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Short-Term Overreaction to Specific Events: Evidence from an Emerging Market

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Abstract

This paper investigates the short-term overreaction to specific events and whether stock prices are predictable in the Egyptian Stock Exchange (EGX). We find evidence of the short-term overreaction in the EGX. Losers ("bad news" portfolios) significantly outperform winners ("good news" portfolios) and investors can earn abnormal return by selling the winners and buying losers. Terrorist attacks have negative and significant abnormal returns for three days post event followed by price reversals on day four post event. Whereas, the tensions in the Middle East region have a negative and significant abnormal returns on event day followed by price reversals on day one post event. Moreover, the formation of a new government has no effect on the average abnormal returns post event in the EGX. The results also show that small firms tend to have greater price reversals compared to large firms. Overall, our results provide evidence of the leakage of information in the EGX.

JEL classifications: G14

Keywords: Overreaction hypothesis; Price reversal; Emerging markets.

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1. Introduction

Stock markets anomalies have long been examined in the literature, e.g., overreaction and long-term price reversals (De Bondt and Thaler, 1985), short-term trends or momentum (Jegadeesh and Titaman, 1993), and excessive volatility of stock prices (Shiller 1981). De Bondt and Thaler (1985) were the first to empirically examine the overreaction hypothesis in finance. They built on the reasoning of Dreman (1982) and detect a new stock market anomaly based on the Kahneman and Tversky (1974) theory of representativeness. De Bondt and Thaler (1985) argue that price reversals can be predicted using past return data (3-5 years) in case of systematic price overshoot. They formulate two main testable hypotheses. The first hypothesis is that "*large stock price movements will be followed by price reversals in the opposite direction*" (the directional effect of Brown and Harlow, 1988) and the second hypothesis is that "*the larger the initial price movements the greater the subsequent reversals*" (the magnitude effect). This suggests that stock returns exhibit negative serial correlation over long horizons and therefore investors may earn abnormal returns by exploiting this long-term mispricing, which is clearly inconsistent with the weak-form of market efficiency.

George and Hwang (2007) argue that systematic mistakes of irrational investors in responding to new information are the main interpretation of the overreaction hypothesis. They claim that the theory of biased self-attribution of Daniel et al. (1998) may explain these mistakes. Therefore, investors may interpret and react differently to the new information, which leads to two contradictive investment behaviors: price continuation or price reversals.

The existing literature has extensively investigated the overreaction phenomenon in developed markets, but only few studies have focused so far on the overreaction to specific events.[1] The overreaction to specific events in emerging markets has, to

[1] See, for instance, Seyhun (1990), Abarbanell and Bernard (1992), Zivney et al. (1996), Larson and Madura (2001), Kadiyala and Rau (2004), and Edmans et al. (2007).

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the best of our knowledge, not been empirically examined yet. A question therefore arises as to whether stock returns are predictable as a result of specific events in emerging markets and if so what is the portfolios' optimal holding period? This paper tries to fill this gap using data from the Egyptian stock exchange (EGX).

The EGX has become one of the biggest and most promising emerging markets in the Middle East and North Africa region, having grown substantially since the beginning of the Egyptian economic reform and privatization program in mid-1990s. During the global financial crisis of 2008-2009 the Egyptian economy achieved a remarkable real GDP growth rate of 7.2% in 2007 and 4.2 % in 2008, whilst some leading developed economies languished with negative or zero growth. As a result, Egypt was chosen by the Economic Reform Forum of the World Bank to be among the seven best countries in the world in undertaking effective steps for economic reform and enhancing the investment climate.[2]

Following the methodology of Cox and Peterson (1994) and Larson and Madura (2003), the present paper examines the short-term overreaction to four major events, namely, terrorist attacks, the formation of new government, tensions in the Middle East region, and the announcement of the privatization of a state-owned enterprise (SOE). Using data for 100 listed firms with no price limits on the EGX over the period 2003-2009, we find evidence of short-term overreaction suggesting that losers (bad news portfolios) significantly outperform winners (good news portfolios) over the event window and that investors can earn abnormal returns by selling winners and buying losers. Terrorist attacks have negative and significant abnormal returns for three days post event followed by price reversal. Positive and significant abnormal returns are reported in day five post event. Tensions in the Middle East region have negative and significant abnormal returns on event day followed by price reversals on day one post event. Moreover, the formation n of new government

[2] For more details, see, the World Federation of Exchanges (WFE) statistics in 2009 and 2010. Some institutional factors distinguish the Egyptian stock market from other emerging markets such as the relatively low regulations and the absence of taxes on dividends and capital gains.

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has no effect on the average abnormal returns post event in the EGX. The results also show that small firms tend to have greater reversals compared to large firms in the post event period. This result is consistent with the literature of the overreaction phenomenon (e.g., Cox and Peterson, 1994; Farag and Cressy, 2010). The results also provide evidence of the leakage of information in the EGX.

Our results have important policy implications. First, they provide clear evidence of stock market imperfection. Investors can, therefore, earn abnormal return by exploiting the overreaction anomaly. Second, to the extent that the regulatory authorities seek to raise the level of market efficiency in emerging markets to improve market liquidity, exploring market imperfections works as an early warning system to the regulator.

