

Stock Return Behaviour around Earnings Disclosure

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Using event study methodology, this research analyse stock return behaviour around earnings disclosure of 227 firms listed on PSX from 2004 to 2013. Empirical evidence suggests firstly, earnings announcements generate significant returns on the announcement day, declaring the PSX to be a semi-strong inefficient market. Secondly, significant returns were observed in the pre-announcement period reflecting information leakage. Thirdly, significant returns were observed in the post-announcement period suggesting a lag in the investors' response. Fourthly, post-earnings announcement drift anomaly is reported for negative earnings announcements, and fifthly, the results are found to be sensitive to the type of statistical test undertaken.

Key words: *Earnings disclosures, efficient market hypothesis, stock returns, emerging markets*

1. Introduction

Companies are required to disclose their earnings to informed investors on a timely basis pursuant to capital market regulations. A wide range of users use earnings as a key measure of company performance, such as earnings figures that assist investors in valuing a stock, earnings forecasts, and the ability of a management to deliver value to its investors (Mlonzi, Kruger, & Nthoesane, 2011). This emphasises the importance of earnings in the capital market, and has been an area of consistent interest to academia over the last few decades. Both developed (See Bai & Qin, 2015; Tucker, 2013; Wael, 2004) and developing market studies (see Ganguli, 2010; Kong & Taghavi, 2006; Muhammad Azeem, Ali, & Muhammad, 2012) have overwhelmingly supported the information content of earnings announcements and their

relationship with stock returns. However, no consensus has been reached about the investor's ability to earn significant returns in response to an earnings announcement.

The answer to this lies in understanding the efficient market hypothesis. As Fama (1970) asserts, an efficient market stock price will reflect any information that is related to the valuing of stock. Fama further classified the efficient market into three categories: weak form, semi-strong form and strong form. The weak form of efficient market hypothesis asserts that stock prices follow a random course and wholly reflect the past information related to the stock. Thus, it is not possible to earn significant returns by predicting future prices on the basis of past trends. The semi-strong form of efficient market (Lindhal and Schadewitz, 2018) implies that the stock prices reflect not only past, but also all available public information such as company financial statements, company fundamentals etc. This therefore implies that any company-related information will immediately be reflected in the stock prices on its release, depriving investors from significant earnings. A strong form of market efficiency implies that stock prices reflect not only public but also private information related to it. This thereby maintains that investors with access to private or public information will not be able to achieve super returns. Grossman and Stiglitz (1980) argue that a strong form of market efficiency is almost non-existent in the real world.

Research suggests that stock are traded at a competitive level if capital markets operate efficiently (Opong, 1995). If this is the case, the market will expand since investors will know that shares will be traded at fair price. Similarly, managers would be able to generate funds through the financial market at a cost reflecting the actual risks associated with business. An efficient market is therefore important, not only for individual investors but also for company managers.

In last two decades, however, several anomalies have been reported that gained the attention of academicians and practitioners alike. Research provided strong evidence against an efficient market in the form of overreaction (Piccoli, Chaudhury, & Souza, 2017; Werner & Thaler, 1987) and under-reaction (Bernard & Thomas, 1989; Forner, Sanabria, & Marhuenda, 2009; Liu, Strong, & Xu, 2003) of stock to public announcements, a tendency towards valued stock (Basu, 1977; Carpenter, 2015; Hanauer & Linhart, 2015) and small-sized company stock (Atiase, 1985; J. Chen, Leong Kan, & Anderson, 2007) to provide super returns, the outperformance of past winner stock against past loser stock (Carpenter, 2015; Galariotis, Holmes, & Ma, 2007; Jegadeesh & Titman, 1993) and neglected stock against prominent stock (Akhter, Butt, Chaudhary, & Kiyani, 2015; Akkoc, Kayali, & Ulukoy, 2009; Beard & Sias, 1997) and the ability of stock to generate significant returns in the month of January (Guler, 2013; Rozeff & Kinney, 1976). In addition, there are studies (Givoly & Palmon, 1982; Savor & WILSON, 2016) that associate early (late) earnings announcements with high (low) abnormal returns. In short, empirical literature has provided compelling evidence against the efficiency market hypothesis concept of gaining no significant returns.

Nevertheless, Fama (1998) proved that many of the reported anomalies are the result of incorrect estimation models adopted for generating expected returns and risk adjustment estimators. Proponents of behavioural finance disagree, claiming that investors act irrationally and that their actions are based on the individual psychology that causes market inefficiency. However, Hatemi-J (2002) disagrees with this, and argues that no consensus has been reached among researchers on the efficiency of capital markets, especially in the case of emerging markets. The rationale may be derived from the fact that emerging markets are in the developmental stage (weak corporate governance, insider trading and lack of data availability), which could have implications in relation to maintaining market efficiency. One interesting question is whether a market that is efficient has a semi-strong form of efficiency. The aim of this study is therefore to examine the sensitivity of stock prices against the public announcement of earnings. This will help us to understand whether earnings announcements convey price-responsive information to investors or not. Moreover, the rationale for undertaking this study stems from the limited literature available on the efficient market hypothesis in the context of the Pakistan stock market. In addition, existing studies (such as Iqbal & Farooqi, 2011; Khan, 2011; Qureshi, Abdullah, & Imdadullah, 2012) lack methodological depth (such as the use of one or no statistical tests), thus necessitating further examination of stock return behaviour around earnings announcements. It is also noteworthy that this study is unique in terms of methodology as three statistical techniques (student t-test, standardized t-test and Wilcoxon sign rank test) are applied to test the significance of abnormal returns. Thus, this paper will not only contribute in terms of literature, but also to the selection of methodology available for testing market efficiency.

In order to achieve the objective of this study, we have employed event study methodology to measure the deviation of the market to the unexpected component of earnings announcements. Two return generating models (market model and market adjusted return model) are employed to estimate the expected returns and three statistical tests (two parametric and one non-parametric) are used to test the significance of unexpected portion of the realised return. The analysis of the results suggests that the PSX lacks a semi-strong form of market efficiency, along with the existence of information leakage in the pre-announcement period and significant correction of stock returns after earnings announcements. The study suggests that investors can earn significant returns through short selling both on the event day and in the period following the announcement. Furthermore, the results also suggest that the financial regulatory authority of Pakistan should review the listed companies' announcement procedures in order to control the possible leakage of information.

2. Methodology

We employed event study methodology to investigate the abnormal returns behaviour around earnings announcements. Event study methodology is considered a powerful tool to examine the financial impact associated with an economic news announcement (Sithipongpanich,

2011). It was first introduced by Ball and Brown (1968) and Fama et al (1969), whom studies are considered as most “significant investigation of the relationship between stock prices and economic events” (Strong, 1992, p. 533). Since then the event study method has been widely used (see Kong and Taghavi, 2006; Cotter, 1997; Brown and Kennelly, 1972), therefore there is little controversy about its statistical properties (Madum, 2008). We have selected a moderate event window of 41 days, with ten days before (t_{-10}) and thirty days after the announcement day (t_{30}) (as selected by C. R. Chen, Wuh Lin, & Sauer, 1997). The rationale for selecting a moderate event window is to avoid the complexities involved in analysing a long event window and a short event window. The rationale for selecting a pre-event window (t_{-10}) is that information may be absorbed by the market prior to the events (Khan, 2011). The need for the post-event window of thirty days (t_{30}) is justified in terms of the uncertainty about the impact of an earnings announcement and the time the market may take to stabilise after the announcement (Kothari, Lewellen, & Warner, 2006).

