\text{var}(\overline{AR_i})$ is the variance of the abnormal return at this event date. In addition, using the cumulative abnormal return and the variance of the cumulative return, one can test for the null hypothesis.

$$\Im_1^{CAR} = \frac{\overline{CAR}(t_1, t_2)}{\text{var}(\overline{CAR}(t_1, t_2))^{1/2}} \sim N(0,\ 1) \quad 17$$

The primary disadvantage of parametric tests is that they heavily rely on particular distributional assumptions. Hence many studies (Bartholdy et al, 2007; Brown and Warner, 1985; Corrado, 1989; Corrado and Zivney, 1992; Cowan, 1992; Cowan and Sergeant, 1996) have utilized nonparametric tests.

We use the nonparametric rank test specified in Corrado (1989). Corrado employ a nonparametric rank test for excess performance. This test has similarities with the standard t-test. However, as opposed to the standard t-test, the rank of the abnormal return is used.

Consider a sample of observations of abnormal returns in the event window for each of N firms. As stated above, to apply the nonparametric rank test, the rank of the abnormal returns for the analysed period for each security is needed. The highest rank is given to the highest price of the security for the analysed period and vice versa for the lowest rank (Lehman, 1975). The rank test transforms the securities' excess returns into a uniform distribution across ranks. Thus, in the case of the nonparametric rank test, one should convert the given time series into its respective ranks. Denoting K_{it} as the rank of the excess return, AR_{it} of the i^{th} firm and with an estimation window of 126 days, the event window comprising 41 days, the following definition holds:

$$K_{it} = rank(AR_{it}), \quad t = -146,...,+20 \tag{18}$$

The first 126 days are used as the estimation window and 20 days on each side of day 0 as the event window. Corrado (1989) reports that the average rank is obtained by dividing the number of observed returns by two. Thus, in this case the average rank is 83.5. The test statistic for the null hypothesis is given by the following equation:

$$\Im_2 = \frac{1}{N}\sum_{i=1}^{N}\frac{(K_{it} - 83.5)}{SD(K)} \tag{19}$$

where, $(K_{it} - 83.5)$ is a proxy for the abnormal return (Corrado,1989). The standard deviation of the rank test is determined by using a sample period of 167 days and follows as:

$$SD(K) = \sqrt{\frac{1}{167}\sum_{t=-146}^{+20}\left(\frac{1}{N}\sum_{i=1}^{N}(K_{it} - 83.5)\right)^2} \tag{20}$$

Tests of the null hypothesis can be implemented using the result that the asymptotic null distribution is standard normal. The main feature of rank test consists of ranking each observation in order to bring them into a uniform distribution. The rest of the procedure of the test does not considerably differ from the t-test statistics.

Empirical Data and Results

This article focuses on the twelve oil companies. These are companies of

- *the USA* - Chevron and Exxon Mobil;
- *Western Europe* - British Petroleum, Eni, Total and Royal Dutch Shell;
- *Russia* - GazProm, LukOil and SurgutNefteGaz; and
- *China* - China Petroleum and Chemicals, Petrochina and Sinopek.

The time series is taken from DataStream®. The oil prices are represented by crude oil prices which are extracted from the Energy Information Administration (http://www.eia.doe.gov).

The time series of consist of the daily data for the period spanning from the 1st January, 2000 to the 18th March, 2008. The first analysed event date starts in 2002. The events are divided into 2 types of news: "good news" and "bad news". The following criterion was used to define the news and its type. If the price of oil on a particular day was greater by 4.5% than the price of the previous day, then the news is classified as "good news". If, on the other hand, the day's oil price is less than the previous day's price by 4.5% then the news is classified as "bad news". In addition, it is insured that there are at least 30 days between the considered events (see Figure 2).

The next analysis consists of simulating the random event dates. To do this, we follow Brown and Warner (1985). The difference from Brown and Warner's experiment is, however, that we do not introduce abnormal returns. The simulation comprises of randomly generated events for each type of news. We defined them as "news one" and "news two", respectively. Thus on average, all two types of randomly generated news should reflect the absence of abnormal returns.