The reminder of the paper is organized as follows. Section 2 presents a survey of the literature. Section 3 briefly describes the dataset. Section 4 details the econometric approach. Section 5 reports the empirical results. Section 6 summarizes and concludes the paper.

2. Literature review

The existing literature has extensively investigated the overreaction phenomenon in developed markets.[3] Few studies have addressed short-term overreaction in emerging stock markets. Farag and Cressy (2010) investigate the short-term overreaction and the disposition effect in the EGX over the period 2005-2008. They argue that the existing literature ignores time dimension in the analysis and this may lay the estimation open to bias due to firm heterogeneity. Using a panel data model, they find that the fixed effect model best suits the EGX data and that unobservable factors play an important role in explaining the overreaction phenomenon. Their results support the disposition effect as past losers outperform past winners.

[3] See, for example, Zarowin (1989), Atkins and Dyl (1990), Bremer and Sweeney (1991), De Bondt and Thaler (1985, 1987), Liang and Mullineaux (1994), Park (1995), Schnusenberg and Madura (2001), Cox and Peterson (1994), Fama (1998), Larson and Madura (2003), Ma et al. (2005); Spyrou et al. (2007), and Lobe and Rieks (2011).

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The overreaction to specific events has also been examined in the past literature. Zarowin (1989) investigates the overreaction to earnings phenomenon in the United States. He creates a trading rule based on firms that experience good earnings (winners) and bad earnings (losers). All listed firms which have seven consecutive years of earnings (six years preceding the event and the current earnings year) are included in the sample over the period 1971-1981. The results show that the poorest earnings portfolio outperforms the best earnings portfolio by 16.6% over the test period due to the differences in firm size, which does not provide support to the hypothesis of overreaction to earnings. Seyhun (1990) studies the trading behavior of the insiders in the NYSE, ASE, and NASDAQ equity markets around the October 1987 stock market crash. The author finds evidence that supports the overreaction hypothesis during the crash as insiders became heavy buyers after the crash so that extreme losers became winners over the three years subsequent to the crash.

Abarbanell and Bernard (1992) examine the overreaction /underreaction of financial analysts to earnings announcements of 178 firms over the period 1976-1986. They find evidence of analysts' underreaction to earnings announcements rather than overreaction and conclude that extreme earnings forecasts by analysts cannot be explained by the overreaction hypothesis. Jegadeesh and Titman (1995) investigate the reaction of stock prices to common factors and firm-specific information in the US. They find evidence of underreaction to the stock market common factors and significant evidence of market overreaction to firm-specific information.

Zivney et al. (1996) investigate the market overreaction to takeover rumors in the United States by examining over 2000 articles of takeover rumors published in the Wall Street Journal over the period 1985-1988. They find negative abnormal returns one year post takeover rumors, and thus conclude that the buy-on-rumors strategy is not profitable. However, they recommend that selling short subsequent to rumors 100 days after the rumor day earns 20% cumulative annual abnormal returns. Larson and Madura (2001) look at the short-term overreaction in the foreign exchange mar-

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ket. They empirically analyze the effect of extreme one-day exchange rate adjustments on a sample of developed and emerging markets. They find evidence of investor underreaction in the industrial economies, and overreaction in the emerging economies.

Kadiyala and Rau (2004) investigate the overreaction/underreaction towards four main corporate events in the United States, namely, cash and equity financed acquisition, share buyback and equity offerings. They find that the announcements of corporate events after good news (i.e., positive earnings surprise) outperforms those events after bad news announcements (i.e., negative earnings surprise) apart from the information convoyed in the corporate event. Edmans et al. (2007) analyze the relation between sudden changes in investors' mood and stock returns. They find significant negative abnormal returns (-7% monthly) as a result of market reaction to losses by national football teams, especially in western European countries. In addition, they find weak evidence of market reaction to international cricket, rugby, and basketball international competitions. They argue that investors may earn abnormal returns by selling short the futures on market indices before major sport events in western European countries. Vergin (2001) finds evidence of price overreaction to the outstanding performance in the U.S. National Football League (NFL) games compared to the previous 2-5 games in the United States between 1981 and 1995.

3. Data

To examine the short-term overreaction hypothesis in the EGX, daily data of stock prices and EGX30 market index are used for 100 listed stocks with no price limits on the EGX.[4] We limit our sample period to 2003-2010 since 2011 onwards corre-

[4] To protect investors – especially small investors – from extreme volatility in prices, the EGX trading regulations initially (in February of 1997) maintained a 5% ceiling/floor restriction over a stock's price compared to its closing price in the last trading session. However, as the Egyptian stock market subsequently developed the need to remove or relax price controls became imperative. On 21 July 2003, the EGX commenced a new price ceiling system, whereby the daily price limit was widened to +/-20 %. To ensure market fairness and investor protection, if any of the stocks weighted average price exceeded +/-10 % from its open-

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spond to a large political instability period following the Arab spring uprisings characterized by many discontinuous trading periods.