Furthermore, to assess the event impact on stock returns, we analysed the behaviour of stock returns in connection with earnings announcements. This is achieved by measuring abnormal returns over a 41-day event window (t_{-10}, t_{30}), where an abnormal return is calculated by subtracting the actual return that a share earned from the normal/expected return that a share would have earned if no earnings were announced (MacKinlay, 1997). The actual share return is calculated using a logarithmic approach, because logarithmic returns normalise data, which conforms to the assumption of standard statistical techniques (Corrado & Truong, 2008). The return on the market is estimated on daily basis from the PSX100 index, which is used as a proxy for the market index. The reason for using PSX100 index as a proxy for market return is that it represents the most tradable stock in the PSX and is pivotal in deciding market behaviour. We used daily share returns to examine the impact of earnings announcements on stock return rather than weekly and monthly shares because daily data permits a more precise measurement of the variability arising from daily price movement as a result of announcements (Brown & Warner, 1985). The advantages of using daily data are quite clear, since in the case of long-term returns (weekly or monthly), there is more chance of other events occurring during the period under study. To counter the assumption of non-normality in daily data (Kothari & Warner, 1997), we employed both parametric and non-parametric tests to examine the event impact, because normality assumption is not required in non-parametric tests (Corrado & Truong, 2008). As regards autocorrelation, the study ensured that there was no clustering of earnings announcements, a condition sufficient to compensate for the absence of cross-sectional correlation (MacKinlay, 1997).

2.1. Return estimation models

The study adopted the market model and market-adjusted return model to estimate the expected returns. The reason for selecting these two simple models rather multi factor model is the non-availability of data, a common phenomenon of developing capital markets. This adoption of

two return generating models make the study novel than other studies, who employed single return generating model, for testing market efficiency. The market model uses selected stock and the relevant market index to determine the expected return if the event has not occurred. The estimation period for calculating the parameter α and β is set at 120 days, which ends ten days prior to the event date (t_{-131} to t_{-11}). In order to calculate unbiased estimators for the market model, the study has selected actively traded unrelated firms of all sizes, and removed observations of non-active trading that took place during the event window (Binder, 1998). Secondly, the study also employed another model called the market-adjusted return model to achieve more robust findings. In accordance with Brown and Warner (1980), the model assumes that each stock has the same systematic risk as the market with coefficient $\alpha_i = 0$ and $\beta_i = 1$, and therefore the return on stock is expected to be the same as the market return.

2.2. Statistical test of abnormal returns

After estimating the abnormal returns, we assessed their magnitude and statistical significance. For this purpose, the abnormal return acquired from each model is the average across the firms for each day of the event window. This was moreover carried out to address Fama's (1998) doubt that the daily average abnormal return reflects the actual return realized by investors, because it takes investors time to adjust their investment position against any emerging news. The study aggregates the average abnormal return across different time periods, which are t_{-10} to t_{30} , t_0 to t_{10} , t_0 to t_{20} and t_0 to t_{30} . The significance of abnormal returns is tested using parametric and non-parametric tests in order to achieve more robust findings. The parametric tests are computed using the methods of Brown and Warner (1985) and Patell (1976), whereas the non-parametric test is computed as the standard Wilcoxon signed rank test.

2.3. Data

A sample of 259 firms of various types and size were selected and analysed over the period from 2004 to 2013. After screening for delisted and merged firms, however, the sample size was reduced to 227 firms representing 69 per cent of the total listed market capital. The final sample is comprised of a wide range of companies; the largest number of firms that got shortlisted were from personal goods (43) followed by construction and material (25) and commercial banks (15) whilst the smallest number is from Media (1), software and computer services (1), support services (1) and real estate investment (1) as can be seen in appendix. A visual inspection of table 5.1 indicates that the oil and gas sector has the highest market capitalisation (US \$14270.4 millions) while leisure goods have the lowest market capitalisation (US \$3.134millions). The study sample consisted of 227 firms that represents 69% of the total listed market capital of PKRS 6056506.03 million (app. USD60565 million) and represents 40% of 560 firms listed on the KSE as of December 31st, 2013. The shortlisted firms generated 2,013 earnings observations over the period from 2004 to 2013. The data was then screened for thin trading, a major source of autocorrelation, which ended up further reducing the

observations to 1,794 earnings announcements. The reason for selecting annual earnings announcements was the availability of the announcement dates for most of the firms listed on the PSX. Moreover, the observations are also segregated on the basis of types of earnings into positive, negative and no-change earnings groups. This segregation was made to fulfil one of the assumptions of event methodology, which maintains that the event should be clearly unanticipated. The unexpected component of announced earnings is estimated by subtracting the actual earnings from the expected earnings. To measure expected earnings, this study employed the naive time-series model of Foster (1977). This process resulted in the generation of 852 positive news announcements, 501 negative news announcements, 286 no-news announcements. One hundred and fifty-five (155) earnings announcements could not be categorised due to lack of data.

2.4. Research hypothesis

The objective of the study is to investigate the impact of earnings announcements on the stock returns of firms listed on the PSX in the context of a semi-strong form of market efficiency. To achieve this objective, a conventional event study methodology has been employed. The average abnormal return is useful for analysing the impact of the event on the market in general, since individual stocks are more exposed to other factors than the event itself, resulting in higher variance and wrong signification of average abnormal returns (Brown & Warner, 1985; Campbell & Limmack, 1997). However, numerous studies (Bernard & Thomas, 1989; 1990) claim that investors time the adjustment of their investment position against any emerging news. For this reason, the study also measures the post-announcement cumulative abnormal returns and tests it for statistical significance. Since examining the financial disclosure impact on stock returns requires hypothesising the relationship between the information (Sutyurin et al., 2019) disclosed and the changes in stock prices, two main hypotheses have been developed that will be tested to meet the objective of the study:

H1: Earnings announcements carry information and result in the generation of significant average abnormal returns on an announcement day, therefore AAR_t is not equal to Zero

H1a: Positive earnings announcements result in the generation of significant positive average abnormal returns on an announcement day, therefore $+AAR_t$ is not equal to Zero

H1b: Negative earnings announcements result in the generation of significant negative average abnormal returns on an announcement day, therefore $-AAR_t$ is not equal to Zero

H1c: No-news earnings announcements result in the generation of no significant average abnormal returns on an announcement day, therefore AAR_t is equal to Zero

H2: Stock prices fail to immediately reflect the earnings news and result in the generation of significant abnormal returns over the post-announcement period, therefore $CAAR_{t_1,t_2}$ is not equal to Zero

3. Empirical Findings

3.1. Stock returns around different types of earnings announcements

Table-I shows the average and cumulative abnormal returns for the 41-day event window around the earnings announcements. An analysis of Table-I indicates that significant positive and negative average abnormal returns are reported for days t_{-5} , t_0 , t_1 , t_4 , and t_{23} , in the case of the student t-test; for days t_{-5} , t_0 and t_4 , in the case of the standardised abnormal return t-test; and for days t_{-5} , t_0 , t_1 , t_3 , t_4 , and t_{21} , in the case of the Wilcoxon signed rank test. The wide variations in the results suggest data sensitivity to the statistical tests undertaken. Therefore, the study only considers AAR to be significant if it is deemed significant by the parametric (either the student t-test or the standardised abnormal return t-test) and the non-parametric test. Subsequently, the study reported AAR for days, t_{-5} , t_0 and t_4 , as significant for all three statistical tests undertaken. In addition, the results in Table-I show that the highest average and median abnormal returns of 0.260 per cent and 0.108 per cent are recorded for days t_{-5} and t_4 , whereas the lowest average and median abnormal return of -0.410 per cent each is recorded on the announcement day (t_0).

Several conclusions can be drawn from the results described in the previous paragraph. Firstly, the sample stock appears to have a strong negative reaction to the earnings announcements. For example, a significant negative AAR of 0.410 per cent in the case of the market t model and 0.480 per cent in the case of the market-adjusted return model is reported on the event day (t_0). Therefore, the study accepts the first main hypothesis, which states that earnings carry information and result in the generation of significant average abnormal returns on an announcement day ($AAR \neq 0$). However, the question that needs to be asked is whether investors would be able to gain returns in the event of a fall in stock prices reported on the event day. In such case, short sell traders can earn substantial returns, because a short seller can borrow the stock and sell it with the expectation that at the time of stock maturity, the cost of the repurchase of the borrowed stock will be less than the proceeds they will receive from the sale. On the basis of the results, and as short selling is permitted in Pakistan, the study rejects the semi-strong form of market efficiency for PSX, which states that it is not possible to earn significant returns on the basis of public news such as earnings announcements. A possible explanation for significant negative abnormal returns on an event day (t_0) can be drawn from the investors' expectations about the earnings, for example when announced earnings did not meet the investors' expectations causing the market to react negatively and drive stock prices down.

