

Jagirdar, Sharneet Singh; Gupta, Pradeep Kumar

Article

Value and contrarian investment strategies: Evidence from Indian stock market

Journal of Risk and Financial Management

Provided in Cooperation with:

MDPI – Multidisciplinary Digital Publishing Institute, Basel

Suggested Citation: Jagirdar, Sharneet Singh; Gupta, Pradeep Kumar (2023) : Value and contrarian investment strategies: Evidence from Indian stock market, Journal of Risk and Financial Management, ISSN 1911-8074, MDPI, Basel, Vol. 16, Iss. 2, pp. 1-19, <https://doi.org/10.3390/jrfm16020113>

This Version is available at:

<https://hdl.handle.net/10419/275181>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.


If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by/4.0/>

Article

Value and Contrarian Investment Strategies: Evidence from Indian Stock Market

Sharnet Singh Jagirdar * and Pradeep Kumar Gupta 

Thapar Institute of Engineering and Technology, Patiala 147004, Punjab, India

* Correspondence: sjagirdar_phdp16@thapar.edu

Abstract: Value and contrarian investment strategies are two basic approaches which are widely used by investors worldwide. Both value and contrarian investment strategies are assumed to pick the same stocks even though the approach to picking the stocks is different. Furthermore, both investment strategies are supposed to work in various forms of market efficiency. The present study aims to empirically review and analyze the investment strategies, value and contrarian, by creating a portfolio of returns of listed stocks in India's Bombay Stock Exchange (BSE) over a period from 1990–91 to 2018–19. A Venn diagram is used to explain the selection of stocks under both investment strategies with analysts' forecast recommendations. The findings show that value and contrarian investment strategies essentially select different stocks at any given point in time. Moreover, the study finds that both investment strategies can work in the same form of market efficiency. This study brings new insights to scholars, analysts, and investors for analyzing investment strategies and their portfolio composition.

Keywords: investment strategy; value stocks; contrarian stocks; analysts; market efficiency



Citation: Jagirdar, Sharnet Singh, and Pradeep Kumar Gupta. 2023. Value and Contrarian Investment Strategies: Evidence from Indian Stock Market. *Journal of Risk and Financial Management* 16: 113. <https://doi.org/10.3390/jrfm16020113>

Academic Editor: Vasileios Kallinterakis

Received: 29 December 2022

Revised: 4 February 2023

Accepted: 7 February 2023

Published: 10 February 2023



Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

Fundamental analysis and technical analyses are the two branches of decision-making methods to value shares with developed countries leading in fundamental analysis (Arnold and Moizer 1984; Arnold et al. 1984; Pike et al. 1993; Al-Abdulqader et al. 2007; Wang et al. 2011; Tijjani et al. 2009) and emerging markets depending on technical analysis (Lovell-Greene et al. 1986; Al-Abdulqader et al. 2007; Wang et al. 2011; Tijjani et al. 2009; Almujaed et al. 2013; Ling et al. 2020). One of the bases of equity investment strategies under fundamental analysis is value investing (Pani and Fabozzi 2021), which was first conceived in 1934 by Benjamin Graham and David Dodd, who believed in buying the stocks (used stocks and securities interchangeably) of undervalued firms. Various investors and academicians have come up with their measure of value, such as book value to market value of equity ratio and the company size (Fama and French 1992; Lakonishok et al. 1994), price-to-earnings ratio (Basu 1977; Chan et al. 1991), dividend yield, earnings to price, cash flow-to-price, sales growth, and reversal of the past five-year returns (Fama and French 1996). The firms with a high book-to-market equity ratio, earnings-to-price ratio, or cash flow-to-price ratio are classified as value stocks. The relative distress gives rise to value premiums as these firms frequently have low earnings (Fama and French 1995; Lakonishok et al. 1994). When distressed stocks are undervalued, and the market corrects the pricing errors, high returns are fetched from the value stocks (Haugen 1995). On the other hand, stocks having low book-to-market equity, earnings-to-price, and cash flow-to-price ratios are called growth stocks. Growth stocks are also called glamour stocks due to their high earnings growth rate and are popular among investors as they are perceived to have strong growth potential. Figure 1 shows a value–growth investment strategy where book-to-market equity ratio is used to differentiate between value and growth investment strategies. The book-to-market equity ratio (or market equity-to-book ratio, which is the

inverse of book-to-market equity ratio) has been used since the initial studies in value investment strategies (Stattman 1980; Rosenberg et al. 1998; Fama and French 1992). It is widely accepted as it contains information on future returns that is unclear in other variables (Pontiff and Schall 1998; Gu 2015; Ball et al. 2020). A high book-to-market equity ratio stocks exhibit underperformance in India (Kumar and Sehgal 2004; Hou et al. 2011; Lalwani and Chakraborty 2018) due to poor earnings growth, excessive leverage, and poor accounting quality gauged by low forensic accounting scores (Mehta and Khanna 2015).

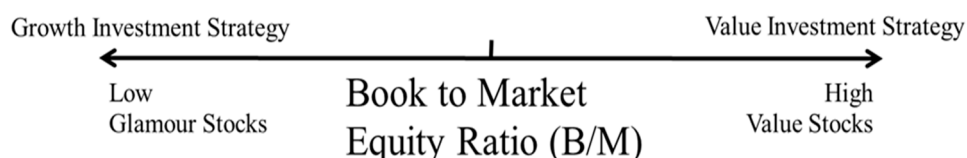


Figure 1. Value–growth investment strategy.

There are some noteworthy risk-based theories which were proposed to explain the value premium such as the three-factor model (Fama and French 1993), the two-beta model (Campbell and Vuolteenaho 2004), the model of consumption-based asset pricing (Lettau and Ludvigson 2001; Yogo 2006), and risk-averse investors (Asness et al. 2015). However, Phalippou (2007) shows that these theories are not empirically satisfactory, and Zaimovic et al. (2021) contend that there is no optimal number of stocks that can constitute a well-diversified portfolio irrespective of period, market, or investor.

In 1977 and 1979, David Dreman (1977, 1979) formally put forth the contrarian investment strategy under technical analysis, which stated that “investor psychology or emotion is the biggest determinant of stock prices” and “Take advantage of the high rate of analyst forecast error by simply investing in out-of-favour stocks”, respectively, and a contrarian investor may earn abnormal returns (De Bondt and Thaler 1985). Dreman (1998) suggests that the contrarian investment strategy is based on stock market overreaction arising out of the irrational behaviour of investors. De Bondt and Thaler (1987), Lakonishok et al. (1994), and Haugen (1995) view this overreaction as a tendency of investors to bid lower the prices of so-called weak stocks that have performed poorly in the past, leading to under-pricing. When the overreaction is corrected, the firm’s stock prices become closer to their fundamental value, giving high stock returns. Mayo (2011) confirmed analysts’ recommendations as one of the main technical indicators that may be useful for investment decisions when adopted as a “contrarian” view. Additionally, past returns, not other fundamental values, are the primary basis for a contrarian investment strategy, which means “to buy past loser stocks and sell past winner stocks” (Mun et al. 1999). However, the study conducted by Jegadeesh and Titman (1993) propounded that “buying past winners and selling past losers realize significant abnormal returns over the 1965 to 1989 period”, which implied that strong past performers are expected to give higher returns than weak past performers (Conrad and Kaul 1998). This strategy to go with the stock market’s momentum and buy past winner stocks is a momentum investment strategy. Furthermore, it was contended that buying past losers is a riskier strategy (Chan 1988; Ball and Kothari 1989).

Figure 2 depicts the contrarian–momentum investment strategy, where past returns help in identifying loser and winner stocks. Both these investment strategies are considered to be prominent (Abukari and Otchere 2020; Choi 2021). Mohapatra and Misra (2020) said that momentum investing has the ability to pass the test of application in the real world, whereas Sadhwani and Bhayo (2021) believed that the momentum effect, which determines the time series pattern in stock return, is an anomaly of behavioural finance.

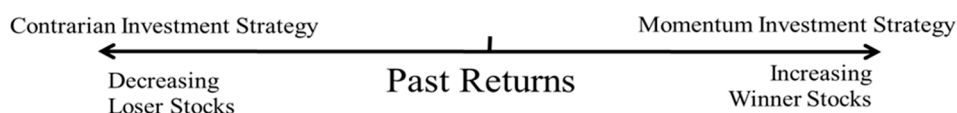


Figure 2. Contrarian–momentum investment strategy.

The existence of contrarian profits is attributed to the overreaction and underreaction of prices to new information (Lo and MacKinlay 1990), the propensity of institutional investors to prefer past winner stocks over past losers, and critical errors made by individual investors (Lakonishok et al. 1994), as emotion drives the price off the fundamental value using noise and fundamental traders with limited arbitrage (Shleifer and Vishny 1997), representativeness and a theory of conservatism bias (Barberis et al. 1998), investor overconfidence, and biased self-attribution (Daniel et al. 1998). Jegadeesh and Titman (1995) observe overreaction in the stock prices due to firm-specific factors and underreaction due to common factors. Optimism on investors' behalf can also be a predictor of a bubble burst (Pan 2020). Baker and Wurgler (2007) assert that the stocks most affected by sentiments are those that are difficult to arbitrage or to value and not by fundamental or rational reasons. Baker and Wurgler (2007), Verma et al. (2008), and Pornpikul and Nettayanun (2021) affirm that rational sentiments have a more significant impact on stock market returns, and irrational factors can explain returns during a financial crisis. Furthermore, Verma and Soydemir (2009) demonstrate a significant downward movement with an increase in irrational optimism. However, an increase in rational sentiment does not change the market price of risk significantly. Asness et al. (2015) perceive the existence of contrarian profits due to those investors who suffer from behavioural biases ignoring past loser stocks for past winner stocks. Itzkowitz et al. (2016) demonstrate the satisficing behaviour of investors and their propensity to the status quo bias influences the stock market. O'Sullivan et al. (2019) reveal that rational sentiment risk influences stock returns. Thampanya et al. (2020) and Nasir et al. (2018, 2021) find that asset returns can be explained by both rational and irrational factors, determined by each country's market development. Li and Li and Li (2021) found that the MCASI (MSCI China A-shares index) returns are affected by both overnight and BW (Baker and Wurgler) sentiments.