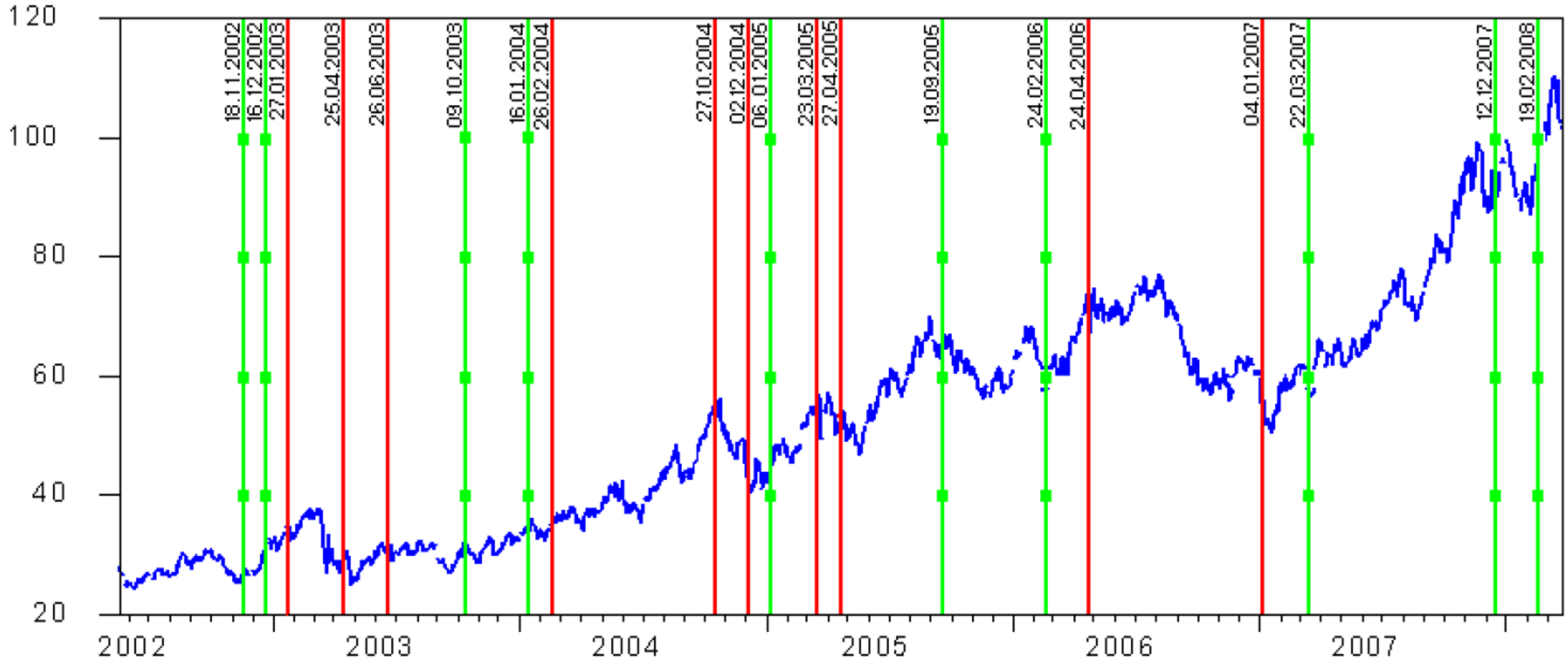

Figure 2: This figure presents the plot of oil prices. "Good news" events: [green line] and "Bad news" events: [red line].

Two models of abnormal return are used, i.e., the constant mean model and the market model. In the first part, the cumulative abnormal return is analysed based on the parametric t-test. In the second part, the abnormal return are analysed using the nonparametric rank test. In the last part the results for the random events are presented.

According to the t-test derived by constant mean model on the date zero there is no significant abnormal return for the “good news”. The abnormal return for that date is 0.1 and variance is equal to 0.0004. The value of $\Im_1^{CAR}$ is low, 034. However, at the event date the sign of the cumulative abnormal return changes from negative to positive. In addition, the level of significance on the 15th, 14th and 13th days prior the event according to $\Im_1^{CAR}$ is -3.0, -4.3 and -3.5 respectively. The next significant negative abnormal return is occurred a week before the event date with $\Im_1^{CAR}$ equal to -2.7 for that date.

For the case of the “bad news”, the t-test does not show significance of abnormal return. Despite this, one day before the event abnormal return was 0.13 while at the event date the level of cumulative abnormal return fell to 0.04. The $\Im_1^{CAR}$ for the day before the event is 1.72. Statistically significant abnormal return is observed from dates -18 and -1 with statistical significance ranging from 0.5% to 5%. The highest level of cumulative abnormal return is observed on the 14th day before the event with $\Im_1^{CAR}$ being equal to 3.6.

After the event date the paths for cumulative abnormal return both for the “bad news” and the “good news” are strikingly similar.