Secondly, the market experienced strong upward movement (the positive average abnormal return) in the pre-announcement period. For example, significant average abnormal returns of 0.210 per cent and 0.220 per cent in the case of the market model, in relation to 0.230 per cent and 0.210 per cent in the case of the market adjusted return models, are recorded for days t_{-8} and t_{-5} . This suggests that the market anticipated the news prior to the official announcement either through information leakage or through timely access to information. This raises serious questions about the performance of the stock market regulatory authority in Pakistan. This is despite the fact that the Security Exchange Commission of Pakistan, which is the regulatory body of the Pakistani stock market, sets stringent penalties for any firm/person involved in the leakage of price-sensitive information before public disclosure. Another possible explanation for the pre-announcement significant abnormal returns stems from the legal requirements of Pakistani firms to inform the stock exchange a week in advance about the agenda of board meetings. It is assumed that as the board meetings agenda reaches the market, it produces speculative activities, which is evident from the recording of a consistent eight-day (from t_{-8} to t_{-1}) positive AAR before the announcement day and subsequent rectification in the form of significant negative AAR on and after the announcement.

Thirdly, the results in Table-I show that the market experienced a significant drop in stock prices after the announcement. For example, significant negative average and median abnormal returns of 0.330 per cent and 0.270 per cent are reported for day t_1 , and 0.380 per cent and 0.260 per cent are reported for day t_4 . The reporting of significant returns in the days following the announcement suggest that the market responded slowly to the earnings news. Specifically, the results show that the AAR for post-announcement days are negative, similar to the AAR on the event day, which indicates that the market may have underreacted to the news, an anomaly widely reported in the literature (e.g. Bernard and Thomas, 1989). However, the validation of underreaction anomalies required empirical testing of the cumulative abnormal return attained on the basis of earnings expectations, and is attained in section 3.5. The reasons for market underreaction could be investors' inability, particularly individual investors, to correctly interpret the earnings and their implications. Moreover, behavioural finance associates this rectification of post-announcement stock prices with irrational investor behaviour, i.e. those who stick to their previous information and do not react to the new information as required.

Fourthly, it can be seen in Table-I that the CAAR experienced a consistent and substantial rise in the days before announcement but becomes volatile after the announcement with no directed trend until day t_{19} . Afterwards, from days t_{20} to t_{28} , a consistent fall is observed in CAAR value. The reporting of significant CAAR on days t_4 , t_3 , t_2 , t_1 and t_0 , suggests an overreaction of the market to the possible leaked information, which is later rectified on and after the announcement day with a largely negative trend in the last portion of the post-event window, thus affirming the AAR results. The results informed the investors that, contradictory to efficient market theory, substantial returns can be gained if they hold investments in sample

stock from day t_{-10} to t_0 . Moreover, the investors can avoid losses if they lay off sample stock until day t_{19} .

In addition, the results obtained through the market-adjusted return model, as presented in Table-I, corroborate the results obtained through the market model. In line with the market model, significant AAR values are reported by the market-adjusted return model, as shown on day t_{-8} t_{-5} t_{-0} t_{+1} t_{+4} t_{+21} and t_{+24} . On the basis of the reported results, we therefore reject the null hypothesis of no significant returns on an announcement day contrary to the claim of the efficient market hypothesis. Moreover, we also confirm the robustness of our findings on the basis of similar results provided by two different return forecast models.

Table-I: Abnormal returns for the full sample (market and market-adjusted return model)

Variables	Market model			Market-adjusted return model		
	AAR (%)	Median (%)	CAAR	AAR (%)	Median (%)	CAAR
-10	-0.096	-0.049	-0.096	-0.134	-0.072	-0.134
-9	-0.039	-0.006	-0.135	-0.075	-0.071	-0.209
-8	0.218*	0.004	0.083	0.231*	0.010	0.022
-7	0.017	-0.002	0.100	-0.034	-0.083	-0.012
-6	0.182	0.062	0.282*	0.135	0.000	0.123
-5	0.225**	0.108*	0.507*	0.214**	0.069*	0.337*
-4	0.267*	0.041	0.774**	0.200	-0.033	0.537*
-3	0.130	0.013	0.904**	0.078	-0.040	0.615**
-2	0.060	-0.064	0.964**	0.066	-0.102	0.681**
-1	0.181	0.019	1.145**	0.159	-0.051	0.840**
0	-0.411**	-0.412*	0.734**	-0.482**	-0.523*	0.358*
1	-0.329*	-0.270*	0.405	-0.386**	-0.347*	-0.028
2	-0.009	-0.097	0.396	-0.063	-0.164*	-0.091
3	0.046	-0.135	0.442	-0.003	-0.201*	-0.094
4	-0.379**	-0.257*	0.063	-0.403**	-0.332*	-0.497
5	-0.098	-0.059	-0.035	-0.129	-0.084	-0.626
6	0.054	-0.007	0.019	-0.020	-0.105*	-0.646
7	0.214*	0.033	0.233	0.152	-0.004	-0.494
8	0.051	-0.051	0.284	-0.023	-0.097*	-0.517
9	-0.095	-0.053	0.189	-0.173	-0.149*	-0.690
10	0.061	-0.027	0.250	0.006	-0.088*	-0.684
11	0.035	-0.024	0.285	-0.059	-0.135*	-0.743
12	0.110	-0.030	0.395	0.072	-0.041	-0.671
13	-0.046	-0.054	0.349	-0.076	-0.073	-0.747
14	-0.135	0.017	0.214	-0.187	-0.031	-0.934
15	0.055	0.013	0.269	-0.041	-0.076	-0.975
16	0.009	-0.003	0.278	-0.081	-0.103*	-1.056
17	0.055	-0.067	0.333	-0.037	-0.105*	-1.093
18	-0.152	-0.038	0.181	-0.262	-0.134*	-1.355*
19	-0.141	-0.093*	0.040	-0.209	-0.154*	-1.564*
20	-0.041	-0.088	-0.001	-0.070	-0.141*	-1.634*
21	-0.137	-0.118*	-0.138	-0.229*	-0.213*	-1.863*
22	-0.075	-0.052	-0.213	-0.160	-0.128*	-2.023*
23	-0.226*	-0.058	-0.439	-0.303*	-0.122*	-2.326*
24	0.057	-0.034	-0.382	-0.037	-0.145*	-2.363*
25	0.109	-0.011	-0.273	0.022	-0.071	-2.341*
26	-0.123	-0.070	-0.396	-0.182	-0.120*	-2.523*

27	-0.096	-0.083	-0.492	-0.140	-0.156*	-2.663**
28	0.114	0.021	-0.378	0.055	-0.052	-2.608**
29	-0.011	0.007	-0.389	-0.109	-0.052	-2.717**
30	-0.063	-0.06	-0.452	-0.145	-0.132*	-2.862**

Note: The Table-I contains abnormal returns around the event window (-10, +30) for a sample of 1,794 observations. P1 represent the student t-test, P2 represents the standardised abnormal return t-test, and P3 represents the Wilcoxon signed rank test. Steric indicates the significance of abnormal return for the day concerned at the P-value of 5 level on a two-tailed basis.