Analysts collect, process, and study macro and microeconomic factors that influence the valuation of stocks to rightly estimate firms' intrinsic value relative to their current market prices and try to predict future prices and returns from investment in stocks. Their prediction may depend on the fundamental analysis, previous trends, or any new information that they believe may influence the valuation and movement of stock prices of a firm. The information that these analysts produce should aid in market efficiency. The studies of Elton et al. (1986), Womack (1996), and Barber et al. (2001) revealed that abnormal returns can be earned by following analyst recommendations. Analysts act as information intermediaries and monitors in financial markets (Chen et al. 2015; Bradley et al. 2017; Brauer and Wiersema 2018) and play governance role in firms (Jensen and Meckling 1976; Moyer et al. 1989; Yu 2008), with investors relying on analysts to process the relevant information and provide recommendations accordingly (Eikermann 2020). Massa and Simonov (2005) recognized that investor stock choice is majorly driven by the availability of information. According to Jegadeesh et al. (2004), analysts generally recommend stocks with high trading volume and high positive momentum of price and earnings. Moreover, if other investment signals reject the stocks, the analysts are not very fast to downgrade these stocks and found the underperformance of these favourably recommended stocks compared to unfavourably recommended stocks. Abarbanell and Bushee (1997) prove that equity analysts are incapable of incorporating fundamental signals into their forecasts, which may be due to limited resource constraints (Harford et al. 2019) and investors can benefit from this underreaction. Sometimes, analysts' intentional and systematic under- and overreaction to new information (Easterwood and Nutt 1999), limited attention (Driskill et al. 2020), ignore value stocks (Ho et al. 2022) or, in other words, give positive recommendations for overvalued stocks and ignore undervalued stocks (Engelberg et al. 2020; Guo et al. 2020). More optimistic forecasts by less experienced analysts (Lim 2001) behave extra optimistically to preserve client relations while issuing growth forecasts and recommendations to affiliated companies (Lin and McNichols 1998; Asquith et al. 2005; Barniv et al. 2009; Arand and Kerl 2015), influenced by institutional investors' interests in firms (Irvine et al. 2007; Mola and Guidolin 2009; Firth et al. 2013; Bradshaw

et al. 2017; Li and Xie 2022). Furthermore, analysts' forecasts may be plagued by a bias due to the economic incentive given by sell-side brokerage firms (Jegadeesh et al. 2004) or to make a short-term profit through increased trading enabled by optimism bias (Jackson 2005; Irvine 2004; Goldstein et al. 2006; Gu et al. 2013) and career prospects (Hong and Kubik 2003). Analysts have been reported to issue more buy (favourable) than sell (unfavourable) recommendations even if there is any alignment of analysts' incentives with the investors (Womack 1996; Morgan and Stocken 2003; Easton and Sommers 2007; Lien et al. 2020; Brycz et al. 2021). Block (1983) suggests that institutional money managers would prefer to herd to momentum investing (Economou et al. 2022) as would analysts (Scharfstein and Stein 1990; Trueman 1994; Grinblatt et al. 1995; Welch 2000; Chen and Jiang 2006; Jegadeesh and Kim 2010; Blasco et al. 2018; Lin 2018) and possibly be wrong than be in a profit-maximizing position with a slight chance of failure but the high potential of humiliation if that failure comes true. This behaviour is found more in inexperienced analysts who herd more and are unwilling to take risks that can negatively affect their careers (Hong et al. 2000). This is evident from the weak performance of stocks that were optimistically promoted by analysts' recommendations (Dechow et al. 2000; Engelberg et al. 2020; Guo et al. 2020). Moulya and Mallikarjunappa (2020) report from the Indian stock market (Nifty 50 stocks) that following analyst recommendations on a daily basis does not earn abnormal returns. Analysts are known to provide relatively precise information to a small group of investors, private or institutional (Cohen et al. 2008; Busse et al. 2012; Brown et al. 2014; Gu et al. 2019), and give relatively imprecise or introduce noise in information to a large group of investors, which is for public consumption (Garcia and Sangiorgi 2011), to profit from private information (Hirshleifer et al. 2022; Green 2006; Irvine et al. 2007) as their careers do not seem to be influenced by their public recommendation performance (Mikhail et al. 1999; Hong and Kubik 2003; Emery and Li 2009). Legal settlements to improve the information in analyst recommendations are not as effective as expected (Kadan et al. 2008). Social media and its relevant value (Chen et al. 2014; Miller and Skinner 2015; Jame et al. 2016; Bartov et al. 2018; Da and Huang 2020) have induced analysts to reduce forecast optimism and improve forecast accuracy due to increased competition among analysts (Hibbert et al. 2022) and crowd wisdom can be exploited for the prediction of stock returns and firm fundamentals (Chen et al. 2014; Jame et al. 2016; Bartov et al. 2018; Tang 2018; Da and Huang 2020; Gu and Kurov 2020; Bartov et al. 2018; Gu and Kurov 2020).

Dreman (1979) advocates for taking advantage of the bias or error by analysts to obtain abnormal returns. The stocks that have been ignored or have received unfavourable ratings by stock analysts may perform better than projected by the analyst. As the irrational investor overreacts to analyst recommendations (Welagedara et al. 2017) and pushes the prices of these unfavourable stocks below their intrinsic value, a window of opportunity opens for the contrarian investor. The stocks that are recommended by analysts are driven to overpricing by this positive news and continue to give abnormal returns until this overreaction is corrected.

The hypothesis developed for an efficient market in which all available information is fully reflected in security prices and trading on the information does not provide any abnormal profits (Fama 1970, 1991). Furthermore, to obtain the prices to reflect all information, all costs of information and trading have to be equal to zero (Grossman and Stiglitz 1980). Jensen (1978) said that "prices have to reflect information to the point where marginal costs remain lower than the marginal benefits or profits of acting on the information". The strong form of market efficiency propounds that any information which is known to any public or private participant is reflected in market prices; therefore, by any means in the strong form, no one can beat the market (Brealey et al. 1999). The semi-strong form of the hypothesis claims that the stock prices reflect all relevant past and publicly available information. One can beat the market by insider trading and not based on fundamental analysis (Bodie et al. 2007). Thus, a value investment strategy would not be more successful in this form of the market, as it is dependent on fundamental analysis, than a contrarian investment strategy that takes into account the past prices of the stocks. Market efficiency is

assumed to be weak if current stock prices are not predictable from past prices (Fama 1991). Consistent with this assumption of weak form, the random walk hypothesis states that the movement in stock prices is random and price changes are independent of one another. Therefore, predicting future price changes accurately based on the technical (trend) analysis where analysts make the chart of past price movements of stocks is rendered useless (Bodie et al. 2007). Thus, a contrarian investment strategy would be unproductive in the weak form of market efficiency. In contrast, a value investment strategy, where a fundamental analysis of firms is conducted, is more successful in giving superior returns in the weak form of the market. Karemera et al. (1999) observed that the random walk hypothesis model is harmonious with the dynamics of returns in the majority of the emerging markets analysed. Going by the efficiency of the market, one of the two strategies will be more effective than the other in various stock markets around the world. However, Ball (1995) argues that the theory of efficient markets is flawed and inadequate in its approach to viewing stock markets.

Unlike other emerging markets, Indian stock markets do not have informational efficiency (Kumar and Jawa 2017) and display the existence of the month of the year effect for March to May, August, September, November, December (Patel 2008; Dash et al. 2011; Minimol and Makeesh 2013; Sen 2014), and the day of the week effect for Monday and Wednesday (Minimol and Makeesh 2013; Palamalai and Kalaivani 2014). However, there is no influence of calendar effect on momentum performance (Maheshwari and Dhankar 2016) and contradictory evidence to suggest that daily and monthly seasonality are not a feature of the Indian stock market (Sasidharan 2009; Sriram and Devi 2013; Agrawal et al. 2014; Kushwah and Munshi 2018; Sahoo et al. 2021). Depending on the seasonality and volatility, different investment strategies are required.

All the studies thus far have compared the contrarian investment strategy with the momentum investment strategy and value investment strategy with growth investment strategy as the contrarian investment strategy is often confused with a value investment strategy. This may be due to the past loser stocks being considered distressed stocks picked in value investment strategy, as investors try to eliminate these stocks from their portfolios, driving the prices of securities down. Investing in these distressed stocks leads to the belief that contrarian and value investors are the same. With a value investment strategy, an investor buys undervalued stocks. A contrarian investment strategy invests in out-of-favour stocks that have not caught the fancy of investors. Investment in out-of-favour stocks is assumed to be a value investment strategy. Both investment strategies are thought to pick the same stocks even though the approach to stock picking is different. This study contends that both investment strategies are not similar in any way. By their definition, the stocks selected under both investment strategies should also be different at any given time. The present study aims to empirically review, compare, and analyse the investment strategies, value and contrarian, by creating a portfolio of stocks of listed stocks in India's Bombay Stock Exchange (BSE) from the financial years 1990–91 to 2018–19. A Venn diagram is used to explain the selection of stocks under both investment strategies with analysts' forecast recommendations. The findings of this study show that value investment and contrarian investment strategies essentially select different stocks at any given point in time. However, a few common stocks fulfil all the criteria of value investment and contrarian investment strategies. Additionally, this study finds that both these strategies can work in the market efficiencies of similar forms. It is inconsistent with the accepted norm that both investment strategies work best in different forms of market efficiency. The two investment strategies, contrarian and value, give correlated returns in India, suggesting that India is not a weak form of an efficient market.

