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**THE REACTION OF DEFENSE STOCKS TO WAR NEWS:
AN EVENT STUDY**

Dino P.N. Mastroianni

A Thesis in the Faculty of Commerce and Administration

Presented in Partial Fulfilment of the Requirements
for the Degree of Master of Science in Administration

Concordia University
Montreal, Quebec, Canada

May 1995

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ABSTRACT

THE REACTION OF DEFENSE STOCKS TO WAR NEWS: AN EVENT STUDY

Dino P.N. Mastroianni

This study investigates the reaction of over 60 defense industry stocks to war news. An event study methodology is set forth and tested for a sample of 34 war related announcements. We use a single factor market model as the return generating process. Two adjustments made to this model are also taken into account: a non-synchronous trading adjustment and a beta-shift adjustment. The single factor market model is also tested for robustness using the GARCH specification.

The results are consistent between the single factor market model and its adjustments. However, the GARCH specification reveals many more significant results. On the whole the results reveal that war news affects defense stocks. Finally, we also explain abnormal returns found for a Gulf war event using three firm specific variables.

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A mamma e papà,

per la loro ispirazione e il loro grande amore.

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THE REACTION OF DEFENSE STOCKS TO WAR NEWS: AN EVENT STUDY

1.0 INTRODUCTION

The defense industry in the United States has been an engine of growth for the economy for many years. An enormous amount of public funds go towards the military and the military industrial complex. In 1992 for example, the defense budget was \$282 billion (Rogerson 1994). The weapons procurement "piece of the pie" was \$80.5 billion which represents 30% of the total defense budget. In the same year expenditures in many regulated sectors were inferior to weapons procurement expenditures. These sectors include: long distance telephone service (\$68 billion), airlines (\$58 billion), pay TV and cable (\$21 billion), amongst others.

Previous studies¹ have looked at the response of defense stocks and the market as a whole to *war news*. These studies have generally found that war news affects defense stocks. However, these studies have areas that can be expanded on or improved. For example, some of these event studies only look at events that have the potential of bringing the U.S. to react militarily. Moreover, they do not look at what happens once a war has erupted. Another shortcoming is that some studies use a small sample of firms and events to conduct their analysis. Other shortcomings include: methodology that does not allow for anticipation of

¹ The previous studies are reviewed in section 2.

the event (e.g. Drzycimsky's (1973) and Billingsley et al. (1987) and McDonald and Kendall (1994) which use pooled results). The problem with using pooled results is that we cannot observe the significance of a specific event. Moreover, conclusions may be erroneous if some of the pooled results are so significant that they compensate for non-significant results.

The purpose of this study is to evaluate the importance of war related news and its impact on defense stocks. According to the *Efficient Market Hypothesis*, security prices fully reflect all available information and adjust immediately to new information. Therefore expectations about the way in which war news or war related news will affect the value of future cash flows for a given firm should be reflected in the firm's security price at the time the war (or war related event) was first anticipated. Security prices are expected to adjust to any event that alters the perceived probability that war will breakout, continue or cease.

An event study conducted on defense industry stocks will be used to test these hypotheses². The objective of an event study is to assess whether there are any abnormal or excess returns (i.e. any returns above what is expected) earned by security holders accompanying specific events, in this case war news.

² In an article, Fama (1991a, p.1600) concludes that event studies are an important part of finance, and that the resultant literature passes the test of scientific usefulness.

There are two types of events employed in this study, positive and negative events. *Positive events*³ are defined to be events that increase the probability that war will break out or that war will escalate. *Negative events* are defined to be events that increase the probability that war will cease or that the intensity of fighting will decrease. A table containing events with their respective definitions, "P" for a positive event and "N" for a negative event, can be found in Appendix A.

We will make some assumptions concerning the effect of war news. If the news or event is positive (i.e. it increases the probability that war will breakout or escalate) we expect there to be positive abnormal returns. We expect this since news that a war will breakout or escalate, should imply an increased demand for military goods. This should give rise to an increase in the perceived probability of enhanced future cash flows. This in turn, should affect the share prices positively, for firms in the defense industry. Conversely, *negative* news should have the reverse effect on defense stocks since a cessation of hostilities should signal a decrease in the demand for military goods.

The wars and war related events that will be covered are: the Vietnam War (1967 and 1968), the Six Day War (1967), the Yom Kippur War (1973), the Falkland Island War (1982) and the Gulf War (1990-1991). There is a total of 34 events studied.

³ *Positive* is taken in the context of the defense portfolio.

The remainder of this paper is organized as follows. In section two, event study methodology and previous studies are reviewed. In section three, the sample data and the methodology are described. Section four is divided into three parts: first, empirical results from the event study are presented, and then summarized, next a cross-sectional study that explains the abnormal returns found for a gulf war event is performed using three firm specific variables. In section five, some limitations, implications and concluding remarks are offered.

2.0 LITERATURE REVIEW

2.1 Event Study Methodology Review: Estimation Techniques and Potential problems.

2.1.1 Non-Synchronous Trading

One problem encountered when dealing with stock returns is "non-synchronous trading." In particular many securities listed on organized exchanges are traded only infrequently with few securities being traded almost continuously¹. Because prices for most securities are reported only at distinct, random intervals, accurate calculation of returns over any fixed sequence of periods is virtually impossible. In turn this introduces into the market model the econometric problem of errors in variables (biased and inconsistent betas). This problem does not seem serious when considering the firms that form the portfolio in this study. However the non-synchronous trading adjustment will be taken into account in order to be consistent with a previous study .

2.1.2 Estimation Period

An estimation period of 200 days seems appropriate when weighing the benefits of a longer estimation period (an improved prediction model) against its costs (model parameter instability²). Strong (1992) gives examples of the number of observations used in the estimation period, they range from 60 observations for Lambert & Larcker (1985) to 600

¹Fama, E.,(1965) and Fisher, L., (1966)

²Brown S.J., and Warner J.B., (1985)

observations for Dodd et al. (1984).

Strong (1992) also mentions that there is a trade-off between including more observations to increase statistical accuracy and not going too far forward or back from the event window in case the parameters of the return generating mechanism have shifted. Different event windows (from 21 days to 1 day) will be chosen to take into account the possibility of "event anticipation" which seems severe for war related events. The shorter event windows are relevant because Morse (1984) and Brown & Warner (1985) have found that the more precise the event date the more powerful the test.

2.1.3 Missing Returns

There are four commonly used techniques to deal with the problem of missing returns. The first is to remove the security with missing returns from the sample, but this technique creates the potential for selection³ bias. The second technique is to use only the available data. This technique has a potential for misestimating abnormal returns; if a firm does not trade one day, the following day's return may reflect information available on that day and the preceding day⁴. A third technique averages the succeeding period's return over the missing period and the succeeding period. According to Peterson (1989) this technique tends to mask single day effects; the succeeding day return spread over the preceding day

³Eades, K.M., Hess J.P., and Kim, E.H.,(1985)

⁴Peterson, P.P., (1989)

does not provide information on the price changes for the individual days. The fourth technique is to use available data removing the missing period return and the succeeding period return from the analysis. This technique achieves the greatest sample size without affecting the identification of individual day price changes⁵.

2.1.4 Event Clustering

Still another potentially serious problem is "event clustering". This problem occurs when an event affects all the firms being studied at a specific date (this seems particularly the case when war news is being studied). The problem created by clustering in calendar time is that the number of securities whose event periods are independent is reduced or eliminated. Clustering increases the variance of the performance measure (abnormal returns); thus, there is lower power of the test to detect abnormal performance. Salinger (1992) and Karafiath (1989) suggest using Zellner's seemingly unrelated regressions (SUR) method. Karafiath (1989) mentions two advantages to using this method. First, it is an appropriate solution to the problem of "event clustering". SUR estimation calculates cross-sectional contemporaneous covariance between the error terms, thus these covariances are properly incorporated in cross-sectional **t** and **F** tests. Second, a wide variety of hypotheses may be tested. This method could be implemented using the three stage least squares procedure.

⁵Brown, S.J., and Warner, J.B.(1985)

2.1.5 Non-Normality

The non-normality problem also seems to occur often. Fama (1976, p.21) provides evidence that the distribution of daily data returns is leptokurtic. Brown & Warner (1985) use data that indicates the same problem along with right skewness. According to Dyckman, Philbrick and Stephan (1985) the fact of having non-normal daily excess returns does not necessarily bias hypothesis tests.

An alternative to parametric tests (such as t tests) are nonparametric tests (such as sign tests and Wilcoxon tests). However, Brown & Warner (1980) caution against the use of such tests since they assume a symmetric distribution. Berry, Gallinger and Henderson (1990) state that nonparametric statistics appear to be more powerful at detecting abnormal performance but their type I error characteristics and their sampling distribution leads to the conclusion that they are ill specified and should be used only with extreme care. However Corrado (1989) uses a nonparametric test which he argues does not require symmetry in cross-sectional excess return distributions for correct specification.

2.1.6 Autocorrelation & Cross-Sectional Correlation

Brown & Warner (1985) suggest adjustments in two specific instances concerning autocorrelation: when event clustering is present, or when using AMEX stocks. They contend that in other cases benefits from autocorrelation adjustments appear to be limited. Salinger (1992a) argues that ignoring autocorrelation can result in significant underestimates of standard errors which affects significance tests.

The case of cross-sectional dependence is more problematic. As in the case of autocorrelation, ignoring the cross-sectional correlation of residuals can result in underestimates of standard errors. This implies too many rejections of the null hypothesis⁶. However, according to Brown & Warner (1985) dependence adjustments can actually be harmful compared to procedures which assume independence. To correct this problem many authors⁷ suggest using joint generalized least squares methods (e.g. seemingly unrelated regressions (SUR⁸)). To test for cross-sectional dependence in SUR models we can use Breusch and Pagan's (1980) Lagrange multiplier (BPLM) procedures or likelihood ratio (LR) test or Wald tests. According to Xiang (1993) the BPLM is asymptotically equivalent to LR or Wald tests but it is easier to implement. However both BPLM and LR tests assume that the return-generating process is well specified.

2.1.7 Variance Increase

Another potentially serious problem is that the variance may increase around the event date⁹. Brown & Warner (1985) indicate that in some event studies the variance could increase by a factor of two. They suggest the estimation of the variance of mean excess returns by the cross-sectional variance. However they caution against the use of this method

⁶Collins D.W., and Dent W.T., (1984), Binder J.J., (1985) and Bernard V.L., (1987) present evidence of the seriousness of the cross-sectional correlation problem in event study.

⁷Karafiath, I., (1988), Salinger, M.(1992b),Ingram,.A.and Ingram, V.C., (1993) and Xiang, B., (1993)

⁸Examples of this method can be found in Kryzanowski and Ursel (1993).

⁹Patell and Wolfson (1984), and Kalay and Loewenstein(1985).

when the shifts in variance are not identical across all securities (since this violates the model's assumption of identically distributed excess returns).

There is evidence of substantial increases in the variance of a security's return for the days around some types of events¹⁰. An implication of a variance increase is that standard procedures using a time series of non-event period data to estimate the variance of the mean excess return will result in too many rejections of the hypothesis that the mean excess return is equal to zero¹¹. Brown & Warner (1985) suggest two methods to deal with the variance increase problem. The first method consists in using only the cross-section of event period excess returns to estimate the variance. But this method has limitations. If the variance of security returns does not increase around the event period, the cross-sectional variances do not provide powerful tests because they ignore event period data¹². The second method suggested is to partition the sample based on an economic model of the effects of the event such as whether the event is 'good news' or 'bad news'¹³. The authors contend that this procedure can reduce the conditional return variances of securities in each subsample.

¹⁰Patel and Wolfson (1979), Kalay & Loewenstein (1983).

¹¹Brown, S.J., and Warner, J.B., (1985)

¹²Peterson, P.P., (1989)

¹³See Thompson (1993) for an example.

2.1.8 Use of Portfolio Returns vs Individual Security Returns

According to Modigliani and Pogue (1974) tests based on individual security returns are inefficient for two reasons. First, there is the problem of errors in variables because beta is measured with some error. The errors are random in their effect but they tend to attenuate the relationship between mean return and risk. The authors state that by carefully grouping the securities into portfolios much of this measurement error problem can be eliminated. This is because the errors in individual stocks' betas tend to cancel each other out. The second problem relates to the obscuring effect of residual variation. Realized security returns have a large random component, which typically accounts for 70% of the variation of return. By grouping securities into portfolios, we can eliminate much of this "noise" and thereby get a much clearer view of the relationship between systematic risk and return. In the case of non-normality of individual security return residuals, Dyckman, Philbrick and Stephan (1985) state that the use of t tests applied to portfolios are well specified.

2.2 Related Studies Review:

2.2.1 Niederhoffer (1971)

The Niederhoffer study has two objectives. First, it examines the relationship between world events and stock prices. Second, it illustrates and suggests specific applications of some techniques for measuring the meaning of events.

The author chose 432 events contained in the *New York Times* for the period 1950-1966. The events had to have headlines of at least five columns wide except for events

concerning the Korean War which had to have headlines of at least eight columns wide. The price data he uses to conduct his analysis are closing prices of the *Standard and Poors Composite Index* and they are also taken from the *New York Times*.

Although Niederhoffer finds many interesting results, I will concentrate on the ones that are of importance to this study. First, he finds that the probability of a world event headline occurring on a randomly selected day is about 0.10. Once a world event headline has occurred, the probability of another one occurring on the following day is 0.19. After two, three, four and five consecutive world event headlines the probabilities of another one occurring on the following day are respectively 0.52, 0.43, 0.62 and 0.62. Second, large changes are more probable on days following world events than on randomly selected days. Moreover, when considering clusters of world events, the proportion of large changes is significantly larger than the proportion following isolated world events. Third, he finds that there is a tendency for the market to overreact to bad news. After a day with a large decrease there are three days of increases. The following results are closely related to this study. He finds that the market rises 65% of the time when there is a U.S. war development with an average percentage increase of 0.3. However, he finds that the market rises 52% of the time when there is an enemy war development with an average percentage change of -0.1. When considering a peace meeting (hostile meeting) the market rises 58% (50%) of the time with an average percentage increase of 0.1 (-0.2).

Niederhoffer concludes that world events affect stock market averages. He points out that by postponing sales and accelerating purchases investors could have made a 2.5% return in four days with a 90% probability. However, he also mentions that the risk during these periods are intuitively larger and thus investors would seek a higher return. Finally, he reports that there is no information in his study that supports or refutes the *Random Walk hypothesis*.

2.2.2 Reilly and Drzycimski (1973)

The authors' objective is to test the *Market Efficiency Hypothesis* by performing a semi-strong test on the scale, direction, consistency and speed of stock market reaction to world events.

They chose seven world events in the *New York Times* that they thought would have an impact on stock prices. The world events are from the period 1968-1972 and among them three events can be considered to be war related and one event is mixed¹⁴. The authors use nine different stock price indicators¹⁵ to conduct their analysis and contrary to Niederhoffer, the authors use close to open returns to perform their tests. They analyze a total of sixty-one price changes for each event.

¹⁴There is one event that contains information about President Johnson not running in the following election and some information on the Vietnam war.

¹⁵The stock price indicators employed are: 30 DJIA, DJIA, DJTA, DJVA, DJCA, 50 NYSE, 50 ASX, Actives and Changers. See Reilly and Drzycimski (1973) for an explanation.

Reilly and Drzycimski find that 53% of the price changes are significant during the period that begins at the closing of the day before the event and ends at the opening of the day after the event. About 66% of all significant price changes on the first full day of trading were not followed by significant price changes on the second full day of trading. Moderate profit opportunities (after commissions) were limited to two events that were not war related. The authors find that there is a tendency for large price changes to follow major events and for these price changes to take place quickly. The coefficient of variation of the percentage price changes is lowest during the first period and higher during the subsequent periods. The authors also find that the more important and the more unexpected the announcement the more likely is the market to react significantly and swiftly.

The authors conclude that their results seem to support the *Market efficiency Hypothesis* but caution against possible biases. First, there is the problem with averaging the results by looking at stock groups, individual firms inside a group may have behaved differently. Second, there is a problem in controlling for individual firm announcements. Third, there is the problem with significant announcements subsequent and previous to the one chosen. Niederhoffer (1971) found that significant news announcements had a tendency to cluster. Finally, this study did not allow for anticipation effects (i.e. the authors do not look at what happens prior to the event).

2.2.3 Billingsley, Lamy and Thompson (1987)

The objective of this study is to examine the impact of world events on the stock market and on a portfolio of defense stocks.

The authors chose twelve events that they thought could have increased the chance that the U.S. would get involved militarily. The world events were taken from the *New York Times* and the *Wall Street Journal* and they span the period 1960-1983. The study uses nine defense firms that received Department of Defense contracts that constituted at least 50% of their gross sales in each of the "world event" years. The daily excess return data are taken from the CRSP tapes. The market portfolio is proxied by the CRSP equally-weighted market index.

