Post-Earning Announcement Drift and Value-Glamour Anomalies in NSE Listed Firms

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Abstract

**Purpose of the article:** Of the various market anomalies, the Value-Glamour anomaly and Post-Earnings Announcement Drifts (PEAD) have consistently attracted the attention of researchers. Prior studies have established that the reaction of value stocks and glamour stocks to the earnings announcement differs significantly and there is a close relationship between the PEAD and abnormal returns arising due to earning announcement surprises. We have studied the drift patterns of various value and glamour portfolios and tested whether the direction of the earnings announcement abnormal return is opposite to that of earnings surprise in the Indian market.

**Methodology:** We use the statistics of 100 firms listed on the NSE for a sample period of 2014–2018. We use a set of 1130 observations analysed using the expectations formation approach around earnings and evaluate the post earnings announcement drift. We use the Earnings Response Coefficients to find the association between abnormal stock returns and earnings surprises.

**Scientific aim:** The aim of this research is to improve the knowledge of market anomalies in developing markets such as India focusing on the impact of earnings announcement on growth and value stocks.

**Findings:** We find that a negative association of abnormal stock returns with surprise in accounting earnings announcements. The stocks, which are overvalued or undervalued, are properly priced after the earnings announcements. Our results refute the earlier studies evidencing the strong support in favour of market inefficiency in the Indian context, particularly with respect to publicly available earnings information.

**Conclusions:** The Indian stock market tends to be efficient with respect to earnings announcements and therefore does not produce excessive returns. However, a heterogeneity with respect to earnings announcement may exist among the category of stocks depending upon liquidity position. Superior returns cannot be derived by traders and investors on a consistent basis from value-glamour anomaly.

**Keywords:** post-earnings announcement drifts, abnormal returns, value and glamour anomaly, earnings response coefficient

**JEL Classification:** C22, G14, G32
1. Introduction

The notion of market efficiency has been frequently challenged by researchers who believe that anomalies do exist in the financial market and particularly the stock market. The pioneering work of Ball, Brown (1968) first observed and documented the drifts of the various market anomalies. Of these, we focus on the “value and glamour” anomaly which implies the outperforming the behaviour of glamour stocks vis-a-vis value stock. Preliminary studies exhibit that value and glamour stocks response to earnings announcements in a different style. Also, Kishore et al. (2008) shows that “earnings announcement abnormal returns (EARs) are significantly related to post-earnings-announcement drifts”. Post stocks returns have gathered substantial attention and have been reported in various studies. Researchers have used a variety of sets to understand this phenomenon. Bernard, Thomas (1989) show that “a long position in stocks with unexpected earnings in the highest deciles, combined with a short position in the stocks in the lowest deciles, yields high abnormal returns”.

Substantial studies have been conducted to explain the drift. These are disclosures (Shin, 2005), investor learning (Chordia, Shivakumar, 2006), idiosyncratic stock return volatility (Mendenhall, 2004), information uncertainty (Francis et al., 2007) and liquidity by some researchers. Future earning of the investor is influenced by the information content in presenting earning and it can be obtained by the Earning Response Coefficients (ERC). The ERC estimates the relationship between information content in companies’ earnings announcements and the equity returns.

A wide range of explanations has been provided in the literature to explain the difference in earnings between growth stocks and value stocks. The famous work of Fama, French (1992) outlines the fundamental risks associated with value strategies. Compensation for risk is reflected by higher average returns obtained of which systematic risk measured by beta is prominent. The risk of the firm’s earnings is negatively related to the reaction of the investor to the unexpected portion of the earnings.

Authors such as Doukas et al. (2002) refute “the extrapolation hypothesis that posits that the superior performance of value stocks is because investors make systematic errors in predicting future growth in earnings of out-of-favour stocks.” Various pieces of research point out that the measurement errors associated with estimation of long-term abnormal returns that imply a notion that glamour stocks yield inferior returns (Kothari et al. 1999). Skinner, Sloan (2000) show that “growth stocks perform similarly to other stocks surprises, but that growth stocks display a much larger negative response to negative earnings surprises. After controlling for the unsymmetrical response of growth stocks to negative earnings surprises, there is no longer evidence of a stock return differential between growth stocks and other stocks”. In some related studies on value-glamour anomaly, we find that post-earnings-announcement drifts are related to Earning Announcement Returns (EAR) significantly.

It is interesting to investigate how the reaction of value stocks differs from glamour stocks and the significance of EARs to post earnings announcement drifts. If the result is affirmative, then we establish that compared to the value stocks, the drift patterns of glamour stocks should exhibit a significant difference. Jegadeesh, Livnat (2006) raise doubt on the market reaction that ignores information other than the one on the announcement dates and place importance to ‘some other information’ similar to Kinney et al. (2002) who also explain it as” the reason for the low explanatory power of earnings surprises for drifts”. In this paper, we analyse the PEAD and Value-Glamour anomaly in the Indian stock markets and attempt to explain the nature of drifts due to earning announcement surprises.
2. Literature review

Over decades, researchers have attempted to study the reaction of stock prices drifting towards the earnings surprises immediate to the earnings announcement popularly referred to as the Post Earnings Announcement Drift (PEAD). Of the various capital market anomalies, the PEAD is well documented in the literature and is a challenge to the notion of efficiency of capital markets.