2. Materials and Methods

Figure 3 below shows contrarian and value stocks form two different sets. The strategy of going against the analysts' recommendations is the basis for the contrarian investment strategy (Dreman 1979). For the purpose of this study on value and contrarian investment strategies, it is assumed that all stocks that are recommended by the analysts will be a subset of value stocks. Analysts may recommend other stocks that are growth or momentum in nature. Still, they are ignored for hypothesis formulation as their measure is just the opposite of value and contrarian stocks, as discussed above. For an elementary understanding of the basics of investment strategy, value and contrarian investment strategies are considered below. It can be assumed from the literature review that the results can be extended for growth and momentum investment strategies. Therefore, the analysts' recommended stocks are taken as a subset of value stocks while intentionally disregarding growth and momentum stocks in this study.

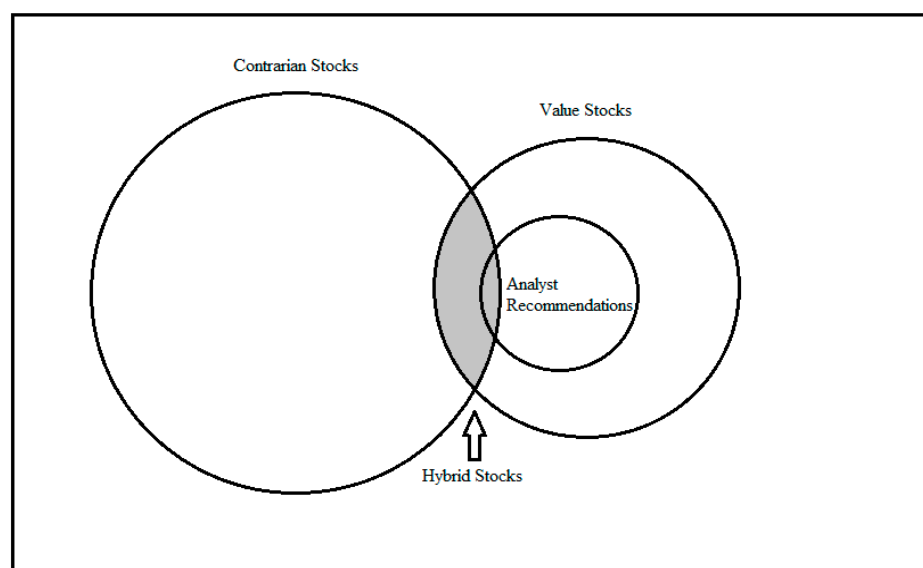


Figure 3. Venn diagram.

Due to bias (Block 1999; Jegadeesh et al. 2004), some analyst recommendations can also ignore undervalued stocks (Engelberg et al. 2020; Guo et al. 2020), value stocks (Ho et al. 2022), or past loser stocks (Economou et al. 2022). By the nature of the contrarian investment strategy, these value stocks can also be called contrarian. These stocks are shown by the intersection of contrarian and value stock sets. These are hybrid stocks with typical features of both value and contrarian stocks. Thus, hybrid stocks can be said to be those stocks that are value stocks but have been ignored or given unfavourable ratings by analysts. These are the same stocks that Dreman (1998) suggested as a second type of contrarian investment strategy based on valuation measures such as price-earnings ratio, price-to-book value ratio, past growth sales, or book-to-market value ratio. These valuation measures are the same as those incorporated by value investors. This combination of strategies will give the investors a smaller set of stocks compared to the original two investment strategies. Additionally, the fundamentals of the value investment strategy suppress the behavioural aspect of the contrarian investment strategy. A hybrid investment strategy is just a value investment strategy with smaller stocks.

Some value stocks are contrarian due to analysts' ignorance or bias, but sometimes, recent changes in recommendations create an exception where investors reject the recommendations. Even after analysts' favorable ratings, the recommendations are not accepted by investors, and the stocks remain out of favor. This market anomaly may be due to investors' loss of faith in analysts' recommendations or the inflow of some new information that the analysts are not privy to. Chances of the latter happening for stocks recommended

by the analysts are meager as any information that has affected a market cannot have passed unnoticed by the analysts—the rejection of analysts' recommendations may be, for the short term, caused by the underreaction of investors. There may also be underreaction for other stocks that have been ignored by the analysts altogether. These may or may not be value stocks. Based on the above discussion, this study proposes that value and contrarian investment strategies select different stocks.

H1. *Value investment and contrarian investment strategies essentially select different stocks.*

Furthermore, contrarian and value investment strategies are similar in picking distressed stocks, so the returns from these investment strategies may correlate. However, these investment strategies are believed to work in different forms of market efficiency. If the returns from these investment strategies correlate in the same market efficiency, it will give an understanding that market efficiency does not affect these investment strategies. This brings forward the second hypothesis that returns from value investment and contrarian investment strategies are correlated irrespective of market efficiency.

H2. *Returns from value investment and contrarian investment strategies are correlated in the same form of market efficiency.*

The data under study comprise the listed stocks of the Bombay Stock Exchange (BSE) from 1990–91 to 2018–19. The data were collected from the Centre for Monitoring Indian Economy (CMIE) PROWESS database which has been used by several published studies in India (Nair and Bhattacharyya 2019; Garg and Gupta 2020; Garg et al. 2021). Dividend information is not included while determining index values of the stock market indices in India; hence, stock returns use the capital gain factor only (Sehgal and Balakrishnan 2002). This convention is consistent with the findings of Felton and Jain (2019), who have reported errors in estimations of historical returns when adjusting historical prices for dividends and stock splits. BSE indicators such as price-to-book value ratio and returns are used to sort the stocks in ascending order for portfolio formation of value and contrarian investment strategies with the help of MS-Excel.

Table 1 shows the total number of companies' stocks whose share price information on BSE was available in the CMIE Prowess database for that year. The strategies under consideration have different approaches to stock selection. The value investment strategy selects stocks with a low price-to-book value ratio, and the contrarian investment strategy selects stocks with low past returns. They are out of favour with investors. At the end of each financial year, on March 31, the securities are ranked in ascending order based on the price-to-book value ratio for the value investment strategy portfolio and the past return of one year for the contrarian investment strategy portfolio. Based on these rankings, ten decile portfolios containing an equal number of stocks are formed. The top decile portfolio based on the price-to-book value ratio ranking in ascending order is the value portfolio (VP_y) for that particular year and the top decile portfolio based on past 1-year returns ranking in ascending order is the contrarian portfolio (CP_y) where 'y' is the year of portfolio formation. Portfolios for 30 years from 1990 to 2019 are formed. After portfolios are formed for every year, the number of stocks in each portfolio is 10% of the total stocks as they are divided into deciles. On the comparison of stocks of VP_y and CP_y for a particular year, the number of stocks that are common and uncommon in both portfolios can be computed and have been given for each year in Table 1 below.

Table 1. Stocks in value portfolio (VP_y) and contrarian portfolio (CP_y).

Year of Portfolio Formation	Total No. of Stocks	No. of Stocks in Value Portfolio (VP _y)	No. of Stocks in Contrarian Portfolio (CP _y)	No. of Stocks Common in Both Portfolios	No. of Uncommon Stocks	% of Uncommon Stocks in Both Portfolios
1990	240	24	24	1	23	95.83
1991	470	47	47	6	41	87.23
1992	620	62	62	2	60	96.77
1993	750	75	75	4	71	94.66
1994	1050	105	105	9	96	91.43
1995	1590	159	159	9	150	94.34
1996	2270	227	227	8	219	96.47
1997	2540	254	254	9	245	96.46
1998	2350	235	235	20	215	91.49
1999	2100	210	210	5	205	97.62
2000	2230	223	223	6	217	97.31
2001	2120	212	212	5	207	97.64
2002	1960	196	196	6	190	96.94
2003	1930	193	193	6	187	96.89
2004	1930	193	193	9	184	95.34
2005	2010	201	201	3	198	98.50
2006	2180	218	218	2	216	99.08
2007	2310	231	231	5	226	99.19
2008	2490	249	249	2	247	99.19
2009	2550	255	255	4	251	98.43
2010	2670	267	267	3	264	98.87
2011	2840	284	284	3	281	98.94
2012	2970	297	297	8	289	97.30
2013	3040	304	304	5	299	98.35
2014	3130	313	313	2	311	99.36
2015	3260	326	326	2	324	99.38
2016	3360	336	336	8	328	97.62
2017	3420	342	342	6	336	98.24
2018	3490	349	349	1	348	99.71
2019	3510	351	351	2	349	99.43

Computing the correlation of value investment and contrarian investment strategies, the 1-year return of respective portfolios is considered. The 1-year ($t + 1$) return of portfolios of value and contrarian strategies is calculated by taking an average of the 1-year returns from the date of portfolio formation (t) of individual stocks in the portfolio. For 1-year returns, portfolios formed from 1990 to 2018 are considered. Table 2 below gives the 1-year return ($t + 1$) for each year of formation of a portfolio (t) of contrarian and value portfolio investment strategies. Returns for year $t + 2$ and $t + 4$ are also considered for robustness check.

Table 2. Return of value portfolio (VP_y) and contrarian portfolio (CP_y).

