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What is Abnormal in Abnormal Returns?

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Abstract: This study investigates how investors determine stock prices after large stock prices shocks in Pakistan Stock Exchange (PSX) over the time period of January 2021 to December 2025. Building on behavioral finance theories of anchoring and underreaction of investors, it examines whether returns after a shock are indicative of reference point and private information signaling instead of immediate and full incorporation of public information. Using an event study approach coupled with panel regressions, this study examines 21 firms from various industries and control for raw returns, trading volume, momentum effects and day-of-the-week anomalies. Large price shocks are defined as extreme daily returns above a given percentile and abnormal returns are analyzed both pre and post shock. The results show that the abnormal returns before the shock tend to be in the opposite direction of the event-day movement, implying the diffusion of information. Following the shock, there is significant continuation of returns in the direction of the first price movement consistent with the anchoring and delayed belief updating. These findings suggest that investors are initially either underreacting or overreacting to new information but improve their expectations, thus predictably resulting in return patterns. Overall, the evidence is suggestive that the PSX has short-term market inefficiencies following excessive price movements. The results add to the behavioral asset pricing literature by illuminating the role played by reference dependence in emerging markets, while suggesting the existence of exploitable abnormal returns following large shocks.

Key Words: Abnormal Returns, Cumulative Abnormal Returns, Private Information, Reference Points, Anchoring, Over-React, Under-React

Introduction

Efficient market hypothesis (EMH) states that stock prices truly reflect the available information and it is not possible for investors to reap abnormal returns by assessing previously released news or past prices. Plastun et al. (2024) found that stock returns are anticipated. The theory of behavioral finance suggests that investors become overconfident, particularly pertaining to their private information (Odean, 1998). Conventional and behavioral finance view financial markets very differently (Gul & Akhtar, 2016). Zakamulin (2024) argued that biased self-attribution and over confidence lead individuals to overreact the signals confirming their previous information but under-react to those signals contradicting their prior information. The study of Zakamulin (2024) estimates that an investor anchor towards signals of private information and under-react in case of large shocks in price contradicting their private information. On the other hand, the proponents of random walk hypothesis believe that stock prices follow an indiscernible trend and move apparently at random. Therefore, fundamental or technical analysis is often useless to predict future price movement and traders can only accidently beat the market. Authors figure out the stock price phenomena to contradict with both hypotheses.

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However, in recent research and academic discourse, there is growing emphasis on the fact that investor sentiments and behavioral biases may lead to systematic discrepancies from market efficiency, especially in the emerging markets (Iqbal & Fazil, 2025; Fazil et al., 2025;Fazil et al., 2024a;Fazil et al., 2024b;Wahab et al.,2025,Wahab et al.,2026).

This study aims to explore the impact of stock returns is explaining raw returns, trading volume, momentum effect, and day of the week effect. Along with the tests pertaining to anchoring of investors to the broadly accessible prices of reference point, this study also aims to find anchoring of investors to signals earlier private information while setting prices after extreme price shocks. Numerous studies argue that investors may have private information prior to subsequent events like dividend announcement (Suwanna, 2012), analyst ratings (Jiang et al., 2022); Juergens & Lindsey, 2009; Madura & Premti, 2014), guidance issued by company (Agapova et al., 2025) and takeovers. Such research proxy private information utilizing cumulative abnormal return (CAR) in the event windows of short-term, for instance 5 days prior event and reveal that on average, investors take advantage from knowledge.

However, corporate announcements such as dividend payments also serve as significant informational signal to investors and can shape investment decisions and market reactions (Iqbal et al., 2025). Moreover, empirical evidence based on developed markets suggests that the reaction of investors to dividend announcements might be subject to the level of market efficiency and economic conditions (Wahab et al., 2026).

However, the signals of private information can be inaccurate. For instance, Mall and Gupta (2019) showed that the information leakage before the announcement of merger is occasionally in the opposite direction than the expected direction (significant and negative CAR in the shares of target just before the days of takeover announcement). This study uses CAR for 10-day abnormal return before price shock as private information proxy and finds evidence for this estimation.

On the basis of inconsistent literature results, this study presents a novel explanation for predictability of return. This paper contributes to the literature because it investigates the role of cues of privately held information in explaining price shock returns. This study controls the publicly available information effects (i.e. dividend announcement), private information, momentum, raw return (after adjusting market return), week of the day affect and reveal that such factors can assist in elucidating the return predictability in the present studies. The process fills the gap between the literature on reference points and market efficiency tests. It adds to the literature and finds the technique that investors utilize signals of private information while making settlement of prices. Furthermore, technological advancements and digital financial advisory platforms are playing an increasingly significant role in how investors make financial decisions and trade in modern-day financial markets (Kumari et al., 2025; Kumari et al., 2024).