3.2. Stock returns around positive earnings

It is claimed that stock behaviour on an event day is its reaction to the unanticipated part of earnings (MacKinlay, 1997). Considering this, we estimated the performance of positive earnings stock over the event window of 41 days. Table-II demonstrates that significant mean and median abnormal returns are reported for the days t_{-7} , t_{-6} , t_{-4} , t_{-3} , t_1 , and t_4 , in the per cent case of the student t-test; for the days t_{-5} and t_4 , in the case of standardised abnormal return t-test and for the days t_{-5} , t_0 , t_1 , t_3 , t_4 , and t_{20} , in the case of the Wilcoxon signed rank test. Numerous findings can be drawn from the results shown in Table-II. Firstly, a significant positive mean and median abnormal return of 0.230 per cent and 0.170 per cent are reported on day t_{-5} , which suggests that the Pakistan stock market has anticipated the news five days prior to public release. Moreover, it suggests that the substantial values for the whole sample on day t_{-5} in Table-I are due to positive earnings news. There are several possible explanations for pre-announcement abnormal returns. One is that information may have been leaked to a few selected investors prior to public announcements who, in turn, traded on that information and gained significant returns, or on receiving the agenda of the board meeting, which the firms are obliged to convey to the Pakistan stock market a week before the change takes place. The speculators, followed by uninformed traders, may have stimulated the market.

Secondly, contrary to general expectation, insignificant average return is reported on the announcement day (t_0) with a negative value of 0.180 per cent in Table-II. However, the median abnormal return is found to be significant, with a negative value of -0.260 per cent. This suggests that either the data is sensitive to the type of statistical tests undertaken or that the average abnormal return is influenced by a few large values. The results prove that the data is sensitive to the model applied since a significant abnormal return is reported on the event day in the case of the market-adjusted return model. An analysis of the results shown in Table-II imply that positive earnings announcements generate significant negative returns on the event day in contrast to the hypothesis. Therefore, we reject the information content hypothesis that positive earnings generate significant positive returns on an announcement day. However, the results maintain that the PSX is a semi-strong inefficient market, as significant earnings can be achieved through short selling. A possible explanation for the negative reaction to the positive earnings can be drawn from the limitations in the methodology, such as the study using



the naive expectation model for measuring expected earnings, which may have produced a biased sample.

Thirdly, the stock showed random behaviour in post-announcement periods, such as significant downward adjustments being reported in the first week after announcement, followed by minor positive adjustments and then a return to downward adjustments. This indicates that there is confusion in the stock market about the earnings impact. In other words, the investors failed to agree about the interpretation of earnings. The reason for this is that some investors are too conservative to change their beliefs about the firms and do not react to the new information. They expect that stock will perform in the same manner as it has done in the past. Another feature of Table-II is the substantial rise in the CAAR before the announcement, with significant positive values on days t_{-4} , t_{-3} , t_{-2} , t_{-1} and t_0 , for both the statistical tests undertaken. However, after the announcement, the CAAR experienced a downward trend from days t_{13} to t_{28} but with no significant value. The significant positive CAAR in the pre-announcement period may have been caused by the investors' over-confidence about their private information, while the reversal of CAAR value in the late post-event period suggests an under-estimation of disclosed earnings about stock prices to investors (Daniel, Hirshleifer, & Subrahmanyam, 1998). Thus, the study assumes that investors' sentiment played a key role in setting the direction of the Pakistan stock exchange. The results also informed the investors that by holding investment in sample stock from day t_{-1} , they can earn a significant return of 1.300 per cent, and that divesting in sample stock until day t_{18} can save them from losses. Thus, overall, the findings relating to positive earnings stand against the notion of semi-strong market efficiency, which advocates that any news will be immediately absorbed into stock prices leaving no space for investors to gain abnormal returns.

Table-II: Abnormal returns around positive news

Variables	Market model			Market-adjusted return model		
	AAR (%)	Median (%)	CAAR	AAR (%)	Median (%)	CAAR
-10	0.100	0.030	0.100	0.046	-0.070	0.046
-9	0.100	0.025	0.200	0.060	-0.151	0.106
-8	0.158	0.016	0.358	0.142	-0.092	0.248
-7	-0.237*	-0.083	0.121	-0.249*	-0.057	-0.001
-6	0.228*	0.067	0.349	0.170	0.045	0.169
-5	0.227**	0.168*	0.576*	0.300**	-0.046*	0.469
-4	0.331*	0.129	0.907**	0.284*	-0.193	0.753**
-3	0.314*	0.039	1.221**	0.282*	-0.175	1.035**
-2	-0.001	-0.047	1.22**	0.066	-0.094	1.101**
-1	0.077	-0.054	1.297**	0.079	-0.081	1.180**
0	-0.176	-0.260*	1.121**	-0.22*	-0.768*	0.960**
1	-0.315*	-0.294*	0.806*	-0.312*	-0.484*	0.648
2	-0.087	-0.101	0.719	-0.104	-0.273	0.544
3	0.158	-0.198*	0.877*	0.140	-0.146*	0.684
4	-0.318**	-0.248*	0.559	-0.367**	-0.342*	0.317
5	-0.210	-0.128	0.349	-0.215*	-0.085*	0.102
6	0.019	-0.063	0.368	-0.043	-0.002*	0.059
7	0.142	0.004	0.510	0.143	-0.044	0.202
8	0.084	-0.014	0.594	0.035	-0.073	0.237
9	0.035	-0.071	0.629	0.091	-0.312	0.328
10	-0.021	-0.022	0.608	-0.073	-0.055	0.255
11	-0.051	-0.035	0.557	-0.125	-0.143	0.130
12	0.031	-0.007	0.588	0.020	-0.087	0.150
13	-0.124	-0.046	0.464	-0.153	-0.028	-0.003
14	0.046	0.029	0.510	-0.001	-0.114	-0.004
15	-0.135	-0.101	0.375	-0.218*	0.056*	-0.222
16	-0.100	-0.067	0.275	-0.149	0.010	-0.371
17	-0.133	-0.078	0.142	-0.167	-0.216	-0.538
18	-0.125	-0.117	0.017	-0.238*	0.043*	-0.776
19	-0.192	-0.093	-0.175	-0.160	-0.268	-0.936
20	-0.150	-0.140*	-0.325	-0.173	-0.029*	-1.109
21	-0.101	-0.047	-0.426	-0.098	-0.259	-1.207*
22	0.044	-0.020	-0.382	0.029	-0.071	-1.178*
23	-0.191	-0.037	-0.573	-0.278*	-0.107*	-1.456*
24	-0.074	-0.085	-0.647	-0.100	-0.227*	-1.556*
25	-0.098	-0.046	-0.745	-0.099	-0.213	-1.655*
26	-0.080	-0.101	-0.825	-0.115	-0.173*	-1.77*
27	-0.149	-0.101	-0.974	-0.195	-0.185*	-1.965*
28	0.043	-0.022	-0.931	0.002	-0.100	-1.963*
29	-0.008	0.048	-0.939	-0.115	-0.011	-2.078*
30	0.081	-0.047	-0.858	0.010	-0.136	-2.068*

Note: One-sample student t-test (P1), Standardised abnormal return t-test (P2) and Wilcoxon signed rank test (P3): test of mean = 0.000 vs. not = 0.000 and test of median = 0.000 vs. median not = 0.000, N=852. Steric indicates the significance of abnormal return for the day concerned at the P-value of 5.000 per cent level on a two-tailed basis.

3.3. Stock returns around negative earnings

It can be seen from Table-III that significant negative mean and median abnormal returns have materialised on the announcement date (t_0) for both the market and market-adjusted return model. Therefore, we accept the information content hypothesis (*H1b*) that negative earnings announcements generate significant negative returns on an event day (t_0). The results point to the sensitivity of the PSX to the negative news as the market generated a significant negative AAR. Furthermore, the study assumes that the presence of significant mean and median abnormal returns on an event day (t_0) for the whole sample is due to the negative earnings announcements.

The results reported in Table-III show that there is a consistent decline in stock returns over the post-announcement period, with a significant dip recorded on days t_4 , t_{15} and t_{23} , and this is further confirmed by declining cumulative returns in the post-even window. This suggests that the market is slow in adjusting the stock price against the disclosed information and indicates an underreaction phenomenon.