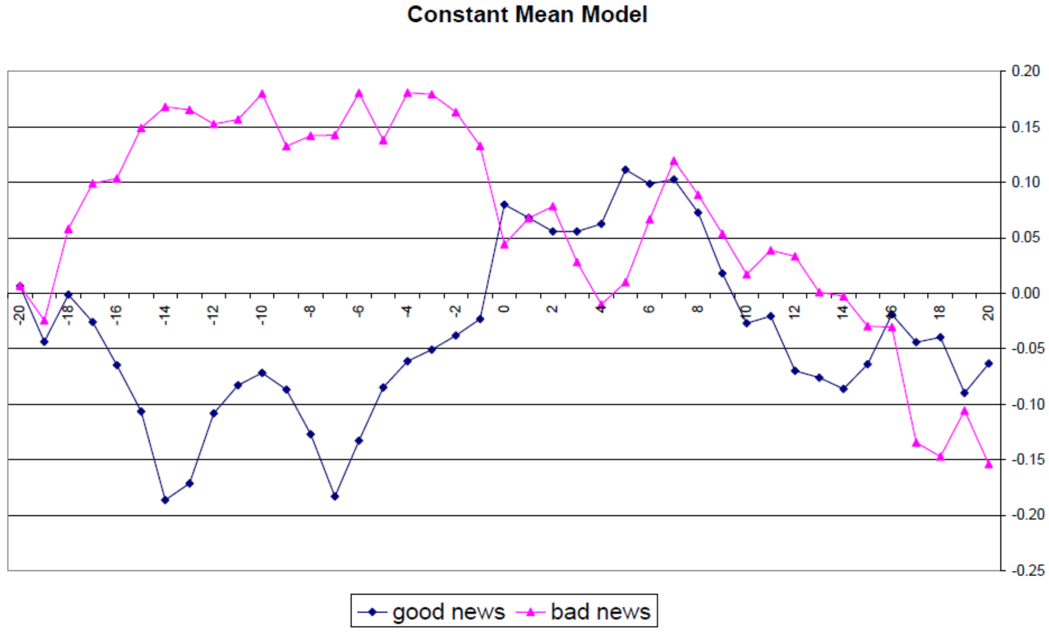

Figure 3: Plot of Cumulative Abnormal Returns for the constant mean model averaged for 12 companies. The horizontal axis represents the event window, with date 0 as the event time. The vertical axis represents the Cumulative Abnormal Returns for this period.

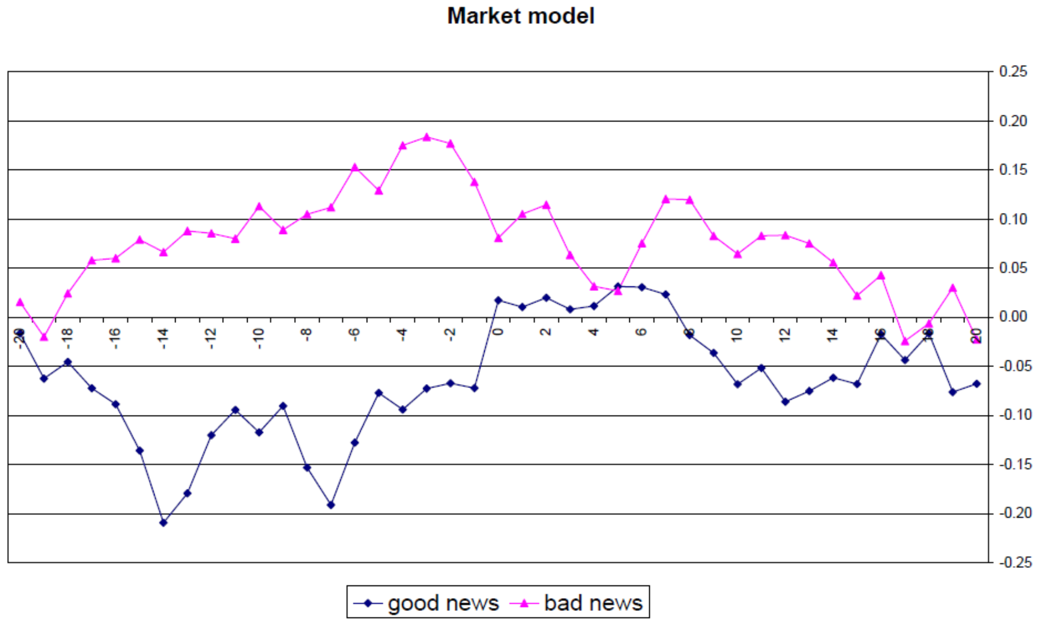

Figure 4: Plot of Cumulative Abnormal Returns for the market model averaged for 12 companies. The horizontal axis represents the event window, with date 0 as the event time. The vertical axis represents the Cumulative Abnormal Returns for this period.