Literature Review

Fundamentals drive markets and stocks follow a random walk. Just like coin toss, it is hard to predict stock prices. In a perfect market, investors cannot consistently reap abnormal returns by utilizing historical stock data or publicly available information. In other words, if one has the availability of private information he/she cannot regularly reap returns above average. The average return will be proportionate to the stock risk. However, the Pakistan Stock Exchange (PSX) confronts all of these academic views. Possibly, it is the market which John Keynes (economist) kept in mind while referring to the financial markets. Such markets are determined by 'animal spirits' or 'irrational exuberance' as referred by previous FED chairman Alan Greenspan to mention overvalued stocks. This discussion raised question that either this growth is led by fundamental development or is it a bubble created by speculation known to everyone and still growing (Brady & Premti, 2019). Recent studies on emerging markets also highlight the fact that behavioural factors and sentiment indicators have a significant effect on the dynamics of stock returns and investor expectations (Iqbal & Gul, 2024).

Individuals depend on heuristics at the time of information inaccessibility while making decisions under uncertainty (Tversky & Kahneman, 1974). Particularly, individuals take estimates after anchoring on the reference point and then correct from it. Research have revealed that investors make use of events while making decisions related to investment (Baker et al., 2012; Zeng et al., 2025; Sturm, 2008; Tsao et al., 2017). In accordance with these studies, it is argued

that investors anchor to such events and overreact on the day of positive price shock. In the following days, the price upsurges due to this over-reaction towards the observed intrinsic value. Therefore, the price shocks that are nearer to the event have probability to show lower (positive) returns in the following days of large price shocks towards upward direction due to the drift of prices towards observed intrinsic value (Yamamoto, 2022). Contemporary behavioral finance research argues further that investor sentiment and psychological biases play an important role in influencing market reactions to such events (Iqbal & Fazil, 2025).

Piccoli et al. (2017) categorizes the prevailing return predictability explanations after price shocks into two major categories. First category is related to rational explanation to market microstructure, Amini et al. (2013) or risk changes, Yasar et al., (2020) and second category is related to behavioral reasons for instance under and over reaction towards new information (Frank & Sanati, 2018). In another study, it is found that the returns of post-event depend on the association of large price movement with the declaration of information (Savor, 2012). However, about 80 percent of major prices shocks in the study of Savor (2012) are not aligned with the information proxy.

The effect of the announcement of dividends has been investigated by numerous studies and analyzed through the event study methodology of the stock price reaction at that time of announcement. The announcement of dividend makes abnormal positive returns because dividend payout is a signalling effect (Suwanna, 2012). Fink (2021) explain event study as empirical financial research technique which allows the investors to assess the influence of a specific event on the prices of stock such as stock return and dividend announcement.

The literature is inconsistent over the issue of predictability of prices; but some theories explain the presence of post-shock drift to overreacting during the shock. Borgards and Czudaj (2020) found that specific stocks show optimistic abnormal returns till 3 days following price decline of 1 day with more than ten per cent. It shows the over-reaction of investors on the large price decline day. Some other studies such as Da et al. (2021) and Todorova (2017) also support the evidence for over-reaction.

Fink (2021) settled uncertain information hypothesis (UIH) to explain the returns of post-shock. This hypothesis claims that large changes in positive and negative prices are related with a supplementary temporal rise in risk; thereby depreciating returns in short run. Over the passage of time, this provisional risk premium can tend to decline as the complete information for enormous change in price is comprehendible and resultantly, the stock price raises. This hypothesis also sees under-reaction to large positive shock in prices and over-reaction after large negative shock in prices. Amini et al. (2013) showed that positive returns after large downward movements can majorly be explained by rising in prices among the spread of ask and bid price. For instance, shocks having huge decline in 1 day were probable to be traded on the price of bid at the closing time. Prior to the shock day, if the stocks are traded at the price of what was quoted in ask, this can account for a huge reversal, specifically in the less traded stocks having wide spreads.