The results have several possible implications. Firstly, investors take time to change their beliefs and accept the actual information (Barberis, Shleifer, & Vishny, 1998). Secondly, investors may lack timely access to information due to communication issues such as the fact that Pakistanis face daily eight-hour load shedding, but this factor is weak, since there are plenty of means to gain access to announcements. Thirdly, there could be a strong influence of unknown variables, as the movement of stock prices relies heavily on many factors aside from earnings news. Another feature of the results reported in Table-III is that most of the pre-event abnormal returns are positive but not significantly different to zero, which is affirmed from the positive cumulative returns for the pre-announcement period. This suggests that investors failed to anticipate the negative news, which could be due to the firms' strict adherence to the insider trading rules, including in relation to negative news samples.

Table-III: Abnormal returns around negative news

Variables	Market model			Market-adjusted return model		
	AAR (%)	Median (%)	CAAR	AAR (%)	Median (%)	CAAR
-10	0.023	0.012	0.023	-0.035	-0.418	-0.035
-9	-0.124	-0.020	-0.101	-0.197	-0.089	-0.232
-8	0.145	0.029	0.044	0.152	0.003	-0.080
-7	0.056	-0.108	0.100	-0.045	0.217	-0.125
-6	0.222	0.015	0.322	0.068	-0.242	-0.057
-5	0.246	0.206	0.568	0.091	-0.006	0.034
-4	-0.135	0.071	0.433	-0.216	0.079	-0.182
-3	-0.115	0.019	0.318	-0.335	-0.011	-0.517
-2	0.178	-0.030	0.496	0.137	-0.092	-0.380
-1	0.240	-0.094	0.736	0.166	0.067	-0.214
0	-0.520**	-0.335*	0.216	-0.647**	-1.100*	-0.861
1	-0.268	-0.302*	-0.052	-0.303	-0.377*	-1.164
2	-0.118	-0.159	-0.170	-0.198	-0.111*	-1.362*
3	-0.119	-0.221	-0.289	-0.073	0.081	-1.435*
4	-0.410*	-0.309*	-0.699	-0.410*	-0.234*	-1.845*
5	0.075	-0.141	-0.624	-0.060	-0.036	-1.905*
6	0.241	-0.138	-0.383	0.159	-0.048	-1.746*
7	0.197	0.031	-0.186	0.106	0.131	-1.640*
8	0.129	-0.029	-0.057	0.067	-0.082	-1.573*
9	-0.220	-0.051	-0.277	-0.515*	0.200*	-2.088*
10	-0.009	-0.087	-0.286	-0.100	0.062	-2.188*
11	0.245	-0.124	-0.041	0.163	0.090	-2.025*
12	-0.234	-0.006	-0.275	-0.187	0.045	-2.212*
13	0.017	-0.063	-0.258	-0.061	-0.230	-2.273*
14	-0.370	0.000	-0.628	-0.434	0.018	-2.707*
15	0.526**	-0.155*	-0.102	0.375	-0.072	-2.332*
16	0.126	-0.193	0.024	0.026	-0.056	-2.306*
17	-0.099	-0.090	-0.075	-0.160	0.057*	-2.466*
18	0.053	-0.244	-0.022	-0.005	-0.052	-2.471*
19	-0.042	-0.027	-0.064	-0.315	-0.187*	-2.786*
20	0.089	-0.211	0.025	0.013	-0.031	-2.773*
21	-0.276	-0.090*	-0.251	-0.371	-0.119*	-3.144*
22	-0.038	-0.018	-0.289	-0.059	-0.076	-3.203*
23	-0.621**	-0.132	-0.910	-0.608**	-0.002	-3.811**
24	0.074	-0.147	-0.836	-0.068	0.100*	-3.879**
25	0.046	-0.075	-0.790	-0.151	0.015*	-4.030**
26	-0.218	-0.122	-1.008	-0.342	0.082*	-4.372**
27	-0.115	-0.176	-1.123	-0.159	0.074	-4.531**
28	-0.061	-0.069	-1.184	-0.234	0.009	-4.765**
29	0.055	-0.016	-1.129	0.037	-0.030	-4.728**
30	-0.116	-0.091	-1.245	-0.210	0.065	-4.938**

Note: One-sample student t-test (P1), Standardised abnormal return t-test (P2) and Wilcoxon signed rank test (P3): Test of mean = 0.000 vs. not = 0.000 and test of median = 0.000 vs. median not = 0.000, N=501. Steric indicates the significance of abnormal returns for the day concerned at the P-value of 5.000 per cent level on a two-tailed basis.



3.4. Stock returns around no-new earnings

Table-IV below illustrates the unexpected share price returns for the no-news earnings announcement around the 41-day event window. A careful analysis of Table-IV suggests that, in line with the general expectation, no-new earnings generate insignificant returns on an announcement day for both return estimation models. Therefore, the study accepts the information content hypothesis (*H_{1c}*) that no-new earnings result in no significant returns in line with the findings of MacKinlay (1997). Furthermore, insignificant AAR on the majority of post-announcement days suggests that the sample stocks have adjusted to a large extent on the event day. Elsewhere, the cumulative abnormal returns mentioned in Table-IV is found to be insignificant throughout the event window. In particular, they follow a random course, with both positive and negative results for the event period. The results therefore suggest that the sample stocks' reaction to the no-new earnings is not characterised by any systematic pattern.

Table-IV: Abnormal returns around no news

Variables	Market model			Market-adjusted return model		
	AAR (%)	Median (%)	CAAR	AAR (%)	Median (%)	CAAR
-10	-0.849	0	-0.849	-0.159	-0.155	-0.159
-9	-0.436	-0.042	-1.285	-0.138	-0.261	-0.297
-8	0.607	-0.009	-0.678	0.212	0.029	-0.085
-7	0.796	0.050	0.118	0.113	-0.071	0.028
-6	-0.107	0.133	0.011	-0.150	-0.221	-0.122
-5	0.167	0.106	0.178	0.372	0.230	0.250
-4	0.875	-0.076	1.053	-0.011	-0.049	0.239
-3	0.069	-0.002	1.122	0.175	-0.004	0.414
-2	-0.091	-0.064	1.031	0.264	-0.046	0.678
-1	0.178	0.076	1.209	0.318	0.097	0.996
0	-0.195	-0.626	0.014	-0.213	-0.356	0.783
1	-1.015*	-0.407	-1.001	-0.216	-0.271	0.567
2	0.196	-0.183	-0.805	0.121	0.085	0.688
3	0.082	-0.158	-0.723	0.062	-0.270	0.750
4	-0.464	-0.263	-1.187	-0.601	-0.652*	0.149
5	-0.308	0.017	-1.495	0.157	0.105	0.306
6	0.089	0.158	-1.406	-0.155	-0.188	0.151
7	0.547	0.072	-0.859	-0.062	-0.096	0.089
8	-0.032	-0.022	-0.891	-0.126	-0.274*	-0.037
9	-0.409	-0.062	-1.300	-0.275	-0.300*	-0.312
10	0.630	-0.007	-0.670	0.053	-0.048	-0.259
11	-0.047	-0.050	-0.717	0.029	-0.208	-0.230
12	0.881*	-0.130	0.164	0.028	-0.067	-0.202
13	0.064	0.059	0.228	0.151	0.045	-0.051
14	-0.480	-0.032	-0.252	0.000	-0.046	-0.051
15	0.068	0.286	-0.184	-0.077	-0.154	-0.128
16	0.014	0.100	-0.170	-0.277	-0.212	-0.405
17	0.655	-0.150	0.485	-0.039	-0.105	-0.444
18	-0.703	0.106	-0.218	0.167	-0.002	-0.277
19	-0.007	-0.013	-0.225	-0.526	-0.404*	-0.803
20	0.047	0.012	-0.178	-0.018	-0.194	-0.821
21	-0.003	-0.268	-0.181	-0.158	-0.221	-0.979
22	-0.395	-0.052	-0.576	-0.225	-0.232	-1.204
23	0.164	-0.110	-0.412	-0.012	-0.062	-1.216
24	0.461	-0.011	0.049	-0.200	-0.208	-1.416
25	0.415	-0.084	0.464	0.178	-0.045	-1.238
26	0.010	-0.072	0.474	0.224	0.008	-1.014
27	0.069	-0.110	0.543	-0.240	-0.286*	-1.254
28	0.425	0.048	0.968	0.007	-0.094	-1.247
29	-0.045	-0.009	0.923	0.147	-0.087	-1.100
30	0.055	-0.063	0.978	-0.099	-0.067	-1.199

Note: One-sample student t-test (P1), Standardised abnormal return t-test (P2) and Wilcoxon signed rank test (P3): Test of mean = 0.000 vs. not = 0.000 and test of median = 0.000 vs. median not = 0.000, N=268. Steric indicates the significance of abnormal returns for the day concerned at the P-value of 5 per cent level on a two-tailed basis.