Figure 3 and Figure 4 show that the constant mean and the market models show similar trends. Moreover, the market model results are not markedly different from those of constant mean model. It also shows the high level of abnormal return on the 14th day prior the event for the "bad news". The value of the t-test is -4.21. The dissimilarity in the cumulative abnormal return can be attributed to the market movement. In other words, the divergence is potentially caused by the changes in market preferences of investors after the sharp increase or decrease in oil prices.

According to the t-test, computed by the constant mean model, averaged abnormal return for individual companies is insignificant for the event date. The $\Im_1^{CAR}$ for the "good news" at the event date for the stocks of British Petroleum, Chevron, Exxon Mobil, Total, Eni and Royal Dutch Shell are 0.7, 0.09, 0.75, -0.142, 0.613 and -0.524 and the values of abnormal returns for that day are 0.124, 0.118, 0.118, 0.124, 0.129 and 0.114 respectively. Despite that the t-test shows an existence of abnormal returns two weeks before the event for individual companies, it is not significant. However, the value of the t-test is higher for the 15th, 14th and 13th days prior the event than those of other dates. The highest but still insignificant level of the t-test is observed at the date -14. For the shares of British Petroleum the value of the t-test is -1.5, for Chevron's stock the t-test is -1.4, for the securities of Exxon Mobil the t-test is equal to -1.1. The t-test for the stocks of Total is -1.6, for the shares of Eni - 1.0 and -1.2 for the stocks of Royal Dutch Shell. The sign of the cumulated abnormal return for the most of the Western companies is negative before the event. However, after the event the cumulative return is positive. Exceptions are Total and Royal Dutch Shell. The securities of these two companies have negative sign all throughout period.

The t-test calculated by the market model at the event date is lower than the t-test computed by the constant mean model. The t-test for the stock's of British Petroleum is -2.1, for the share's of Chevron t-test is equal to -1.6 and for security's of Exxon Mobil is -1.3. The values of the t-test for the stocks of the companies from the Continental Europe at this date are as follows: -2.25, -1.38 and -1.77 for Total, Eni and Royal Dutch Shell' securities, respectively. The signs of the cumulative abnormal returns are roughly similar to the ones obtained by the constant mean model with sporadic negative signs after the event date.

For the case of the "bad news", the t-test does not show significance of abnormal return after the event date. The t-test indicates statistically significant positive abnormal returns for Total, Eni and Royal Dutch Shell's stocks two weeks before the event. The values of the t-test are 1.89, 2.24 and 1.70, respectively. However, the market model does not report significant results for this date. After the event the signs of the cumulative abnormal returns change to the negative, although the timing of this change is different for different stocks.

For Chinese's and Russian companies the t-test shows some surprising outcomes which are difficult to explain by the changes in the oil prices. For example, Sinopek's stocks have significant abnormal returns both for the "good news" and "bad news". However, the cumulated abnormal return of "good news" is negative, while for the "bad news" the sign of cumulated abnormal returns is positive. According to the t-test, for the rest of the stocks the event date does not have any impact.

We conducted the second test, rank test, which is nonparametric in nature and does not rely on the assumption of the normality of the time series. Examination of the cumulative abnormal return showed that the plot of the proxy of cumulative abnormal return in case of the constant mean model has a similar movement similar to the actual abnormal returns for portfolio of companies. However, the test was conducted without cumulating proxy of the abnormal return both for constant mean model and market model. The proxy for the abnormal return for the event date is equal to 358.3 and the variance is 26.6 for the "good news". The rank test for the day zero (event day) is 13.5. The "bad news" show that the cumulative abnormal return is -252.9 and the standard deviation is 27.4. The rank test in case of "bad news" is -9.2. Another significant negative abnormal return is observed 9 days before the event. The rank test for that day is -6.1. Interestingly, "bad news" also includes positive abnormal returns. Significant positive abnormal returns are observed on the 15^{th} and 18^{th} days before the event. The abnormal returns for these days are 136.2 and 236.4 for date -15 and -18 respectively. The rank test is equal to 5.1 for the date -15 and 8.1 for the date -18.