Billingsley et al find that the market as a whole reacted negatively on day 0 (the event date) and positively on the following day (both results are significant at the 5% level). They argue that reversal could be explained by the fact that the market reacted positively to the U.S. not taking immediate military action. The authors also find that the defense portfolio exhibits a significant positive return on the event day. The results suggest that there was no anticipation and no reaction after the event day.

The authors conclude that their results suggest that the market as a whole reacts negatively to events that may increase the chances of war while defense stocks react positively to the same announcements. Their explanation is that the market may be reacting

to increased uncertainty brought about by the event while the defense stocks are reacting to the probability of greater profits.

2.2.4 Cutler, Poterba and Summers (1989)

This study's objective is to measure the fraction of variation in aggregate stock returns that can be attributed to economic news. The authors separate economic news into two. The first part is macroeconomic news and the second is world news (wars, presidential illness...).

Cutler et al use seven variables of monthly macroeconomic activity¹⁶ to perform the first part of their analysis how much variation in stock returns is due to macroeconomic news. The aggregate stock return is proxied by the real return of the value-weighted index on the NYSE. Monthly data spans the period from 1926-1986 and yearly data spans the period from 1871-1986. In the second part of their study forty nine events are chosen in the "Chronology of Important World Events" from the *World Almanac*. Out of the forty nine events, nineteen are war related and one is mixed. In order to be included in the study the events must have been carried as a lead story by the *New York Times* and its business section had to have reported that the event affected the stock market. The events span the period 1941-1987 and the market portfolio is proxied by the S&P Index.

¹⁶These variables measure real and financial conditions. See Cutler, Poterba and Summer (1989) for an explanation.

Using a vector autoregressive approach (VAR) and different numbers of lags and one lead their model's adjusted R^2 range from .005 to .534. The authors point out that the higher adjusted R^2 may be overestimating the results. They argue that about one third is a reasonable estimate of the adjusted R^2 . In the second part of the analysis the authors look at basic statistics such as the average absolute return (AAR) and the standard deviation of returns (SDR) to test the effect of world events. The AAR (SDR) for the world events is 1.46% (2.08) compared to 0.56% (.82) for all days in the 1941-1987 period. The authors use another method of testing the importance of world events. They chose the fifty highest daily returns on the S&P Composite Stock Index since 1946 and they tried to match them with explanations given by the *New York Times*. Out of fifty events, five are war related. Mixed results were found. On some days there is clearly a link between the high price move and the news released by the *Times*. However, on several days there is no explanation given.

Cutler et al come to the conclusion that as much as half the variance in aggregate stock returns cannot be explained by publicly available news. They offer two other explanations for stock price movements. First, an average assessment of available information might be taken by investors. Second, they offer "propagation mechanisms" as an explanation. According to this hypothesis small shocks can cause large price shifts due to supply and demand for stocks. Finally, they contend that stock returns are too volatile to be explained solely by "news".

2.2.5 McDonald and Kendall (1994)

The objective of this study is to measure the effects of military actions taken by the U.S., the former Soviet Union or their clients on defense stocks.

The authors chose seventeen events which they thought had a high likelihood of direct military intervention by the U.S. or the former U.S.S.R.. Sixteen firms were chosen to form the defense portfolio. They had to respond to two criteria to be included. First they had to be suppliers of military equipment to the Department of Defense and second, their returns data had to be available on the CRSP tapes.

McDonald and Kendall find interesting results. They split their results in two. Firstly, they look at all events using pooled abnormal returns. They find a significant positive abnormal return (0.8%) for the interval [day 0 to day +2] . Secondly, they look at events where the U.S. was involved separately from events where the U.S.S.R. was involved. For events where the U.S. was involved they found a significant negative abnormal return (-1.2%) for the interval [day +2 to day +10]. The authors contend that there is no abnormal return prior to or on the event date because of anticipation. For events where the U.S.S.R. was involved they find a large significant positive abnormal return (3.4%) for the interval [day 0 to day +2]. They also find a significant negative abnormal return (-2.9%) for the interval [day +2 to day +10]. The authors offer the "overreaction" hypothesis to explain this fact. For events where the superpowers were not involved there were no significant abnormal returns.

Finally the authors conclude that events which have the potential for confrontation seem to offer positive and negative abnormal returns. They suggest that investors diversify their portfolios with stocks that tend to react in the opposite direction from defense stocks to minimize the negative effects of "war news".

3.0 DATA DESCRIPTION AND METHODOLOGY

3.1 Description of Events and Data

Tables containing a list of events and their respective dates can be found in Appendix A. The headlines were taken from the *Wall Street Journal Index*. As was the case in previous studies, these events were chosen in a subjective manner. The events were included in the study if we felt that they would have an impact on the defense portfolio. The headlines indicate in general: the beginning of hostilities, an increase in hostilities, peace talks, a decrease in hostilities, or an increase in troop commitment. The third column of the tables contains an anticipation of the sign or effect of the event. If we thought that the event would have a positive effect on the defense portfolio we indicate it with a **P**, if we thought it would have a negative effect we indicate it with a **N**.

The firms included in the study are taken from the Department of Defense's publication, *Five hundred contractors receiving the largest dollar volume of prime contract awards for research, development, test and evaluation*. All firms contained in this publication were cross-referenced with the *Center for Research on Security Prices (CRSP)* header file to obtain the largest sample of firms with available data. Depending on the period in which the event occurred there are between sixty-three and sixty-nine firms included in the defense portfolio¹. The defense portfolio is constructed by taking the average of all the

¹A list of all the firms included in each period can be found in Appendix B.

individual firms' returns. Daily stock market returns are taken from the CRSP database. The value-weighted index of all the securities included in the CRSP database is used as a proxy for the market portfolio.

3.2 Research Design

In this study, we use an event study methodology to measure the response of a portfolio of U.S. defense related firms to "war news" or war related news. Following the event study literature the abnormal return (γ_{it}) to a portfolio i at time t is estimated as the prediction error of the market model². Abnormal returns are estimated for each observation within an "event window" that includes observations corresponding to the days when new information was learned. The estimation equation using OLS is:

$$r_{it} = \alpha_i + \beta_i r_{Mt} + \sum_{t=T_1}^{T_2} D_{it} \gamma_{it} + \epsilon_{it}$$

where r_{it} is the return to portfolio i at time t , β_i is the systematic risk of portfolio i , α_i is the intercept, r_{Mt} is the return to the market portfolio, and ϵ_{it} is an error term assumed to have zero mean and variance σ^2 , that is constant over time. The dummy variable D_{it} is equal to one for the days in event window $[T_1, T_2]$ and zero otherwise. The interval for t is $[-180, +40]$, that is 180 days before the headline date to 40 days after.

² Brown, S.J. & Warner, J.B. (1985) and Karafiath, I. (1988)

By using a separate dummy variable for each day in the event window, the estimates of β_i and $\text{var}(\beta_i)$ are identical to those that would be obtained by estimating the market model with pre-event and post-event data. Thus the estimates are not affected by the event window observations³.

The estimated coefficient γ_{it} on the dummy variable represents the abnormal return for portfolio i on day t in the event window. The abnormal returns can be summed over any interval $T_{1,n}$ and $T_{1,n,j}$, within the event window $[T_1, T_2]$ to form the cumulative abnormal return ($CAR_{T_{1,n}, T_{1,n,j}}$):

$$CAR_{T_{1,n}, T_{1,n,j}} = \sum_{t=T_{1,n}}^{T_{1,n,j}} \gamma_{it} \quad n > 0, j > 0$$

where $T_{1,n}$ and $T_{1,n,j}$ can represent any day within the event window (e.g. day 0 and day 5 or day 1 and day 10).

³Salinger (1992a) and Karafiath (1988).

The market model with a correction for non-synchronous trading can be estimated in the following manner:

$$R_{it} = \alpha_i + \sum_{j=1}^1 \beta_{i,j} R_{M,t,j} + \sum_{t=T_1}^{T_2} D_{it} \gamma_{it} + \epsilon_{it}$$

Where the second term to the right of the equality represents the correction for non-synchronous trading. With this correction the $\beta_{i,j}$ is a three day average beta. The other variables have been defined previously. This correction should pickup "small" firm effect biases, it does not seem necessary for the portfolio used in this study. The correction is made to be consistent with a previous study.

A second correction to the market model is the beta shift correction. This measure allows the beta to shift at the event date⁴. The correction can be made with the following model:

$$R_{it} = \alpha_i + \sum_{j=1}^1 \beta_{i,j} R_{M,t,j} D_1 + \sum_{k=1}^1 \beta'_{i,k} R_{M,t,k} D_2 + \sum_{t=T_1}^{T_2} \gamma_{it} D_{it} + \epsilon_{it}$$

Where $\beta_{i,j}$ is the pre-event beta and $\beta'_{i,k}$ is the post-event beta. D_1 is a variable with a value of one before the headline and zero otherwise. D_2 is a variable with a value of one on the headline date and after and zero otherwise. The other variables have been defined previously.

⁴Chow test results can be found in Appendix D, Table D5.

Another correction to the market model is the correction for generalized autoregressive conditional heteroskedasticity (GARCH). The GARCH(1,1) process is given by⁵:

$$\begin{aligned}\epsilon_t | \Psi_{t-1} &\sim N(0, h_t) \\ h_t &= \alpha_0 + \alpha_1 \epsilon_{t-1}^2 + \alpha_2 h_{t-1}\end{aligned}$$

where ϵ_t is a real-valued discrete-time stochastic process, and Ψ_t is the information set (σ -field) of all information through time t . By employing this method conditional variance shifts can occur each day. The Berndt, Hall, Hall and Hausman (BHHH) maximization procedure is used with RATS to correct for GARCH effects.

⁵For further explanation see Bollerslev (1986).

4.0 EMPIRICAL RESULTS

4.1 Event Study Results

Tables containing the results for all three models⁵ and the GARCH specification of the market model can be found in Appendix C. Tables containing tests⁶ can be found in Appendix D. On the whole these tests seem to justify the use of the GARCH specification.

All three versions of the market model exhibit similar results. However, there is considerable differences between the OLS and the GARCH specifications. The former doubles the number of significant abnormal returns (ARs) found on the event day or the headline day without increasing the number of significant ARs displaying a sign that is contrary to the one expected. When looking at the cumulative abnormal returns (CARs) the GARCH specification quadruples the significant ones with the expected signs but it also increases the number of significant CARs with a sign that is contrary to the expected one.

⁵(1) the market model, (2) the market model with an adjustment for non-synchronous trading and (3) the market model that allows for a beta shift at the headline date (i.e. day 0).

⁶(1) the ARCH Engle test, (2) the Lung-Box Q test, (3) skewness and kurtosis measures, (4) the White test, (5) the Durbin-Watson test and (6) the Chow test.

Significance is determined by a p-value:

$$p\text{-value} = P\{t(\alpha/2;n-k) \leq (b_1 - \beta_1)/s\{b_1\} \leq t(1-\alpha/2;n-k)\}$$

where $t(\alpha/2;n-k)$ denotes the $(\alpha/2)$ 100 percentile of the t distribution with $(n-k)$ degrees of freedom. $(b_1 - \beta_1)/s\{b_1\}$ is the t -statistic calculated by any statistical package, where b_1 is the estimated coefficient, β_1 may be used to test a hypothesis that the true coefficient is zero, and $s\{b_1\}$ is the standard error of b_1 . Thus the p -value describes the exact significance level of an econometric result. For example, a p -value of .07 indicates that a coefficient is statistically significant at the .07 level but not at the .05 level. It can be interpreted to mean that .07 of the t distribution lies outside an interval of t_c standard deviations from the estimated coefficient. t_c represents the critical value of the t distribution.

4.1.1 Vietnam War Period

The first event looked at is the official rejection of peace by Hanoi reported by the *Wall Street Journal* (WSJ) on January 4, 1967. As can be seen in Table C1 there is a statistically significant abnormal return (-2%) to the defense portfolio on the day of the event for the OLS specification. The sign of the AR is negative which is contrary to what is expected. However, when looking at the GARCH specification there is no abnormal return on the day of the event or the day of the headline. The CARs for the periods around the headline are significantly negative both for the OLS and the GARCH specifications. They range from -2.5% to -7.5% for the OLS specification, and from -3.4% to -9.3% for the

GARCH specification. The signs are contrary to the expected ones.

The next event is a statement made by Defense Secretary McNamara to the effect that the troop buildup would continue for 18 months. The WSJ reported the story on January 26. Table C2 shows no abnormal return on the day of the event or the day of the headline both for OLS and GARCH specifications. However, when looking at the CARs for the twenty one day period around the headline, both OLS and GARCH specifications show a -7% abnormal return. The sign of the abnormal return is contrary to the expected one.

On February 7 the WSJ reported that U.S. forces assaulted the Vietcong's national headquarters. Table C3 shows very similar results for both OLS and GARCH. The CARs for both specifications range from -2.6%, for the seven day period around the headline, to -5.8% for the twenty one day period around the headline. The only difference is that OLS reveals a -0.9% AR on the day before the event and GARCH reveals a -1% CAR for the three day period around the headline. The signs are contrary to the ones expected.

On February 24, the WSJ reported that U.S. forces launched the biggest offensive of the war. OLS regressions reveal a 1% AR two days after the headline and a 2.8% CAR for the seven day period around the headline (see Table C4). The GARCH specification reveals CARs ranging from 0.6%, for the three day period around the headline, to 2.9% for the seven day period around the headline. The signs are the expected ones.

On March 1, the U.S. Senate pledged full support to the American forces in Vietnam. Table C5 reveals a 1% AR on the day before the event date for the OLS specification. GARCH reveals a 1.6% CAR, for the seven day period around the headline and a 2.3% CAR for the eleven day period around the headline. The signs are the expected ones.

On April 25, the WSJ reported that U.S. planes struck MIG bases, it contended that this action could signal new bombing targets and an increase in troop deployment. Table C6 exhibits no significant results with OLS. However, GARCH reveals a 0.6% AR on the day of the headline and CARs ranging from 0.9%, for the three day period around the headline, to 1.4% for the seven day period around the headline. The signs are the expected ones.

On July 14, the WSJ reported that President Johnson and General Westmoreland agreed on the need for more troops to be sent to Vietnam. Table C7 exhibits a -0.9% AR five days after the headline and a -3.8% CAR for the twenty one day period around the headline (OLS results). The GARCH specification reveals small single day abnormal returns, four are positive and one is negative. They range from -0.7% to 0.9%. The CARs on the other hand are all negative. They range from -0.7%, for the three day period around the headline, to -4% for the twenty one day period around the headline. The signs for the OLS specification are contrary to the ones expected. The signs for the GARCH specification are mixed.

On August 4, the WSJ reported that the U.S. troop commitment would increase by 45,000 by July 1968. Table C8 shows no significant results using the OLS specification. The GARCH specification shows positive ARs before the headline and negative ones on the day of the headline and the following days. They range from -0.1% to 0.8%. However, The CARs are negative and they range from -0.4%, for the three day period around the headline, to -3.6% for the twenty one day period around the headline. On the whole the signs are contrary to the ones expected.

On August 15, the WSJ reported that U.S. planes bombed an area near China and that Senator Mansfield called such raids very dangerous. Table C9 exhibits no significant ARs or CARs using OLS. GARCH reveals mixed results. There is a 0.2% AR on the headline date and small single day negative ARs around the same date. They range from -0.3% to -0.9%. The CARs range from -0.8%, for the seven day period around the headline, to -1.3% for the eleven day period around the headline. On the whole the signs are contrary to the expected ones except for the headline date.

On December 13, the WSJ reported that 10,000 troops were being airlifted to Vietnam from the U.S. Table C10 reveals a -1% AR two days after the headline date and no significant CARs with the OLS specification. GARCH reveals mostly negative CARs ranging from -0.3%, for the three day period around the headline, to -2.2% for the eleven day period around the headline. The signs are contrary to the expected ones.

On December 22, the WSJ reported that President Johnson and President Thieu agreed on peace talks. Table C11 exhibits interesting results. The OLS specification reveals a -4.5% CAR, for the eleven day period around the headline, and a -9.7% CAR for the twenty one day period. The GARCH specification reveals a 0.3% AR on the event day. The CARs range from -1%, for the three day period around the headline, to -9.7% for the twenty one day period around the headline. The signs are the expected ones.

On January 8, 1968, the WSJ reported that General Westmoreland said that " the war's end is close ". Table C12 shows that the OLS specification reveals four significant ARs on the headline date and on prior dates. All four ARs are a little higher than -1%. The CARs range from -3%, for the three day period around the headline, to -12% for the twenty one day period around the headline. GARCH reveals similar results. The signs are the expected ones.

On January 18, President Johnson pledged to seek a complete cessation of hostilities. Table C13 shows that the OLS specification reveals a -0.8% AR on the headline date and CARs ranging from -2.2%, for the seven day period around the headline, to -7.3% for the twenty one day period around the headline. The GARCH specification reveals similar results. The signs are the expected ones.