We define the event as the sets of firms experiencing a one-day price rise (Winners) or fall (Losers) of at least 10% as the result of the following events: (A) - terrorist attacks; (B) - tensions in the Middle East region; (C) - privatizations of a SOE; and (D) - formation of a new government. We use the EGX 30 index, a free floated market capitalization weighted index, to represent the Egyptian stock market benchmark as in Farag and Cressy (2010). Data are collected from the EGX and the Egypt for Information Dissemination (EGID), which provides online services about EGX listed firms.

Following Cox and Peterson (1994) and Farag and Cressy (2010), the estimation period for betas is [-105, -6] and the test period is [+1, +120] days as compared with the event day. We use the market model as a benchmark to measure the abnormal returns with betas estimated for each firm over the 100 days prior to the event.[5]

4. Econometric modeling

We use the event study methodology to estimate the abnormal returns during the test period. Following the methodology of Bremer and Sweeney (1991) and Cox and Peterson (1994), we begin by defining daily returns.

Daily returns

The return variable R_t is defined as the first difference in the natural logarithm of the closing price over two consecutive trading days:

$$R_t = Log\ P_t - Log\ P_{t-1} \quad (1)$$

where p_t is the closing price of the stock in day (t) adjusted for dividends, rights issue, and stock split.

ing price during the trading session, the trading would be halted for half an hour. When the session is resumed, if the stock's weighted average price exited the 20 % band, trading on this stock would be halted until the end of the session.

[5] The CAPM and market adjusted abnormal return are also used as alternative models to estimate the abnormal return. The results remain qualitatively the same.

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Stock abnormal returns

Stocks' abnormal returns in the test period are defined as the residuals of the market model.

$$AR_{it} = R_{it} - \alpha_i - \beta_i R_{mt}, \quad t = 0,1,2.....,T \tag{2}$$

$$R_{jt} = \alpha_j + \beta_j R_{mt} + \varepsilon_{jt} \tag{3}$$

where T = 120 days, α_i and β_i are the OLS estimates of the market model parameters for firm (i) estimated over the estimation window. R_{it} and R_{mt} are the firm (i) and market returns for period (t), respectively.[6]

Cumulative abnormal returns (CARs)

Cumulative abnormal returns (*CARs*) and cumulative average abnormal returns (*CAARs*) are then calculated as follows:

$$CAR_{it} = \sum_{\tau=1}^{t} AR_{i\tau} \tag{4}$$

$$CAAR_t = \sum_{i=1}^{I} CAR_{it} / I \tag{5}$$

where I = 100 stands for the number of stocks in the sample.

We use the t-test statistic to examine whether or not there is a significant difference in *CARs* between winners and losers for a given day within the event window as follows:

$$t - stat = AR_t / S(AR_t)$$

$$S(AR_t) = \sqrt{\sum_{t=a}^{n} (AR - AAR)^2 / n - 1} \tag{6}$$

where S is the standard deviation of the stock's abnormal returns.

Cross-sectional regression

Following previous studies including Cox and Petersen, (1994), Farag and Cressy (2010), Larson and Madura, (2003), and Ma et al. (2005), we estimate the following cross-sectional model by regressing cumulative abnormal returns CAR_i against initial abnormal returns in event day AR_{i0}, firm size, and a dummy variable

[6] We also use the symmetric GARCH and asymmetric TARCH models to estimate the abnormal returns and to control for serial correlation in return time series following Benou and Richie (2003) and obtained similar results.

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representing firm ownership.[7] In addition, we include the $Leak_i$ variable (cumulative average abnormal returns for three days before the event date) that captures the leakage of information and the effect of insider information as a proxy for market inefficiency (Larson and Madura, 2003). Moreover, we include a dummy variable (*Ownership*) as a proxy of firm ownership to indicate whether or not the firm is state-owned before the IPO. This is consistent with the Egyptian economic reform program started in 1997; as number of SOEs is floated into the Egyptian stock exchange through IPOs.

$$CAR_i = \mu + \beta_1 AR_{i0} + \beta_2 \ln mcap_i + \beta_3 Leak_i + \beta_4 Ownership_i + \varepsilon_i \quad i = 1,.....100 \qquad (7)$$

where $CAR_i = \sum_{t=1}^{120} CAAR_{it} / 100$. AR_{i0} is the initial abnormal return in event day (t=0). *Ownership* is a dummy variable taking the value of 1 if the firm was privately held before IPO and a value of 0 otherwise. $lnmcap_i$ is the natural logarithm of the free floated market cap of firm i one day before the event. $Leak_i$ is cumulative average abnormal returns for three days before event date as a proxy for the leakage of information. ε_i is a white noise error term for stock i.

5. Empirical results

The descriptive statistics for the four events are presented in Table 1. The sample includes 100 firms over 120 days as test periods. The initial one-day abnormal return on event day (AR_{i0}) for the losers' events (A and B) are -5.60% and -3.17%, respectively. However, the initial abnormal return on event day for the winners' events (C and D) is 7.11% and 6.52%, respectively. Cumulative abnormal return (CAR_{it}) over the same event window (120 days) for the losers are 14.59% and 7.46 % for events A and B, respectively, and for the winners are -20.52% and -35.19% for events C and D, respectively. This suggests that buying losers on average not only earns positive ab-

[7] Firm size is proxied by the natural logarithm of the market capitalization of the free float one day before the event to mitigate potential endogeneity problems.