Year (t) of Portfolio Formation	Year t + 1 Return of Value Portfolio (VP_y)	Year t + 2 Return of Value Portfolio (VP_y)	Year t + 4 Return of Value Portfolio (VP_y)	Year t + 1 Return of Contrarian Portfolio (CP_y)	Year t + 2 Return of Contrarian Portfolio (CP_y)	Year t + 4 Return of Contrarian Portfolio (CP_y)
1990	-0.22	6.61	2.08	13.28	6.72	-1.10
1991	4.94	-1.75	1.49	6.00	-1.34	-0.67
1992	-2.39	0.69	2.57	-3.05	0.20	1.51
1993	-0.02	-0.71	-3.09	1.36	0.16	-2.70
1994	-0.12	0.77	7.42	0.47	0.75	6.43
1995	1.17	-2.89	2.47	1.12	-2.76	3.19
1996	0.17	1.99	-0.39	0.67	4.04	0.59
1997	8.35	4.16	-0.59	6.62	4.05	-0.61
1998	3.59	1.92	-0.64	6.13	2.96	0.77
1999	-0.05	-0.71	-0.47	-1.23	0.19	-0.81
2000	-1.98	-0.27	1.49	-2.02	0.22	0.07
2001	-0.65	0.58	3.18	-0.15	0.21	2.48
2002	-1.05	1.80	1.23	-0.74	0.49	1.48
2003	1.47	4.32	1.16	1.73	3.40	1.14
2004	4.27	1.36	1.32	2.42	1.54	0.67
2005	1.24	0.92	-0.32	0.55	0.37	-0.44
2006	0.69	1.36	0.91	0.39	0.16	0.28
2007	1.43	0.43	-0.05	0.74	0.25	0.04
2008	0.42	0.28	0.78	0.70	0.31	1.48
2009	0.64	0.43	0.06	0.21	-0.09	-0.23
2010	-0.07	0.81	0.32	0.12	0.32	-0.29
2011	1.01	0.07	0.62	0.25	-0.80	-0.44
2012	0.23	0.47	-0.43	-0.35	-0.14	-0.42
2013	0.76	0.57	0.31	0.15	0.25	0.07
2014	0.44	-0.57	-0.57	-0.48	-0.06	0.09
2015	-0.69	0.12	-0.21	-0.63	0.16	-0.56
2016	0.26	-0.84		0.03	-0.68	
2017	-0.59	-0.16		-0.44	-0.13	
2018	-0.25			-0.27		

Table 3 below shows the t-test statistic with the Equality of Variances (Levene's Test). Levene's test (for testing the assumption of homogeneity of variances) is "an inferential statistic that is widely used to assess the equality of variances for a variable calculated for two or more groups" (Levene 1961). T-test statistics test the hypothesis that measures the significance of each 1-year return of contrarian and value portfolios. The variances of the two groups under consideration are equal and are assumed by the t-test. However, unequal variances can affect the rate of Type I error. For this investigation, a 2-tailed t-test is used to obtain the evidence to reject or accept the hypothesis. Descriptive statistics in Table 4 illustrate the essential attributes of the data. Pearson correlation coefficient in Table 5 below measures the statistical relationship between the 1-year returns of contrarian and value investment portfolios in the Bombay Stock Exchange from 1990 to 2018.

Table 3. Independent samples test for contrarian and value portfolio returns for year t + 1.

	Levene’s Test for Equality of Variances		t-Test for Equality of Means							
	F	Sig. (2-Tailed)	T	df	Sig. (2-Tailed)	Mean Difference	Standard Error Difference	95% Confidence Interval of the Difference		
								Lower	Upper	
Portfolio Returns	Equal Variances Assumed	1.342	0.252	0.512	56	0.611	0.3657	0.7147	−1.0659	1.7579
	Equal Variances Not Assumed			0.512	49	0.611	0.3657	0.7147	−1.0704	1.8020

Table 4. Descriptive statistics of contrarian and value portfolio returns for year t + 1.

Portfolio Returns	Mean	Standard Deviation	N	Standard Error Mean
Contrarian Portfolio	1.1583	3.1934	29	0.5930
Value Portfolio	0.7925	2.1484	29	0.3989

Table 5. Pearson correlation between portfolio returns of contrarian and value for year t + 1.

Portfolio Return	Contrarian Portfolio	Value Portfolio	N	Sig. (2-Tailed)
Contrarian Portfolio	1.000	0.557 **	29	0.002
Value Portfolio	0.557 **	1.000	29	0.002

** significant at the 1% level (2-tailed).

3. Results

As shown in Table 1, the composition of stocks in VPy and CPy are different from each other, barring very few stocks every year. Nine years out of 30 years, the percentage of uncommon stocks in both value and contrarian portfolios is 99% and above. The number of years the percentage of uncommon stocks was in the range of 95–98% is 17 years out of 30 years, and only for four years did the percentage of uncommon stocks drop below 95%. This means that both investment strategies mainly selected different stocks over 30 years. Therefore, we cannot reject the H1 hypothesis that value investment and contrarian investment strategies essentially select different stocks. The few stocks that are common to both contrarian and value stocks selection are the hybrid stocks.

$$\text{Hybrid Stocks} = \text{Contrarian Stocks} \cap \text{Value Stocks}$$

As can be seen from Table 1, these hybrid stocks are few every year under consideration. Maximum hybrid stocks can be found for 1991, which is 13% of all the stocks under observation. The hybrid stocks form the second type of contrarian investment strategy of Dreman (1998), which is based on valuation measures, in this case, price-to-book value ratio. The findings are interesting because both investment strategies aim to select distressed stocks. Both investment strategies use different indicators but use price for the price-to-book value ratio and calculate returns. Moreover, the common stocks in both strategies are almost negligible.

Table 3 results the homogeneity of variances test with an F-statistic and a p-value of 0.252 ($p > 0.05$), which treats the group variances as equal. However, $p < 0.05$ violates the assumption of homogeneity of variances and treats group variances unequally.

Table 3 reveals that 1-year returns are normally distributed for both groups, and homogeneity of variance has been measured by the Levene’s Test for Equality of Variances. Furthermore, an independent t-test has been conducted on the data with a 95% confidence

interval (CI) to compare 1-year returns of contrarian and value investment portfolios. No significant difference in 1-year returns of contrarian and value portfolios is found. The difference between the 1-year returns of the contrarian portfolio (1.1583 ± 3.134) and the 1-year returns of the value portfolio (0.7925 ± 2.1484) ($t(56) = 0.512, p = 0.611$) is 0.3657 (95% CI, -1.0659 to 1.7579).

A Pearson product-moment correlation coefficient has been computed (Table 5 above) to measure the relationship between the 1-year return of contrarian and value investment portfolios. There is a positive correlation between the two variables ($r = 0.557, n = 29, p = 0.002$). A scatterplot summarizes the results (Figure 4 below). The scatterplot presents opportunities to earn abnormal profits from seasonality effects. Overall, there is a strong and positive correlation between the 1-year return of contrarian and value investment portfolios. Increases in 1-year returns on the contrarian investment portfolio were correlated with increases in 1-year returns on the value investment portfolio. From these results, hypothesis H2 cannot be rejected, the returns from the value investment strategy and contrarian investment strategy are correlated in the same form of market efficiency, and it can be concluded that both investment strategies can be used in the market efficiencies of similar form. The returns of the contrarian and value investment portfolios are correlated in an emerging market such as India. India is not a weak form of the efficient market (Hamid et al. 2017; Kumar and Jawa 2017; Dias et al. 2020). The two investment strategies, contrarian and value, give correlated returns in India, supporting the features of a semi-strong form of market efficiency in which the stock prices reflect available information. The correlation suggests that the information reflected in stock prices used for the contrarian investment strategy may contain the information from fundamental analysis (price-to-book value ratio) used for value investment strategy and India is not a weak form of an efficient market.

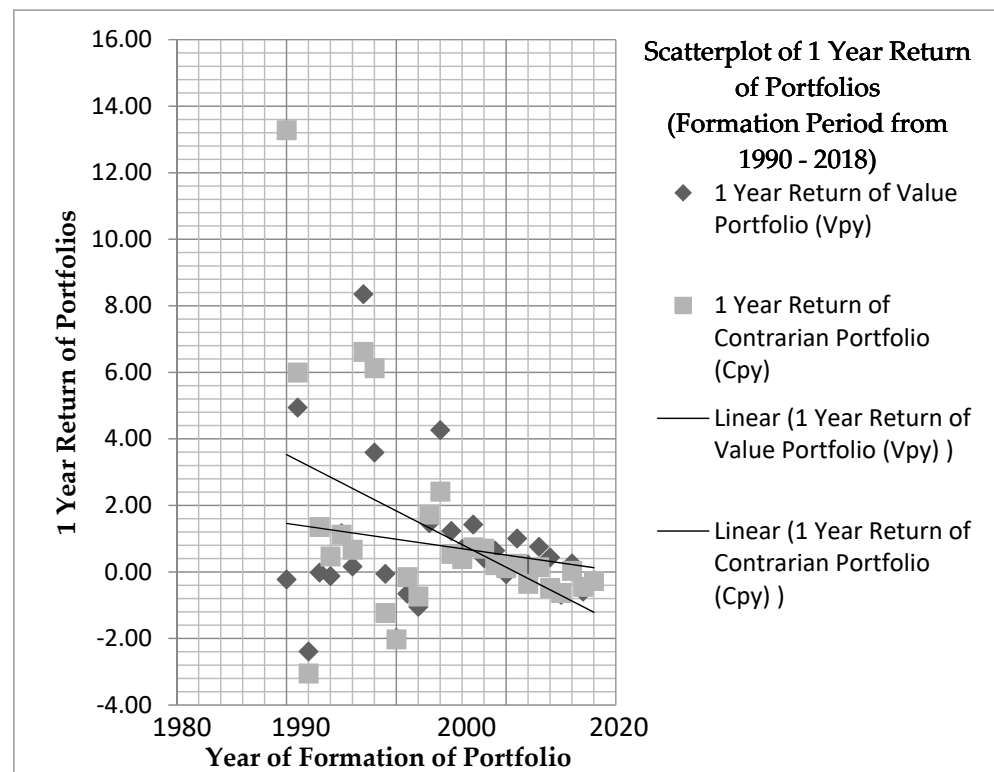


Figure 4. Scatterplot (t + 1).