On February 14, the WSJ reported that General Westmoreland's request for more troops was granted. Table C13 shows that OLS and GARCH specifications exhibit similar

results. They both reveal a 1.4% AR on the day of the headline. The CARs for OLS (GARCH) range from 1.7% (1.3%), for the three day period around the headline, to 3% (3.4%) for the eleven day period around the headline. The signs are the expected ones.

On February 28, the WSJ reported that President Johnson was stressing a military effort instead of peace talks. The OLS specification only reveals a 1.2% AR four days after the headline (see Table C15). The GARCH specification reveals two negative ARs prior to the event day. They occur one and two days before the event date and they are respectively -0.7% and -0.5%. The CARs are mixed and they range from -1%, for the three day period around the headline, to 4.3% for the twenty one day period around the headline. On the whole the signs are the expected ones.

On April 2, the WSJ reported that the U.S. was to activate 60,000 reservists soon and that a third of them were slated for Vietnam. Table C16 shows a 1.3% AR on the day of the event with OLS. There is also a 1.6% CAR for the three day period around the headline. GARCH on the other hand, reveals a 1% and 0.6% AR three and four days before the event. The CARs range from 1.6%, for the three day period around the headline, to 2.3% for the eleven day period around the headline. The signs are the expected ones.

On April 9, The WSJ reported that Hanoi formally accepted President Johnson's bid for peace talks on Vietnam. Table C17 shows a 0.9% AR on the day of the headline and a

1.3% AR five days prior for the OLS specification. The GARCH specification reveals mixed single day ARs. They include a -0.4% AR on the day of the event and a 1% AR on the day of the headline. The CARs range from 1%, for the three day period around the headline, to 2.8% for the twenty one day period around the headline.

4.1.2 Six-Day War Period

On January 16, 1967, the WSJ reported that U.N. secretary general U Thant warned of a possible clash between Israel and Syria. Table C18 shows no ARs on the day of the event or the day of the headline both with OLS and GARCH. However, when looking at periods around the event date there are significant negative abnormal returns. The CARs for the eleven and the twenty one day interval around the headline are respectively -4% and -10% both with OLS and GARCH. The signs are contrary to the ones expected.

On January 25, Israel and Syria agreed to refrain from hostile acts. Table C19 shows no significant abnormal returns on the day of the event or the day of the headline both with OLS and GARCH specifications. The CAR for the twenty one day interval around the headline date shows a -7% abnormal return both for OLS and GARCH. The sign is the one expected.

On May 21, Cairo ordered a total mobilization. Table C20 reveals no abnormal returns on the day of the event or the day of the headline both with OLS and GARCH. There

are no significant CARs for the OLS specification. However, the GARCH specification reveals CARs ranging from 1%, for the three day period around the headline, to 2% for the twenty one day period around the headline. The signs are the expected ones.

On June 5, war broke out. Table C21 shows a 1.5% abnormal return on the day of the event both with OLS and GARCH. There are no CARs found using OLS but there are when using GARCH and they range from 1.4%, for the three day period around the headline, to 4.6% for the twenty one day period around the headline. The signs are the expected ones.

4.1.3 Yom Kippur War Period

On October 10, 1973, the WSJ reported that Israel bombed inside Syria and Egypt and that tanks clashed in the Sinai. Table C22 shows no significant single day abnormal returns or CARs with the OLS specification. The GARCH specification shows mixed results. It shows a -0.4% AR on the day of the headline and a 0.2% CAR for the three day period around the headline. The CARs for the eleven and twenty one day period around the headline date are respectively -1% and -3%.

On October 15, the WSJ reported that Egypt attacked along the Suez Canal and that Saudi Arabia sent troops to the Syrian front. Table C23 exhibits no significant abnormal returns or CARs with the OLS specification. The GARCH specification reveals a 0.5% significant abnormal return on the day before the event occurred. However, it also reveals

negative CARs ranging from -0.4%, for the three day period around the headline, to -2% for the twenty one day period around the headline. The single day AR exhibits the expected sign but not the CARs.

On October 23, the WSJ reported that a truce took effect at the Suez Canal. Table C24 exhibits no single day ARs both with OLS and GARCH. The GARCH specification reveals significant CARs. They range from -0.5%, for the three day period around the headline, to -3% for the twenty one day period around the headline. All the CAR's exhibit the expected signs.

On November 9, the WSJ reported that U.S. officials said that Israel and Egypt agreed to a preliminary peace plan. Table C25 reveals a 1% AR on the day of the event and no significant CARs with OLS. Contrary to OLS, GARCH reveals no single day ARs but it reveals significant CARs. They range from 1% for the three day period around the headline, to 5% for the twenty one day period around the headline. All the signs, both with OLS and GARCH, are contrary to the expected ones.

On December 5, the WSJ reported that the House of representatives moved toward providing Israel with \$2.2 billion to replace arms used up or destroyed. The OLS specification in Table C26 shows a -1% AR three days before the headline and a 1% AR on the day after the headline. It also shows a 6% CAR for the twenty one day period around the

headline. The GARCH specification shows a 2% AR on the day of the headline, a 1.5% CAR for the three day period around the headline and a 6% CAR for the twenty one day period around the headline. On the whole the signs are the expected ones.

4.1.4 Falklands War Period

On April 5, 1982, the WSJ reported that Britain and Argentina were near confrontation over the Argentine invasion of the Falklands. The OLS specification in Table C27 exhibits no significant single day ARs or CARs. The GARCH specification shows a 1.6% AR on the day of the event. Before the event there are two small negative ARs and after the event there are three small positive ARs (they are all less than 1%). The CARs are also significant, they range from 0.6%, for the three day period around the headline, to 2% for the twenty one day period around the headline. On the whole the signs are the expected ones.

On April 22, the WSJ reported that the British Foreign Secretary, Francis Pym, indicated that Britain's navy could go into action even while peace talks continue. Table C28 exhibits a 0.6% AR two days after the headline appeared. The OLS specification does not indicate any CARs. The GARCH specification indicates a negative AR (-0.3%) on the day of the headline. There are also small single day positive and negative ARs before and after the event but they seem to cancel each other out. There is a significant CAR (0.3%) for the seven day period around the headline, and a 1.7% CAR for the twenty one day period around

the headline. On the whole the signs are the expected ones.

On May 19, the WSJ reported that Prime Minister Thatcher issued an ultimatum to Argentina, warning that if U.N. talks fail Britain will be forced to recover the islands militarily. Table C29 shows no significant results with OLS. There are several small significant ARs with GARCH but they seem to cancel each other out, they range from -0.9% to 0.8%. There is a -0.9% CAR, for the eleven day period around the headline, and a -2.4% CAR for the twenty one day period around the headline. On the whole the signs are contrary to the expected ones.

On May 28, the WSJ reported that the U.S. begun to ship Britain a large variety of weapons and military gear. Table C30 shows no significant results with OLS. The GARCH specification shows a 1% AR on the day of the event which is partly offset by a -0.4% AR on the following day. The CARs are not significant except for a very small -0.3% for the seven day period around the headline. On the whole the signs are the expected ones.

On June 11, the WSJ reported that U.S. officials contended that Peru and Venezuela were helping Argentina replace some of its warplanes lost during the war. Table C31 shows no significant results using the OLS specification. The GARCH specification reveals a 0.5% AR on the headline date and small positive ARs around it. The CARs are quite small. They range from 0.4% , for the three day period around the headline, to 1.4% for the twenty one

day period around the headline. The signs are the expected ones.

4.1.5 Gulf War Period

On August 2, 1990, Iraq invaded Kuwait. The next day the WSJ reported that the Iraqi invasion of Kuwait would help President Bush stave off some defense reductions. Table C32 does not exhibit any interesting results. The OLS specification reveals a 0.8% AR on the day of the headline and it does not reveal any significant CARs. The GARCH specification shows a 0.8% CAR, for the three day period around the headline, and a -1.6% CAR for the twenty one day period around the headline. On the whole the signs are the expected ones.

On January 16, 1991 war erupts in the Gulf as coalition war planes bomb Iraqi targets. Table C33 shows some significant results. The OLS specification reveals significant ARs one and two days after the headline, they are respectively 1% and 2.2%. The CARs are also high, for example there is a 5.4% CAR for the seven day period around the event. The GARCH specification does not reveal any single day ARs. However, the CARs are even larger than those found using OLS. They range from 3.2%, for the three day period around the event, to 6.6% for the seven day period around the event. The signs are the expected ones.

On February 13, the WSJ reported that for the first time Iraq indicated that it may want a diplomatic solution to the crisis. Table C34 exhibits a -1.2% AR for the day after the headline and a -7% CAR for the twenty one day period around the headline (OLS results). The GARCH specification reveals some small mixed results for single day ARs but the CARs are all negative. They range from -1.1% , for the three day period around the headline, to -6.7% for the twenty one day period around the headline. On the whole the signs are the expected ones.

4.2 Summary Of Results

In this section we will summarize the previous results. The GARCH specification will be used since it is justified by ARCH Engle tests and other statistics (see Appendix D for tables containing the results of these tests).

4.2.1 Vietnam War Period

Out of seventeen events that occurred during the Vietnam war period, there are six significant ARs of the expected sign and there are four significant ARs of a sign contrary to the expected one. These results are for ARs occurring on the day of the event or on the day of the headline. There are nine events that display significant CARs of the expected sign and seven events that display significant CARs with signs that are contrary to expectations.

Although these results do not seem very encouraging, there is an interesting occurrence. The most significant results of the expected sign seem to occur near the *Tet offensive* period. There are single day ARs close to 2% and a twenty one day CAR of nearly -13%. This period is an important one during the Vietnam war. According to Herring (1986, p.184) "Tet had a tremendous impact in the United States and ushered in a new phase of a seemingly endless war".

Some of the contradictory results may be explained in the following manner. The Six Day war period coincides with the Vietnam war period. Two events from both wars occurred on the same day (01/26/67) and two events occurred close together (01/04/67) for the Vietnam war and (01/16/67) for the Six Day war. The events that occurred on the same day have different expected signs. Thus investors may have given more importance to the Middle East event. The market could have built up slowly expecting the war in the Middle East to erupt and then react to the news that Israel and Syria agreed to refrain from hostilities. If this is the case, it could mean that the market anticipated Defense Secretary McNamara's statement that the troop buildup would continue and thus not have reacted to this news on January 26. This is not improbable since it seems more plausible that investors have better anticipations of what their government will do than of what governments in the Middle East will do.

4.2.2 Six Day War Period

Out of four events that occurred during the Six Day war period, there is one that displays a significant AR on the day of the event. It is a very significant 1.5% AR and it occurs on the day that the war broke out. However, the three day CARs are significant and of the expected signs in three of the four events and they are all above 1%.

4.2.3 Yom Kippur War

Out of the five events that occurred during the Yom Kippur war period, one displays a highly significant AR on the headline date and it is of the expected sign. The 2% AR occurs on the day when the WSJ reports that the House of Representatives moved to provide \$2.2 billion to Israel and this is in a period where Israel and Syria have been fighting for several days. The CARs for the three day period around the headline for the five events are all of the expected sign except for one. Only the CAR for the event concerning the \$2.2 billion dollar military aid package to Israel is above 1%.

4.2.4 Falklands War Period

Out of the five events that occurred during the Falklands war period, all events display significant ARs on the day of the event or on the day of the headline. The events that display ARs above 1% are: the report that Argentina and Britain were near confrontation, and the report that the U.S. began to ship military material to Britain. There are different period significant CARs for all the events, three are of the expected sign and two are not. However,

these CARs are all small especially the ones that are of a sign contrary to expectations.

4.2.5 Gulf War Period

Out of the three events that occurred during the Gulf war period, none display significant ARs on the event day or on the headline day. However, there are significant ARs after the beginning of the bombing of Iraqi targets. These ARs occur one and two days after the headline and they are respectively 1% and 2.2%. Significant CARs are associated with two events: the beginning of the air raids and the Iraqi willingness to "talk peace."

4.3 Cross-Sectional Analysis

In this section we will try to explain the abnormal returns using firm specific characteristics. For this we will use the Gulf war period data since it is the most recent and the easiest to obtain. All the firms contained in the event study for the Gulf war period were included as long as data on research and development, capital expenditures and concentration ratios was available on the *Compustat* database and in the *U.S. Census of Manufactures* government publication. The list of the 47 firms included in the analysis can be found in Appendix B.

The intuition behind the choice of these three variables is as follows. R&D seems the perfect variable to explain ARs in the defense industry for two reasons. First, the government is the buyer of defense industry products. R&D may be viewed as future technological

superiority which is an objective of the government. Moreover, this technological lead over foes in the defense area seems very important for the government. For example, the relatively low loss of life (on the allied side) in the Gulf war can be attributed to technological superiority. Second, investors may perceive R&D as a signal of a firm's future profitability and hence prefer to invest in a firm with a higher R&D level. Needless to say that the reputation of a firm's R&D program is also important. If a firm contributes a large proportion of its revenues to R&D year after year and never produces anything worthwhile investors may view R&D as detrimental.

Many of the skills and technologies to create and produce weapons systems are relatively specific to the weapons industry. Rogerson (1994) contends that if the government drives a hard bargain when the weapon is ready for sale, the firm may lose its investment in physical or human capital. Thus investors may consider capital expenditures to be a burden and hence value these investments negatively.

The four firm concentration ratio measures the percentage of sales in a sector of an industry accounted for by the four largest firms in that sector. The intuition is that if a firm operates in a sector with a high concentration ratio (i.e. the four largest firms account for a large percentage of shipments) it can "price" in an oligopolistic manner. Thus investors may prefer to invest in a firm that operates in a sector with a high concentration ratio.

The dependent variable is the $CAR_{i, -1, +1}$ of firm i for the three day period around the headline (i.e. day -1 to day +1). The independent variables are research and development (R&D), capital expenditures (CE) and the four firm concentration ratio (CR). Both R&D and CE were standardized by total sales. An average CR is used for firms operating in more than one sector of the defense industry. R&D and CE values are from the same year as the event but the CR is from the 1982 census which is the most recent found (the previous CR values from the census seem to be quite stable through time).

The model is as follows:

$$CAR_{i, -1, +1} = \alpha_i + \beta_{1i} R\&D_i + \beta_{2i} CE_i + \beta_{3i} CR_i + \epsilon_i$$

where ϵ_i is the error term with the usual assumptions. The OLS regression results are given in Table 1.

TABLE 1. Regression of the three day CAR (day -1 to +1) on the standardized research and development and capital expenditures variables and on the four firm on market concentration ratio (CR). Day 0 is January 16 1991.

Dependent variable	Independent Variables					
	Constant	R&D	CE	CR	F	R ²
CAR _{t-1,t+1}	-0.0205 (-0.8434)	0.6096** (2.0833)	-0.4153* (-1.9015)	0.0894** (2.3473)	3.578**	0.33

Note: Data in parentheses are t-Statistics

** Significant at the 5% level.

* Significant at the 10% level.

† Goldfeld-Quandt and White tests were performed to test for Heteroskedasticity. None was found at the 10% level.

The results indicate that the valuation impact of the beginning of the allied air attack on Iraqi targets depends on R&D, capital expenditures and the firm's concentration ratio. R&D and the concentration ratio are valued positively as was predicted. Moreover, capital expenditures are valued negatively as was also predicted. Thus for the first time, there is evidence that not only does war news affect stock prices but that the abnormal return can be explained by three firm specific variables; R&D, capital expenditures and the firm's concentration ratio.

5.0 IMPLICATIONS AND CONCLUSION

5.1 Limitations and Implications

There may be some explanations to the finding that many events did not have abnormal returns (ARs) on the event date or the headline date. If there was "anticipation" of the event, prices may have already moved. There are two possibilities: there can be one significant anticipation outside the event window or many small anticipations leading up to the event date. Another explanation for an absence of abnormal returns is that if investors perceive that the military has a large stockpile of necessary goods, then they may not believe that the military will need more equipment (especially if they believe the event to be of minor significance). Still another reason for which there may not be any ARs due to positive war news may have to do with the percentage of revenues that come from the defense industry for a specific firm. If an important percentage of a firm's revenues come from outside the defense industry then the ARs may be zero or even negative.

Many events were close to each other, for this reason the CARs that have a sign contrary to expectations may be taking into account more than one event. Moreover, during war there are many news reports pertaining to the same conflict during small time spans thus it is difficult to chose a day zero. Another reason for capturing an AR with a sign that is contrary to expectations has to do with the markets perception of an event. For example, if there is a very successful offensive by the U.S., this event would be expected to exhibit a

positive AR. If on the contrary, a negative AR was observed, investors may have perceived this successful offensive to signal an end to the war.

Certain implications can be drawn from this study. Some previous studies have found the market as a whole to react negatively to the commencement or escalation of wars. Our results suggest in general that defense stocks react in the opposite direction, thus investors should have diversified their holdings in defense stocks and non defense stocks in order to hedge against stocks' negative reactions to war news. Moreover, if investors wanted to invest in firms that operated in the defense industry and wanted to realize greater abnormal returns in the event of war, they should have invested in firms with high industry concentration ratios and R&D expenditures and with low capital expenditures.