The rank test based on the market model reveals the same trend in cumulative abnormal return as previous tests. The proxy for the abnormal return is 350.0 and -

183.3 for the “good news” and “bad news” respectively. The rank tests are 13.3 and -6.1, respectively and the null hypothesis that the event has no impact is strongly rejected. For the “good news” there is significant level of negative abnormal return two weeks prior the event date. The rank tests are -5.0 and 5.3 for the 14^{th} day and 12^{th} day before the event, respectively. Another significant negative abnormal return observed on the 8^{th} and 7^{th} days before the event, however on the 6^{th} day the sign of abnormal return changes to positive one. The rank tests for those days are -7.9, -5.3 and 6.0 respectively. The “bad news” has positive abnormal return 18 days before the event. The rank test showed that with value 5.1.

The figures for the cumulative e abnormal returns and the proxy for the cumulative abnormal return show similarities. The plots of proxy for cumulative abnormal returns presented in Figures 5 and 6.

Constant Mean Model

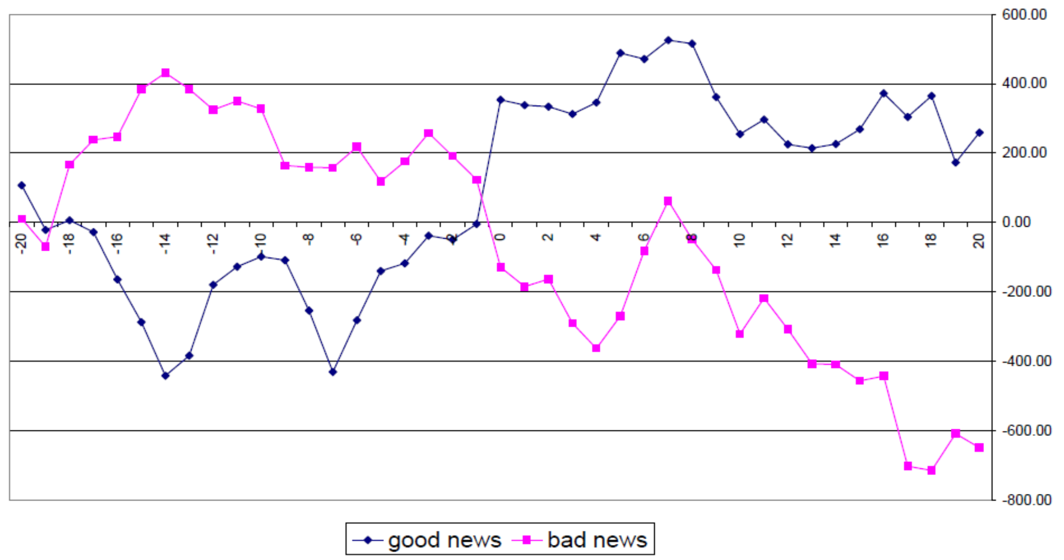

Figure 5: Plot cumulating proxy of abnormal returns for the constant mean model averaged for 12 companies. The proxy for the abnormal return is (K_{it} - 83.5), (Corrado, 1989). The horizontal axis represents the event window, with date 0 as the event time. The vertical axis represents the proxy for the cumulative abnormal return for this period.

Market Model

Figure 6: Plot cumulating proxy of abnormal returns for the market model averaged for 12 companies. The proxy for the abnormal return is (K_{it} - 83.5), (Corrado, 1989). The horizontal axis represents the event window, with date 0 as the event time. The vertical axis represents the proxy for the cumulative abnormal return for this period.

Yet again, the tests undertaken for individual companies showed mixed results. That is, the event date has considerable effect on Western companies. In case of Russian and Chinese oil companies, the effects of changes in oil prices do not changes the abnormal return markedly or, even, have an inverse effect.

Compared with the parametric test, the nonparametric test indicates the strong significance for all Western stocks. The value of the rank test for the "good news" ranges from 5.29 for Royal Dutch Shell's stock to 12.79 for Eni's stocks on the event date. In addition, the rank test shows high negative abnormal return approximately two weeks before the event. However, a week before the event there are significant positive abnormal return for most of the securities. These are, especially, noticeable with stocks of Chevron and Exxon Mobil. The rank test for these securities are 8.52 and 6.38 respectively. On the event date the rank test showed 8.91 for Chevron's stocks and 9.13 for the stocks of Exxon Mobil. Another significant date is 9 days after the event. The rank test detects considerable negative abnormal returns on that date. For instance, the value of the average proxy for abnormal returns of British Petroleum is -28.4 while on the 8^{th} day it was equal to 13.5. For the rest of the securities the picture is somewhat similar to those of the shares of British Petroleum.

