

How Rapidly Do Stock Prices Adjust to Firm-Specific Information Such as Earnings Announcements or Dividend Declarations?

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ABSTRACT: The purpose of this research is to study the speed at which stock prices adjust to firm-specific announcements of both dividends and earnings. This study is based on asking whether new information is reflected in prices as soon as it is announced, as is predicted by the Efficient Market Hypothesis, or whether new information is reflected as time passes after the announcement. This study used a qualitative approach of collecting evidence from secondary resources, as well as using an event-study method of determining the patterns of abnormal returns relative to the dates of the announcements made by corporations. Analyses of data indicate that stock prices exhibit very significant reactions to announcements on the announcement date, suggesting the markets process firm-specific information fairly quickly (efficiently) at the time of the announcement. However, there is also considerable evidence that indicates that stock prices exhibit delayed adjustments in their return patterns for many announcements, such as examples of post-earnings announcement drift, or when there is gradual incorporation of firm-specific information into stock prices. While both earnings announcements and dividend announcements impact the returns of firm-specific stock prices, typically the most immediate and largest reactions in abnormal returns occur in response to the announcement of earnings releases. In summary, although stock prices adjust rapidly to firm-specific information, there remains considerable evidence that stock prices do not always adjust instantaneously to reflect new firm information due to a number of factors, including behavioural issues related to investing, information asymmetry, and transaction costs. Therefore, this study demonstrates the importance of investors and regulators as well as corporations understanding market efficiency and firm-specific price discovery through the examination of post-announcement stock returns.

1. INTRODUCTION

The Efficient Market Hypothesis (EMH) proposed by Eugene F. Fama forms the basis for modern financial economics. Under conditions of complete and perfect efficiency, stock prices are deemed to come into line with all available information instantaneously and accurately. As such, all investors should be able to attain only normal returns because new information should be incorporated into prices immediately.

However, actual markets are not perfectly efficient and have frictions including transaction costs, investor psychology, limited attention, and asymmetric-sized information, which thereby delay the amount of time it takes for new information to be processed through the market. Therefore, stock prices will not always adjust instantaneously, causing temporary mispricings to exist as long as the markets have not completely accounted for the new information.

Firm-specific information is vital to the price discovery process; earnings announcements and dividend declarations are the primary signals of a firm's characteristics (i.e., profit, financial strength, future prospects). Most significantly, earnings announcements and dividend declarations alter investor expectations, thus often resulting in pronounced changes in stock prices. Although the evidence is clear that a market reacts to corporate news, the rate and duration of the adjustment process has been open to debate. Asymmetric-sized information suggests that while some market participants react to corporate news within milliseconds, they could also take a matter of seconds to evaluate then react to that information. So this study's principal research question seeks to answer; how quick and effectively do stock values respond to a specific company's news?

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2. LITERATURE REVIEW

2.1 Efficient Market Theory

The Efficient Market Hypothesis (EMH) is a theoretical framework that describes how capital markets reflect and process information in the pricing of stocks. The hypothesis asserts that all publicly accessible data will be quickly and accurately included in the price of stock, thus making it almost impossible for investors to repeatedly and consistently earn excess rates of return above the market (Fama, 1970). The EMH has three classifications of efficiency: weak-form, semi-strong form, and strong-form EMH. Each form has a different definition about what type of information is incorporated into stock prices.

Weak Form

The weak-form efficiency means that current stock prices include all past market information, such as past stock prices, past trading volume, and past return data. Therefore, under a weak-form efficiency, the price movement of stocks takes place randomly over time; therefore, future stock price changes will be independent of previous price trends. Therefore, technical analysis cannot create excess returns for investors since any predictable patterns to stock prices have already been taken advantage of by other market participants (Fama, 1970). While empirical research supports the existence of weak-form efficient markets, some short-term anomalies, such as momentum anomalies, have been documented.