3.5. Post-earnings announcements drift

In this section, we tested the Pakistan Stock Exchange for the post-earnings announcement drift anomaly (PEAD). The PSX was tested for the PEAD anomaly on the basis of the results given in Tables-I, II, and III, which show significant returns in the days after announcements.

The results shown in Table-V indicate that positive news generated a negative CAAR for all three event windows, with different values produced by the market model and market-adjusted return model. In the case of the market model, the CAAR for the event windows of ten and twenty days are only reported to be significant by the student t-test. On other hand, in the case of the market-adjusted return model, the CAAR for the event window of ten days is reported to be significant by the student t-test, while the CAAR for the event windows of twenty and thirty days are reported to be significant by both the student t-test and the standardised abnormal return test. This means that the data is sensitive to the type of statistical test undertaken, and that the CAAR is sensitive to the type of model employed for estimating expected returns.

Table-V: Cumulative average abnormal return for positive, negative and no-new earnings

Positive news						
Event window	Market model			Market-adjusted return model		
	CAAR (%)	P1	P2	CAAR (%)	P1	P2
CAAR _{t₀,t₁₀}	-0.700	0.060	0.320	-0.900*	0.007	0.290
CAAR _{t₀,t₂₀}	-1.600*	0.001	0.990	-2.300**	0.000	0.005
CAAR _{t₀,t₃₀}	-2.200*	0.001	0.370	-3.200**	0.000	0.002
Negative news						
Event window	Market model			Market-adjusted return model		
	CAAR (%)	P1	P2	CAAR (%)	P1	P2
CAAR _{t₀,t₁₀}	-1.000	0.107	0.410	-2.000*	0.001	0.070
CAAR _{t₀,t₂₀}	-0.700	0.420	0.380	-2.600**	0.003	0.017
CAAR _{t₀,t₃₀}	-2.000*	0.040	0.620	-4.700**	0.000	0.000

Note: CAAR represents the cumulative average abnormal return, P1 is the student t-test and P2 is the standardised abnormal return t-test. A two-tailed test is applied and is considered significant at the P critical value of 0.050 or less. Steric indicates the significance of abnormal returns for the day concerned at the P-value of 5.000 per cent level on a two-tailed basis.

It can be seen from Table-V that for the market model, the value of CAAR dropped from -0.700 per cent to -2.200 per cent with an increase in the event period from 10 days to 30 days, and for the market-adjusted return model, the value of CAAR dropped from -0.900 per cent to -3.200 per cent with an increase in the event period from 10 days to 30 days. This suggests a consistent and visible decline in the value of sample stock in the post-announcement period. Therefore, the study rejects the post-earnings announcement drift anomaly (*H2*) for positive earnings stock, as the sample stock return drifts in a negative direction. Despite this, the study cannot deem the PSX to be semi-strong market efficient because the CAAR is statistically

significant for the event window of twenty (t_0 to t_{20}) and thirty days (t_0 to t_{30}). In other words, the results informed the investors that, in the case of positive earnings, buying and holding shares between days t_0 and t_{30} can cause them significant losses, while short sell positions can earn them substantial returns.

The negative returns reported in relation to positive news by sample firms indicates a number of factors to be considered. Firstly, there may be some exceptionally bad information beyond earnings for the sample stock or the country, which may push down the stock prices (Johnson and Zhao, 2012). Secondly, the methodology limitations, such as the use of incorrectly-specified models for calculating expected returns may have produced inaccurate results (Kothari et al., 2006). Thirdly, the results could be the function of the investors' sentiments (Barberis et al., 1998). However, whether these explanations can resolve the enigma must be left to future research.

Furthermore, for negative news, the CAAR is shown to be negative for all three event windows but with different values between the market model and market-adjusted return model. For example, Table-V shows that in the case of the market model, significant negative CAAR is reported for the event window of thirty days. On the other hand, in the case of the market-adjusted return model, a significant negative CAAR is reported for all three event windows of ten days, twenty days and thirty days. Likewise, a great difference is reported in the value of CAAR calculated through the market model and the market-adjusted return model. For the market model, the CAAR decreased from -1.000 per cent to -2.000 per cent with an increase in the aggregation period from ten days to thirty days, while for the market-adjusted return model the CAAR decreased from -2.000 per cent to -4.700 per cent with an increase in the aggregation period from ten days to thirty days. The results suggest two main findings. Firstly, the study accepts the existence of the PEAD (H2) anomaly for negative news sample stock, particularly in the case of the market-adjusted return model. Secondly, results are sensitive to the type of model employed for estimating expected returns, as argued by Fama and French (1996), who claim that they may lack consideration for risk and size factors when calculating expected returns.

Overall, on the basis of the results shown in Table-V, the study accepts the second hypothesis, which states that stock fails to reflect the earnings information immediately, resulting in significant returns being produced in the period after announcement, hence $CAAR \neq 0$. Therefore, the semi-strong form of market efficiency for the PSX remains suspended because investors can earn significant returns by taking a short sell position in relation to the sample stock during the post-announcement period.

4. Conclusion

The main conclusion to be drawn from this study is that earnings announcements have a significant impact on the stock returns of the firms listed on the PSX. The analysis of the

empirical results also indicates a number of implications. Firstly, the results indicate that the PSX cannot be defined as having semi-strong efficiency, as significant negative returns are reported on the announcement day (t_0). This means that investors can gain significant returns if they take a short sell position on the sample stock. Secondly, significant positive returns are observed in the pre-announcement period for positive earnings. This implies that the market anticipates the positive earnings prior to public announcement either through more advanced anticipation techniques or through information leakage. The information leakage should be a cause for concern for the Security Exchange Commission of Pakistan and raises questions about its performance. The results are in line with the findings for other emerging markets (such as Fan-Fah, 2004 in Malaysia; Odabasi, 1998 in Turkey etc.), which suggest that emerging markets share similar characteristics (such as weak corporate governance, lack of accountability etc.). Thirdly, significant negative abnormal returns were reported in the post-announcement period in relation to both the positive and negative earnings, an indication of under reaction by investors. The sample stock of positive and negative news was further tested for post-earnings announcement drift. The results only confirmed the existence of PEAD for negative news on the sample stock. However, significant negative cumulative returns were also reported in the case of positive news on the sample stock in contrast to the Bernard and Thomas (1989) findings for US listed stock. This means that the PSX failed to immediately reflect the earnings announcement and lacks the presence of a semi-strong form of market efficiency. In light of result, the sample firms were tested for post-earnings announcement drift anomaly. The results reported significant negative cumulative abnormal returns for the sample stock of both the positive and negative news. However, following the method of Bernard and Thomas, the study only accept the PEAD anomaly for negative earnings. Nevertheless, investors can gain significant returns through short selling in the case of both positive and negative news since significant negative cumulative returns were generated.