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normal returns over the period following the event but also outperforms the winner portfolios.

Cumulative average abnormal returns three days before the event as a proxy for the leakage of information (*Leak*) are 1.07% and -0.12 % for the losers' events A and B, respectively, and are 0.66% and -0.56% for the winners events C and D, respectively. Average firm size proxied by market capitalization for the losers are 312 million (A) and 354 million (B) Egyptian pounds, respectively, whereas the average firm size for the winners are 370 million (C) and 326 million (D) Egyptian pounds, respectively. Finally, half of the sample was formerly SOEs before the IPO.

"Insert Table 1 about here"

Table 2 presents the correlation matrix for the variables associated with each of the four events. The reported correlations show that there is no potential multicollinearity since all correlations are lower than 0.50.

"Insert Table 2 about here"

Table 3 presents the average abnormal returns and t-statistics for the losers and winners over event window [–5; +5]. It is clear that both losers and winners have, as expected, highly significant abnormal returns on event day (p value < 0.001).

For event A (*Terrorist Attacks*), we notice positive abnormal returns pre event (-4 to -1 days), which may indicate investors' optimism and herding behavior. The average abnormal return on event day is negative -5.61% and highly significant at less than 0.1%. We also notice that the effect of event A continues (price continuation phenomenon) for the subsequent three days post event, as the average abnormal returns are negative and highly significant at the 5% level. Price reversal occurs on the fourth day where positive and highly significant abnormal returns are found on day 5.

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With regard to event B (*Tensions in the Middle East*), the average abnormal return on the event day is negative -3.17% and highly significant at the 1% level. However, price reversal occurs on day 1 post event as we notice a positive abnormal return on day one post event (1.35% significant at the 5% level). There is no leakage of information, as insignificant abnormal returns are found over the five days before the event B.

"Insert Table 3 about here"

Figure 1 shows the results of plotting cumulative average abnormal returns (*CAARs*) over time, for the losers over one week pre- and post-events. The overreaction is clear from figure 1 as stock price reversal of event B occurs on day 1 post event while the price reversal of event A occurs in the fourth day post event.

"Insert Figure 1 about here"

The winners have highly significant positive abnormal returns (7.11% and 6.52%) on the event day for events C (The privatization of a SOE) and D (The formation of the new government), respectively. Price reversal occurs on day 1 post event for both events. We also notice positive and significant abnormal returns for event C on day 1 preceding the event, which is synonym of a leakage of information effect. Figure 2 shows the results of plotting *CAARs* over time, for the winners over one week pre- and post-events.

We conclude that positive and significant abnormal returns can be achieved as the result of terrorist attacks in the fifth day post event. However, the tensions in the Middle East region have negative and significant abnormal returns on event day followed by price reversals on day one post event. Furthermore, although we find positive and significant abnormal returns on day 0 as the results of the privatization of a SOEs and the formation of a new government, we notice that there is no significant average abnormal returns post events. To summarize, these findings are consistent with the literature on overreaction phenomenon as past losers (bad news) outper-

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form winners (good news) in the sense that investors may achieve abnormal returns by selling winners and buying losers.

"Insert Figure 2 about here"

Table 4 reposts the CAARs for losers and winners over the different periods to allow better assessment of the optimal holding period for the winners and losers. With regard to event A, we see that the CAAR pre-event window [-5, -1] is positive and highly significant, which implies herding behavior and investors' optimism. Highly significant negative abnormal returns are reported in the following day due to the terrorist attack as shown in Table 3. CAAR [+21, +50], and [+51, +120] windows have positive and abnormal return at the 5% level. The optimal holding periods are [+21, +30], [+51, +60], and [+41, +50] as the CAARs are 4.40%, 3.89%, and 3.72%, respectively. However, the optimal holding period for event B is [+31, +40], as the cumulative average abnormal returns is 5.36%. The findings support the argument that past losers outperform past winners. The optimal selling period for the winners events (C) and (D) are [+41, +50], and [+71, +80], respectively in views of positive CAARs during these periods.

"Insert Table 4 about here"

Figures 3—5 show the patterns of *CAARs* for winners and losers over the 120-day period post events. It is clear from the figures that past losers outperform past winners, which enables the investors to achieve abnormal returns by selling winners and buying losers (the disposition effect). These results are therefore consistent with the literature on price reversal (De Bondt and Thaler, 1985). Similar results are found by, among others, Cox and Petersen (1994), Larson and Madura (2003), Ma et al. (2005), and Farag and Cressy (2011).

"Insert Figure 3 about here"

"Insert Figure 4 about here"

"Insert Figure 5 about here"

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Table 5 presents the results of a cross sectional OLS regression of Eq. (7). The dependent variable is the CAR over 120 days post event. It is clear that the models are reasonably well specified since the F statistics are highly significant for both the winners' and losers' specifications. The average adjusted R-squared is 23.29% and 22.63% for the losers and winners, respectively. The negative sign of *lnmcap* as a proxy for firm size suggests the small firm effect, as small firms tend to have greater reversals compared with large firms in the post-event period. This result is consistent with the literature of the overreaction phenomenon (e.g., Cox and Peterson, 1994; Farag and Cressy, 2010). More interestingly, we find positive and significant influence of the leakage of information with regard to events A and D. Furthermore, privately-held firms before IPOs have greater *CARs* than the SOEs for both losers and winners, except in the case of event D.