Semi-Strong Form

Semi-strong efficiency states that stock prices reflect all publicly available information, including financial statements, announcements of dividends, announcements of earnings, and wider macroeconomic announcements. Under semi-strong efficiency, stock prices will adjust to incorporate new information very quickly and correctly when it becomes available. Event-study methodology is widely used to study the existence of semi-strong efficiency, revealing that stock prices respond. However, evidence of delayed adjustment and market anomalies challenges the notion of perfect semi-strong efficiency.

Strong Form

The strong form of the efficient market hypothesis (EMH) indicates that the prices of stocks will reflect all available information about those stocks including all public and private (including insider) information. Therefore, if the strong form holds, even if you have private or insider information you will not be able to earn abnormal returns consistently. However, the evidence available overwhelmingly does not support the strong-form of efficiency, as shown from studies of insider trading where those with private information earn excess returns (at least for short periods) based upon that information (Jaffe, 1974).

2.2 Dividend Announcements and Stock Price Reaction

The importance of dividend policy as a means for companies to relay information to their investors has been widely studied. The dividend of a company that changes can convey signals about a company's future profitability, cash flow stability, and management's level of confidence.

Dividend Signalling Hypothesis

According to the dividend signalling hypothesis, when a manager changes the dividend paid by a company, the manager is trying to convey private information about that company's future prospects. A dividend increase signals that management is confident about positive future earnings and this leads to a positive reaction of stock prices, while a dividend reduction may indicate that a company is in financial distress (Bhattacharya, 1979; Miller & Rock, 1985). In general, there is empirical evidence that dividend increases produce positive abnormal returns around announcement dates.

Positive vs Negative Dividend Changes

Researchers also note that when firms announce dividends, the markets may react differently to increases in dividends compared with decreases. For example, firms that announce an increase in their dividends generally see a positive abnormal return, suggesting that the market has optimistic expectations regarding the firm's future prospects; on the other hand, firms that announce a decrease in their dividends experience a more negative reaction than firms that have increased their dividends, reflecting the market's pessimism about the firm's future prospects (Aharony & Swary, 1980). That said, recent research has also found that in some cases, firms announcing dividend cuts may receive only a small reaction from the market, provided that the investors believe that the cut was made for short-term or strategic reasons, rather than as a signal of long-term weakness.

Information Leakage

Another issue that arises in studies of dividend announcement effects is the presence of abnormal returns in advance of the actual announcement. Some investors may have access to the same information as others before the announcement date, resulting in movements in stock prices that occur prior to the actual dividend announcement. These pre-announcement price movements may be evidence of information leakage or insider trading (John & Williams, 1985); they present evidence against strong-form efficient market theory, as well as raise issues regarding the effectiveness of regulations and market transparency.

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2.3 Market Reaction to Earnings Announcements

Earnings announcements are, arguably, the most important of the firm-specific events affecting stock prices, because they provide insight into the firm's current financial performance and its prospects for future growth.

Immediate Price Adjustment

Previously conducted empirical research has documented that stock prices react quickly to the release of earnings news, with the majority of the price reaction occurring around the announcement date, thus validating the semi-strong form of market efficiency; in addition, the amount of price movement and the direction of movement are related to whether the firm has reported a profit or loss compared with the consensus of the analysts (Ball & Brown, 1968).

Post-Earnings Announcement Drift (PEAD)

Since the beginning of studies examining reactions to corporate earnings announcements, a growing body of literature has documented cases where stock prices continued to drift in the direction of an earnings surprise long after its initial announcement. Researchers have shown that prices continue to drift for many weeks or even months after an earnings surprise (Bernard and Thomas, 1989) and that there is some evidence to support an initial underreaction by the market to new information, contrary to the EMH assumption of immediate and perfect adjustment of the stock price to all available information. The findings from a majority of studies examining post-earnings announcement drift attribute this phenomenon to three sources: (1) gradual information diffusion; (2) under-reaction by investors; and (3) investor behaviour biases.