Robustness checks are conducted for the results. Tables 6 and 7 reveal that 1-year returns are normally distributed for both groups, and no significant difference in returns of contrarian and value portfolios in years $t + 2$ and $t + 4$ are found. Additionally, there is a positive correlation between the returns of the two portfolios for $t + 2$ ($r = 0.927$, $n = 28$, $p = 0.002$) and for $t + 1$ ($r = 0.855$, $n = 26$, $p = 0.002$). The results are robust.

Table 6. Independent samples test for contrarian and value portfolio returns for year $t + 2$.

		Levene’s Test for Equality of Variances		t-Test for Equality of Means						
		F	Sig. (2-Tailed)	T	df	Sig. (2-Tailed)	Mean Difference	Standard Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Portfolio Returns	Equal Variances Assumed	0.024	0.877	0.069	54	0.945	0.03496	0.50402	−0.97553	1.04546
	Equal Variances Not Assumed			0.069	53.992	0.945	0.03496	0.50402	−0.97554	1.04546

Table 7. Independent samples test for contrarian and value portfolio returns for year $t + 4$.

		Levene’s Test for Equality of Variances		t-Test for Equality of Means						
		F	Sig. (2-Tailed)	T	df	Sig. (2-Tailed)	Mean Difference	Standard Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Portfolio Returns	Equal Variances Assumed	0.099	0.754	0.667	50	0.508	0.33155	0.49738	−0.66746	1.33056
	Equal Variances Not Assumed			0.667	49.530	0.508	0.33155	0.49738	−0.66770	1.33079

Tables 8 and 9 give the descriptive statistics of contrarian and value portfolio returns for year $t + 2$ and $t + 4$ respectively. The portfolio return per unit of risk is compared in Table 10 above for contrarian and value portfolios formed in year t . The portfolio risk is measured by the standard deviation of portfolio return over time. The portfolios’ return per unit of risk for contrarian and value portfolios over time $t + 1$, $t + 2$, and $t + 4$ are comparable. This is because there is no significant difference in return of contrarian and value portfolios over $t + 1$, $t + 2$, and $t + 4$, and their risk is also equivalent even though the stocks are different in the portfolios of the contrarian and value investment strategies. Furthermore, the results of the study found no evidence of market trend or seasonality in portfolio return for portfolios formed in time t and their returns observed in time $t + 1$, $t + 2$, and $t + 4$.

Table 8. Descriptive statistics of contrarian and value portfolio returns for year $t + 2$.

Portfolio Returns	Mean	Standard Deviation	N	Standard Error Mean
Contrarian Portfolio	0.7415	1.89756	28	0.35861
Value Portfolio	0.7764	1.87409	28	0.35417

Table 9. Descriptive statistics of contrarian and value portfolio returns for year t + 4.

Portfolio Returns	Mean	Standard Deviation	N	Standard Error Mean
Contrarian Portfolio	0.4619	1.70370	26	0.33412
Value Portfolio	0.7935	1.87867	26	0.36844

Table 10. Portfolio return per unit of risk.

Portfolio Return per Unit of Risk	Year t + 1 Contrarian Portfolio (CP _y)	Year t + 1 Value Portfolio (VP _y)	Year t + 2 Contrarian Portfolio (CP _y)	Year t + 2 Value Portfolio (VP _y)	Year t + 4 Contrarian Portfolio (CP _y)	Year t + 4 Value Portfolio (VP _y)
Mean/Standard Deviation	0.36	0.37	0.39	0.41	0.27	0.42

4. Discussion

Value investment and contrarian investment strategies are thought to select the same stocks even though the selection criteria are different. The selection criteria employed by these investment strategies try to get abnormal returns by identifying various characteristics of stocks. Contrarian investors look for stocks that are ignored by analysts and investors who do not favour such stocks. The reason for analysts and investors to ignore these stocks may be due to their low past returns, bias, or lack of information. The market anomaly where investors reject a stock despite favourable recommendations by the analysts is due to a loss of faith in the analysts or underreaction to the signal. A source of profit for contrarian investment strategies is investors' behaviour, which is irrational, leading to overreaction or underreaction. Value investors look for undervalued stocks with a market value lesser than their intrinsic value. The value investment strategy obtains compensation for extended periods of underperformance by invested stocks which risk-averse investors pay once these undervalued stocks cross their fundamental value in market price. A value investor is poised to obtain a minimum return amounting to the difference between fundamental and under-priced values. Still, the time it will take to achieve it is uncertain. In contrast, a contrarian investor is unsure of the amount of profit, and the period it will take to make that profit, making a contrarian investment strategy riskier than a value investment strategy.

The stocks that are common to value and contrarian investment strategies have given rise to a hybrid investment strategy which is a contrarian investment strategy based on valuation measures of firms. Combining these two investment strategies will tilt the balance more towards value investment as it inhibits the behavioural aspect of a contrarian investment strategy and the expected synergy from a contrarian investment strategy is lost. The empirical results have shown that value and contrarian investors select different stocks at any given time. Some common stocks fulfil all the criteria of contrarian and value investment strategies, but the majority of the stocks chosen by these strategies are different.

Furthermore, value and contrarian investment strategies are assumed to work in different forms of market efficiency. The value investment strategy is successful in the weak form of market efficiency, and the contrarian investment strategy works better in a semi-strong efficient market. However, the results show that both strategies can work in the same form of market efficiency, and their 1-year returns correlate in the same market, conveying that India is not a weak form of the efficient market.

5. Conclusions

This study empirically compares value and contrarian investment strategies and enriches the existing literature on stock market investment strategies. This study is significant for scholars, analysts, and investors as it disentangles value investment and contrarian investment strategies. It clarifies the purpose of these investment strategies and their portfolio composition. By bringing out the difference in the composition of stocks of portfolios for the value investment and contrarian investment strategies and the high correlation in

their returns in the same market efficiency, this study has challenged the convention. This study adds to the literature on the value investment strategy and the contrarian investment strategy by making them more comprehensive through a Venn diagram. It raises questions on the coherence of the market efficiency theory when selecting between value and contrarian investment strategies. As value investment and contrarian investment strategies are known to give abnormal returns over a long investment period, it would be beneficial to observe the results for portfolio returns of more significant than the 1-year holding period taken in this study. It will also be interesting to examine whether the results replicate for stocks listed on other stock exchanges worldwide.

Author Contributions: Conceptualization, S.S.J.; methodology, P.K.G.; software, P.K.G.; validation, S.S.J. and P.K.G.; formal analysis, S.S.J. and P.K.G.; investigation, S.S.J. and P.K.G.; resources, S.S.J. and P.K.G.; data curation, S.S.J. and P.K.G.; writing—original draft preparation, S.S.J.; writing—review and editing, S.S.J. and P.K.G.; visualization, S.S.J. and P.K.G.; supervision, P.K.G.; project administration, P.K.G. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Data Availability Statement: Restrictions apply to the availability of these data. Data were obtained from CMIE's database on performances of listed and unlisted companies and are available <https://prowessiq.cmie.com/>, accessed on 31 January 2020 with the permission of CMIE.

Conflicts of Interest: The authors declare no conflict of interest.

References

- Abarbanell, Jeffrey S., and Brian J. Bushee. 1997. Fundamental analysis, future earnings, and stock prices. *Journal of Accounting Research* 35: 1–24. [\[CrossRef\]](#)
- Abukari, Kobana, and Isaac Otchere. 2020. Dominance of hybrid contrarian strategies over momentum and contrarian strategies: Half a century of evidence. *Financial Markets and Portfolio Management* 34: 471–505. [\[CrossRef\]](#)
- Agrawal, Akanksha, Deepali Gupta, and Sanjay Gupta. 2014. Seasonality and Stock Index Return: A Study of Diwali Festival. *Financial Matters in Global Perspective [Internet]*. Gwalior: PRESTIGE Institute of Management 1: 307–11.
- Al-Abdulqader, K. A., Gwen Hannah, and David M. Power. 2007. The appraisal of ordinary shares by Saudi investors. *Research in International Business and Finance* 21: 69–86. [\[CrossRef\]](#)
- Almujamed, Hesham I., Suzanne Fifield, and David Power. 2013. An investigation of the role of technical analysis in Kuwait. *Qualitative Research in Financial Markets* 5: 43–64. [\[CrossRef\]](#)
- Arand, Daniel, and Alexander G. Kerl. 2015. Sell-Side Analyst Research and Reported Conflicts of Interest. *European Financial Management* 21: 20–51. [\[CrossRef\]](#)
- Arnold, John, and Peter Moizer. 1984. A survey of the methods used by UK investment analysts to appraise investments in ordinary shares. *Accounting and Business Research* 14: 195–207. [\[CrossRef\]](#)
- Arnold, John, Peter Moizer, and Eric Noreen. 1984. Investment appraisal methods of financial analysts: A comparative study of US and UK practices. *International Journal of Accounting* 19: 1–18.
- Asness, Clifford, Andrea Frazzini, Ronen Israel, and Tobias Moskowitz. 2015. Fact, fiction, and value investing. *The Journal of Portfolio Management* 42: 34–52. [\[CrossRef\]](#)
- Asquith, Paul, Michael B. Mikhail, and Andrea S. Au. 2005. Information content of equity analyst reports. *Journal of Financial Economics* 75: 245–82. [\[CrossRef\]](#)
- Baker, Malcolm, and Jeffrey Wurgler. 2007. Investor sentiment in the stock market. *Journal of Economic Perspectives* 21: 129–52. [\[CrossRef\]](#)
- Ball, Ray. 1995. The theory of stock market efficiency: Accomplishments and limitations. *Journal of Applied Corporate Finance* 8: 4–18. [\[CrossRef\]](#)
- Ball, Ray, and S. P. Kothari. 1989. Nonstationary expected returns: Implications for tests of market efficiency and serial correlation in returns. *Journal of Financial Economics* 25: 51–74. [\[CrossRef\]](#)
- Ball, Ray, Joseph Gerakos, Juhani T. Linnainmaa, and Valeri Nikolaev. 2020. Earnings, retained earnings, and book-to-market in the cross section of expected returns. *Journal of Financial Economics* 135: 231–54. [\[CrossRef\]](#)
- Barber, Brad, Reuven Lehavy, Maureen McNichols, and Brett Trueman. 2001. Can investors profit from the prophets? Security analyst recommendations and stock returns. *The Journal of Finance* 56: 531–63. [\[CrossRef\]](#)
- Barberis, Nicholas, Andrei Shleifer, and Robert Vishny. 1998. A model of investor sentiment. *Journal of Financial Economics* 49: 307–43. [\[CrossRef\]](#)
- Barniv, Ran, Ole-Kristian Hope, Mark J. Myring, and Wayne B. Thomas. 2009. Do analysts practice what they preach and should investors listen? Effects of recent regulations. *The Accounting Review* 84: 1015–39. [\[CrossRef\]](#)
- Bartov, Eli, Lucile Faurel, and Partha S. Mohanram. 2018. Can Twitter help predict firm-level earnings and stock returns? *The Accounting Review* 93: 25–57. [\[CrossRef\]](#)