"Insert Table 5 about here"

6. Summary and Conclusions

The existing literature has extensively investigated the overreaction hypothesis, but only few studies have addressed the overreaction to specific events. In this paper, we examine the short-term overreaction to four main events that may affect stock returns. These events include the terrorist attacks, the tensions in the Middle East region, privatization of a SOE, and the formation of new government. We particularly tackle the question of whether or not stock prices are predictable in the EGX. We use daily price data from the EGX on a sample of 100 listed firms that experienced dramatic one-day price change as the result of the considered events over the period 2003 to 2010 and finds evidence of short-term overreaction in the EGX. Bad news portfolios are found to significantly outperform good news ones over the event window, suggesting that investors can earn abnormal return by selling winners and buying losers.

Moreover, terrorist attacks have negative and significant abnormal returns for three days post event followed by price reversal as positive and significant abnormal returns are reported in day five post event. However, Tensions in the Middle East region have negative and significant abnormal returns on event day followed by

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price reversals on day one post event. Moreover, the formation of a new government and the privatization of SOEs have no effect on the average abnormal returns post event in the EGX. We also provide evidence that small firms tend to have greater reversals compared to large firms in the post event period. This result is consistent with the prior literature on the overreaction phenomenon. Finally, we find evidence that supports the presence of the leakage of information in the EGX.

Overall, the findings of our paper provide clear evidence of stock market imperfection, which signals the invalidation of the weak-form market efficiency. Investors can thus earn abnormal return by exploiting the overreaction anomaly. Typically, since the short selling strategy is not widely used in the Egyptian stock market, investors may adopt a trading strategy consisting of buying event-exposed shares at the end of each trading day and selling it at the end of the following trading session(s). Similar conclusions are reached by Brown et al. (1988) and Lob and Rieks (2011). As to policymakers, they would need to implement institutional and regulatory reforms to improve the level of market efficiency and liquidity.

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Table 1: Descriptive Statistics

	Mean	Standard deviation	Skewness	Kurtosis
Panel A: Event A (Terrorist attacks)				
CAR_{it}	0.1459	0.5331	0.8378	3.5184
AR_{i0}	-0.0560	0.0305	-0.9938	5.4384
Lnmcap	19.557	2.1201	-0.2359	3.4275
Leak	0.0107	0.0364	0.3326	3.9305
Ownership	0.5000	0.5051	0.0000	1.0000
Panel B: Event B (Tensions in the Middle East)				
CAR_{it}	0.0746	0.4560	0.8879	4.2309
AR_{i0}	-0.0317	0.0515	2.4385	5.3944
Lnmcap	19.684	1.6846	0.1821	2.4302
Leak	-0.0012	0.0619	-3.9771	2.3192
Ownership	0.5000	0.5051	0.0000	1.0000
Panel C: Event C (Privatization of a SOE)				
Car_{it}	-0.2052	0.6675	0.2085	6.1621
AR_{i0}	0.0711	0.0389	1.3019	4.4327
Lnmcap	19.731	1.8593	-0.3922	3.6710
Leak	0.0066	0.0422	0.9448	4.0901
Ownership	0.5000	0.5051	0.0000	1.0000
Panel D: Event D (Formation of a new government)				
Car_{it}	-0.3519	0.5917	-0.3775	2.7186
AR_{i0}	0.0652	0.0312	1.86134	6.0601
Lnmcap	19.604	1.3670	0.1102	2.3783
Leak	-0.0056	0.0417	-2.1486	3.1620
Ownership	0.5000	0.5051	0.0000	1.0000

$CAR_i = \sum_{t=1}^{120} CAAR_{it} / 100$. AR_{i0} is the initial abnormal return in event day (t=0). $Ownershipe_i$ is a dummy variable taking the value of 1 if the firm was privately held before IPO and a value of 0 otherwise. $lnmcap_i$ is the natural logarithm of the free floated market cap of firm i one day before the event. $Leak_i$ is cumulative average abnormal returns for three days before event date as a proxy for the leakage of information. ε_i is a white noise error term for stock i.

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Table 2: Correlation Matrix

	Lnmcap	AR_{i0}	Leak	Ownership
Panel A: Event A (Terrorist attacks)				
Lnmcap	1.0000			
AR_{i0}	-0.0388	1.0000		
Leak	0.0040	-0.1455	1.0000	
Ownership	0.1262	-0.2257	-0.2555	1.0000
Panel B: Event B (Tensions in the Middle East)				
Lnmcap	1.0000			
AR_{i0}	0.0146	1.0000		
Leak	0.1174	-0.0589	1.0000	
Ownership	0.4507	0.2362	-0.0816	1.0000
Panel C: Event C (Privatization of a SOE)				
Lnmcap	1.0000			
AR_{i0}	-0.1087	1.0000		
Leak	0.2641	0.3422	1.0000	
Ownership	0.2989	-0.0848	-0.0007	1.0000
Panel D: Event D (Formation of a new government)				
Lnmcap	1.0000			
AR_{i0}	0.0014	1.0000		
Leak	0.0562	-0.1267	1.0000	
Ownership	-0.1532	-0.0597	0.1030	1.0000

$CAR_i = \sum_{t=1}^{120} CAAR_{it} / 100$. AR_{i0} is the initial abnormal return in event day (t=0). $Ownership_i$ is a dummy variable taking the value of 1 if the firm was privately held before IPO and a value of 0 otherwise. $lnmcap_i$ is the natural logarithm of the free floated market cap of firm i one day before the event. $Leak_i$ is cumulative average abnormal returns for three days before event date as a proxy for the leakage of information. ε_i is a white noise error term for stock i.