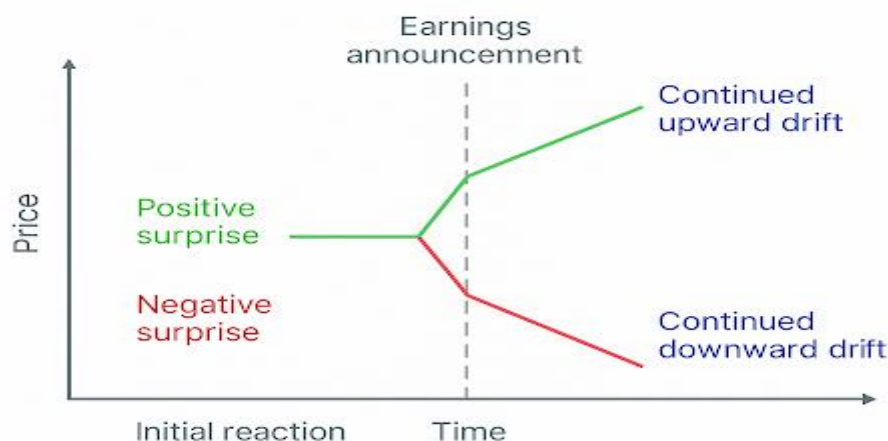
Market vs Analyst Efficiency

An additional dimension of the literature related to reactions to corporate earnings announcements compares the speed with which markets and analysts process new information. Analysts analyse and re-forecast based on the earnings data; however, investors' reactions to an earnings announcement may be delayed due to several behavioural biases, including overconfidence and herd behaviour. The research has also demonstrated that markets generally react quicker than analysts; however, analysts' updated forecasts may contribute to the continued drift of stock prices following an earnings announcement (Hong and Stein, 1999). These findings illustrate the impact of heterogeneity of investors' processing of information on the operation of financial markets.

2.4 Synthesis of Literature

The literature has also consistently indicated that both dividends and earnings announcements have a significant impact on the stock price reaction. Studies examining how markets respond to new information provide evidence that stock prices react quickly to the new information and, therefore, support a semi-strong efficient market. In contrast, however, an increasing number of examples of reasonably effective markets have been identified as anomalies to perfect efficiency, including (1) asymmetric dividend responses; (2) leakage of information prior to the announcement of corporate earnings; and (3) post-earnings announcement drift.

The results of this study indicate that the process of adjusting to new prices begins quickly, but it can take longer to fully adjust to information due to factors like behavioral bias, disparities in the availability of information, and market inefficiencies. As a result, it is still unclear how quickly and consistently stock prices adjust to new information. Thus, this paper will answer two questions: how quickly do stock prices reflect firm-specific information, and do abnormal returns continue after firm announcements.



Source: Financial Model

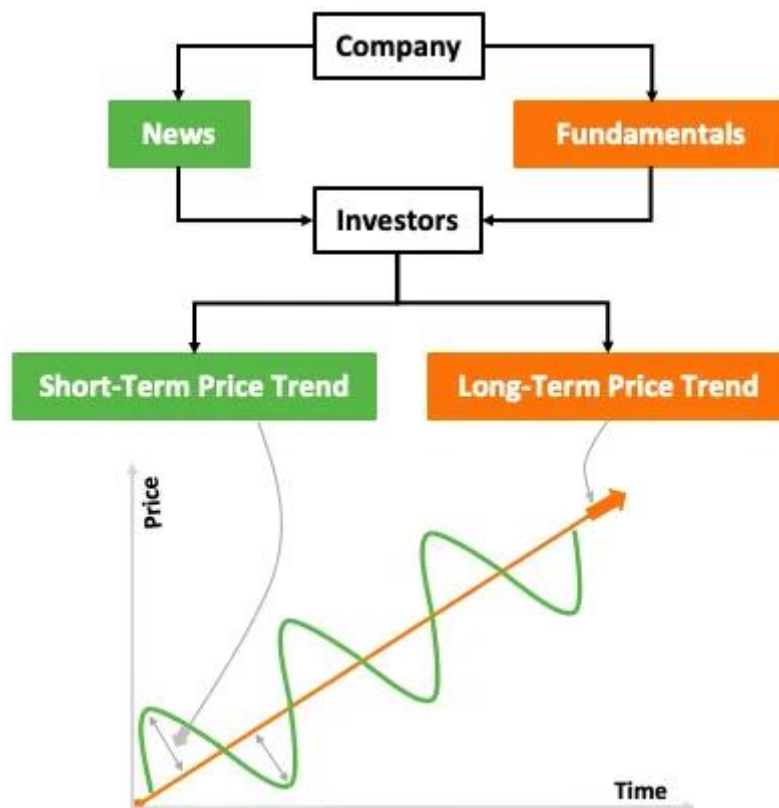
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3. CONCEPTUAL FRAMEWORK