The "bad news" also affects the share prices. The lowest level of the rank test observed for the stocks of Royal Dutch Shell is -2.78 and the greatest is for the shares of Exxon Mobil, which is equal to -11.86. The average rank test for all six Western companies is -6.51. Yet again, the rank test indicates statistically significant positive abnormal returns 15 days before the event. The market model for the rank test supports the constant mean model. It indicates the significance of abnormal returns at the event date and significant positive abnormal returns are observed 15 days before the event.

The picture is not clear for securities of Russian and Chinese companies. Overall, the changes in oil prices seem to have some effect on the share prices. However, in comparison with the Western companies, it is negligible. For instance "good news" is statistically significant for the shares of following companies: Lukoil, Gazprom, Surgutneftegaz and Petrochina. Significance for the "bad news" observed for the stocks of Petrochina and China Petroleum and Chemicals. Despite this, the level of significance is much lower then those observed for the stocks of the Western companies. Interestingly, China Petroleum and Chemicals' shares have significant negative abnormal return fifteen days before the event for the "good news". While at the same date for the most of the securities of the Western companies positive abnormal returns are observed. The rank test for the shares of "China Petroleum and Chemicals" is -9.51 and -5.99 for the constant mean model and the market model, respectively.

Finally, the nonparametric rank test shows that overall the abnormal returns of oil companies' shares for the analysed period is affected by oil price change. In addition, there are significant abnormal returns before and after the event. The results obtained under the constant mean and the market models do not greatly differ. Based on the rank test the outcome is different from traditional parametric t-test. While the nonparametric rank test strongly indicates the existence of abnormal returns, the parametric test rejects the possibility of abnormal return. Bartholdy et al (2007) point out that in some instances the test may show different results. In such situations, the nonparametric test is more reliable in detecting the abnormal return. Thus taking into account the results obtained by the nonparametric rank test it is possible to say that oil price change affects the shares of Western oil companies. However, its impact on Chinese and Russian companies is weak.

The experiment proves that on average random event dates do not show abnormal return and both the parametric t-test and the nonparametric rank test indicate this. Both tests show an absence of abnormal return. In the case of the constant mean model, the t-test shows 0.021 for "news one" and -0.011 for the "news two". The market model indicates the value of the t-test value for day zero equal to 0.006 for "news one" and 0.0022 for "news two". For individual companies the t-test shows a sporadic outcome. However these do not change the overall picture of the test.

The rank test as expected supports the t-test in this experiment. The value of the rank test for the proxy for the cumulative abnormal return is 0.025 and -0.025 for "news one" and "news two" respectively. For the proxy obtained by the market model, the value of the rank test is 0.11 and -0.08 for the "news one" and "news two" respectively. For the rest of the event window, the rank test does not indicate any abnormal return as well. Thus, this experiment confirms that randomly generated events on average should not show abnormal return.

The analysis of individual companies showed that the reactions on the oil price news of shares of emerging and Western oil companies are different. For instance, the abnormal returns of most Western companies are negative, irrespective of news. The exceptions are Exxon Mobil and, to some extent, Chevron and Eni. In contrast, the investments into Russian and Chinese oil companies generate positive abnormal return regardless of the type of news. The possible explanation of this result is that the oil companies are considered as strategic companies in China and Russia and in many instances prone to political influences.

The experiment with random event dates indicates a similar outcome for this experiment both for the parametric t-test and the nonparametric rank test. They show that one cannot reject the null hypothesis of no abnormal return.

Conclusion

This analysis aimed to fill the gap in the empirical research of event studies of oil companies. It is focused on the question of whether the changes in oil prices have an impact on share prices of emerging and Western oil companies. The methodology is in line, with that of other researchers.

The nonparametric rank test results reveal considerable abnormal returns for oil companies. However, the tests also show the discrepancy among the companies from different economic areas. For example, while oil price change effects stock prices of American and European oil companies as expected, the most atypical behaviour is observed for the securities of Chinese and Russian companies.

A simulation experiment was additionally conducted based on the same tests but with randomly generated event dates. This experiment had the expected results both under the parametric t-test and the nonparametric rank test. Viz., one can not reject the null hypothesis of no abnormal returns in the case of random event dates for the stock prices of oil companies.

It is also interesting to note, and further research is required in the future, to explain why the Russian and Chinese oil companies behave differently. Potential causes of such performances of the shares are, perhaps, inside information, political influences and corruption.

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