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Table 3: Average abnormal returns for the losers and winners

	Losers				**Winners**			
	Event A (Terrorist attacks)		**Event B (Tensions in the Middle East)**		**Event C (Privatization of a SOE)**		**Event D (Formation of a new government)**	
	AR	t-stat.	AR	t-stat.	AR	t-stat.	AR	t-stat.
-5	0.0076	1.5545	0.0164	3.6968***	-0.0082	-1.6781*	-0.0139	-3.8321***
-4	0.0132	3.2188***	0.0036	0.9181	-0.0076	-1.6032	-0.0021	-0.5180
-3	0.0057	1.6057**	-0.0021	-0.4622	-0.0015	-0.2217	-0.0065	-1.8253*
-2	0.0071	1.8626*	0.0013	0.2268	0.0016	0.3584	-0.0038	-0.6696
-1	**0.0107**	**2.0852****	-0.0012	-0.1316	0.0165	**2.0974****	-0.0155	-0.9416
0	**-0.0561**	**-12.9808*****	**-0.0317**	**-4.351*****	**0.0711**	**12.9446*****	**0.0652**	**14.7585*****
1	**-0.0102**	**-2.0736****	**0.0135**	**2.3198****	-0.0019	-0.2682	-0.0045	-0.7875
2	**-0.0027**	**-2.0399****	0.0071	1.4715	-0.0042	-0.6728	-0.0141	-2.4994**
3	**-0.0029**	**-2.0098****	0.0027	0.6223	-0.0023	-0.4373	-0.0027	-0.6476
4	0.0009	0.2347	0.0004	0.1173	0.0015	0.2596	0.0029	0.6588
5	0.0076	2.8693***	0.0019	0.4245	0.0044	0.7254	0.0024	0.4093

***, **,* indicate significance at the 1%, 5% and 10% levels.

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Table 4: Cumulative average abnormal returns for the losers and winners over the event window

	Losers				Winners			
	Event A (Terrorist attacks)		Event B (Tensions in the Middle East)		Event C (Privatization of a SOE)		Event D (Formation of a new government)	
	CAAR	*t-stat.*	*CAAR*	*t-stat.*	*CAAR*	*t-stat.*	*CAAR*	*t-stat.*
CAAR[-5, -1]	0.0442	4.3367***	0.0182	1.0320	-0.0091	-0.6260	-0.0318	-2.2355**
CAAR [+1,+3]	-0.0103	-1.3035	**0.0232**	**2.4000****	-0.0084	-0.8859	-0.0213	-2.5359**
CAAR [+4, +10]	-0.0202	-1.5722	0.0096	0.6974	-0.0207	-1.2872	-0.0130	-0.8731
CAAR [+11,+20]	-0.0258	-1.5302	0.0286	1.7410*	-0.0364	-1.8625*	-0.0744	-4.8753***
CAAR [+21,+30]	**0.0440**	**2.6806****	-0.0214	-1.7046*	-0.0284	-1.6095	-0.0297	-2.8938***
CAAR [+31,+40]	0.0129	0.8168	**0.0536**	**3.3828*****	-0.0044	-0.2696	-0.0119	-0.8013
CAAR [+41,+50]	**0.0372**	**2.1367****	-0.0003	-0.0159	**0.0175**	**1.0686**	-0.0105	-0.7185
CAAR [+51,+60]	**0.0389**	**2.2478****	0.0037	0.3419	-0.0277	-2.7228**	-0.0282	-2.0974**
CAAR [+61,+70]	0.0181	1.1175	-0.0015	-0.1280	-0.0138	-0.7880	-0.0333	-2.5463**
CAAR [+71,+80]	0.0258	1.5835	-0.0121	-0.9497	-0.0222	-1.5291	**0.0001**	0.0027
CAAR [+81,+90]	0.0191	1.1156	0.0156	0.8437	-0.0168	-0.9501	-0.0173	-1.0317
CAAR [+91,+100]	0.0085	0.5045	-0.0073	-0.5856	-0.0216	-1.8115**	-0.0242	-1.2570
CAAR [+101,+110]	-0.0140	-0.6897	-0.0072	-0.5663	-0.0336	-3.0108***	-0.0348	-2.3560**
CAAR [+111,+120]	0.0089	0.4647	-0.0090	-0.7796	0.0116	1.2655	-0.0567	-4.9903***
CAAR [+21,+50]	0.0941	3.1020***	0.0319	1.0002	-0.0153	-0.4314	-0.0521	-1.9923*
CAAR [+51,+120]	0.1053	2.1986**	-0.0178	-0.4985	-0.1240	-2.6274**	-0.1945	-3.2825***
CAAR [+1,+120]	0.1455	1.9336*	0.0737	1.1440	-0.2022	-2.1365**	-0.3736	-4.2565***