Using event-study methodology and the analysis of abnormal returns, the study provides a theoretical framework for understanding how information affects financial markets using the theory of market efficiency. The framework describes the relationship between information arrival, how investors react to it, and how stock prices respond to new information.

3.1 Market Efficiency and Information Processing

Market efficiency is the way that stock prices respond to incoming public information. For example, when new firm-specific information such as an earnings announcement or a dividend declaration becomes publicly available, people interpret and react to it using trading, i.e., buying or selling. Therefore, this market activity drives the stock price to its new level of equilibrium. In a semi-strong efficient market, this should happen quickly and should not exhibit any systemic bias in the stock price movement. However, different interpretations by different investors, different behavioral responses by different investors, and difference in the availability of information may lead to delays in the process of including that information in the stock price, leading to temporary mispricing followed by a gradual adjustment to the right level of stock price.



Source: Money Rich

3.2 Event Study Approach

The methodology used to determine the extent of adjustment of stock prices to new information for this study was determined using an event study approach. The event study is a measurement for the effect of some type of corporate action, (e.g. earnings announcement, dividend declaration) on stock price changes over a specified time frame. In order to use this method, the researcher must specify the date of an event (the date of the announcement) and evaluate stock prices (returns) for a period of time both before and after that announcement. This will allow for the evaluation of both the immediate market reaction to the new information, as well as any future adjustments that may occur (potentially in a delayed manner), and also whether any information concerning the corporate event was leaked prior to public announcement.

3.3 Abnormal Returns (AR)

The abnormal return represents the difference between the actual return of a stock and its expected return during the announcement period. The abnormal return measures the change in stock price as a result of the announcement compared to the general market movements. The actual calculation of the abnormal return is as follows:

$$AR = \text{Actual Return} - \text{Expected Return}$$

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If the market has efficiently incorporated new information into stock prices, it is expected that there will be a very large abnormal return only during the announcement date, and that the return will return to its fully expected level within a very short time frame. However, if there are significant abnormal returns after an announcement, this will indicate that the market has either not yet adjusted or that it is inefficient.

3.4 Cumulative Abnormal Returns (CAR)

Cumulative Abnormal Returns (CAR) aggregate abnormal returns over the event window to evaluate the general impact of the announcement on stock price behaviour. CAR provides information regarding the timing of price adjustments whether they occur quickly or slowly over time. CAR is determined by summing abnormal returns over the selected time period:

$$CAR = \sum AR \text{ (over event window)}$$

If there is a large spike in CAR around the date of an announcement, it indicates rapid incorporation of new information; in contrast, gradual trends will indicate a slow adjustment and potential underreaction by investors.

4.5 Expected vs Actual Market Reaction

This section presents a conceptual framework that compares expected market behaviour (based on the Efficient Market Hypothesis) to actual observed market reactions. According to semi-strong market efficiency, stock prices adjust to new information and therefore there should no longer be any opportunities for abnormal returns past the announcement date. Conversely, if there are observable delayed adjustments in an actual market reaction and there are persistent abnormal returns or price drift, this suggests there may be delays in processing information, biases in investor behaviour or frictions in the market. This conceptual framework is developed to enable an assessment of the speed and efficiency with which securities incorporate firm-specific information into stock prices.