5.2 Conclusion

This research is concerned with the impact of "war news" on defense related stocks. It extends previous studies by using a greater sample of events and firms. It also considers GARCH effects which were not considered in past studies. Finally, it attempts to explain the abnormal returns found using three firm specific variables: research and development, capital expenditures and the firm's industry concentration ratio.

Our results suggest that war news or war related news does affect defense stocks. When looking at single day abnormal returns we find that out of a total of 34 events, 12

reveal significant abnormal returns, of the expected sign, on the day of the event or the day of the headline. Out of the remaining 22 events, only 3 display significant abnormal returns, of a sign contrary to expectations, on the day of the event or the day of the headline. When looking at cumulative abnormal returns there are 20 events that reveal significant CARs of the expected sign and 13 that display signs contrary to expectations. Our results also suggest that abnormal returns can be explained using three firm specific variables: research and development, capital expenditures and the firm's industry concentration ratio.

Future research may be undertaken in many areas. Studies may be conducted on present and past events that were not included in this study. For example, present events include the conflict in Bosnia and Croatia. Past events not covered in this study include the Cuban Missile Crisis and events concerning the Cold War such as those leading to the tearing down of the Berlin Wall. Future studies can use different samples of firms with distinctive characteristics. These include firms that have at least 50% of their revenues coming from the defense industry, or firms that are major players in the defense industry (i.e. large firms). The defense portfolio may even be constructed using international firms. Firms such as British Aerospace (U.K.), Thomson-CSF (France), Daimler-Benz (Germany), Mitsubishi Heavy Ind. (Japan) and others are amongst the worlds largest defense firms. More studies may also be conducted to try to explain abnormal returns with larger samples of events and different independent variables.

APPENDIX A

TABLE A. List of events from the Wall Street Journal. The first column contains the headline date, the second contains the headline and the third contains the expected sign of the abnormal return; P for positive and N for negative.

Headline Dates	Headlines in the Wall Street Journal	ES
	VIETNAM	
01/04/67	Hanoi officially rejected Britain's renewed appeal for peace talks.	P
01/26/67	Defense Secy. McNamara said troop buildup in Vietnam to continue for next 18 months, but at eased pace.	P
02/07/67	U.S. forces opened massive assault on Vietcong's national headquarters.	P
02/24/67	Biggest offensive of Vietnam's war launched by 45,000 U.S. troops.	P
03/02/67	Senate pledged full support of American fighting forces in South Vietnam.	P
04/25/67	Step-Up in Vietnam: Strikes at MIG bases seen as signalling big expansion of war; new bombing targets likely; U.S. troop-strength goal may be increased by 50,000.	P
07/14/67	President Johnson, Gen. Westmoreland agreed on need for more troops in Vietnam.	P
08/04/67	U.S. troop commitment in Vietnam to be increased by 45,000 by July 1968.	P
08/15/67	U.S. jets again bombed near China; Sen. Mansfield called such raids 'very dangerous.'	P
12/13/67	About 10,000 troops flying in South Vietnam from U.S. in massive airlift.	P N
12/22/67	President Johnson and President Thieu agreed on conditions for Saigon-Vietcong peace talks.	N
01/08/68	Vietnam war's end is beginning 'to come into view' Gen. Westmoreland said.	N
01/18/68	President Johnson, in State of the Union Message, pledged to seek 'complete cessation' of Vietnam hostilities.	P
02/14/68	Vietnam to get 10,500 more U.S. troops in response to Gen. Westmoreland's request.	P
02/28/68	The War President: Johnson now stresses Vietnam military effort instead of peace talks: more troops, money likely; negotiations with Hanoi meet rising skepticism; new case for tax increase.	P
04/02/68	U.S. to activate 60,000 reservists soon; a third of them to be slated for Vietnam	N
04/09/68	Hanoi formally accepted President Johnson's bid for talks on Vietnam.	

	6 Day War	
01/16/67	Israeli-Syrian buildup of troops threatens major class soon, U Than warned	P
01/26/67	Israel, Syria agreed to refrain from hostile acts that could spark border war	N
05/22/67	Cairo ordered total mobilization of reserves in confrontation with Israel	P
06/06/67	War broke out in the Middle East: Israel said it pushed into the Sinai Peninsula	P
	YOM KIPPUR	
10/10/73	Israel bombed inside Syria and Egypt; tanks battled in the Sinai desert.	P
10/15/73	U.S. will send jets to Israel to help counter supplies Soviets are airlifting to Arabs.	P
10/23/73	A Mideast truce took effect at the Suez; Iraq, Lybia rejected it; Syria held out.	N
11/09/73	Israel and Egypt agreed to a preliminary peace plan, U.S. officials said.	N
12/05/73	House moved toward providing Israel with \$2.2 billion to replace arms used up or destroyed in the recent Middle East war.	P
	FALKLANDS	
04/05/82	Britain, Argentina near confrontation over Argentine invasion of Falklands.	P
04/22/82	British foreign Secretary Francis Pym indicates that Britain's navy could go into action even while Falkland Islands peace talks continue.	P
05/19/82	Prime Minister Margaret Thatcher issued ultimatum to Argentina, warning that if UN talks fail to solve the Falkland Islands conflict in ' a day or so' Britain will be forced to recover the islands militarily.	P
05/28/82	U.S. has begun to ship Britain a large variety of weapons and military gear to bolster its Falklands war effort.	P
06/11/82	Peru and Venezuela are helping Argentina replace some of the warplanes it has lost fighting with Britain over the Falkland Islands, U.S. officials contend.	P

GULF WAR		
08/03/90	The Iraqi invasion of Kuwait is bound to help President Bush's efforts to stave off some defense reductions. Big cuts are still likely, but the crisis changes the mood.	P
01/16/91	The US-led air attack on Iraq opened with nearly flawless bombing raids on Jan 16, 1991, achieving a strong measure of surprise, suppressing Iraqi defenses and seizing the skies over Iraq and Kuwait;	P
02/13/91	Iraq said that it is ready to work with the USSR to end the Persian Gulf War, the first time since the war started that Iraq has indicated it may want a diplomatic way out of the crisis.	N

APPENDIX B

EXHIBIT B1. Firms included in the Vietnam war period.

ALLIED SIGNAL INC	LOCKHEED CORP
AMERICAN TELEPHONE & TELEG CO	LOGICON INC
BALL CORP	LORAL CORP
BOEING CO	MCDONNELL DOUGLAS CORP
BOLT BERANEK & NEWMAN INC	MINNESOTA MINING & MFG CO
BRUNSWICK CORP	MOTOROLA INC
COMPTEK RESEARCH INC	NORTHROP CORP
COMPUTER SCIENCES CORP	ODETICS INC
CORNING INC	OLIN CORP
CUMMINS ENGINE INC	PERKIN ELMER CORP
DIGITAL EQUIPMENT CORP	RAYTHEON COMPANY
DRAVO CORP	ROCKWELL INTERNATIONAL CORP
DU PONT E I DE NEMOURS & CO	ROHM & HAAS CO
E C C INTERNATIONAL CORP	SPARTON CORP
E G & G INC	SUNDSTRAND CORP
E SYSTEMS INC	T R W INC
EAGLE Picher INDS INC	TELEDYNE INC
EASTMAN KODAK CO	TENNECO INC
EATON CORP	TEXAS INSTRUMENTS INC
EDO CORP	TEXTRON INC
ELECTRONIC ASSOCIATES INC	THIokol CORP DE
EMERSON ELECTRIC CO	UNION CORP
FORD MOTOR CO DE	UNISYS CORP
GENCORP INC	UNITED TECHNOLOGIES CORP
GENERAL DYNAMICS CORP	VARIAN ASSOCIATES INC
GENERAL ELECTRIC CO	WESTINGHOUSE ELECTRIC CORP
GENERAL MOTORS CORP	WYLE LABS
GRUMMAN CORP	XEROX CORP
G T E CORP	
HARRIS CORP DE	
HARSCO CORP	
HERCULES INC	
HONEYWELL INC	
I R T CORP	
I T T CORP	
INTERNATIONAL BUSINESS MACHS	
JOHNSON CONTROLS INC	
KOLLMORGEN CORP	
LITTON INDUSTRIES INC	

EXHIBIT B2. Firms included in the Six Day war period.

AEROJET GENERAL CORP	LOCKHEED CORP
ALLIED SIGNAL INC	LORAL CORP
AMERICAN TELEPHONE & TELEG CO	MARTIN MARIETTA CORP
AVCO CORP	MCDONNELL DOUGLAS CORP
BABCOCK & WILCOX CO	MINNESOTA MINING & MFG CO
BOEING CO	MOTOROLA INC
BRUNSWICK CORP	NEWPORT NEWS SHIPBUILDING
COMBUSTION ENGINEERING INC	NORTHROP CORP
COMPUTER SCIENCES CORP	OLIN CORP
CORNING INC	PERKIN ELMER CORP
CUMMINS ENGINE INC	PLANNING RESEARCH CORP
DU PONT E I DE NEMOURS & CO	RAYTHEON COMPANY
DYNCORP	REMINGTON ARMS INC
E G & G INC	ROCKWELL INTERNATIONAL CORP
EAGLE PICHER INDS INC	ROHM & HAAS CO
EASTMAN KODAK CO	SPARTON CORP
EATON CORP	SUNDSTRAND CORP
EDO CORP	T R W INC
ELECTRONIC ASSOCIATES INC	TELEDYNE INC
EMERSON ELECTRIC CO	TENNECO INC
FAIRCHILD INDUSTRIES INC	TEXAS INSTRUMENTS INC
FORD MOTOR CO DE	TEXTRON INC
GENCORP INC	THIOKOL CORP DE
GENERAL DYNAMICS CORP	UNISYS CORP
GENERAL ELECTRIC CO	UNITED TECHNOLOGIES CORP
GENERAL INSTRUMENT CORP	VARIAN ASSOCIATES INC
GENERAL MOTORS CORP	WESTINGHOUSE ELECTRIC CORP
GRUMMAN CORP	XEROX CORP
G T E CORP	
HARRIS CORP DE	
HARSCO CORP	
HAZELTINE CORP	
HERCULES INC	
HONEYWELL INC	
I T T CORP	
INTERNATIONAL BUSINESS MACHS	
JOHNSON CONTROLS INC	
LITTON INDUSTRIES INC	
L T V AEROSPACE CORP	

EXHIBIT B3. Firms included in the Yom Kippur war period.

ALLIED SIGNAL INC	KOLLMORGEN CORP
AMERICAN TELEPHONE & TELEG CO	LITTON INDUSTRIES INC
AVCO CORP	LOCKHEED CORP
BABCOCK & WILCOX CO	LORAL CORP
BOEING CO	MCDONNELL DOUGLAS CORP
BOLT BERANEK & NEWMAN INC	MINNESOTA MINING & MFG CO
BRUNSWICK CORP	MOTOROLA INC
COMBUSTION ENGINEERING INC	NORTHROP CORP
COMPUTER SCIENCES CORP	OLIN CORP
CORNING INC	PLANNING RESEARCH CORP
CUMMINS ENGINE INC	RAYTHEON COMPANY
DIGITAL EQUIPMENT CORP	REMINGTON ARMS INC
DRAVO CORP	ROHM & HAAS CO
DU PONT E I DE NEMOURS & CO	SPARTON CORP
DYNCORP	SUNDSTRAND CORP
E G & G INC	T R W INC
E SYSTEMS INC	TELEDYNE INC
EAGLE Picher INDS INC	TENNECO INC
EASTMAN KODAK CO	TEXAS INSTRUMENTS INC
EATON CORP	TEXTRON INC
EDO CORP	THIokol CORP DE
ELECTRONIC ASSOCIATES INC	UNION CORP
EMERSON ELECTRIC CO	UNISYS CORP
FAIRCHILD INDUSTRIES INC	UNITED TECHNOLOGIES CORP
FORD MOTOR CO DE	VARIAN ASSOCIATES INC
GENCORP INC	WESTINGHOUSE ELECTRIC CORP
GENERAL DYNAMICS CORP	WYLE LABS
GENERAL ELECTRIC CO	XEROX CORP
GENERAL INSTRUMENT CORP	
GENERAL MOTORS CORP	
GRUMMAN CORP	
HARRIS CORP DE	
HARSCO CORP	
HAZELTINE CORP	
HERCULES INC	
HONEYWELL INC	
I T T CORP	
INTERNATIONAL BUSINESS MACHS	
JOHNSON CONTROLS INC	

EXHIBIT B4. Firms included in the Falklands war period.

ALLIED SIGNAL INC	MCDONNELL DOUGLAS CORP
AMERICAN TELEPHONE & TELEG CO	MINNESOTA MINING & MFG CO
BALL CORP	MOTOROLA INC
BOEING CO	NORTHROP CORP
BOLT BERANEK & NEWMAN INC	OLIN CORP
BRUNSWICK CORP	PERKIN ELMER CORP
COMPUTER SCIENCES CORP	RAYTHEON COMPANY
CORNING INC	ROCKWELL INTERNATIONAL CORP
CUMMINS ENGINE INC	ROHM & HAAS CO
DIGITAL EQUIPMENT CORP	SPARTON CORP
DRAVO CORP	SUNDSTRAND CORP
DU PONT E I DE NEMOURS & CO	T R W INC
E G & G INC	TELEDYNE INC
E SYSTEMS INC	TENNECO INC
EAGLE Picher INDS INC	TEXAS INSTRUMENTS INC
EASTMAN KODAK CO	TEXTRON INC
EATON CORP	THIOKOL CORP DE
EDO CORP	UNION CORP
ELECTRONIC ASSOCIATES INC	UNISYS CORP
EMERSON ELECTRIC CO	UNITED TECHNOLOGIES CORP
FORD MOTOR CO DE	VARIAN ASSOCIATES INC
G T E CORP	WESTINGHOUSE ELECTRIC CORP
GENCORP INC	WYLE LABS
GENERAL DYNAMICS CORP	XEROX CORP
GENERAL ELECTRIC CO	
GENERAL MOTORS CORP	
GRUMMAN CORP	
HARRIS CORP DE	
HARSCO CORP	
HERCULES INC	
HONEYWELL INC	
I T T CORP	
INTERNATIONAL BUSINESS MACHS	
JOHNSON CONTROLS INC	
KOLLMORGEN CORP	
LITTON INDUSTRIES INC	
LOCKHEED CORP	
LOGICON INC	
LORAL CORP	

EXHIBIT B5. Firms included in the Gulf war period.

ALLIED SIGNAL INC	LOCKHEED CORP
AMERICAN TELEPHONE & TELEG CO	LOGICON INC
BALL CORP	LORAL CORP
BOEING CO	MCDONNELL DOUGLAS CORP
BOLT & BERANEK & NEWMAN INC	MINNESOTA MINING & MFG CO
BRUNSWICK CORP	MOTOROLA INC
COMPTEK RESEARCH INC	NORTHROP CORP
COMPUTER SCIENCES CORP	ODETICS INC
CORNING INC	OLIN CORP
CUMMINS ENGINE INC	PERKIN ELMER CORP
DIGITAL EQUIPMENT	RAYTHEON COMPANY
DRAVO CORP	ROCKWELL INTERNATIONAL CORP
DU PONT E I DE NEMOURS & CO	ROHM & HAAS CO
E C C INTERNATIONAL CORP	SPARTON CORP
E G & G INC	SUNDSTRAND CORP
E SYSTEMS INC	T R W INC
EAGLE PICHER INDS INC	TELEDYNE INC
EASTMAN KODAK CO	TENNECO INC
EATON CORP	TEXAS INSTRUMENTS INC
EDO CORP	TEXTRON INC
ELECTRONIC ASSOCIATES INC	THIOKOL CORP DE
EMERSON ELECTRIC CO	UNION CORP
FORD MOTOR CO DE	UNISYS CORP
GENCORP INC	UNITED TECHNOLOGIES CORP
GENERAL DYNAMICS CORP	VARIAN ASSOCIATES INC
GENERAL ELECTRIC CO	VITRONICS CORP
GENERAL MOTORS CORP	WESTINGHOUSE ELECTRIC CORP
GRUMMAN CORP	WYLE LABS
G T E CORP	XEROX CORP
HARRIS CORP DE	
HARSCO CORP	
HERCULES INC	
HONEYWELL INC	
I R T CORP	
I T T CORP	
INTERNATIONAL BUSINESS MACHS	
JOHNSON CONTROLS INC	
KOLLMORGEN CORP	
LITTON INDUSTRIES INC	

EXHIBIT B6.

Firms included in the cross-sectional analysis of the gulf war period.