***, **, and * indicate significance at the 1%, 5% and 10% levels.

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Table 5: Cross Sectional Regressions

	Losers		Winners	
Dependent variable CAR	**Event A (Terrorist attacks)**	**Event B (Tensions in the Middle East)**	**Event C (Privatization of a SOE)**	**Event D (Formation of a new government)**
Independent variables				
C	1.2342**	1.7719**	1.9500*	1.1827
	(0.5963)	(0.7581)	(1.0102)	(1.1555)
Lnmcap	-0.0665**	-0.1042***	-0.0988*	-0.0174
	(0.0319)	(0.0410)	(0.0501)	(0.0575)
Leak	0.4020***	-0.9480	-2.9608	4.5557**
	(0.0721)	(1.1972)	(2.2338)	(1.8844)
AR_{i0}	2.6280	-2.9834**	-5.2833**	0.7006
	(2.3067)	(1.4622)	(2.3474)	(2.5030)
Ownership	0.4371***	0.3391**	0.3517*	-0.4660***
	(0.1438)	(0.1453)	(0.1747)	(0.1568)
Adj R^2	0.2265	0.2394	0.2315	0.2211
F.stat	4.5868**	3.8202***	4.6895***	3.3522**

$CAR_i = \sum_{t=1}^{120} CAAR_{it} / 100$. AR_{i0} is the initial abnormal return in event day (t=0). $Ownership_i$ is a dummy variable taking the value of 1 if the firm was privately held before IPO and a value of 0 otherwise. $lnmcap_i$ is the natural logarithm of the free floated market cap of firm i one day before the event. $Leak_i$ is cumulative average abnormal returns for three days before event date as a proxy for the leakage of information. ε_i is a white noise error term for stock i. ***, **, and * indicates significance at the 1%, 5% and 10% levels. Robust standard errors are between parentheses.

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Figure 1: Cumulative average abnormal returns for events A and B

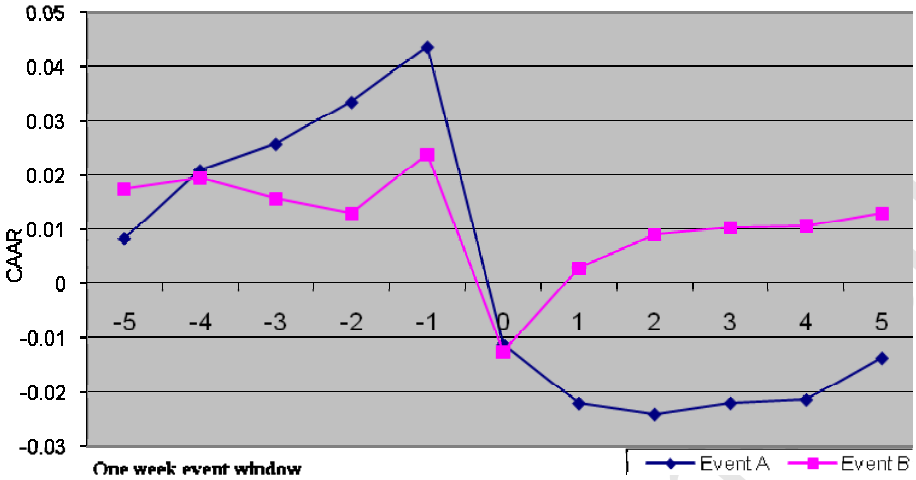

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Figure 2: Cumulative average abnormal returns for the events C and D

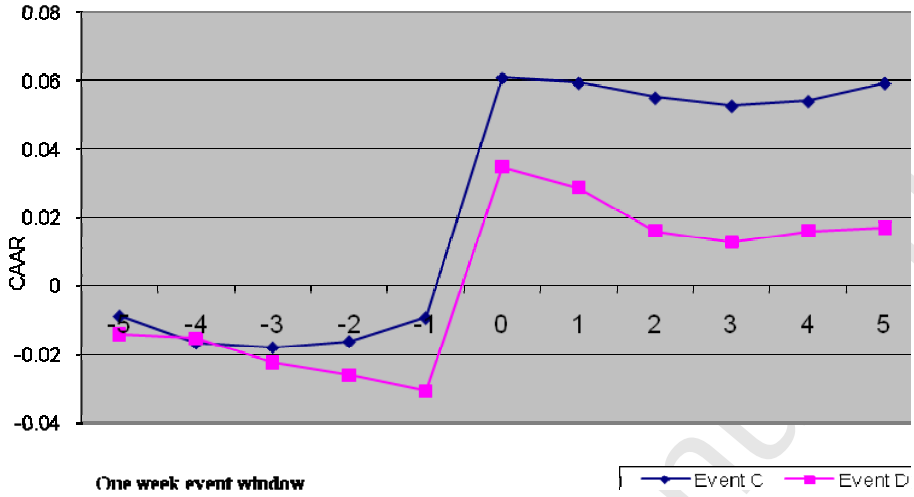

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Figure 3: CAARs for the Events A and B over event window