4. METHODOLOGY

Using a qualitative research strategy, this study investigate how firm-specific information (e.g., earnings announcements or dividend distributions) affects the stock price adjustment process through the analysis of secondary data.

This study reviews and aggregates findings from all existing empirical literature pertaining to stock price responses to the event being studied (earnings announcements and dividends). Furthermore, this study uses a variety of data sources to reflect upon the entirety of the research literature, rather than focus upon any specific firm or range of firms.

The methodology follows the classic event study paradigm of identifying and quantifying market reactions to an event by examining price movements before and after the date of announcement in order to identify both immediate reactions, as well as delayed adjustments and potential information leakage from the date of announcement. Finally, an aggregated qualitative interpretation of the cumulative evidence of abnormal returns from all prior studies is assessed for the purposes of evaluating how quickly and effectively markets incorporate new information into stock prices.

5. ANALYSIS

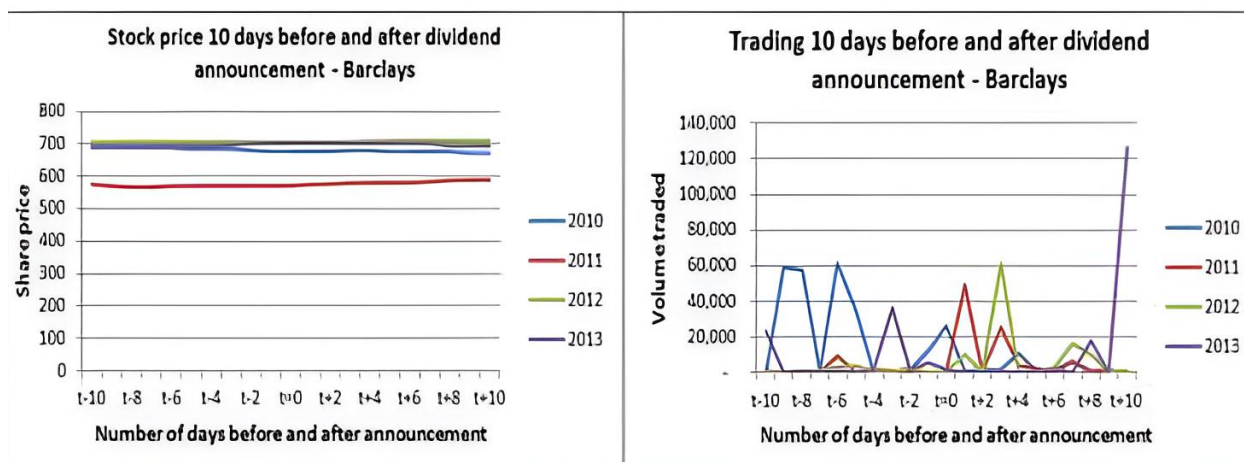
5.1 Immediate Market Reaction on Announcement Day

Numerous studies have demonstrated that stock prices tend to respond strongly on the day of significant corporate announcements such as earnings announcements and declarations of dividends. Generally, positive earning surprises and increases in dividend payments will produce positive abnormal returns, while negative announcements will produce negative price changes. This immediate market reaction indicates that, once the announcement is made, the market quickly reacts to the new information providing evidence that prices reflect the market's evaluation of the public information almost immediately.

5.2 Speed of Price Adjustment

Although there are strong price reactions to the announcements (i.e., announcement day returns) within efficient markets, the time it takes for a price to fully adjust varies by market and across events. In general, the majority of Price changes occur within a short period after the announcement in the efficient marketplace demonstrating that the information released has been quickly incorporated into the price. On the other hand, differences in how investors interpret the announcement, how they trade in relation to the announcement, and the availability of information available to traders can impact the amount of time it may take for a price to reach its new equilibrium.