- Basu, Sanjoy. 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: 663–82. [\[CrossRef\]](#)
- Blasco, Natividad, Pilar Corredor, and Elena Ferrer. 2018. Analysts herding: When does sentiment matter? *Applied Economics* 50: 5495–509. [\[CrossRef\]](#)
- Block, Stanley B. 1983. Teaching investments in the context of the efficient market hypothesis: Some strategies to consider. *Journal of Financial Education* 12: 54–58.
- Block, Stanley B. 1999. A study of financial analysts: Practice and theory. *Financial Analysts Journal* 55: 86–95. [\[CrossRef\]](#)
- Bodie, Zvi, Alex Kane, and Alan Marcus. 2007. *Investments*. New York: McGraw-Hill Irwin.
- Bradley, Daniel, Sinan Gokkaya, and Xi Liu. 2017. Before an analyst becomes an analyst: Does industry experience matter? *The Journal of Finance* 72: 751–92. [\[CrossRef\]](#)
- Bradshaw, Mark T., Xue Wang, and Dexin Zhou. 2017. *Soft Information in the Financial Press and Analysts' Recommendation Revisions*. Working Paper. Boston: Boston College.
- Brauer, Matthias, and Margarethe Wiersema. 2018. Analyzing analyst research: A review of past coverage and recommendations for future research. *Journal of Management* 44: 218–48. [\[CrossRef\]](#)
- Brealey, Richard A., Ian A. Cooper, and Evi Kaplanis. 1999. What is the international dimension of international finance? *Review of Finance* 3: 103–19. [\[CrossRef\]](#)
- Brown, Nerissa C., Kelsey D. Wei, and Russ Wermers. 2014. Analyst recommendations, mutual fund herding, and overreaction in stock prices. *Management Science* 60: 1–20. [\[CrossRef\]](#)
- Brycz, Bogumiła, Tadeusz Dudycz, and Katarzyna Włodarczyk. 2021. Are Analysts Really Optimistic in Their Stock Recommendations? The Case of the Polish Capital Market. *Emerging Markets Finance and Trade* 57: 3649–76. [\[CrossRef\]](#)
- Busse, Jeffrey A., T. Clifton Green, and Narasimhan Jegadeesh. 2012. Buy-side trades and sell-side recommendations: Interactions and information content. *Journal of Financial Markets* 15: 207–32. [\[CrossRef\]](#)
- Campbell, John Y., and Tuomo Vuolteenaho. 2004. Bad beta, good beta. *American Economic Review* 94: 1249–75. [\[CrossRef\]](#)
- Chan, K. C. 1988. On the contrarian investment strategy. *Journal of Business* 61: 147–63. [\[CrossRef\]](#)
- Chan, Louis K. C., Yasushi Hamano, and Josef Lakonishok. 1991. Fundamentals and stock returns in Japan. *The Journal of Finance* 46: 1739–64. [\[CrossRef\]](#)
- Chen, Qi, and Wei Jiang. 2006. Analysts' weighting of private and public information. *The Review of Financial Studies* 19: 319–55. [\[CrossRef\]](#)
- Chen, Hailiang, Prabuddha De, Yu Jeffrey Hu, and Byoung-Hyoun Hwang. 2014. Wisdom of crowds: The value of stock opinions transmitted through social media. *The Review of Financial Studies* 27: 1367–403. [\[CrossRef\]](#)
- Chen, Tao, Jarrad Harford, and Chen Lin. 2015. Do analysts matter for governance? Evidence from natural experiments. *Journal of Financial Economics* 115: 383–410. [\[CrossRef\]](#)
- Choi, Jaehyung. 2021. Maximum drawdown, recovery, and momentum. *Journal of Risk and Financial Management* 14: 542. [\[CrossRef\]](#)
- Cohen, Lauren, Andrea Frazzini, and Christopher Malloy. 2008. The small world of investing: Board connections and mutual fund returns. *Journal of Political Economy* 116: 951–79. [\[CrossRef\]](#)
- Conrad, Jennifer, and Gautam Kaul. 1998. An anatomy of trading strategies. *The Review of Financial Studies* 11: 489–519. [\[CrossRef\]](#)
- Da, Zhi, and Xing Huang. 2020. Harnessing the wisdom of crowds. *Management Science* 66: 1847–67. [\[CrossRef\]](#)
- Daniel, Kent, David Hirshleifer, and Avanidhar Subrahmanyam. 1998. Investor psychology and security market under- and overreactions. *The Journal of Finance* 53: 1839–85. [\[CrossRef\]](#)
- Dash, Mihir, Mohit Sabharwal, and Anirban Dutta. 2011. Seasonality and market crashes in Indian stock markets. *Asian Journal of Finance & Accounting* 3: 174–84.
- De Bondt, Werner F. M., and Richard Thaler. 1985. Does the stock market overreact? *The Journal of Finance* 40: 793–805. [\[CrossRef\]](#)
- De Bondt, Werner F. M., and Richard H. Thaler. 1987. Further evidence on investor overreaction and stock market seasonality. *The Journal of Finance* 42: 557–81. [\[CrossRef\]](#)
- Dechow, Patricia M., Amy P. Hutton, and Richard G. Sloan. 2000. The relation between analysts' forecasts of long-term earnings growth and stock price performance following equity offerings. *Contemporary Accounting Research* 17: 1–32. [\[CrossRef\]](#)
- Dias, Rui, Paula Heliodoro, Nuno Teixeira, and Teresa Godinho. 2020. Testing the weak form of efficient market hypothesis: Empirical evidence from equity markets. *International Journal of Accounting, Finance and Risk Management* 5: 40. [\[CrossRef\]](#)
- Dreman, David N. 1977. *Psychology and the Stock Market: Investment Strategy Beyond Random Walk*. 's-Hertogenbosch: Amacom.
- Dreman, David N. 1979. *Contrarian Investment Strategy: The Psychology of Stock Market Success*. New York: Random House Incorporated, vol. 1.
- Dreman, David N. 1998. It's tulip time on Wall Street. *Forbes* 161: 325–25.
- Driskill, Matthew, Marcus P. Kirk, and Jennifer Wu Tucker. 2020. Concurrent earnings announcements and analysts' information production. *The Accounting Review* 95: 165–89. [\[CrossRef\]](#)
- Easterwood, John C., and Stacey R. Nutt. 1999. Inefficiency in analysts' earnings forecasts: Systematic misreaction or systematic optimism? *The Journal of Finance* 54: 1777–97. [\[CrossRef\]](#)
- Easton, Peter D., and Gregory A. Sommers. 2007. Effect of analysts' optimism on estimates of the expected rate of return implied by earnings forecasts. *Journal of Accounting Research* 45: 983–1015. [\[CrossRef\]](#)