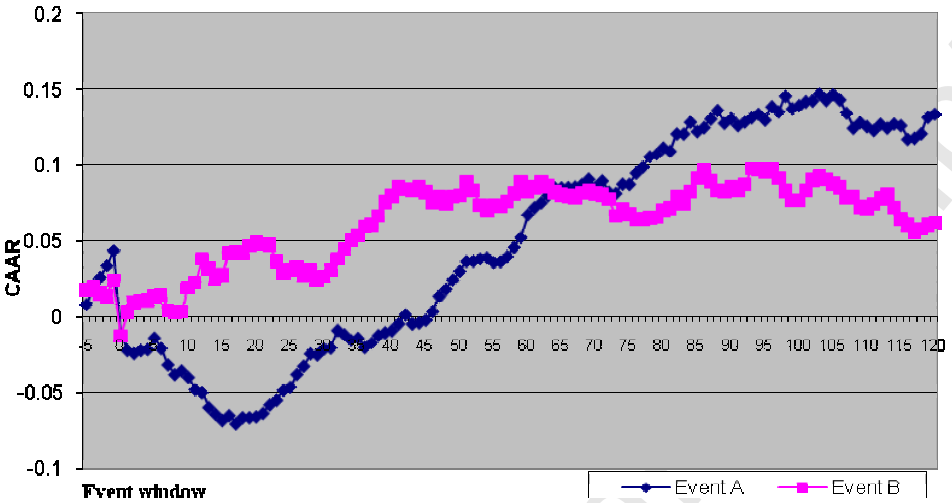

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Figure 4: CAARs for the events C and D over the event window

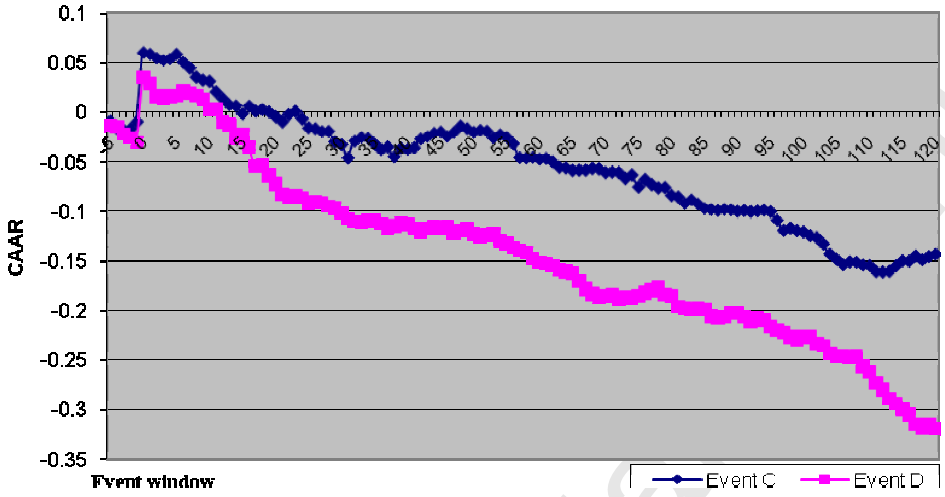

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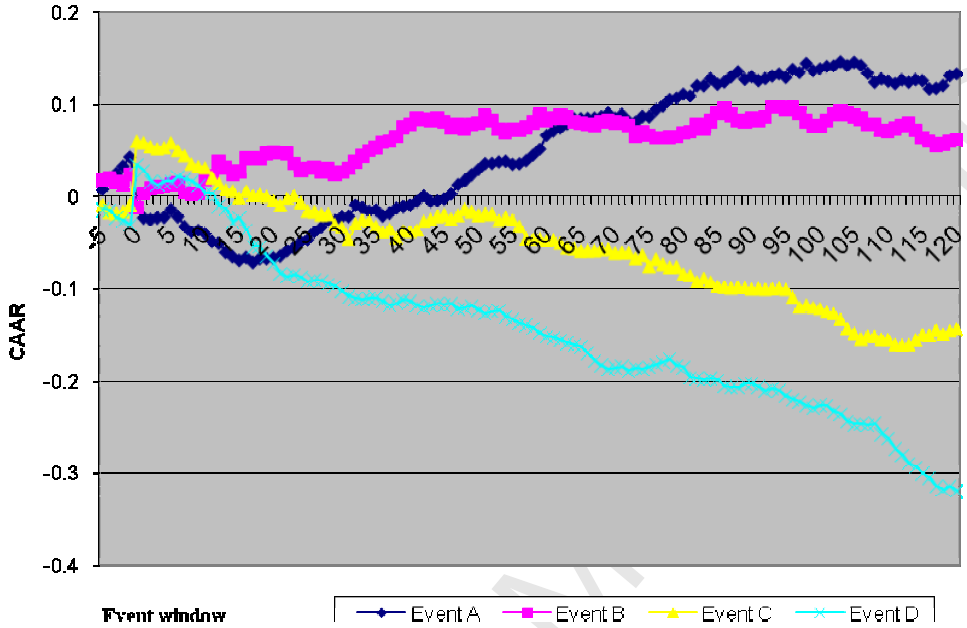
Figure 5: CAARs for all events



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