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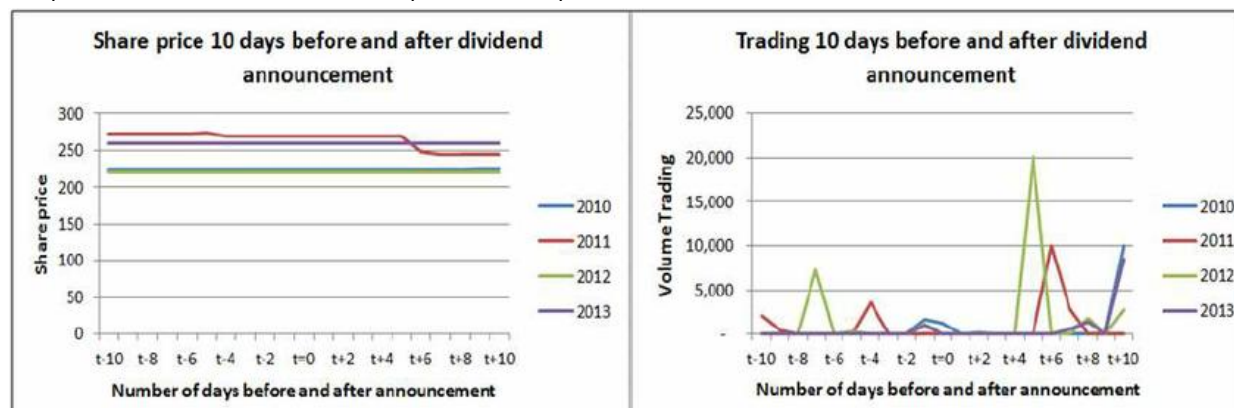
Source: [ResearchGate](#)

5.3 Evidence of Delayed Adjustment

Post-Earnings Announcement Drift (PEAD) - Despite the immediate reaction of the market at the time of the announcements of earnings, subsequent research has shown that abnormal returns continue to persist following an announcement of earnings (PEAD). Specifically, after an announcement of increased earnings, the stock price will tend to move in the same direction as the earnings announcement for an extended period of time following the announcement demonstrating that markets initially underreact to the new information before accurately pricing the stock.

Gradual Information Diffusion

Gradual information diffusion can help explain delayed adjustments in the market because some investors react to or process the same information quicker than others. For example, institutional investors tend to respond to new information very quickly, whereas individual investors often take longer to adjust their expectations; therefore, the price of an asset may adjust gradually by several periods to reflect all investors' expectations of price.



Source: [ResearchGate](#)

5.4 Dividend vs Earnings Reaction Comparison

Both dividend announcements and earnings announcements affect stock prices; however, they affect the market differently. Generally speaking, earnings announcements create larger and more immediate effects on price due to their more direct link to a company's performance than dividend announcements. Dividend announcements also contain useful information; however, when dividend announcements differ (e.g., an increase versus a decrease), typically, returns associated with dividend increases are greater than those associated with dividend decreases. Additionally, returns associated with dividend decreases may vary based on how effectively the dividend decrease is received by an investor.

5.5 Information Asymmetry and Leakage

Prior to official announcements, the empirical evidence indicates that there are usually abnormal returns. This suggests that, in general, there are instances of asymmetrical information and information leakage; in other words, there are situations in which some investors have access to the information prior to the information being made publicly available; hence, prior to an announcement being made public, the efficient price of an asset may change as a result of the advance knowledge of certain

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investors. The implications of this finding are two-fold: first, it undermines the premise that all investors have access to equal amounts of information and second it suggests that insider trading or non-standard distribution of information exist in the marketplace

5.6 Comparison with EMH Predictions

According to EMH, stock prices will adjust instantly and completely to new public information, resulting in no opportunity to earn enduring positive abnormal returns because the market is efficient. The semi-strong market being efficient; the evidence of immediate reactions around announcement dates supports the view of semi-strong market efficiency; however, the existence of post-announcement drift (the market is still reacting to an announcement) delays how the market reacts to new information and leakages of information support that the market is not perfectly efficient. Therefore, price adjustments can be considered as happening quickly, but will not necessarily happen perfectly, as some degree of behavioural factors or pricing frictions may impact the complete efficiency of capital markets.