ALLIED SIGNAL INC	TELEDYNE INC
BALL CORP	TEXAS INSTRUMENTS INC
BOEING CO	TEXTRON INC
BRUNSWICK CORP	THIOKOL CORP DE
COMPTEK RESEARCH INC	UNISYS CORP
CORNING INC	UNITED TECHNOLOGIES CORP
DIGITAL EQUIPMENT	VARIAN ASSOCIATES INC
E C C INTERNATIONAL CORP	WESTINGHOUSE ELECTRIC CORP
E G & G INC	
E SYSTEMS INC	
EAGLE PICHER INDS INC	
EATON CORP	
EDO CORP	
ELECTRONIC ASSOCIATES INC	
EMERSON ELECTRIC CO	
FORD MOTOR CO DE	
GENCORP INC	
GENERAL DYNAMICS CORP	
GENERAL ELECTRIC CO	
GENERAL MOTORS CORP	
GRUMMAN CORP	
HARRIS CORP DE	
HARSCO CORP	
HERCULES INC	
HONEYWELL INC	
INTERNATIONAL BUSINESS MACHS	
KOLLMORGEN CORP	
LITTON INDUSTRIES INC	
LOCKHEED CORP	
LORAL CORP	
MOTOROLA INC	
NORTHROP CORP	
ODETICS INC	
OLIN CORP	
RAYTHEON COMPANY	
ROCKWELL INTERNATIONAL CORP	
SPARTON CORP	
SUNDSTRAND CORP	
T R W INC	

APPENDIX C

TABLE C1. VIETNAM WAR 67/01/04 (expected sign is positive)				
	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	000087 (.9879)	004994 (.2945)	008312 (.1064)	000087 (.1000)
-1	-.020318 (.0004)	-.024229 (.0000)	-.025387 (.0000)	-.019477 (.3903)
-2	.003837 (.5025)	-.000477 (.9198)	-.000923 (.8425)	.003837 (.1000)
-3	.003590 (.5313)	.002028 (.6649)	.002116 (.6443)	.003590 (.1000)
-4	.002534 (.6585)	.002184 (.6408)	.002299 (.6161)	.002534 (.9999)
-5	-.000988 (.8631)	.001346 (.7736)	.001258 (.7838)	-.000988 (.1000)
+1	-.003960 (.4935)	-.006098 (.1963)	.000266 (.9590)	-.003960 (.9999)
+2	-.013754 (.0161)	-.009175 (.0519)	-.005677 (.2538)	-.013754 (.9990)
+3	.009134 (.1116)	-.005915 (.2081)	-.002402 (.6239)	-.009134 (.9997)
+4	-.005586 (.3288)	-.001311 (.7811)	-.000117 (.9806)	-.005586 (.9998)
+5	.000687 (.9049)	-.000040 (.9931)	.003733 (.4305)	.000687 (.1000)
-1 to +1	-.024759 (.0137)	-.026077 (.0015)	-.021501 (.0126)	-.033759 (.0000)
-3 to +3	-.041209 (.0076)	-.041103 (.0012)	-.030611 (.0255)	-.045658 (.0000)
-5 to +5	-.045241 (.0203)	-.039078 (.0151)	-.022573 (.2001)	-.061810 (.0000)
-10 to +10	-.074709 (.0071)	-.055499 (.0161)	-.030762 (.2304)	-.093432 (.0000)
0 to +10	-.042616 (.0322)	-.017263 (.3059)	.040850 (.0921)	-.038709 (.0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C2. VIETNAM WAR 67/01/26 (expected sign is positive)				
	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	001071 (8477)	- 001655 (7176)	- 001480 (7564)	001071 (1 000)
-1	- 002964 (5951)	- 001031 (8217)	- 001199 (7935)	- 002964 (9999)
-2	001512 (7863)	003547 (4376)	003279 (4732)	001112 (9999)
-3	- 002062 (.7117)	001254 (7843)	000931 (8391)	- 002062 (9999)
-4	- 003977 (4700)	- 004106 (3695)	- 004455 (3306)	- 003977 (9999)
-5	- 007057 (2050)	- 007258 (1120)	- 007529 (0995)	- 007057 (9997)
+1	- 001390 (8036)	- 002162 (6369)	- 000183 (9700)	- 001390 (9999)
+2	- 006110 (2739)	- 004038 (3778)	- 001545 (7516)	- 006110 (9998)
+3	- 005329 (3386)	- 001309 (7749)	000108 (9820)	- 005329 (9998)
+4	002357 (6723)	002334 (6093)	002584 (5754)	002357 (9999)
+5	- 004409 (4290)	- 006114 (1807)	- 005693 (2341)	- 004409 (9998)
-1 to +1	- 003308 (7332)	- 004910 (5382)	- 003055 (7142)	- 003440 (2790)
-3 to +3	- 015764 (2930)	- 005592 (6506)	000261 (9839)	- 015364 (0000)
-5 to +5	- 030013 (1142)	- 021970 (1612)	- 017059 (3018)	- 029504 (0000)
-10 to +10	- 068647 (0110)	- 042829 (0581)	- 034638 (1533)	- 066705 (0000)
0 to +10	- 041140 (0297)	- 033010 (0342)	- 028697 (1415)	- 040387 (0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C3. VIETNAM WAR 67/02/07 (expected sign is positive)				
	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	- 002744 (6112)	- 002981 (5093)	- 003923 (4123)	- 002744 (9999)
-1	- 005473 (3101)	- 001739 (7001)	- 001807 (6909)	- 005473 (9998)
-2	- 009241 (0870)	- 009008 (0451)	- 009030 (0459)	- 009241 (9996)
-3	- 004253 (4308)	- 006072 (1778)	- 006016 (1847)	- 004253 (9998)
-4	002499 (6434)	002405 (5933)	002425 (5924)	002499 (9999)
-5	- 005184 (3364)	- 001216 (7878)	- 001287 (7772)	- 005184 (9998)
+1	- 003986 (4614)	- 004977 (2718)	- 005471 (2610)	- 003986 (9998)
+2	- 002971 (5823)	000984 (8286)	001774 (7245)	- 002971 (9999)
+3	003165 (5578)	- 000017 (9970)	- 001021 (8300)	003165 (9999)
+4	- 008260 (1255)	- 007962 (0766)	- 009399 (0512)	- 008260 (9997)
+5	- 001825 (7359)	- 000420 (9259)	000003 (9995)	- 001825 (9999)
-1 to +1	- 012321 (1893)	- 009707 (2151)	- 010523 (1895)	- 009983 (0128)
-3 to +3	- 026282 (0694)	- 024542 (0422)	- 026643 (0322)	- 026176 (0000)
-5 to +5	- 040364 (0275)	- 032865 (0322)	- 037822 (0207)	- 038276 (0000)
-10 to +10	- 058758 (0235)	- 047359 (0296)	- 050636 (0244)	- 058205 (0000)
0 to +10	- 025395 (1654)	- 022700 (1363)	- 027619 (0991)	- 024665 (0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C4. VIETNAM WAR 67/02/24 (expected sign is positive)				
	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	-001457 (7865)	000662 (8848)	001898 (7026)	-001457 (9999)
-1	004395 (4139)	004842 (2843)	004978 (2727)	004395 (9998)
-2	004719 (3802)	002835 (5315)	002916 (5213)	004719 (9998)
-3	-000669 (9011)	-000318 (9441)	-000190 (9666)	-000669 (1000)
-4	-002232 (6782)	-002966 (5127)	-002928 (5195)	-002232 (9999)
-5	-004957 (3567)	-004858 (2829)	-004760 (2943)	-004957 (9998)
+1	004099 (4490)	006302 (1632)	007428 (1462)	004099 (9998)
+2	010985 (0403)	004603 (3144)	006281 (2174)	010985 (9996)
+3	005621 (2966)	005630 (2139)	004607 (3291)	005621 (9998)
+4	-005123 (3411)	-003077 (4975)	-004888 (3002)	-005123 (9998)
+5	000399 (9408)	002140 (6367)	001361 (7681)	000400 (1000)
-1 to +1	007059 (4511)	011875 (1318)	013282 (1018)	005993 (0011)
-3 to +3	028377 (0483)	025045 (0384)	025148 (0385)	028729 (0000)
-5 to +5	016453 (3674)	016334 (2876)	014328 (3559)	018463 (0000)
-10 to +10	006082 (8144)	015251 (4856)	009927 (6590)	004768 (1498)
0 to +10	019217 (2930)	023315 (1293)	032561 (2527)	022082 (0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C5. VIETNAM WAR 67/03/02 (expected sign is positive)				
	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	-005114 (.3454)	-003103 (.4972)	-005391 (.2563)	-005113 (.9998)
-1	005631 (.2993)	005605 (.2195)	005823 (.2029)	005630 (.9998)
-2	010994 (.0417)	004561 (.3227)	004558 (.3242)	010994 (.9996)
-3	004106 (.4515)	006360 (.1685)	006448 (.1640)	004106 (.9998)
-4	-001449 (.7893)	000592 (.8978)	000767 (.8681)	-001449 (.9999)
-5	004404 (.4163)	004809 (.2914)	004978 (.2756)	004404 (.9998)
+1	000408 (.9400)	002105 (.6448)	000923 (.8425)	000408 (1.000)
+2	-004081 (.4513)	-003372 (.4600)	-004128 (.3724)	-004081 (.9998)
+3	004421 (.4146)	003684 (.4193)	003206 (.4873)	004421 (.9998)
+4	001551 (.7749)	002022 (.6580)	000999 (.8303)	001551 (.9999)
+5	002684 (.6207)	002710 (.5529)	001618 (.7296)	002684 (.9999)
-1 to +1	000925 (.9221)	004675 (.5575)	001845 (.8226)	-000275 (.8795)
-3 to +3	016751 (.2488)	016096 (.1893)	012553 (.3194)	015861 (.0000)
-5 to +5	024648 (.1810)	027037 (.0808)	022629 (.1622)	022950 (.0000)
-10 to +10	009286 (.7218)	014951 (.4968)	005573 (.8104)	001171 (.7222)
0 to +10	-008190 (.6571)	-001994 (.8981)	-016718 (.3484)	-013285 (.0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C6. VIETNAM WAR 67/04'25 (expected sign is positive)				
	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	008648 (1149)	008519 (0801)	008829 (0618)	006006 (0537)
-1	003153 (5664)	004021 (4102)	004526 (3399)	001000 (9261)
-2	002022 (7133)	002720 (5777)	002662 (5748)	003332 (6743)
-3	004228 (4418)	004206 (3889)	004235 (3716)	001443 (0688)
-4	-002252 (6822)	-000610 (9008)	-000008 (9986)	-004318 (0000)
-5	000697 (8993)	001089 (8238)	000831 (8611)	006980 (0000)
+1	-002367 (6669)	-002573 (5991)	-003187 (5058)	-002368 (9999)
+2	005140 (3503)	003675 (4523)	005217 (2762)	005140 (9998)
+3	-006125 (2648)	-004484 (3587)	-005643 (2393)	-006125 (9998)
+4	-000626 (9094)	-000227 (9629)	-000685 (8859)	-000626 (1000)
+5	-002717 (6213)	-003215 (5104)	-002972 (5342)	-002717 (1000)
-1 to +1	009519 (3193)	010075 (2354)	010352 (2100)	009050 (0000)
-3 to +3	015121 (3053)	016587 (2055)	017470 (1726)	013807 (0000)
-5 to +5	010296 (5820)	013871 (4046)	015057 (3570)	010124 (0000)
-10 to +10	000833 (9749)	005452 (8175)	000859 (9705)	-000067 (9846)
0 to +10	-010046 (5905)	-005734 (7299)	-010193 (5414)	-007783 (0001)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C7. VIETNAM WAR 67/07/14 (expected sign is positive)				
	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	000253 (9546)	000610 (8864)	001283 (7726)	002456 (6615)
-1	- 003057 (4900)	- 004012 (3473)	- 003982 (3528)	004117 (0000)
-2	- 002024 (6477)	- 002507 (5568)	- 002460 (5658)	009289 (0000)
-3	- 000314 (9435)	000667 (8760)	000667 (8765)	- 001856 (6654)
-4	000349 (9372)	001600 (7086)	001572 (7145)	005406 (0000)
-5	000170 (9695)	- 000461 (9142)	- 000464 (9140)	- 000314 (8812)
+1	- 003971 (3695)	- 003664 (3908)	- 005019 (2643)	- 001413 (7063)
+2	000714 (8719)	000893 (8343)	001723 (6952)	005409 (0000)
+3	- 004626 (2957)	- 003721 (3832)	- 003865 (3799)	- 007238 (0000)
+4	003417 (4402)	003676 (3889)	003799 (3764)	002592 (8127)
+5	- 009013 (0410)	- 008470 (0470)	- 007925 (0710)	- 008314 (4532)
-1 to +1	- 006850 (3741)	- 007142 (3366)	- 007951 (3033)	- 006906 (0009)
-3 to +3	- 013398 (2589)	- 012076 (2916)	- 012461 (2981)	- 014170 (0000)
-5 to +5	- 018983 (2062)	- 016104 (2665)	- 015347 (3060)	- 020574 (0000)
-10 to +10	- 037917 (0742)	- 039515 (0545)	- 044955 (0380)	- 039913 (0000)
0 to +10	- 026923 (0724)	- 026971 (0617)	- 036983 (0252)	- 028248 (0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C8. VIETNAM WAR 67/08/04 (expected sign is positive)				
	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	-004480 (2794)	-005102 (2053)	-004528 (2866)	-006067 (0152)
-1	001990 (6313)	001418 (7252)	001517 (7081)	002601 (0098)
-2	-000378 (9273)	000585 (8846)	000612 (8797)	-000140 (9984)
-3	000313 (9397)	000814 (8398)	000856 (8323)	001666 (0578)
-4	000374 (9280)	000718 (8585)	000798 (8436)	008006 (0000)
-5	-006563 (1125)	-006259 (1195)	-006192 (1250)	-005569 (0000)
+1	-001700 (6816)	-000886 (8260)	-002038 (6257)	-001515 (9236)
+2	002236 (5894)	001943 (6291)	001734 (6688)	-008332 (0000)
+3	-000594 (8860)	-000360 (9288)	-000135 (9736)	-000456 (9941)
+4	-005340 (1970)	-004515 (2630)	-004674 (2616)	-005880 (0000)
+5	-002534 (5422)	-002165 (5934)	-001986 (6370)	-011489 (0000)
-1 to +1	-004224 (5577)	-004584 (5123)	-004641 (5146)	-004485 (0008)
-3 to +3	-002682 (8093)	-001609 (8815)	-001496 (8914)	-002900 (2312)
-5 to +5	-017428 (2146)	-014421 (2917)	-014036 (3126)	-018310 (0000)
-10 to +10	-031154 (1172)	-032905 (0894)	-031194 (1107)	-035881 (0000)
0 to +10	-011765 (4043)	-013017 (3474)	-011685 (4036)	-013483 (0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C9. VIETNAM WAR 67/08/15 (expected sign is positive)				
	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	000488 (9030)	- 000238 (9518)	000812 (8439)	001585 (0877)
-1	002950 (4636)	002029 (6060)	002002 (6125)	004026 (3512)
-2	- 002710 (5004)	- 002298 (5594)	- 002309 (5593)	- 006468 (0000)
-3	- 005416 (1760)	- 004594 (2404)	- 004564 (2458)	- 000664 (0600)
-4	- 000574 (8861)	- 000316 (9355)	- 000285 (9421)	001492 (7692)
-5	002228 (5781)	002020 (6047)	002056 (5998)	000365 (8936)
+1	001150 (7746)	000995 (7991)	000713 (8598)	- 008848 (0000)
+2	- 002485 (5350)	- 003344 (3921)	- 003117 (4391)	003087 (0000)
+3	- 001101 (7835)	- 000315 (9359)	- 000674 (8678)	- 002226 (5312)
+4	- 002744 (4943)	- 001967 (6157)	- 002324 (5669)	- 002988 (0383)
+5	- 002091 (6028)	- 002537 (5176)	- 002138 (5931)	- 002347 (9569)
-1 to +1	004646 (5073)	002846 (6788)	003527 (6113)	004905 (1432)
-3 to +3	- 007430 (4923)	- 008245 (4399)	- 007586 (4822)	- 008725 (0000)
-5 to +5	- 011002 (4232)	- 011599 (3944)	- 010564 (4421)	- 012941 (0000)
-10 to +10	- 005486 (7785)	- 006976 (7195)	- 003586 (8568)	- 008652 (0019)
0 to +10	002990 (8276)	000009 (9995)	003044 (8282)	000704 (6920)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C10. VIETNAM WAR 67 '12 '13 (expected sign is positive)				
	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	003825 (.3759)	003498 (.3995)	007089 (.0695)	003825 (.9998)
-1	-003860 (.3706)	-004420 (.2865)	-005161 (.1785)	-003860 (.9998)
-2	-002513 (.5601)	-002616 (.5277)	-003062 (.4241)	-002513 (.9998)
-3	001671 (.6985)	001677 (.6855)	001275 (.7393)	001671 (1.000)
-4	-003334 (.4394)	-002997 (.4693)	-003525 (.3574)	-004596 (.0397)
-5	003079 (.4752)	002700 (.5145)	002434 (.5254)	003162 (.0347)
+1	000800 (.8531)	002497 (.5486)	006826 (.0867)	000800 (1.000)
+2	-011692 (.0064)	-010661 (.0097)	-009373 (.0183)	-011692 (.9992)
+3	-002608 (.5453)	-003313 (.4243)	-004899 (.2039)	-002419 (.1443)
+4	000703 (.8705)	000054 (.9896)	000778 (.8411)	000296 (.8461)
+5	002984 (.4893)	002468 (.5517)	004074 (.2928)	001617 (.1354)
-1 to +1	000759 (.9197)	001578 (.8275)	008421 (.2179)	-003903 (.0000)
-3 to +3	-014774 (.2011)	-013689 (.2178)	-007617 (.4617)	-019893 (.0000)
-5 to +5	-011474 (.4335)	-011635 (.4086)	-003881 (.7670)	-022439 (.0000)
-10 to +10	-097391 (.3552)	-017410 (.3883)	007975 (.6785)	-021360 (.0000)
0 to +10	-025955 (.0761)	-024984 (.0768)	005936 (.6785)	-027516 (.0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	- 003966 (.3776)	- 003904 (.3555)	- 001374 (.7219)	-.005384 (.2658)
-1	- 000761 (.8656)	- 000235 (.9557)	- 001161 (.7618)	003297 (.0000)
-2	002952 (.5117)	002392 (.5714)	002026 (.5966)	.003081 (.7899)
-3	000590 (.8956)	- 000146 (.9724)	- 000026 (.9945)	000590 (.1000)
-4	- 002731 (.5437)	- 003769 (.3724)	- 002841 (.4581)	- 002731 (.9999)
-5	- 011880 (.0078)	- 010676 (.0111)	- 010787 (.0045)	- 011880 (.9993)
+1	006657 (.1382)	- 007003 (.0972)	- 004359 (.2611)	- 006657 (.9996)
+2	- 002862 (.5254)	- 001976 (.6408)	001569 (.6863)	- 002862 (.9998)
+3	- 004649 (.3007)	- 004103 (.3336)	- 000232 (.9536)	- 004649 (.9997)
+4	- 000135 (.9761)	- 000771 (.8556)	001508 (.6990)	- 000135 (.1000)
+5	- 012342 (.1157)	- 010374 (.0138)	- 006265 (.1080)	- 012342 (.9993)
-1 to +1	- 011507 (.1410)	- 011304 (.1249)	- 007012 (.2990)	- 011320 (.0000)
-3 to +3	- 015839 (.1895)	- 015568 (.1724)	- 003739 (.7234)	- 007451 (.0000)
-5 to +5	- 044613 (.0033)	- 042857 (.0027)	- 024219 (.0708)	- 052659 (.0000)
-10 to +10	- 097391 (.0000)	- 094130 (.0000)	- 066690 (.0005)	- 096877 (.0000)
0 to +10	- 079882 (.0000)	- 077218 (.0000)	- 051367 (.0004)	- 077387 (.0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	- 012596 (0054)	- 010399 (0131)	- 006425 (1195)	- 012596 (9995)
-1	- 011222 (0135)	- 013188 (0016)	- 013517 (0007)	- 016812 (0000)
-2	- 001878 (6802)	- 003663 (3843)	- 003079 (4436)	- 001878 (9999)
-3	- 013217 (0034)	- 011666 (0050)	- 011950 (0025)	- 015358 (0008)
-4	- 012250 (0068)	- 010211 (0145)	- 011365 (0042)	- 012250 (9993)
-5	000041 (9928)	- 000620 (8826)	- 001054 (7926)	000041 (1 000)
+1	- 005990 (1878)	- 004293 (3072)	- 001284 (7566)	- 005990 (9998)
+2	001253 (7835)	- 000151 (9713)	- 000076 (9850)	001253 (9999)
+3	- 006466 (1564)	- 006621 (1147)	- 004731 (2464)	- 006466 (9997)
+4	- 010196 (0247)	- 008794 (0358)	- 005382 (1875)	- 010196 (9995)
+5	- 007937 (0806)	- 006409 (1258)	- 003492 (3877)	- 007937 (9996)
-1 to +1	- 030162 (0001)	- 028200 (0001)	- 022016 (0019)	- 029690 (0000)
-3 to +3	- 051651 (0000)	- 052075 (0000)	- 044111 (0001)	- 048273 (0000)
-5 to +5	- 085619 (0000)	- 082330 (0000)	- 071133 (0000)	- 080838 (0000)
-10 to +10	- 126963 (0000)	- 117134 (0000)	- 101692 (0000)	- 122237 (0000)
0 to +10	- 059763 (0001)	- 049769 (0004)	- 030229 (0383)	- 053314 (0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C13. VIETNAM WAR 68/01/18 (expected sign is negative)				
	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	-0.007820 (.0881)	-0.006921 (.0941)	-0.006316 (.1240)	-0.007416 (.0000)
-1	-0.000170 (.9705)	-0.000849 (.8376)	-0.000682 (.8675)	-0.001598 (.2618)
-2	-0.006483 (.1573)	-0.005803 (.1604)	-0.005997 (.1412)	-0.006482 (.9997)
-3	-0.007881 (.0854)	-0.006265 (.1300)	-0.006828 (.0944)	-0.007881 (.9996)
-4	-0.010135 (.0269)	-0.008650 (.0367)	-0.009363 (.0221)	-0.011062 (.0000)
-5	-0.006402 (.1640)	-0.006596 (.1118)	-0.006810 (.0968)	-0.009673 (.0000)
+1	-0.002937 (.5226)	.000419 (.9203)	.002059 (.6239)	-0.002304 (.7626)
+2	.002556 (.5819)	.003371 (.4211)	.003730 (.3751)	.002779 (.0756)
+3	.0016 (.7236)	-0.001626 (.6982)	-0.003875 (.3565)	-0.010248 (.0000)
+4	.001799 (.6954)	.000281 (.9461)	-0.000749 (.8558)	.000017 (.9842)
+5	.007359 (.1085)	.006105 (.1404)	.005980 (.1464)	.007527 (.0000)
-1 to +1	-0.011013 (.1676)	-0.007457 (.3018)	-0.005149 (.4753)	-0.012427 (.0000)
-3 to +3	-0.021800 (.0763)	-0.018316 (.0995)	-0.018770 (.0890)	-0.020283 (.0000)
-5 to +5	-0.029811 (.0550)	-0.027704 (.0478)	-0.030601 (.0278)	-0.029696 (.0000)
-10 to +10	-0.073905 (.0007)	-0.073880 (.0002)	-0.079653 (.0000)	-0.068583 (.0000)
0 to +10	-0.006651 (.6723)	-0.008669 (.5469)	-0.010471 (.4636)	-0.004217 (.0089)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	014287 (0018)	009031 (0337)	006327 (1533)	013770 (0000)
-1	011283 (0152)	006087 (1563)	006527 (1303)	011283 (9994)
-2	005425 (2448)	002894 (5060)	003003 (4932)	005425 (9997)
-3	-001387 (7684)	001109 (7964)	-000332 (9388)	-001387 (9999)
-4	001101 (8113)	003840 (3678)	003540 (4064)	001101 (9999)
-5	004979 (2797)	003339 (4247)	003681 (3749)	004979 (9997)
+1	-007695 (0951)	-004905 (2427)	-004879 (2507)	-007695 (9997)
+2	-004483 (3308)	-002869 (4938)	-001887 (6547)	-004483 (9998)
+3	001880 (6836)	000296 (9435)	-000567 (8920)	001880 (9999)
+4	002309 (6171)	002683 (5210)	002299 (5821)	002309 (9999)
+5	001603 (7281)	003899 (3515)	004442 (2880)	001603 (9999)
-1 to +1	017664 (0270)	009833 (1803)	007480 (3174)	013396 (0000)
-3 to +3	019750 (1129)	011385 (3178)	007988 (4992)	023025 (0000)
-5 to +5	030480 (0516)	026175 (0680)	024497 (1020)	034502 (0000)
-10 to +10	024499 (2792)	019133 (3655)	017410 (4145)	022818 (0000)
0 to +10	002967 (8497)	004118 (7722)	003904 (7824)	-001124 (5750)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C15. VIETNAM WAR 68/02/28 (expected sign is positive)