- Economou, Fotini, Konstantinos Gavriilidis, Bartosz Gebka, and Vasileios Kallinterakis. 2022. Feedback trading: A review of theory and empirical evidence. *Review of Behavioral Finance. ahead-of-print*. [CrossRef]
- Eikemann, Nils. 2020. *Value Based Performance Measures*. Wiesbaden: Springer Fachmedien Wiesbaden.
- Elton, Edwin J., Martin J. Gruber, and Seth Grossman. 1986. Discrete expectational data and portfolio performance. *The Journal of Finance* 41: 699–713. [CrossRef]
- Emery, Douglas R., and Xi Li. 2009. Are the Wall Street analyst rankings popularity contests? *Journal of Financial and Quantitative Analysis* 44: 411–37. [CrossRef]
- Engelberg, Joseph, R. David McLean, and Jeffrey Pontiff. 2020. Analysts and anomalies. *Journal of Accounting and Economics* 69: 101249. [CrossRef]
- Fama, Eugene F. 1970. Efficient capital markets: A review of theory and empirical work. *The Journal of Finance* 25: 383–417. [CrossRef]
- Fama, Eugene F. 1991. Efficient capital markets: II. *The Journal of Finance* 46: 1575–617. [CrossRef]
- Fama, Eugene F., and Kenneth R. French. 1992. The cross-section of expected stock returns. *The Journal of Finance* 47: 427–65. [CrossRef]
- Fama, Eugene F., and Kenneth R. French. 1993. Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics* 33: 3–56. [CrossRef]
- Fama, Eugene F., and Kenneth R. French. 1995. Size and book-to-market factors in earnings and returns. *The Journal of Finance* 50: 131–55. [CrossRef]
- Fama, Eugene F., and Kenneth R. French. 1996. Multifactor explanations of asset pricing anomalies. *The Journal of Finance* 51: 55–84. [CrossRef]
- Felton, James, and Pawan Jain. 2019. True returns: Adjusting stock prices for cash dividends and stock splits. *Advances in Financial Education* 17: 192–205.
- Firth, Michael, Chen Lin, Ping Liu, and Yuhai Xuan. 2013. The client is king: Do mutual fund relationships bias analyst recommendations? *Journal of Accounting Research* 51: 165–200. [CrossRef]
- Garcia, Diego, and Francesco Sangiorgi. 2011. Information sales and strategic trading. *The Review of Financial Studies* 24: 3069–104. [CrossRef]
- Garg, Arunesh, and Pradeep Kumar Gupta. 2020. Mandatory CSR expenditure and firm performance: Evidence from India. *South Asian Journal of Business Studies* 9: 235–49. [CrossRef]
- Garg, Arunesh, Pradeep Kumar Gupta, and Pritpal Singh Bhullar. 2021. Is CSR Expenditure Relevant to the Firms in India? *Organizations and Markets in Emerging Economies* 12: 178–97. [CrossRef]
- Goldstein, Michael, Paul Irvine, Eugene Kandel, and Zvi Wiener. 2006. Brokerage commissions and institutional trading patterns. *The Review of Financial Studies* 22: 5175–212. [CrossRef]
- Green, T. Clifton. 2006. The value of client access to analyst recommendations. *Journal of Financial and Quantitative Analysis* 41: 1–24. [CrossRef]
- Grinblatt, Mark, Sheridan Titman, and Russ Wermers. 1995. *Momentum investment strategies, portfolio performance, and herding: A study of mutual fund behavior*. *The American Economic Review*: 1088–105.
- Grossman, Sanford J., and Joseph E. Stiglitz. 1980. On the impossibility of informationally efficient markets. *The American Economic Review* 70: 393–408.
- Gu, Anthony Yanxiang. 2015. Value, growth, size and performance along major market trends: Evidence from the us semiconductor firms. *Academy of Accounting and Financial Studies Journal* 19: 1.
- Gu, Chen, and Alexander Kurov. 2020. Informational role of social media: Evidence from Twitter sentiment. *Journal of Banking & Finance* 121: 105969.
- Gu, Zhaoyang, Zengquan Li, and Yong George Yang. 2013. Monitors or predators: The influence of institutional investors on sell-side analysts. *The Accounting Review* 88: 137–69. [CrossRef]
- Gu, Zhaoyang, Zengquan Li, Yong George Yang, and Guangqing Li. 2019. Friends in need are friends indeed: An analysis of social ties between financial analysts and mutual fund managers. *The Accounting Review* 94: 153–81. [CrossRef]
- Guo, Li, Frank Weikai Li, and KC John Wei. 2020. Security analysts and capital market anomalies. *Journal of Financial Economics* 137: 204–30. [CrossRef]
- Hamid, Kashif, Muhammad Tahir Suleman, Syed Zulfiqar Ali Shah, and Rana Shahid Imdad Akash. 2017. Testing the Weak Form of Efficient Market Hypothesis: Empirical Evidence from Asia-Pacific Markets. Available at SSRN 2912908. Available online: <https://ssrn.com/abstract=2912908> (accessed on 28 December 2022). [CrossRef]
- Harford, Jarrad, Feng Jiang, Rong Wang, and Fei Xie. 2019. Analyst career concerns, effort allocation, and firms' information environment. *The Review of Financial Studies* 32: 2179–224. [CrossRef]
- Haugen, Robert A. 1995. *The New Finance: The Case against Efficient Markets*. Hoboken: Prentice Hall Hoboken.
- Hibbert, Ann Marie, Qiang Kang, Alok Kumar, and Suchi Mishra. 2022. Twitter Information, Analyst Behavior, and Market Efficiency, Analyst Behavior, and Market Efficiency (March 4, 2022). Available online: <https://ssrn.com/abstract=4035960> (accessed on 28 December 2022). [CrossRef]
- Hirshleifer, David A., Yushui Shi, and Weili Wu. 2022. *Do Sell-Side Analysts Say "Buy" While Whispering "Sell"?* No. w30032. Cambridge: National Bureau of Economic Research, Available at SSRN 3445084.

- Ho, Tuan, Y. Trong Nguyen, Hieu Truong Manh Tran, and Dinh-Tri Vo. 2022. Fundamental analysis and the use of financial statement information to separate winners and losers in frontier markets: Evidence from Vietnam. *International Journal of Emerging Markets. ahead-of-print*. [CrossRef]
- Hong, Harrison, and Jeffrey D. Kubik. 2003. Analyzing the analysts: Career concerns and biased earnings forecasts. *The Journal of Finance* 58: 313–51. [CrossRef]
- Hong, Harrison, Jeffrey D. Kubik, and Amit Solomon. 2000. Security analysts' career concerns and herding of earnings forecasts. In *The Rand Journal of Economics*. pp. 121–44.
- Hou, Kewei, G. Andrew Karolyi, and Bong-Chan Kho. 2011. What factors drive global stock returns? *The Review of Financial Studies* 24: 2527–74. [CrossRef]
- Irvine, Paul J. 2004. Analysts' forecasts and brokerage-firm trading. *The Accounting Review* 79: 125–49. [CrossRef]
- Irvine, Paul, Marc Lipson, and Andy Puckett. 2007. Tipping. *The Review of Financial Studies* 20: 741–68. [CrossRef]
- Itzkowitz, Jennifer, Jesse Itzkowitz, and Scott Rothbort. 2016. ABCs of trading: Behavioral biases affect stock turnover and value. *Review of Finance* 20: 663–92. [CrossRef]
- Jackson, Andrew R. 2005. Trade generation, reputation, and sell-side analysts. *The Journal of Finance* 60: 673–717. [CrossRef]
- Jame, Russell, Rick Johnston, Stanimir Markov, and Michael C. Wolfe. 2016. The value of crowdsourced earnings forecasts. *Journal of Accounting Research* 54: 1077–110. [CrossRef]
- Jegadeesh, Narasimhan, and Woojin Kim. 2010. Do analysts herd? An analysis of recommendations and market reactions. *The Review of Financial Studies* 23: 901–37. [CrossRef]
- Jegadeesh, Narasimhan, and Sheridan Titman. 1993. Returns to buying winners and selling losers: Implications for stock market efficiency. *The Journal of finance* 48: 65–91. [CrossRef]
- Jegadeesh, Narasimhan, and Sheridan Titman. 1995. Overreaction, delayed reaction, and contrarian profits. *The Review of Financial Studies* 8: 973–93. [CrossRef]
- Jegadeesh, Narasimhan, Joonghyuk Kim, Susan D. Krische, and Charles MC Lee. 2004. Analyzing the analysts: When do recommendations add value? *The Journal of Finance* 59: 1083–124. [CrossRef]
- Jensen, Michael C. 1978. Some anomalous evidence regarding market efficiency. *Journal of Financial Economics* 6: 95–101. [CrossRef]
- Jensen, Michael C., and William H. Meckling. 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics* 3: 305–60. [CrossRef]
- Kadan, Ohad, Leonardo Madureira, Rong Wang, and Tzachi Zach. 2008. Conflicts of interest and stock recommendations: The effects of the global settlement and related regulations. *The Review of Financial Studies* 22: 4189–217. [CrossRef]
- Karemera, David, Kalu Ojah, and John A. Cole. 1999. Random walks and market efficiency tests: Evidence from emerging equity markets. *Review of Quantitative Finance and Accounting* 13: 171–88. [CrossRef]
- Kumar, Harish, and Rachna Jawa. 2017. Efficient market hypothesis and calendar effects: Empirical evidences from the Indian stock markets. *Business Analyst* 37: 145–60.
- Kumar, Muneesh, and Sanjay Sehgal. 2004. Company characteristics and common stock returns: The Indian experience. *Vision* 8: 33–45. [CrossRef]
- Kushwah, Silky Vigg, and Ms Sulekha Munshi. 2018. The effect of seasonality over stock exchanges in India. *Amity Journal of Management* 4: 46–53.
- Lakonishok, Josef, Andrei Shleifer, and Robert W. Vishny. 1994. Contrarian investment, extrapolation, and risk. *The Journal of Finance* 49: 1541–78. [CrossRef]
- Lalwani, Vaibhav, and Madhumita Chakraborty. 2018. Quality investing in the Indian stock market. *Managerial Finance* 44: 127–41. [CrossRef]
- Lettau, Martin, and Sydney Ludvigson. 2001. Resurrecting the (C) CAPM: A cross-sectional test when risk premia are time-varying. *Journal of Political Economy* 109: 1238–87. [CrossRef]
- Levene, Howard. 1961. Robust tests for equality of variances. In *Contributions to Probability and Statistics. Essays in Honor of Harold Hotelling*. Redwood City: Stanford University Press, Palo Alto, pp. 279–92.
- Li, Yan, and Weiping Li. 2021. Empirical Analysis of MSCI China A-Shares. *Journal of Risk and Financial Management* 14: 514. [CrossRef]
- Li, Zhi, and Jing Xie. 2022. The effect of institutional investor distraction on analyst forecasts. Paper presented at 2022 CICF Conference, 2022 AsianFA Conference, Virtual, July 7.
- Lien, Donald, Pi-Hsia Hung, and Li-Wen Chen. 2020. Analyst recommendations, herding intensity, and trading performance. *Asia-Pacific Journal of Financial Studies* 49: 772–802. [CrossRef]
- Lim, Terence. 2001. Rationality and analysts' forecast bias. *The Journal of Finance* 56: 369–85. [CrossRef]
- Lin, Mei-Chen. 2018. The impact of aggregate uncertainty on herding in analysts' stock recommendations. *International Review of Financial Analysis* 57: 90–105. [CrossRef]
- Lin, Hsiou-wei, and Maureen F. McNichols. 1998. Underwriting relationships, analysts' earnings forecasts and investment recommendations. *Journal of Accounting and Economics* 25: 101–27. [CrossRef]
- Ling, Pick-Soon, Ruzita Abdul-Rahim, and Fathin Faizah Said. 2020. The effectiveness of technical strategies in Malaysian Shari' ah vs conventional stocks. *ISRA International Journal of Islamic Finance* 12: 195–215. [CrossRef]
- Lo, Andrew W., and A. Craig MacKinlay. 1990. When are contrarian profits due to stock market overreaction? *The Review of Financial Studies* 3: 175–205. [CrossRef]