Fourthly, the reported results are consistent with the explanation provided by behavioural finance regarding market participants. For example, the existence of PEAD for negative news is in line with Hong and Stein's (1999) explanation suggesting that investors tend to only act on a fraction of the information received privately, while ignoring the actual complete information. However, as more and more information in support of the actual information reaches to the market, investors start to react and adjust their portfolios, causing underreaction in the short term. Likewise, the stock returns' behaviour for positive earnings is in line with Daniel et al., (1998), who suggest that informed investors overreact to private information signals and underreact to public signals due to self-attribution biases. This causes a rise in stock prices in the period before an announcement and a slow correction in stock prices in the period after announcements, as observed in the case of positive earnings. Thus, this study suggests that stock market anomalies could be the outcome of behavioural biasness of investors. Fifthly, the results acquired through the market model corroborate the results obtained through the market-adjusted return model, in line with Brown and Warner's (1985) claim that the two return generating models (the market model, the market-adjusted return models) produce



similar results. This comparative analysis of two return generating model make the study novel than other studies, who employed single return generating model, for testing market efficiency. Sixthly, the data is found to be sensitive to the type of statistical tests undertaken, as the three statistical tests failed to provide similar results. This is especially true of the Wilcoxon signed rank test, which declared returns to be significant on a greater number of days than the student t-test and the Patell test. This affirmed the findings of Brown and Warner (1985) that the normality of data is of less concern when the sample size is large. For this reason, this study only considers those returns classed as significant by at least two statistical tests. The results thereby also assert that future studies should use more than one statistical test to measure the significance of returns. Overall, the study supplements the academia and global investors about the behaviour of stock returns in the emerging Islamic capital market by accessing Journal of East-West Business.



REFERENCES

- Akhter, A., Butt, S., Chaudhary, S., & Kiyani, J. (2015). Neglected Firm Effect and Stylized Equity Returns: Evidence from Pakistan. *International Letters of Social and Humanistic Sciences*, 50, 100-106.
- Akkoc, S., Kayali, M. M., & Ulukoy, M. (2009). The neglected firm effect and an application in Istanbul Stock Exchange. *Banks and Bank Systems*, 4(3), 53-58.
- Atiase, R. K. (1985). Predisclosure Information, Firm Capitalization, and Security Price Behavior Around Earnings Announcements. *Journal of Accounting Research*, 23(1), 21-36.
- Bai, M., & Qin, Y. (2015). Short sales constraints and price adjustments to earnings announcements: Evidence from the Hong Kong market. *International Review of Financial Analysis*, 42, 304-315. doi:10.1016/j.irfa.2015.08.006
- Barberis, N., Shleifer, A., & Vishny, R. (1998). A model of investor sentiment. *Journal of Financial Economics*, 49(3), 307-343. doi:[https://doi.org/10.1016/S0304-405X\(98\)00027-0](https://doi.org/10.1016/S0304-405X(98)00027-0)
- Basu, S. (1977). Investment Performance of Common Stocks in Relation to Their Price-Earnings Ratios: A Test of the Efficient Market Hypothesis. *The Journal of Finance*, 32(3), 663-682. doi:10.2307/2326304
- Beard, C. G., & Sias, R. W. (1997). Is there a neglected-firm effect? . *Financial Analysts Journal*, 53(5), 19-23.
- Bernard, V. L., & Thomas, J. K. (1989). Post-Earnings-Announcement Drift: Delayed Price Response or Risk Premium? *Journal of Accounting Research, Current Studies on The Information Content of Accounting Earnings 1989* 1-36.
- Bernard, V. L., & Thomas, J. K. (1990). Evidence that stock prices do not fully reflect the implications of current earnings for future earnings. *Journal of Accounting and Economics*, 13(4), 305-340. doi:[https://doi.org/10.1016/0165-4101\(90\)90008-R](https://doi.org/10.1016/0165-4101(90)90008-R)
- Binder, J. (1998). The Event Study Methodology Since 1969. *Review of Quantitative Finance and Accounting*, 11(2), 111-137. doi:10.1023/A:1008295500105
- Brown, S. J., & Warner, J. B. (1980). Measuring security price performance. *Journal of Financial Economics*, 8(3), 205-258. doi:[https://doi.org/10.1016/0304-405X\(80\)90002-1](https://doi.org/10.1016/0304-405X(80)90002-1)
- Brown, S. J., & Warner, J. B. (1985). Using daily stock returns: The case of event studies. *Journal of Financial Economics*, 14(1), 3-31. doi:[https://doi.org/10.1016/0304-405X\(85\)90042-X](https://doi.org/10.1016/0304-405X(85)90042-X)
- Campbell, K., & Limmack, R. J. (1997). Long-term over-reaction in the UK stock market and size adjustments *Applied Financial Economics*, 7(5), 537-548. doi:10.1080/096031097333402
- Carpenter, J. N., Lu, F., & Whitelaw, R. F. . (2015). THE REAL VALUE OF CHINA'S STOCK MARKET. *NATIONAL BUREAU OF ECONOMIC RESEARCH 1050 Massachusetts Avenue Cambridge, MA 02138*.
- Chen, C. R., Wuh Lin, J., & Sauer, D. A. (1997). EARNINGS ANNOUNCEMENTS, QUALITY AND QUANTITY OF INFORMATION, AND STOCK PRICE CHANGES.



- Journal of Financial Research*, 20(4), 483-502. doi:doi:10.1111/j.1475-6803.1997.tb00261.x
- Chen, J., Leong Kan, K., & Anderson, H. (2007). Size, book market ratio and risk factor returns: evidence from China A-share market. *Managerial Finance*, 33(8), 574-594. doi:10.1108/03074350710760304
- Corrado, C. J., & Truong, C. (2008). Conducting event studies with Asia-Pacific security market data. *Pacific-Basin Finance Journal*, 16(5), 493-521. doi:<https://doi.org/10.1016/j.pacfin.2007.10.005>
- Daniel, K., Hirshleifer, D., & Subrahmanyam, A. (1998). Investor Psychology and Security Market Under- and Overreactions. *The Journal of Finance*, 53(6), 1839-1885. doi:doi:10.1111/0022-1082.00077
- Fama, E. F. (1970). Multiperiod Consumption-Investment Decisions. *The American Economic Review*, 60(1), 163-174.
- Fama, E. F. (1998). Market efficiency, long-term returns, and behavioral finance¹The comments of Brad Barber, David Hirshleifer, S.P. Kothari, Owen Lamont, Mark Mitchell, Hersh Shefrin, Robert Shiller, Rex Sinquefeld, Richard Thaler, Theo Vermaelen, Robert Vishny, Ivo Welch, and a referee have been helpful. Kenneth French and Jay Ritter get special thanks.¹ *Journal of Financial Economics*, 49(3), 283-306. doi:[https://doi.org/10.1016/S0304-405X\(98\)00026-9](https://doi.org/10.1016/S0304-405X(98)00026-9)
- Fama, E. F., & French, K. R. (1996). Multifactor Explanations of Asset Pricing Anomalies. *The Journal of Finance*, 51(1), 55-84. doi:doi:10.1111/j.1540-6261.1996.tb05202.x
- Forner, C., Sanabria, S., & Marhuenda, J. (2009). Post-earnings announcement drift: Spanish evidence. *Spanish Economic Review*, 11(3), 207-241. doi:10.1007/s10108-008-9048-4
- Foster, G. (1977). Quarterly Accounting Data: Time-Series Properties and Predictive-Ability Results. *The Accounting Review*, 52(1), 1-21.
- Galarotis, E. C., Holmes, P., & Ma, X. S. (2007). Contrarian and momentum profitability revisited: Evidence from the London Stock Exchange 1964–2005. *Journal of Multinational Financial Management*, 17(5), 432-447. doi:<https://doi.org/10.1016/j.mulfin.2007.01.003>
- Ganguli, S. K. (2010). EMH and Post-Earning Announcement Drift: An Insight from Event Study of Turnaround Companies in India Available at SSRN: <https://ssrn.com/abstract=1545647> or <http://dx.doi.org/10.2139/ssrn.1545647>.
- Givoly, D., & Palmon, D. (1982). Timeliness of Annual Earnings Announcements: Some Empirical Evidence. *The Accounting Review*, 57(3), 486-508.
- Grossman, S. J., & Stiglitz, J. E. (1980). On the Impossibility of Informationally Efficient Markets. *The American Economic Review*, 70(3), 393-408.
- Guler, S. (2013). January effect in stock returns: Evidence from emerging markets. . *Interdisciplinary Journal of Contemporary Research in Business*, 5(4), 641-648.
- Hanauer, M. X., & Linhart, M. (2015). Size, Value, and Momentum in Emerging Market Stock Returns: Integrated or Segmented Pricing? *Asia-Pacific Journal of Financial Studies*, 44(2), 175-214. doi:doi:10.1111/ajfs.12086