	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	-004861 (.2885)	-002569 (.5390)	-002643 (.5338)	-004861 (.9097)
-1	002057 (.6531)	-000269 (.9489)	-000234 (.9560)	004021 (.1892)
-2	001448 (.7532)	000071 (.9864)	-000365 (.9313)	-004585 (.0000)
-3	-006665 (.1451)	-004358 (.2968)	-004398 (.2971)	-006689 (.0000)
-4	001841 (.6875)	004124 (.3218)	004309 (.3045)	000391 (.8819)
-5	002671 (.5600)	002900 (.4853)	003053 (.4659)	002442 (.9292)
+1	002577 (.5760)	002731 (.5146)	003123 (.4639)	.002577 (.9999)
+2	000961 (.8344)	001268 (.7681)	001600 (.7256)	.000961 (.9999)
+3	000764 (.8711)	000982 (.8189)	001892 (.6754)	000764 (1.0000)
+4	012135 (.0082)	003829 (.3862)	006168 (.2141)	.012135 (.9993)
+5	005123 (.2727)	000074 (.9864)	-000640 (.8926)	.005123 (.9998)
-1 to +1	-000251 (.9749)	-000121 (.9869)	000229 (.9756)	-001119 (.2921)
-3 to +3	-004159 (.7433)	-002807 (.8149)	-001851 (.8795)	-011467 (.0000)
-5 to +5	.018837 (.2307)	009181 (.5323)	.011721 (.4421)	021443 (.0000)
-10 to +10	035469 (.1073)	027532 (.1730)	027830 (.1740)	042785 (.0000)
0 to +10	015877 (.3084)	016310 (.2541)	016708 (.2495)	025346 (.0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C16. VIETNAM WAR 68/04/02 (expected sign is positive)				
	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	005419 (2448)	008799 (.0357)	008114 (0645)	005419 (9998)
.	012544 (0072)	013274 (0014)	013069 (0017)	012248 (9829)
-2	.001212 (7954)	-000836 (8425)	-001221 (7717)	001212 (9999)
-3	-006198 (1832)	-004812 (2499)	-004804 (2505)	-006198 (9997)
-4	006153 (1874)	007047 (0909)	006926 (0962)	009818 (0000)
-5	003554 (4463)	001359 (7453)	001018 (8075)	005565 (0000)
+1	-001821 (6965)	-002314 (5794)	-001440 (7321)	-001821 (9999)
+2	-007067 (1793)	-005709 (1712)	-006084 (1511)	-007067 (9997)
+3	-002033 (6631)	-002100 (6191)	-002478 (5855)	-002033 (9999)
+4	009374 (0453)	007264 (0837)	011570 (0097)	009374 (9995)
+5	002022 (6650)	004503 (2857)	004432 (3165)	002022 (9999)
-1 to +1	016266 (0454)	017959 (0060)	019786 (0073)	016096 (0000)
-3 to +3	001937 (8776)	006483 (5704)	005267 (6496)	008538 (0000)
-5 to +5	024526 (1256)	028934 (0467)	030809 (0376)	023637 (0000)
-10 to +10	021345 (3464)	031782 (1221)	041342 (0627)	022740 (0000)
0 to +10	-000643 (9684)	011417 (4412)	026188 (1691)	-002784 (0999)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	009431 (0433)	007399 (0779)	011254 (0121)	010591 (0000)
-1	- 002045 (6604)	- 002010 (6340)	- 002327 (5823)	- 004399 (0000)
-2	- 007040 (1296)	- 005627 (1773)	- 005791 (1648)	- 006806 (0001)
-3	- 001800 (6991)	002217 (5954)	- 002550 (5413)	- 001919 (3516)
-4	005427 (2427)	008894 (0337)	008826 (0356)	005427 (9998)
-5	012601 (0067)	013408 (0012)	013085 (0017)	010323 (0528)
+1	002046 (6604)	004630 (2719)	005542 (2140)	- 003222 (0000)
+2	005861 (2087)	006125 (1427)	007723 (0698)	005302 (0006)
+3	001943 (4766)	003573 (3941)	004388 (3079)	- 005315 (0000)
+4	- 004356 (3498)	- 004291 (3063)	- 003021 (4850)	- 006399 (0000)
+5	- 005843 (3107)	- 005347 (2027)	- 004089 (3457)	- 004377 (1078)
-1 to +1	009430 (2448)	010207 (1649)	013208 (0782)	010222 (0000)
-3 to +3	008623 (4939)	012499 (2745)	017551 (1364)	010395 (0000)
-5 to +5	017458 (2792)	027735 (0610)	038550 (0130)	021713 (0000)
-10 to +10	025209 (2698)	037497 (0756)	048112 (0280)	028244 (0000)
0 to +10	009218 (5663)	016989 (2458)	037838 (0297)	008567 (0000)

Note. model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C18. SIX DAY WAR 67/01/16 (expected sign is positive)

Abnormal returns with their p-values in brackets.				
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	- 006496 (2449)	- 003650 (4234)	- 002723 (5746)	- 006496 (9998)
-1	- 000867 (8772)	001046 (8180)	000625 (8905)	- 000867 (1 000)
-2	- 004278 (4451)	- 001796 (6933)	- 002270 (6179)	- 004278 (9999)
-3	- 000313 (9551)	- 001126 (8044)	- 001593 (7257)	- 000313 (1 000)
-4	- 005611 (3155)	- 001348 (7682)	- 001766 (6994)	- 005611 (9998)
-5	- 009179 (1017)	- 006088 (1814)	- 006643 (1443)	- 009179 (9997)
+1	003288 (5579)	001980 (6632)	004651 (3253)	003288 (9999)
+2	000030 (9957)	003486 (4431)	005278 (2621)	000030 (1 000)
+3	- 006385 (2533)	- 006373 (1601)	- 005102 (2802)	- 006385 (9998)
+4	- 004574 (4150)	- 004713 (2993)	- 002279 (6306)	- 004574 (9998)
+5	- 002362 (6730)	000979 (8296)	003001 (5253)	- 002363 (9999)
-1 to +1	- 004170 (6698)	- 000607 (9390)	002687 (7407)	- 004571 (0023)
-3 to +3	- 015776 (2979)	- 006802 (5832)	- 001310 (9192)	- 016462 (0000)
-5 to +5	- 039948 (0384)	- 619672 (2176)	- 011134 (5113)	- 036451 (0000)
-10 to +10	- 093466 (0007)	- 072739 (0017)	- 065241 (0085)	- 103878 (0000)
0 to +10	- 025327 (1863)	- 013769 (3800)	008327 (6816)	- 025683 (0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C19. SIX DAY WAR 67/01/26 (expected sign is negative)