- Lovell-Greene, N. J., J. F. Affleck-Graves, and A. H. Money. 1986. A survey of investment appraisal methods used by financial analysts in South Africa. *Investment Analysts Journal* 15: 7–19. [CrossRef]
- Maheshwari, Supriya, and Raj S. Dhankar. 2016. Seasonality in Momentum Profits: Evidence from the Indian Stock Market. Available online: <http://www.publishingindia.com> (accessed on 28 December 2022).
- Massa, Massimo, and Andrei Simonov. 2005. Behavioral biases and investment. *Review of Finance* 9: 483–507. [CrossRef]
- Mayo, H. B. 2011. *Introduction to Investments: International Edition*. Nashville: South-Western College Publishing.
- Mehta, Gaurav, and Karan Khanna. 2015. *Can 'Value' Investors Make Money in India?* Mumbai: Ambit Capital.
- Mikhail, Michael B., Beverly R. Walther, and Richard H. Willis. 1999. Does forecast accuracy matter to security analysts? *The Accounting Review* 74: 185–200. [CrossRef]
- Miller, Gregory S., and Douglas J. Skinner. 2015. The evolving disclosure landscape: How changes in technology, the media, and capital markets are affecting disclosure. *Journal of Accounting Research* 53: 221–39. [CrossRef]
- Minimol, M. C., and K. G. Makesh. 2013. Seasonality in Emerging Economies: Evidences from Indian Stock Market. *International Journal of Financial Management* 3: 26–36.
- Mohapatra, Sabyasachi, and Arun Kumar Misra. 2020. Momentum returns: A portfolio-based empirical study to establish evidence, factors and profitability in Indian stock market. *IIMB Management Review* 32: 75–84. [CrossRef]
- Mola, Simona, and Massimo Guidolin. 2009. Affiliated mutual funds and analyst optimism. *Journal of Financial Economics* 93: 108–37. [CrossRef]
- Morgan, John, and Phillip C. Stocken. 2003. An analysis of stock recommendations. *RAND Journal of Economics*, 183–203.
- Moulya, V. Harshitha, and T. Mallikarjunappa. 2020. Does an analyst's stock recommendation cause anomalous price drift? A study of the Indian Stock Market. *South Asian Journal of Management* 27: 150–67.
- Moyer, R. Charles, Robert E. Chatfield, and Phillip M. Sisneros. 1989. Security analyst monitoring activity: Agency costs and information demands. *Journal of Financial and Quantitative Analysis* 24: 503–12.
- Mun, Johnathan C., Geraldo M. Vasconcellos, and Richard Kish. 1999. Tests of the contrarian investment strategy evidence from the French and German stock markets. *International Review of Financial Analysis* 8: 215–34. [CrossRef]
- Nair, Asha K. S., and Som Sekhar Bhattacharyya. 2019. Mandatory corporate social responsibility in India and its effect on corporate financial performance: Perspectives from institutional theory and resource-based view. *Business Strategy & Development* 2: 106–16.
- Nasir, Muhammad Ali, Sabih Abass Rizvi, and Matteo Rossi. 2018. A treatise on oil price shocks and their implications for the UK financial sector: Analysis based on time-varying structural VAR model. *The Manchester School* 86: 586–621. [CrossRef]
- Nasir, Muhammad Ali, Muhammad Shahbaz, Trinh Thi Mai, and Moade Shubita. 2021. Development of Vietnamese stock market: Influence of domestic macroeconomic environment and regional markets. *International Journal of Finance & Economics* 26: 1435–58.
- O'Sullivan, Niall, Sheng Zhu, and Jason Foran. 2019. Sentiment versus liquidity pricing effects in the cross-section of UK stock returns. *Journal of Asset Management* 20: 317–29. [CrossRef]
- Palamalai, Srinivasan, and M. Kalaivani. 2014. Day-of-the-week effects in the Indian stock market. *Day-of-the-Week Effects in the Indian Stock Market, International Journal of Economics and Management* 8: 158–77.
- Pan, Wei-Fong. 2020. Does investor sentiment drive stock market bubbles? Beware of excessive optimism! *Journal of Behavioral Finance* 21: 27–41. [CrossRef]
- Pani, Bijon, and Frank J. Fabozzi. 2021. Finding Value Using Momentum. *The Journal of Portfolio Management* 48: 264–83. [CrossRef]
- Patel, Jayen B. 2008. Calendar effects in the Indian stock market. *International Business & Economics Research Journal (IBER)* 7: 61–70.
- Phalippou, Ludovic. 2007. Can risk-based theories explain the value premium? *Review of Finance* 11: 143–66. [CrossRef]
- Pike, Richard, Johannes Meerjanssen, and Leslie Chadwick. 1993. The appraisal of ordinary shares by investment analysts in the UK and Germany. *Accounting and Business Research* 23: 489–99. [CrossRef]
- Pontiff, Jeffrey, and Lawrence D. Schall. 1998. Book-to-market ratios as predictors of market returns. *Journal of Financial Economics* 49: 141–60. [CrossRef]
- Pornpikul, Chanapol, and Sampan Nettayanun. 2021. Stock return drivers: A mix of reasons and emotions. *Review of Behavioral Finance* 14: 751–771. [CrossRef]
- Rosenberg, Barr, Kenneth Reid, and Ronald Lanstein. 1998. Persuasive evidence of market inefficiency. *Streetwise: The Best of the Journal of Portfolio Management*, 48–55.
- Sadhwani, Ranjeeta, and M. U. R. Bhayo. 2021. Momentum and disposition effect in the US stock market. *Cogent Economics & Finance* 9: 1999004.
- Sahoo, Bibhu Prasad, Ankita Gulati, and Irfan Ul Haq. 2021. Seasonality and Long-Term Nature of Equity Markets: Empirical Evidence from India. *The Journal of Asian Finance, Economics and Business* 8: 741–49.
- Sasidharan, Anand. 2009. Does Seasonality Persists in Indian Stock Markets? Available online: <https://mpa.ub.uni-muenchen.de/24185/> (accessed on 28 December 2022).
- Scharfstein, David S., and Jeremy C. Stein. 1990. Herd behavior and investment. *The American Economic Review* 80: 465–79.
- Sehgal, Sanjay, and I. Balakrishnan. 2002. Contrarian and momentum strategies in the Indian capital market. *Vikalpa* 27: 13–20. [CrossRef]
- Sen, Som Sankar. 2014. The Month-of-the-Year Effect in the Indian Stock Market: A Case study on BSE–Sensex. *Journal of Commerce & Accounting Research* 3: 22–27.
- Shleifer, Andrei, and Robert W. Vishny. 1997. The limits of arbitrage. *The Journal of Finance* 52: 35–55. [CrossRef]

- Sriram, M., and P. Renuka Devi. 2013. Seasonality in the returns: A study of BSE Sensex. *International Journal of Financial Management* 3: 60.
- Stattman, Dennis. 1980. Book values and stock returns. *The Chicago MBA: A Journal of Selected Papers* 4: 25–45.
- Tang, Vicki Wei. 2018. Wisdom of crowds: Cross-sectional variation in the informativeness of third-party-generated product information on Twitter. *Journal of Accounting Research* 56: 989–1034. [[CrossRef](#)]
- Thampanya, Natthinee, Junjie Wu, Muhammad Ali Nasir, and Jia Liu. 2020. Fundamental and behavioural determinants of stock return volatility in ASEAN-5 countries. *Journal of International Financial Markets, Institutions and Money* 65: 101193. [[CrossRef](#)]
- Tijjani, Bashir, Suzanne Fifield, and David M. Power. 2009. The appraisal of equity investments by Nigerian investors. *Qualitative Research in Financial Markets* 1: 6–26. [[CrossRef](#)]
- Trueman, Brett. 1994. Analyst forecasts and herding behavior. *The Review of Financial Studies* 7: 97–124. [[CrossRef](#)]
- Verma, Rahul, and Gökçe Soydemir. 2009. The impact of individual and institutional investor sentiment on the market price of risk. *The Quarterly Review of Economics and Finance* 49: 1129–45. [[CrossRef](#)]
- Verma, Rahul, Hasan Baklaci, and Gökçe Soydemir. 2008. The impact of rational and irrational sentiments of individual and institutional investors on DJIA and S&P500 index returns. *Applied Financial Economics* 18: 1303–17.
- Wang, Jing, Jim Haslam, and Claire Marston. 2011. The appraisal of ordinary shares by Chinese financial analysts. *Asian Review of Accounting* 19: 5–30. [[CrossRef](#)]
- Welagedara, Venura, Saikat Sovan Deb, and Harminder Singh. 2017. Investor attention, analyst recommendation revisions, and stock prices. *Pacific-Basin Finance Journal* 45: 211–23. [[CrossRef](#)]
- Welch, Ivo. 2000. Herding among security analysts. *Journal of Financial Economics* 58: 369–96. [[CrossRef](#)]
- Womack, Kent L. 1996. Do brokerage analysts' recommendations have investment value? *The Journal of Finance* 51: 137–67. [[CrossRef](#)]
- Yogo, Motohiro. 2006. A consumption-based explanation of expected stock returns. *The Journal of Finance* 61: 539–80. [[CrossRef](#)]
- Yu, Fang Frank. 2008. Analyst coverage and earnings management. *Journal of Financial Economics* 88: 245–71. [[CrossRef](#)]
- Zaimovic, Azra, Adna Omanovic, and Almira Arnaut-Berilo. 2021. How Many Stocks Are Sufficient for Equity Portfolio Diversification? A Review of the Literature. *Journal of Risk and Financial Management* 14: 551. [[CrossRef](#)]

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.