- Hatemi-J, A. (2002). Money supply and the informational efficiency of the stock market in Korea: evidence from an alternative methodology. *Journal of Economic Integration*, 17, 517-526.
- Hong, H., & Stein, J. C. (1999). A Unified Theory of Underreaction, Momentum Trading, and Overreaction in Asset Markets. *The Journal of Finance*, 54(6), 2143-2184.
- Iqbal, J., & Farooqi, F. A. (2011). Stock price reaction to earnings announcement: the case of an emerging market. *Munich Personal Repec Archive*. Online at [http://mpra.ub.uni-muenchen.de/30865/MPRA Paper, 30865](http://mpra.ub.uni-muenchen.de/30865/MPRA_Paper,30865).
- Jegadeesh, N., & Titman, S. (1993). Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency. *The Journal of Finance*, 48(1), 65-91. doi:10.2307/2328882
- Khan, N. U. (2011). *Dividend policy and the stock market reaction to dividend announcements in Pakistan*. (Doctoral Dissertation), University of Dundee.
- Kong, S., & Taghavi, M. (2006). The Effect of Annual Earnings Announcements on the Chinese Stock Markets. *International Advances in Economic Research*, 12(3), 318-326. doi:10.1007/s11294-006-9020-8
- Kothari, S. P., Lewellen, J., & Warner, J. B. (2006). Stock returns, aggregate earnings surprises, and behavioral finance. *Journal of Financial Economics*, 79(3), 537-568. doi:<https://doi.org/10.1016/j.jfineco.2004.06.016>
- Kothari, S. P., & Warner, J. B. (1997). Measuring long-horizon security price performance. *Journal of Financial Economics*, 43(3), 301-339. doi:[https://doi.org/10.1016/S0304-405X\(96\)00899-9](https://doi.org/10.1016/S0304-405X(96)00899-9)
- Liu, W., Strong, N., & Xu, X. (2003). Post-earnings-announcement Drift in the UK. *European Financial Management*, 9(1), 89-116. doi:doi:10.1111/1468-036X.00209
- Lindahl, F. & Schädewitz, H. (2018) Accounting Quality in Eastern Europe after Communism, *Journal of East-West Business*, 24:1, 24-49, DOI: 10.1080/10669868.2017.1403988
- MacKinlay, A. C. (1997). Event Studies in Economics and Finance. *Journal of Economic Literature*, 35(1), 13-39.
- Mlonzi, V. F., Kruger, J., & Nthoesane, M. G. (2011). Share price reaction to earnings announcement on the JSE-ALtX : a test for market efficiency. *15(3)*, 275-166.
- Muhammad Azeem, Q., Ali, A., & Muhammad, I. (2012). Stock Prices' Variability around Earnings Announcement Dates at Karachi Stock Exchange. *Economics Research International*, 2012(2012). doi:10.1155/2012/463627
- Opong, K. K. (1995). THE INFORMATION CONTENT OF INTERIM FINANCIAL REPORTS: UK EVIDENCE. *Journal of Business Finance & Accounting*, 22(2), 269-279. doi:10.1111/j.1468-5957.1995.tb00683.x
- Patell, J. M. (1976). Corporate Forecasts of Earnings Per Share and Stock Price Behavior: Empirical Test. *Journal of Accounting Research*, 14(2), 246-276.



- Piccoli, P., Chaudhury, M., & Souza, A. (2017). How do stocks react to extreme market events? Evidence from Brazil. *Research in International Business and Finance*, 42, 275-284. doi:<https://doi.org/10.1016/j.ribaf.2017.07.166>
- Qureshi, M. A., Abdullah, A., & Imdadullah, M. (2012). Stock Prices' Variability around Earnings Announcement Dates at Karachi Stock Exchange. *Economics Research International*, 2012, 6. doi:10.1155/2012/463627
- Rozeff, M. S., & Kinney, W. R. (1976). Capital market seasonality: The case of stock returns. *Journal of Financial Economics*, 3(4), 379-402. doi:[https://doi.org/10.1016/0304-405X\(76\)90028-3](https://doi.org/10.1016/0304-405X(76)90028-3)
- Savor, P., & WILSON, M. (2016). Earnings Announcements and Systematic Risk. *The Journal of Finance*, 71(1), 83-138. doi:doi:10.1111/jofi.12361
- Sitthipongpanich, T. (2011). Understanding the Event Study. *Journal of Business Administration*, 34(130), 59-68.
- Sutyurin, S. Trofimenko, O. Vorobieva, I. Zashev, P. Abramkov, A. & Pantić, B. (2019) Russian Investments in the Balkans: Expectations and Realities – the Special Case of Lukoil, *Journal of East-West Business*, 25:4, 319-339, DOI: 10.1080/10669868.2018.1467844
- Tucker, J., Guermat, C. and Prasert, S. (2013). Short run reaction to news announcements: UK evidence. . *Studia Oeconomica*, 58(2), 41-71. doi:<http://eprints.uwe.ac.uk/12799>
- Wael, L. (2004). , Market Reaction to Annual Earnings Announcements: The Case of Euronext Paris . *EFMA 2004 Basel Meetings Paper*. doi:SSRN: <https://ssrn.com/abstract=498502> or <http://dx.doi.org/10.2139/ssrn.498502>
- Werner, F. M. D. B., & Thaler, R. H. (1987). Further Evidence on Investor Overreaction and Stock Market Seasonality. *The Journal of Finance*, 42(3), 557-581. doi:10.2307/2328371

Appendix I: Sector wise information of selected companies on the KSE at the end of December 2013

Nature of Company	No of Firms	Market Capitalisation Rs in Million	Sector Percentage
Automobile and Parts	8	57374.46	1.370205747
Beverage	1	3240.62	0.07739186
chemicals	15	319669.75	7.634291087
commercial banks	15	795783.44	19.00474606
Construction and Material	25	182282.86	4.353243976
electricity	9	279622.18	6.677882773
Electronic and Electric goods	1	1314.96	0.03140362
Engineering	7	32376.75	0.773215276
Equity Investment Instruments	11	9505.3	0.227003735
financial services	15	19528.97	0.466387081
fixed line telecommunication	3	92931.84	2.219380213
Food Producers	12	302048.12	7.213454731
forestry (paper and board)	2	4068.63	0.097166234
General Industries	9	186264.3	4.448327955
Household goods	5	13895.97	0.331860866
Health care Equipment and services	1	2252.91	0.05380356
Industrial material and mining	3	6656.48	0.158968767
leisure Good	1	319.66	0.007634058
industrial transportation	2	24928.55	0.595338805
life Insurance	3	14486.2	0.345956624
multiutilities	2	28352.14	0.677100319
Media	1	917.51	0.021911796
Non Life Insurance	9	48483.76	1.157879771
oil and gas	11	1455585.82	34.76201878
pharmaceutical	8	51294.43	1.225003648
personal goods (textile)	43	176699.27	4.21989776
real state investment and services	1	1068.1	0.025508157
software and computer services	1	1834	0.043799233
Support services	1	2539.72	0.060653101
Tobacco	2	31545.09	0.753353733
Travel and Leisure	4	40416.15	0.96521067
Total	231	4187287.94	100