	Abnormal returns with their p-values in brackets			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	001450 (7895)	001176 (7908)	- 000765 (8686)	001450 (9999)
-1	- 002638 (6274)	- 000670 (8798)	- 000826 (8524)	- 002638 (9999)
-2	002121 (6963)	004083 (3562)	003841 (3860)	002121 (9999)
-3	- 002347 (6659)	000958 (8291)	000661 (8818)	- 002347 (9999)
-4	- 004579 (4006)	- 004700 (2889)	- 005034 (2565)	- 004579 (9998)
-5	- 006365 (2409)	- 006468 (1440)	- 006732 (1288)	- 006365 (9998)
+1	- 001758 (7467)	- 002458 (5795)	- 000510 (9141)	- 001758 (9999)
+2	- 006299 (2470)	- 004283 (3341)	- 002107 (6560)	- 006300 (9997)
+3	- 004971 (3597)	- 000991 (8232)	000188 (9678)	- 004971 (9998)
+4	002802 (6058)	002827 (5226)	003130 (4838)	002802 (9999)
+5	- 004159 (4439)	- 005765 (1927)	- 005186 (2637)	- 004159 (9998)
-1 to +1	- 002967 (7538)	- 004359 (5727)	- 002252 (7836)	- 003074 (2989)
-3 to +3	- 014903 (3077)	- 004699 (6945)	000957 (9390)	- 014767 (0000)
-5 to +5	- 028295 (1265)	- 019933 (1897)	- 014886 (3528)	027622 (0000)
-10 to +10	- 067813 (0100)	- 014573 (0577)	- 033899 (1494)	- 066143 (0000)
0 to +10	- 039979 (0302)	- 031618 (0363)	- 027689 (1434)	- 039412 (0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C20 SIX DAY WAR 67/05 '22 (expected sign is positive)				
	Abnormal returns with their p-values in brackets			
Event Window	Model 1	Model 2	Model 3	G-ARCH Model 1
DAY 0	007762 (1207)	007524 (1089)	007610 (0858)	007762 (9996)
-1	000001 (9998)	000284 (9519)	000768 (8626)	000001 (1 000)
-2	- 002370 (6364)	- 002203 (6394)	- 002383 (5911)	- 002370 (9999)
-3	- 000382 (9393)	000368 (9378)	000928 (8343)	- 000382 (1 000)
-4	000426 (9322)	- 000818 (8620)	- 002104 (6361)	000426 (1 000)
-5	- 000955 (8490)	- 000964 (8378)	- 000052 (9907)	- 000955 (1 000)
+1	005276 (2927)	006802 (1517)	005489 (2310)	005276 (9997)
+2	001911 (7063)	000508 (9152)	- 001699 (7132)	001912 (9999)
+3	- 000038 (9940)	- 004065 (3947)	000711 (8775)	- 000038 (1 000)
+4	- 003130 (5325)	- 001174 (8034)	- 003275 (4643)	- 003130 (1 000)
+5	- 002223 (6579)	000059 (9903)	- 002335 (6340)	- 002223 (1 000)
-1 to +1	013192 (1302)	014827 (0713)	014146 (0713)	012034 (0000)
-3 to +3	012527 (3529)	009578 (4511)	011894 (3268)	011748 (0000)
-5 to +5	006588 (7001)	006786 (6756)	004355 (7810)	007346 (0023)
-10 to +10	014016 (5645)	- 001997 (9314)	003639 (8723)	020574 (0000)
0 to +10	025970 (1309)	011361 (4923)	018124 (2708)	032756 (0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C21. SIX DAY WAR 67/06/06 (expected sign is positive)				
	Abnormal returns with their p-values in brackets			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	- 003400 (5189)	- 016339 (0021)	002059 (8306)	- 003400 (9999)
-1	015287 (0041)	014645 (0058)	016173 (0018)	015287 (0000)
-2	- 001003 (8451)	005174 (3098)	006983 (1590)	- 001003 (1 000)
-3	005719 (2662)	- 001405 (7813)	- 004945 (3205)	005807 (0014)
-4	000762 (8859)	- 000870 (8636)	- 000082 (9868)	000762 (1 000)
-5	- 002380 (6435)	000020 (9969)	000675 (8894)	- 002380 (1 000)
+1	- 000342 (9471)	005089 (3059)	001145 (8399)	- 000342 (1 000)
+2	002550 (6198)	004665 (3377)	003776 (4423)	002550 (1 000)
+3	- 003999 (4365)	- 003677 (4488)	- 003003 (5389)	- 003999 (9998)
+4	004842 (3466)	005516 (2552)	006278 (1939)	004842 (1 000)
+5	003200 (5335)	005201 (2834)	003625 (4570)	003200 (1 000)
-1 to +1	010514 (2388)	003724 (6673)	021552 (0302)	014447 (0000)
-3 to +3	014123 (3063)	008146 (5330)	021993 (1210)	022976 (0000)
-5 to +5	020952 (2287)	018542 (2585)	037263 (0422)	030731 (0000)
-10 to +10	030388 (2177)	027607 (2353)	045636 (0725)	045796 (0000)
0 to +10	- 002433 (8910)	- 000232 (9890)	012676 (5432)	003717 (2059)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C22. YOM KIPPUR WAR 73/10/10 (expected sign is positive)				
Abnormal returns with their p-values in brackets.				
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	- 003440 (4478)	- 002310 (5724)	- 002767 (5319)	- 004593 (0562)
-1	- 000395 (9302)	001869 (6426)	002739 (4909)	- 000506 (9902)
-2	000205 (9639)	002221 (5805)	002443 (5362)	000205 (1 000)
-3	002827 (5329)	001994 (6200)	001181 (7653)	002827 (9999)
-4	- 007181 (1111)	- 005238 (1934)	- 004810 (2253)	- 007181 (9996)
-5	- 002224 (6234)	000204 (9595)	000483 (9029)	- 002224 (9999)
+1	005676 (2115)	001183 (7720)	003665 (3700)	006002 (1416)
+2	002278 (6145)	005920 (1421)	005497 (1705)	002278 (9999)
+3	- 007132 (1141)	- 004734 (2388)	- 005919 (1351)	- 007132 (9996)
+4	001342 (7666)	- 000307 (9389)	- 000272 (9451)	001342 (9999)
+5	- 000158 (9721)	000367 (9270)	- 000541 (8905)	- 000158 (1 000)
-1 to +1	001804 (8186)	000783 (9107)	009703 (5947)	002019 (0226)
-3 to +3	- 000040 (9973)	006315 (5586)	006918 (5162)	- 001513 (2350)
-5 to +5	- 008691 (5721)	000474 (9724)	001649 (9026)	- 009755 (0000)
-10 to +10	- 033673 (1226)	- 021594 (2670)	- 021604 (2588)	- 033728 (0000)
0 to +10	- 013179 (3900)	- 013518 (3198)	- 013647 (3063)	- 012636 (0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C23. YOM KIPPUR WAR 73/10/15 (expected sign is positive)				
Abnormal returns with their p-values in brackets.				
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	-007161 (1117)	-004865 (2284)	-006125 (1250)	-007161 (9996)
-1	002301 (6100)	006021 (1374)	006557 (1026)	002301 (9999)
-2	005729 (2058)	001347 (7423)	-000848 (8364)	005004 (0023)
-3	-003482 (4410)	-002810 (4939)	-001369 (7397)	-003522 (9279)
-4	-000390 (9310)	002030 (6161)	002437 (5433)	-001250 (7918)
-5	000236 (9583)	002212 (5841)	002253 (5117)	000236 (1000)
+1	001335 (7672)	-000257 (9493)	-000030 (9941)	001335 (9999)
+2	-000165 (9708)	-000378 (9252)	-000487 (9024)	-000165 (1000)
+3	-002712 (5473)	-003204 (4261)	-003219 (4168)	-003074 (1744)
+4	-003182 (4802)	-003344 (4082)	-002925 (4656)	-000723 (2396)
+5	-003454 (4443)	-001779 (6605)	-003103 (4394)	-003454 (9998)
-1 to +1	-003542 (6515)	000852 (9035)	000320 (9632)	-004433 (0000)
-3 to +3	-004305 (7218)	-004264 (6933)	-005620 (5978)	-005149 (0001)
-5 to +5	-011484 (4527)	-005267 (7006)	-007092 (5996)	-012330 (0000)
-10 to +10	-019798 (3622)	-011237 (5644)	-013060 (4969)	-023118 (0000)
0 to +10	-024293 (1114)	-023241 (0882)	-024152 (0722)	-025077 (0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C24. YOM KIPPUR WAR 73/10 '23 (expected sign is negative)				
	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	001967 (.6705)	- 000476 (.9067)	000422 (.9158)	001967 (.1000)
-1	- 003525 (.4466)	- 001756 (.6666)	- 000475 (.9058)	- 003525 (.9998)
-2	- 003289 (.4767)	- 003549 (.3828)	- 003909 (.3285)	- 003289 (.9998)
-3	- 002807 (.5437)	- 003171 (.4338)	- 003218 (.4172)	- 002807 (.9998)
-4	- 000258 (.9556)	- 000405 (.9203)	- 000323 (.9351)	- 000258 (.1000)
-5	001242 (.7883)	- 000246 (.9516)	- 000650 (.8703)	001242 (.9999)
+1	- 003964 (.3909)	- 003568 (.3782)	- 003549 (.3705)	- 003964 (.9998)
+2	000217 (.9626)	000616 (.8793)	000478 (.9044)	000217 (.1000)
+3	- 001117 (.8093)	- 001629 (.6880)	- 001938 (.7941)	- 001117 (.9999)
+4	- 005503 (.2332)	- 003749 (.3563)	- 004263 (.2859)	- 005503 (.9997)
+5	- 000143 (.9754)	001241 (.7603)	000051 (.9899)	- 000143 (.1000)
-1 to +1	- 005560 (.4895)	- 005836 (.4077)	- 003670 (.5968)	- 005560 (.0000)
-3 to +3	- 012850 (.2997)	- 013858 (.2016)	- 011574 (.2773)	- 013312 (.0000)
-5 to +5	- 017988 (.2513)	- 017431 (.2046)	- 017139 (.2029)	- 019065 (.0000)
-10 to +10	- 024070 (.2793)	- 023712 (.2246)	022996 (.2307)	- 027485 (.0000)
0 to +10	- 010144 (.5194)	- 014433 (.2968)	- 016368 (.2347)	- 012274 (.0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C25. YOM KIPPUR WAR 73/11/09 (expected sign is negative)				
Abnormal returns with their p-values in brackets.				
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	- 003902 (4900)	- 000091 (9858)	- 002874 (5509)	- 003902 (9999)
-1	013768 (0142)	012385 (0146)	012054 (0119)	013768 (9995)
-2	004792 (3041)	003579 (4809)	002370 (6200)	005792 (9998)
-3	- 000062 (9912)	- 002750 (5885)	- 002206 (.6451)	- 000062 (1 000)
-4	- 000220 (9691)	000576 (9098)	003442 (4718)	- 000220 (1 000)
-5	- 001280 (8206)	- 002942 (5631)	- 001433 (.7648)	- 001280 (1 000)
+1	005475 (3336)	004430 (3837)	001523 (7510)	005475 (9998)
+2	.002577 (6490)	- 000228 (9644)	- 003347 (.4903)	.002577 (9999)
+3	- 005588 (3247)	- 006449 (2051)	- 009212 (0544)	- 005588 (9998)
+4	003195 (5712)	- 000754 (8827)	- 000455 (9249)	003195 (9999)
+5	006056 (2811)	002507 (6328)	001721 (7366)	008556 (0000)
-1 to +1	015448 (1152)	016964 (0556)	010853 (1965)	015341 (0000)
-3 to +3	018855 (2160)	011333 (4104)	- 001795 (8911)	025794 (.0000)
-5 to +5	027488 (1539)	011045 (5319)	001535 (.9266)	030981 (0000)
-10 to +10	039316 (1593)	019635 (4472)	- 005470 (.8244)	.053128 (.0000)
0 to +10	025830 (1927)	016742 (3570)	- 019202 (2995)	.045141 (0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C26. YOM KIPPUR WAR 73/12/05 (expected sign is positive)				
Abnormal returns with their p-values in brackets.				
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	001744 (7618)	003576 (4923)	004035 (4467)	019222 (0000)
-1	- 002659 (6408)	- 009705 (0614)	- 007325 (1384)	- 002659 (9999)
-2	006133 (2859)	006085 (2350)	007896 (1037)	006133 (9998)
-3	- 011024 (0523)	- 011266 (0273)	- 009322 (0543)	- 011024 (9996)
-4	000996 (8610)	006132 (2313)	006353 (1914)	000996 (1 000)
-5	000921 (8723)	- 006009 (2473)	- 006835 (1668)	001980 (0044)
+1	012528 (0273)	005642 (2827)	011292 (0338)	012528 (9995)
+2	002535 (6619)	001664 (7477)	006635 (1919)	002535 (9999)
+3	001316 (8175)	008029 (1214)	009268 (0702)	001316 (1 000)
+4	- 002737 (6315)	001279 (8044)	- 004118 (4163)	- 001146 (3720)
+5	- 001237 (8300)	- 001799 (7262)	- 008202 (1006)	- 000051 (9751)
-1 to +1	011675 (2388)	- 000599 (9473)	006604 (4672)	015448 (0000)
-3 to +3	010590 (4878)	003744 (7838)	019566 (1373)	- 000036 (9758)
-5 to +5	008703 (6530)	003617 (8354)	007129 (6656)	- 002825 (1103)
-10 to +10	057391 (0370)	026768 (2857)	031140 (1882)	063377 (0000)
0 to +10	037772 (.0496)	033012 (0546)	025674 (1163)	041471 (0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C27. FALKLANDS WAR 82/04/05 (expected sign is positive)

Abnormal returns with their p-values in brackets.				
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	001217 (7552)	002058 (5825)	000615 (8751)	001443 (.3188)
-1	001652 (6732)	003002 (4233)	003172 (3983)	016082 (0000)
-2	000218 (9557)	- 000627 (8673)	- 000540 (8858)	- 005701 (0000)
-3	- 000711 (8554)	- 001591 (6712)	- 001490 (6914)	- 002298 (2990)
-4	001953 (6170)	002080 (5770)	002120 (5702)	.002636 (1298)
-5	- 000026 (9947)	- 000629 (8662)	- 000653 (8614)	- 007839 (0000)
+1	003113 (4253)	002841 (4463)	002711 (4713)	.94721 (0000)
+2	001272 (7447)	001213 (7454)	000441 (9074)	001624 (1 000)
+3	- 000700 (8578)	- 000194 (9585)	- 000619 (8715)	001946 (0001)
+4	005107 (1902)	005670 (1282)	005053 (1850)	005006 (0001)
+5	.000262 (9465)	000068 (9854)	000424 (9101)	000538 (7174)
-1 to +1	006051 (3739)	008015 (2188)	006651 (3142)	006984 (0196)
-3 to +3	006294 (5503)	007011 (4882)	004532 (6592)	005891 (0679)
-5 to +5	011115 (2888)	014760 (2473)	011917 (3570)	.013492 (0000)
-10 to +10	017979 (3430)	023901 (1919)	019240 (3028)	.020698 (0000)
0 to +10	017056 (1829)	003679 (1181)	015237 (2538)	016239 (0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	- 000520 (8930)	- 000903 (8073)	- 001886 (6245)	- 003299 (0000)
-1	001252 (7455)	000061 (9868)	000009 (9980)	002422 (4709)
-2	- 004287 (2659)	- 004242 (2502)	- 004303 (2441)	- 004593 (7882)
3	002259 (5580)	003418 (3546)	003478 (3469)	003069 (0007)
-4	000492 (8986)	000734 (8424)	000793 (8302)	- 004872 (0000)
-5	004299 (2646)	003678 (3188)	003663 (3216)	- 000685 (0277)
-1	- 001675 (6650)	- 001195 (7469)	- 002845 (4606)	- 001916 (2398)
+2	006417 (0955)	008053 (0288)	007245 (0607)	007698 (0220)
+3	- 002715 (4816)	- 001746 (6367)	- 001878 (6194)	002601 (0000)
+4	- 005758 (1346)	- 005955 (1058)	- 005505 (1408)	- 007718 (0000)
+5	- 002636 (4943)	- 003027 (4119)	- 002359 (5275)	- 001931 (2823)
-1 to +1	- 000950 (8880)	- 002076 (7485)	- 004901 (4711)	- 000756 (7354)
-3 to +3	000759 (9416)	003545 (7219)	- 000421 (9675)	002629 (0337)
-5 to +5	- 003018 (8181)	- 001228 (9223)	- 003672 (7610)	- 001711 (2907)
-10 to +10	014908 (4233)	016459 (3584)	012735 (4879)	016644 (0000)
0 to +10	- 000337 (9795)	000368 (9767)	- 003978 (7621)	002258 (1127)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment

	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	-004230 (2736)	-004369 (2452)	-003257 (3991)	-003721 (0001)
-1	001467 (7047)	001005 (7897)	000756 (8411)	002300 (0069)
-2	-000514 (8944)	000275 (9418)	000057 (9879)	-000351 (7428)
-3	000542 (8884)	001120 (7662)	001023 (7860)	-005728 (0000)
-4	-003349 (3858)	-003461 (3560)	-003541 (3450)	008442 (0000)
-5	-002759 (4751)	-001789 (6342)	-001812 (6298)	-009370 (0000)
+1	003396 (3801)	002812 (4545)	003997 (2960)	003435 (7499)
+2	-002196 (5697)	-002707 (4715)	-002347 (5401)	-001288 (6739)
+3	003507 (3640)	003738 (3189)	004171 (2676)	003014 (7365)
+4	-002980 (4404)	-002322 (5383)	-001566 (6930)	-003645 (0002)
+5	-001845 (6350)	-001428 (7051)	000353 (9290)	-004956 (0000)
-1 to +1	000636 (9250)	-000559 (9323)	001613 (8099)	-000244 (7685)
-3 to +3	002037 (8450)	001974 (8461)	004834 (6394)	000805 (6111)
-5 to +5	-009506 (4716)	-007605 (5557)	-002255 (8661)	-009695 (0000)
-10 to +10	-023433 (2076)	-021973 (2259)	-014301 (4567)	-024036 (0000)
0 to +10	-003491 (7913)	-004215 (7444)	006701 (6471)	-004436 (0129)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C30. FALKLANDS WAR 82/05/28 (expected sign is positive)				
	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	- .004002 (.2927)	- .004246 (.2528)	- .004630 (.2260)	- .004743 (.0019)
-1	.002580 (.4984)	.001118 (.7643)	.001003 (.7886)	.011659 (.0000)
-2	- .001547 (.6864)	- .001134 (.7611)	- .001359 (.7162)	- .000809 (.6344)
-3	- .002893 (.4473)	- .002319 (.5341)	- .002347 (.5302)	- .002845 (.0241)
-4	.003631 (.3401)	.003826 (.3014)	.003763 (.3103)	.006997 (.0000)
-5	- .002148 (.5727)	- .002695 (.4680)	- .002697 (.4687)	- .002838 (.6769)
+1	.001978 (.6038)	.002128 (.5665)	.002976 (.4310)	.001942 (.9493)
+2	.003023 (.4270)	.002602 (.4832)	.002622 (.4883)	.003303 (.0147)
+3	- .002031 (.5938)	- .000968 (.7950)	- .000588 (.8803)	- .000962 (.6140)
+4	- .001626 (.6710)	- .001520 (.6832)	.000129 (.9737)	.002957 (.0000)
+5	.002825 (.4582)	.001940 (.6026)	.002988 (.4468)	.002276 (.6784)
-1 to +1	.000552 (.9337)	- .001012 (.8758)	- .000504 (.9382)	- .000324 (.7083)
-3 to +3	- .002984 (.7710)	- .002914 (.7720)	- .002342 (.8192)	- .003580 (.0168)
-5 to +5	- .000201 (.9877)	- .001319 (.9181)	.002003 (.8805)	- .000963 (.5997)
-10 to +10	.006267 (.7351)	.005787 (.7518)	.009480 (.6112)	.004130 (.1142)
0 to +10	.004706 (.7164)	.004914 (.6977)	.009947 (.4563)	.004138 (.0239)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GIARC 11 Model 1
DAY 0	005187 (1755)	005674 (1194)	005181 (2319)	005118 (0000)
-1	000959 (8005)	- 001211 (7384)	- 001148 (7528)	- 000733 (7664)
-2	001795 (6370)	001387 (6991)	001282 (7216)	- 000450 (3907)
-3	- 001842 (6276)	- 001718 (6321)	- 001750 (6269)	002789 (0000)
-4	002851 (4472)	001809 (6154)	001851 (6084)	001222 (0258)
-5	- 001464 (7012)	- 001227 (7329)	- 001407 (6966)	000024 (9702)
+1	- 001621 (6705)	001175 (7473)	004424 (2994)	- 000505 (8809)
+2	- 001934 (6105)	- 002875 (4232)	- 003212 (3867)	002912 (0000)
+3	001834 (6291)	002067 (5651)	002163 (5615)	- 000825 (6387)
+4	001311 (7307)	001631 (6497)	002615 (4800)	000095 (9589)
+5	000400 (9162)	- 000776 (8291)	- 000719 (8469)	- 000105 (9444)
-1 to +1	004476 (4982)	005457 (3809)	006424 (3361)	004321 (0000)
-3 to +3	003400 (6658)	004405 (6471)	004552 (6492)	004113 (0115)
-5 to +5	007860 (5443)	006111 (6194)	007136 (5726)	007082 (0022)
-10 to +10	017932 (3263)	015234 (3793)	015156 (3849)	014136 (0000)
0 to +10	012738 (3224)	014660 (2270)	014792 (2256)	010531 (0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C32. GULF WAR 90/08/03 (expected sign is positive)				
Abnormal returns with their p-values in brackets.				
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	007750 (0656)	006897 (9926)	004116 (3406)	007750 (9995)
-1	003890 (3482)	003797 (3553)	006324 (:288)	003890 (9998)
-2	- 005016 (2248)	- 004965 (2180)	- 004364 (2755)	- 005016 (9997)
-3	- 000858 (8359)	- 001280 (7505)	- 001350 (7346)	- 000858 (9999)
-4	005723 (1660)	005612 (1625)	005929 (1359)	005723 (9996)
-5	004047 (3277)	- 003813 (3430)	- 003248 (4145)	- 004047 (9998)
+1	- 004793 (2617)	- 007163 (0889)	- 009739 (0248)	- 004793 (9997)
+2	- 002492 (5470)	- 006425 (1249)	- 005884 (1724)	- 002492 (9998)
+3	002081 (6156)	002102 (6022)	002945 (4612)	002082 (1 000)
+4	- 002452 (5540)	- 001823 (6521)	- 001806 (6531)	- 002452 (9998)
+5	- 005545 (1720)	- 004650 (2488)	- 005303 (1848)	- 005545 (9996)
-1 to +1	007594 (3151)	004037 (5907)	001392 (8550)	008062 (0000)
-3 to +3	000554 (9608)	- 007200 (5189)	- 007590 (5018)	001350 (2366)
-5 to +5	- 006196 (6628)	- 012212 (3811)	- 012088 (3837)	- 001542 (2700)
-10 to +10	- 030239 (1345)	- 041336 (0379)	- 042085 (0327)	- 016116 (0000)
0 to +10	000321 (9821)	- 007050 (6162)	- 014713 (3013)	010166 (0000)

Note. model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	005152 (3397)	004976 (3597)	011191 (0581)	005152 (9998)
-1	007701 (1524)	005911 (2699)	005311 (3209)	007701 (9997)
-2	002350 (6647)	003352 (5317)	003376 (5282)	002350 (9999)
-3	001341 (8036)	001461 (7851)	001855 (7287)	001067 (7408)
-4	005556 (3024)	004734 (3737)	004414 (4057)	005556 (9998)
-5	- 009739 (0700)	- 010288 (0525)	- 010586 (0153)	- 009739 (9966)
+1	003180 (5635)	002476 (6496)	003567 (5493)	003180 (9999)
+2	010383 (0532)	014578 (0070)	014522 (0149)	010383 (9996)
+3	022405 (0000)	022741 (0000)	022887 (0000)	022405 (9991)
+4	- 002269 (6740)	- 002529 (6354)	- 001074 (8415)	- 002269 (9999)
+5	- 001067 (8436)	- 001277 (8113)	000756 (8890)	- 001067 (1 000)
-1 to +1	016389 (0830)	013654 (1483)	019266 (0479)	032005 (0000)
-3 to +3	054045 (0002)	056368 (0000)	059877 (0000)	065729 (0000)
-5 to +5	047245 (0095)	047886 (0080)	054453 (0028)	060230 (0000)
-10 to +10	- 003854 (8830)	001550 (9526)	014997 (5791)	- 026008 (0000)
0 to +10	026715 (1562)	034638 (0683)	- 014713 (0046)	045688 (0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

TABLE C34 GULF WAR 91/02/13 (expected sign is negative)				
	Abnormal returns with their p-values in brackets.			
Event Window	Model 1	Model 2	Model 3	GARCH Model 1
DAY 0	003601 (5097)	003319 (5404)	003132 (5736)	003601 (9999)
-1	-004315 (4285)	-001602 (7702)	-001862 (7344)	-004315 (9998)
-2	004411 (4237)	004272 (4349)	004047 (4596)	006135 (0251)
-3	005483 (3149)	005451 (3183)	004792 (3803)	005274 (0116)
-4	-003062 (5743)	-001018 (8518)	-001278 (8145)	-002129 (1189)
-5	-000744 (8922)	000512 (9253)	000343 (9499)	-001777 (6941)
+1	-011815 (0294)	-010549 (0522)	-009783 (0916)	-011815 (9995)
+2	002268 (6787)	000989 (8557)	003165 (5805)	002268 (9999)
+3	-001883 (7298)	-000395 (9421)	-003120 (5939)	-001883 (9999)
+4	-005573 (3069)	-004798 (3755)	-005068 (3574)	-006857 (0805)
+5	-004639 (3946)	-005755 (2874)	-004317 (4354)	-004739 (8618)
-1 to +1	-012656 (1815)	-008877 (3500)	-007586 (4265)	-011151 (0000)
-3 to +3	-002509 (8651)	001555 (9158)	001615 (9136)	-006235 (0000)
-5 to +5	-001175 (3486)	-010385 (5787)	-009162 (6241)	-017036 (0000)
-10 to +10	-071077 (0087)	-059327 (0326)	-053635 (0550)	-067055 (0000)
0 to +10	-041663 (0240)	040211 (0283)	-034173 (0792)	-040081 (0000)

Note: model 1 = single factor market model, model 2 = single factor market model with non-synchronous trading adjustment, model 3 = single factor market model with adjustment for non-synchronous trading adjustment and beta shift adjustment.

APPENDIX D

TABLE D1. ARCH tests for the market model portfolio returns series.

EVENT	LAG LENGTH			
	1	2	4	10
Six-Day war 67/01/16	3.98	4.07	10.3	13.8
67/01/26	4.4	4.62	12.4	13
67/05/22	1.1	3.01	15.3	15.4
67/06/06	1.01	2.82	13.9	4.17
Falklands war 82/04/05	4.22	5.53	5.81	15.5
82/04/22	4.34	5.69	6.49	17.2
82/05/19	5.15	5.26	7.22	12.1
82/05/23	6.52	6.5	6.66	13.6
82/06/11	4.4	5.16	5.04	8.91
Gulf war 90/08/03	0.22	0.23	2.88	11.3
91/01/16	1.19	1.22	1.59	11.4
91/02/13	1.1	1.1	1.36	10.1
Vietnam war 67/01/04	3.89	4.02	9.14	13
67/01/26	4.1	4.36	11.8	12.3
67/02/07	3.23	3.78	13.2	12.5
67/02/24	3.22	3.79	13.5	12.7
67/03/02	3.11	3.74	13.3	12.6
67/04/25	2.03	2.96	10.5	10.5
67/07/14	0.09	0.11	3.69	6.26
67/08/04	0.19	0.25	4.8	9.05
67/08/15	0	0.14	4.35	9.43

EVENT	LAG LENGTH			
	1	2	4	10
57/12/13	9.6	10.2	19.8	21.3
67/12/22	18.9	18.7	21.1	26.1
68/01/08	13.7	13.6	17.9	18.7
68/01/18	11.3	12.1	16.8	17.6
68/02/14	9.37	10.5	15.1	16.5
68/02/28	8.5	9.12	13.1	13.9
68/04/02	6.43	6.55	9.98	10.8
68/04/09	6.71	7.26	10.4	10.9
Yom Kippur war 73/10/10	7.56	8.94	15.56	20.04
73/10/15	6.26	7.46	13.6	18.5
73/10/23	8.08	9.74	13.7	21
73/11/09	53.7	53.7	61.5	73.9
73/12/05	53.9	53.7	60.3	62.3
Critical value (.05)	3.84	5.99	9.49	18.3

TABLE D2. Joint autocorrelation hypothesis test of portfolio returns and of residuals. And skewness and kurtosis of residuals.

EVEN1	Q-statistic		skewness residuals	kurtosis residuals
	portfolo returns	residuals		
Six-Day war 67/01/16	11.03	7.56	0.48	2.15
67/01/26	11.73	6.81	0.4	2.23
67/05/22	5.47	5.23	0.55	3.03
67/06/06	6.36	6.27	0.61	3.39
Falklands war 82/04/05	12.83	4.34	0.27	0.45
82/04/22	11.89	2.89	0.29	0.57
82/05/19	12.66	0.63	0.32	0.5
82/05/28	11.13	0.81	0.3	0.48
82/06/11	10.42	0.86	0.18	0.06
Gulf war 90/08/03	4.24	10.08	-0.37	1.56
91/01/16	23.8	7.06	0.35	0.97
91/02/13	22.62	7.33	0.42	0.89
Vietnam war 67/01/04	11.15	8.34	0.51	2.24
67/01/26	11.81	7.41	0.42	2.35
67/02/07	15.39	8.7	0.44	2.75
67/02/24	14.93	8.14	0.43	2.78
67/03/02	13.57	7.05	0.44	2.61
67/04/25	9.96	5.36	0.55	2.47
67/07/14	6.44	5.22	0.11	1.18
67/08/04	3.91	4.47	0.02	1.16
67/08/15	5.76	3.25	-0.06	1.31
67/12/13	17.37	41.26	-0.28	0.56
67/12/22	15.03	37.28	-0.12	0.7
68/01/08	15.01	31.49	-0.05	0.71
68/01/18	16.47	32.45	-0.01	0.7
Critical value (.05)	9.49	9.49		

TABLE D2 (CONTINUED). Joint autocorrelation hypothesis test of portfolio returns and of residuals. And skewness and kurtosis of residuals.

EVENT	Q-statistic		skewness residuals	kurtosis residuals
	portfolio returns	residuals		
68/02/14	14.37	33.69	-0.01	0.76
68/02/28	17.53	31.12	0.05	0.8
68/04/02	17.36	36.92	0.12	0.76
68/04/09	18.07	39.04	0.13	0.82
Yom Kippur war 73/10/10	20.74	5.69	0.17	-0.25
73/10/15	22.22	5.74	0.19	-0.22
73/10/23	21.52	4.56	0.2	-0.31
73/11/09	21.83	14.43	-0.66	2.62
73/12/05	21.04	13.7	-0.66	2.5
Critical value (.05)	9.49	9.49		

TABLE D3 White test for models with value weighted market portfolios

EVENT	Model 1	Model 2	Model 3
Six-Day war 67/01/16	3.27	7.92	9.02
67/01/26	5.91	10	11.21
67/05/22	1.48	22.39	23.87
67/06/06	0.88	21.42	15.89
Falklands war 82/04/05	6.52	6.43	7.58
82/04/22	5.72	5.86	11.82
82/05/19	4.19	5.29	11.78
82/05/28	1.59	3.13	8.01
82/06/11	0.4	1.82	6.28
Gulf war 90/08/03	9.41	9.96	12.72
91/01/16	0.02	1.93	3.69
91/02/13	0.04	1.86	4.05
Vietnam war 67/01/04	4.06	8.57	8.92
67/01/26	6.14	10.23	11.67
67/02/07	4.07	13.07	15.75
67/02/24	3.88	14.1	17.18
67/03/02	4.25	14.33	17.13
67/04/25	1.23	19.22	16.24
67/07/14	1.19	10.33	11.92
67/08/04	0.7	7.52	9.01
67/08/15	0.98	6.22	8.44
67/12/13	0.09	4.75	8.4
67/12/22	0.17	5.35	9.4

EVENT	Model 1	Model 2	Model 3
68/01/08	0.08	7.91	3.27
68/01/18	0.41	9.1	8.42
68/02/14	1.32	13.53	9.56
68/02/28	3.97	15.37	14.84
68/04/02	5.57	17.14	19.19
68/04/09	5.28	16.29	20.74
Yom Kippur war 73/10/10	0.02	2.4	7.55
73/10/15	0	2.94	6.11
73/10/23	0.02	3.31	3.25
73/11/09	28.68	29.24	19.81
73/12/05	27.19	26.7	25.84
Critical values (.05)	3.84	7.81	12.59

TABLE D4. Durbin-Watson d statistics for models with value weighted market portfolios.

EVENT	Model 1	Model 2	Model 3
Six-Day war 67/01/16	2.136	2.18	2.21
67/01/26	2.0151	2.09	2.12
67/05/22	2.0388	2.09	1.99
67/06/06	2.0484	2.08	1.97
Falklands war 82/04/05	1.9392	1.91	1.91
82/04/22	1.9507	1.93	1.93
82/05/19	1.9387	1.96	1.96
82/05/28	1.9682	1.98	1.98
82/06/11	1.9786	1.98	1.99
Gulf war 90/08/03	2.0307	2.04	2.07
91/01/16	1.7327	1.7	1.72
91/02/13	1.7118	1.69	1.71
Vietnam war 67/01/04	2.1473	2.22	2.36
67/01/26	2.0525	2.13	2.16
67/02/07	2.0126	2.1	2.11
67/02/24	2.0073	2.07	2.06
67/03/02	2.0064	2.03	2.05
67/04/25	2.0372	2.11	2.05
67/07/14	1.79	1.78	1.76
67/08/04	1.8535	1.84	1.83
67/08/15	1.9315	1.91	1.9
67/12/13	1.5189	1.49	1.75
67/12/22	1.4993	1.5	1.72

EVENT	Model 1	Model 2	Model 3
68/01/08	1.5253	1.54	1.63
68/01/18	1.55	1.51	1.48
68/02/14	1.5246	1.52	1.49
68/02/28	1.5136	1.47	1.464
68/04/02	1.4744	1.47	1.47
68/04/09	1.4555	1.41	1.4095
Yom Kippur 73/10/10	1.9835	2.07	2.13
73/10/15	1.976	2.13	2.14
73/10/23	1.9191	2.13	2.14
73/11/09	1.5509	1.59	1.8
73/12/05	1.5779	1.61	1.83
Critical values (.05) Lower Limits	$dL=1.748$ $dU=1.789$	1.728 1.810	1.697 1.841
Critical values (.05) Upper Limits	$4-dU=2.211$ $4-dL=2.252$	2.190 2.272	2.159 2.303

TABLE D5. Chow test for market model with value weighted market portfolios.

EVENT	Test statistic
Six-Day war 67/01'16	2.25
67/01/26	1.69
67/05'22	3.14
67/06/06	3.41
Falklands war 82/04/05	0.22
82/04/22	0.59
82/05/19	2.64
82/05/28	2.10
82/06'11	2.22
Gulf war 90/08/03	3.67
91/01/16	1.37
91/02/13	3.92
Vietnam war 67/01/04	10.10
67/01/26	1.65
67/02/07	1.17
67/02/24	0.90
67/03/02	1.91
67/04/25	0.48
67/07/14	0.90
67/08/04	0.14
67/08/15	0.06
67/12/13	18.54
67/12/22	14.32
68/01/08	6.09
68/01/18	1.87
68/02/14	3.58

68'02'28	1.21
68'04'02	1.81
68'04'09	2.47
Yom Kippur war 73'10'10	1.60
73'10'15	1.43
73'10'23	3.40
73'11'09	8.23
73/12/05	8.41
Critical value (.05)	3.00

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