Piccoli et al. (2017) also conducted a comprehensive literature review on the studies related to returns post price shocks and results contradictory findings. Such as, Amini et al. (2013) and Caporale & Plastun (2024) find evidence steady to market efficiency. However, Da et al. (2021) and Todorova (2017) find evidence related to over-reaction. On the other hand, Piccoli et al. (2017) find evidence related to under-reaction. In contrast, Yasar et al. (2020) find evidence in support of UIH. However, Piccoli et al. (2017) and Ham et al. (2022) find supporting evidence pertaining to numerous theories.

Amini et al. (2013) carried out meta-analysis of 60 studies over short run returns after price shocks and reported the essentials of likelihood that suggested the contradictory results. Explicitly, Piccoli et al. (2017) argued that it is hard to make conclusion about the direction or size of any probability from previous research. In addition, much understanding is required on the fundamental causes for the perceived facts along with integration of these areas with financial theory. However, we utilize the theory of behavioral finance to not only develop but also test hypotheses on the method of setting price by the investors after extreme price shocks.

The application of event studies is made on different firm-related and economic events to examine the impact of an event on a specific firm's share price class for instance mergers and acquisitions, earning announcement, dividend announcement, new debt-equity issuance announcement, etc. (Suwanna, 2012). The believers of signaling theory

argue that announcement of dividend is an event which serves as an instrument to position the quality message at a lower cost in comparison to its alternatives. Bhattacharyya (1979) contends that on the basis of asymmetric information of dividend policy, managers access private information regarding distributional provision of the project's cash flow, which can direct market signal by dividend announcement. Black (1976), Easterbrook (1984), and Jensen and Meckling (1976) argue that the role of dividend is played in reducing agency conflict among shareholder and manager. Miller and Modigliani (1961) suggested that dividends are unsuitable to investors in idealistic assumptions i.e. in absence of transaction costs and taxes. Gordon (1963) makes argument that the shareholders prefer cash dividends rather than capital gains and have a preference of up-rated dividend policy as compared to an extremely unreliable capital gain from uncertain future investment. However, Akbar and Baig (2010) proposes insignificant abnormal returns for announcement of cash dividend.

On the basis of these conflicting fallouts in the previous literature, this study provides a novel explanation of behavioral finance for predictability of returns and helps in comprehending the factors that enlighten returns after shock in prices.

Hypotheses Development

The anchoring and adjustment theory of Tversky and Kahneman's (1974) makes suggestion that investors are inclined to anchor the significant information in the situation of indecision. It directs to undervalue the actual value for variable under interest. At an event, the price of stock has been reported to have psychological consideration in investment decisions. If the price of stock is close to the highest of reference point (ten days pre and post dividend announcement) prior a huge negative shock, investors can utilize such price to anchor from which adjustment is made to market price. In the light of above discussion, the following hypothesis may be drawn:

H1: Dividend announcement affects the stock returns

The finance literature examines that investors are inclined to become overconfident; thereby directing them to overvalue the accuracy of private information (Zakamulin, 2024; Gul & Akhtar, 2016). This theory proposes if shock price contradicts private information of investors, then investors anchor their private information; thereby underreacting on the day of event. In the subsequent days, the price of stock will continuously move in the direction of expected intrinsic value. Just like Ham et al. (2022), this study utilizes CAR as private information signal proxy. It is estimated that in case of a positive CAR prior to one day increase, it was somehow projected. In contrast to it, in case of a negative CAR prior to one day decrease, it was not projected and investors can underreact on the shock day since they anchor the personal information they have. Such under reaction can result in continuous movement of stock price in the following days. This movement is also in the same trend as the price of shock moves. Concisely, this study predicts a negative (positive) CAR before one day large increase (decrease) is linked with higher (lower) abnormal returns after the day of event. Sturm (2003) utilized long run returns before huge price change for instance twelve, six and one month returns being proxies for the confidence of investors. This study finds that change in price return depends on this confidence measure. However, this study concentrates on the private information of investors and uses cumulative abnormal returns following previous literature in 10 days pre and post price shock window as the proxy for availability of private information. Therefore, this study is unique not only in its scope and objective, but also in the variables used. In the light of above discussion, the following hypothesis may be drawn:

H2: Private information affects the stock returns

Moreover, Sturm (2014) argued on the behavior of stock price when they move apart from the prospective reference points. Especially, the author connects reversals from Standard & Poor's 500 Index' low and high value intraday changes in the sentiment of investors. His results also assist in connecting the gap among technical analysis and behavioral finance trading strategies. This article is different in a way that the scholars concentrate on the individual stock returns after extreme day to day changes in price. Furthermore, it is examined that such returns depend on how much stock price is closed to its reference point. In the light of above discussion, the following hypothesis may be drawn:

H3: Raw returns affect the stock returns

At the day of event, the decreasing price moves apart from the anchor, resultantly, investors can underreact on the shock day. With the passage of time, the price of stock moves downward to its fundamental value since investors gradually review their beliefs. This hypothesis propose that the more stock price is near to highest of reference point on the shock day, the negative or lower the CAR will be on the subsequent days (Wang, 2024). Same arguments are applied to huge one-day increase in the stock price which trade close to their reference point. Therefore, this study predicts the close is the reference point of stock prior to large positive (negative) shock, the higher (lower) the CAR after event. The stock returns are also observed to seasonal anomalies among which most common are weekend effect or day of the week affect where lower returns are observed over the closure of Monday or Friday (Selvakumar, 2011). In the light of above discussion, the following hypothesis may be drawn:

H4: Day of the week affects the stock returns

Cheema and Nartea (2017) associate the momentum effect with the news of investors' overconfidence in the bullish market. In this market, momentum effect is profitable and vice versa in bearish market. In the light of above discussion, the following hypothesis may be drawn:

H5: Momentum trading affects the stock returns

Wong, & Zhang (2022) and Savor (2012) argues that the huge change in return of prices depend on the possibility of firm-related news in the days or month near to price shock. The scholars use the prevalence of news bulletin as the information proxy; however, Savor (2012) utilizes the announcement of an expert report. Ham et al. (2022) and Frank & Sanati (2018) study some of specific reasons of the large movements in price like earnings announcement and then connect them to changes in the abnormal returns of cross-section. The trading volume of stocks also affects the trend in movement of prices with company specific events such as earnings announcement (Israeli, 2015). The dynamic and concurrent relationship exists between stock returns and trading volume, which becomes a subject matter for considerable stream of studies and also this study. In the light of above discussion, the following hypothesis may be drawn:

H6: Volume of the shares affects the stock returns

Sample and Methodology

Data of 21 companies from different industries is taken for a period from 1st January 2021 to 31st December 2025 based on market capitalization. The data related to daily stock prices is gleaned from database of business recorder and Karachi Stock Exchange.

The closing price of the stocks as actual transaction is taken in contrast to bid-ask spread. The stock returns are calculated as:

$$R_{i,t} = \ln P_{i,t} - \ln P_{i,0} \ldots\ldots\ldots \text{Equation 1}$$

where,

$R_{i,t}$ is the return of stock i, $P_{i,t}$ is the price of stock i and $P_{i,0}$ is previous price of stock i

The market return is calculated as:

$$R_{m,t} = \ln I_{m,t} - \ln I_{m,0} \ldots\ldots\ldots \text{Equation 2}$$

Where,

$R_{m,t}$ is the Market Return, $I_{m,t}$ is the Market Index (KSE-100) current value and $I_{m,0}$ is the Previous Market Index value.

After calculating stock returns and market returns, the abnormal returns are calculated by using the formula:

$$AR_{i,t} = R_{i,t} = R_{m,t} \ldots\ldots\ldots \text{Equation 3}$$

Where,

$AR_{i,t}$ is abnormal return of stock i, $R_{i,t}$ is the return of stock i *and* $R_{m,t}$ is the Market Return.

The $t - period$ Cumulative abnormal returns $\mathrm{CAR}_{i,t}$ for stock i are are calculated by aggregating the abnormal returns using the following formula:

$$CAR_{i,t} = \sum_{t1}^{t2} AR_{i,t} \ldots\ldots\ldots \text{Equation 4}$$

To test the hypothesis regarding extent of cumulative abnormal returns in the days following the event day i.e. dividend announcement, the following regression model is run:

$$CAR_{i,t} = \alpha + \beta_1(DA) + \beta_2(CONTRA) + Controls + \varepsilon_{i,t} \ldots\ldots\ldots \text{Equation 5}$$

Where

$CAR_{i,t}$ is the cumulative abnormal return in the days that follow the large price change.

DA is the dividend announcement, which is an event causing the large price shock and takes the value of 1 if the event takes place and 0 otherwise.

CONTRA is the dummy variable for contradiction, which is considered as 1 if there is contradiction observed by the major price change due to the private information of investors and 0, otherwise. This under reaction indicates the price of stock moving in the similar direction as the change in large price in the following days.