6. DISCUSSION

6.1 Interpretation of Results

The results of this study show that stock prices respond quickly to specific-for-firm announcements (such as earnings announcements and dividend declarations) on the date of the announcement in particular; however, these adjustments happen at varying degrees of speed and completion. Evidence demonstrating continued price movement following announcements indicates that although initial price adjustments have occurred, the actual total adjustment will occur over an extended time frame. The observed pattern of rapid price adjustment demonstrates both an ability for the market to rapidly process information and that there were temporary pricing inefficiencies in the market.

6.2 Market Efficiency Evaluation

The data supports Eugene F. Fama's semi-strong form of market efficiency to a moderate extent, as stock market prices adjusted quickly to new public information, however there were price movements both before and after announcements which detracted from market efficiency; suggesting a continuous spectrum of market efficiency from some information being disclosed fully.

6.3 Behavioural and Institutional Factors

Behavioral biases (e.g., investor overreaction, investor underreaction, investor herd mentality) may produce a delay in price adjustment. Institutional obstacles to efficiency (e.g., how different participants have access to information, different trading technologies to trade in the market, limitations of market liquidity) may also contribute to a delay in price adjustment among various participants. The combined effect of these influences could explain why a stock's price could deviate temporarily from its true market value.

6.4 Investor Implications

While the results indicate that the market may be quick to react, short-term opportunities still exist owing to delayed information adjustment and diffusion; consistently achieving abnormal returns will be difficult for most investors as most information is quickly adjusted into prices. Therefore, when making trading decisions, investors need to take into consideration both market efficiencies as well as behavioural influences.

6.5 Regulatory Implications

based on the findings of this study, to establish a marketplace that is fair and efficient there should be transparency and equal distribution of information. Evidence of information leaks points to the need for more stringent disclosure regulation and monitoring mechanisms to prevent insider trading as well as to ensure that all investors have access to relevant information.

6.6 Corporate Implications

The findings of this research highlight the importance of earnings and dividend announcements with regard to investor perception and the valuation of companies in the marketplace. Clear, timely, and transparent communications can reduce uncertainty and volatility; additionally, companies can potentially use timing of disclosure and dividend policies to communicate strength and potentially influence the market.

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7. CONCLUSION

7.1 Summary of Findings

This research explored the speed at which stock prices react to firm-specific news, such as earnings announcements and dividend declarations. The results indicate that the market processes new information and thus stock prices adjust almost instantaneously, although evidence suggests that price adjustments can continue for extended periods after the appointments. Specific patterns of delayed reactions and gradual incorporation of information support the efficiency of the stock market as a whole, but not its perfect efficiency.

The results of this research demonstrate that while stock prices respond very quickly to firm-specific information, they do not adjust fully to that information in a very short time frame. The initial reactions occur about the time of the announcement, thus providing evidence of semi-strong market efficiency, and yet persistent abnormal returns and delayed adjustments suggest that the market continues to incorporate the announced information over an extended period. As such, the adjustment process is fast but not perfectly efficient. Because of the design of this research, which relies upon qualitatively analyzed secondary data, the conclusions drawn from the research were based upon pre-existing findings that may vary according to time, market, and methodology. The lack of primary statistical analysis also limits our ability to measure the speed and size of the price adjustment process accurately.

Theoretically, subsequent studies can refine their abnormalities through quantitative event study procedures with firm-level data. These results could then be used to conduct comparative studies between developed and emerging capital markets regarding adjustment speeds. Furthermore, future research projects may focus on behavioural biases in both the trading and pricing behaviour of participants as well as the significance of technology in how information becomes available and how fast it is incorporated into the pricing of stocks.

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