In our regression models, some variables are controlled on the day of event or 1 day prior that could affect post event return so, the following regression model is run:

$$CAR_{i,t} = \alpha + \beta_1(DA)_{i,t} + \beta_2(CONTRA)_{i,t} + \beta_3(RR)_{i,t} + \beta_4(DWE)_{i,t} + \beta_5(VOL)_{i,t} + \beta_6(CARM)_{i,t} + \varepsilon_{i,t}$$

…. Equation 6

where,

RR is the raw return calculated by taking the difference of stock returns and market return (Brady & Premti, 2020)

DWE is the day of the week effect and is a dummy variable, which takes the value of 1 on Friday and 0 otherwise.

VOL is the volume calculated by the natural logarithm of number of shares traded daily.

CARM is the cumulative abnormal return of market, which measures the momentum effect.

The data for these variables of selected companies is obtained from published annual reports, reports of Pakistan Stock Exchange, State Bank of Pakistan and data base of business recorder.

Results

Table 1 shows the summary statistics for the variables used in our regression analysis. It exhibits the results of descriptive statistics for PSX returns for the period from 1st January 2021 to 31st December 2025 of 21 companies covering various industries. Among these variables, CAR is regressed against seven explanatory variables i.e. raw return, day of the week effect, volume, momentum, contradiction and dividend announcement. Among these explanatory variables, day of the week effect, contradiction and dividend announcement are dummy variables. The anomalies may be due to some unanticipated events or corporate announcements that would have been reflected in the stock prices.

Table 1

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
CAR	23,365	-1.352	1.813	.120	.444
RR	23,365	-.283	.124	.000	.018
DWE	23,365	.000	1.000	.200	.400
VOL	23,364	3.912	17.926	12.657	2.009
CARM	23,365	-0.114	.508	.210	.142
CONTRA	23,365	.000	1.000	.000	.035
DA	23,365	.000	1.000	.000	.058

These results suggest that data comprises of 23,365 observations. The mean for cumulative abnormal return is 0.12, which shows that on average firms out-perform the market with twelve percent. The mean for raw return is 0.000 which shows that on average firms experienced a performance as explained by market rate of return with a standard deviation of 0.018 shows that the increase in excess returns over a period of 5 years is just 1.8 percent. The mean for day of the week effect on Friday is 0.200 with standard deviation of 0.400 which shows a negligible volatility in stock prices on Friday in the study period. The mean for log of trading volume is 12.657 with standard deviation of 2.009. The mean for momentum is 0.210 with standard deviation of 0.142. The mean for contradiction is 0.000, which shows the effect of least private information. The mean for dividend announcement is also 0.000, which shows less frequency of this event throughout the sample.

Table 2 shows the predictors of CAR as explained in equation 6 so our regression results are as follows:

$$CAR_{i,t} = 0.606 + 0.008(DA)_{i,t} - 0.069(CONTRA)_{i,t} + 1.566(RR)_{i,t} - 0.002(DWE)_{i,t} - 0.043\ (VOL)_{i,t} + 0.0269\ (CARM)_{i,t} + \varepsilon_{i,t} \quad \text{..... equation 6}$$

Table 2

Predictors of CAR

	Co-ef.	t-value	Sig.
(Constant)	.606	31.935	.000
RR	1.566	9.767	.000
DWE	-.002	-.237	.813
VOL	-.043	-30.192	.000
CARM	.269	13.422	.000
CONTRA	-.069	-.721	.471
DA	.008	.135	.892
F(6, 1147)	199.302 (.000)		
R-square	.049		

Dependent Variable: CAR

The overall model is significant at 1 percent level of confidence. The value of R square is 0.049, which shows this model is explaining 4.9 per cent of the variation in the cumulative abnormal returns.

The empirical results suggest that the constant term is positive, which suggests that cumulative abnormal returns (CARs) are still positive after the window of the event. This evidence provides substantiation for post-event return continuation, which is consistent with the research on delayed price adjustment and post-announcement drift. Such findings go against the interpretation of market efficiency and suggest that information is added to prices gradually (Chordia et al., 2020; Hou et al., 2020).

The analysis reveals that the calendar anomalies, such as day-of-the-week effect and dividend announcement, are statistically unimportant and thus, the traditional anomalies cannot be considered an explanation for the abnormal returns in the sampled market. This finding is consistent with the research which finds that many classical anomalies in the calendar have been offset in modern markets by the improvement in the efficiency of arbitrage, algorithmic trading, and the faster dissemination of information (Chordia et al., 2020).

In contrast, raw returns are positively and highly significantly related to post-event abnormal returns, suggesting the existence of a momentum-driven continuation effect. This finding is in line with the substantial evidence of return persistence in global equity markets. Momentum effects are commonly attributed to underreaction of investors to new information and slow information diffusion (Berkman et al., 2020). The findings, thus, support the behavioral explanation that investors do not immediately have access to new information in asset prices.

The coefficient of the trading volume is negative and statistically significant, indicating that there is a negative relationship between trading activity and the subsequent abnormal returns. One way to interpret this is that phases of high trading volume may reflect some temporary liquidity shock or investor overreaction, which may often cause pressure on price, followed by correction (Zhang et al., 2022). Recent empirical studies highlight the role of order-flow imbalances and liquidity shocks to play an important role in shaping the post-event dynamics of returns and that these dynamics may reduce the persistence of returns (Nguyen et al., 2024).

Furthermore, market-level cumulative abnormal returns are positive and highly significant, suggesting that market-wide conditions have a strong impact on firm-level post-event returns. This evidence supports the market momentum hypothesis, where positive market performance increases the tendency of firms to change prices and motivates momentum-based trading strategies. The findings also have some resonance with another argument presented by Pavel Savor that shows that large price shocks often contain informational signals that result in gradual price adjustment rather than immediate equilibrium. In particular, his research in the Journal of Financial Economics shows that price shocks related to information are likely to cause persistent return drift while non-informational shocks are likely to lead to reversals (Savor, 2012).

Overall, the findings suggest that momentum effects, trading activity and market conditions are important factors in determining post-event abnormal returns, while traditional calendar anomalies seem to have little explanatory power. These results add to the growing literature documenting the continued role of behavioral biases, liquidity conditions and information diffusion in asset pricing dynamics in modern financial markets.

Conclusion

Hence, utilizing cumulative abnormal returns before the price socks is used as signal of private information. In the perspective of PSX, it is found in this study that shocks do not controverts the signal of private information. It is also examined that investors anchor their previous beliefs and either under or over react on the day of event. Afterwards, these investors adjust or amend their expectations and shift the price towards the dimension of preliminary price shock. These results are extracted after controlling for changes in raw return, momentum, and trading volume to explain returns. The above results reveal that PSX show inefficient behavior and investor can earn excess abnormal returns by applying fundamental analysis.

The findings add to the literature on market anomalies and behavioral asset pricing, based on the evidence of persistent abnormal returns after price events. The positive link between excess returns and post-event drift provides evidence to support the case that markets are not necessarily fully efficient, and that investors are slow to incorporate new information into prices. This study, thus, adds additional empirical evidence for behavioral theories that focus on investor underreaction, limited attention and information diffusion.

For investors and portfolio managers, the results indicate the importance of keeping an eye on excess returns, market conditions, and trading activity when looking to invest. The presence of the momentum effects leads us to the possibility that return continuation strategies generate abnormal profits in the short to medium term. On the other hand, the negative relationship between trading volume and abnormal returns suggests that high trading volume may be an indicator of temporary market pressure or investor overreaction, which may be a signal to inform trading decisions and risk management strategies.

For market regulators and policy makers, the results highlight the need for efficient communication of information and market transparency. Improving the quality and availability of public information can help lower the reliance on speculative information signals and lower the behavioural biases that lead to abnormal return patterns.

Despite its contributions, there are a number of limitations that should be recognised. First, the study mostly concentrates on the quantitative financial indicators such as trading volume, raw returns and market returns. Other potentially relevant factors, such as investor sentiment and media coverage, and macroeconomic factors, are not taken into account in the analysis. Second, the event study framework captures abnormal returns during some defined time

window. However, long term markets and structural changes may affect return persistence over and beyond the considered timeframe.

Future research could expand this study in a number of ways. First, future research could include behavioral variables, such as indicators of investor sentiment or social media signals, or analyst recommendations, in order to understand better the psychological drivers of post-event return persistence. Secondly, the comparative studies of developed and emerging markets could help to pin down whether institutional factors and market structure play a role in abnormal return dynamics. Third, future research might consider the possibility of using machine learning and more sophisticated econometric methods to capture the nonlinearity of the relationship between market variables and abnormal returns, which may prove helpful in improving predictive ability. Finally, additional work could examine sector-specific effects, with different industries potentially responding differently to shocks in the market because of differences in risk exposure, information asymmetry and investor attention.

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