Various studies have been conducted to explore the cause behind its existence. The deviation of the PEAD is associated with the inefficiency in the information processing capabilities of the market investor (Bartov et al., 2000; Troung, 2010). Consequently, inefficiencies are introduced into the market. Bernard, Thomas (1989) define the PEAD as the “tendency for stocks’ Cumulative Abnormal Returns (CAR) to drift upwards, in the case of positive earnings surprise, and downwards, in the case of negative earnings surprise”.

In American stock markets, a large amount of research following Ball, Brown (1968) and Foster et al. (1984) shows the existence of the PEAD. Johnson, Schwartz (2000) investigate the perseverance of the PEAD and find that “the profit opportunities previously associated with simple trading strategies, designed to exploit the drift phenomenon, have now been substantially abolished indicating a market which gradually becomes more productive”. Amihud, Mendelson (1986) have indicated that the investment horizon and liquidity as investor preferences and the bid-ask spread is a step towards realisation of efficiency, rather being an anomaly.

The proof of a wrong specified model resulting in the PEAD may be the real cause rather than the market efficiency (Forner et al. 2009). The unexpected returns model does not consider the unexpected returns as reflected by the liquidity risk resulting into the PEAD (Sadka, Sadka, 2004). The studies of Bhushan (1994) and Brav, Heaton (2006) depict the tendency of stronger drifts for the marginal stocks. The major cause of imperfections in the information processing behaviour of investors is due to the degree of confidence in the private information and the extent of the reliability of information (Liang, 2003).

Chordia, Shivakumar (2006) show that when markets are inefficient, the use of a simple long–short trading strategy is not able to generate profit. But, as per Mendenhall (2004) bid-ask spreads on the PAED will be profitable for long-short games. The existence of anomaly is established by Porta et al. (1997) for size-adjusted EARs when compared for value vs. glamour stocks. Also, the portfolios with large EARs exhibit large drifts (Brandt et al., 2008).

Combining long and short positions for unexpected earnings may generate abnormal returns (Livnat, Mendenhall, 2006). Hotchkiss, Strickland (2003) show that “when the firm reports earnings below the analysts’ expectations, the response is more negative for firms with higher levels of ownership by momentum or aggressive growth investors”.

Ganguli’s (2010) study of turnaround companies creates an earning surprise because of the poor information processing capability of analysts establishing the case of the PEAD anomaly in Indian stock markets. In a recent study by Angelovska (2017), we also find that in the period of recession, the investors did not react positively to the earnings announcements. We are therefore motivated to examine the existence of the PEAD and value-glamour anomaly in Indian stock markets, especially during a period when the information processing ability of market investors is on the rise.

3. Methodology

For the purpose of the study, we have identified 100 top NSE listed firms that are typically “large caps”. Of these, we investigate the
PEAD patterns for 98 companies (Table 7) listed on NSE obtained from CMIE Prowess 8.0 databases, classified as (a) glamour stocks and (b) value stocks for the period 2013–2018 (Table 8) representing the period after the global financial crisis and its stabilisation. Stocks are classified into quintiles and first and last quintile portfolio is selected.

We define value stocks having low P/E and P/B ratios typically perceived to have low growth potential and glamour stock having high P/E and P/B ratios with robust financial and market performance. The Price to Book Ratio (P/B) = Equity Share Price / Book Value per Share and the Price-to-earnings ratio (P/E) = Equity Share Price/Earnings per Share (Table 9) are used as proxies for performance with training and forward effects similar to earlier studies.

\[ \text{Earnings Surprise} = \text{Actual Returns} - \frac{\text{Expected Returns}}{\text{Absolute (Expected Returns)}}. \]  

(1)

The Earnings Response Coefficient (ERC) has been used to confirm the existence of efficiency using the abnormal returns model. The ERC has been estimated from the difference of actual results around the estimation date and the expectations of returns by the market before announcements.

We use the framework of Gupta and Bhatia (2013), who have used Easton, Zmijewski (1989) for the estimation of the ERC distribution of ERCs for sample firms using the abnormal returns model with the two-day holding period quoted as follows:

\[ CPE(-1,0)_{jt} = \lambda_{j0} + \lambda_{j1} \left[ \frac{FE_{jt}}{P_{jt-2}} \right] + \lambda_{j2} RVL_{jt} + \mu_{jt}, \]  

(2)

where:

- \( CPE(-1,0)_{jt} \) – sum of the market model prediction errors over the interval from the trading day −1 through the earnings announcement day, day 0 for firm \( j \) for quarter \( t \);
- \( FE_{jt} \) – earnings announced in quarter \( t \) minus the most recent analyst forecast for quarter \( t \) earnings;
- \( P_{jt-2} \) – price of security \( j \) on day \( t-2 \) (2 days before day zero);
- \( RVL_{jt} \) – stock return for firm \( j \) from the day after the forecast date through two days before the earnings announcement;
- \( \lambda_{j0}, \lambda_{j1}, \lambda_{j2} \) – firm-specific regression coefficients;
- \( \mu_{jt} \) – normally distributed disturbance terms.

They first use a generic estimator to find the co-efficient of the regressor and then proceed to find the impact of fixed effects (FE) and random effects (RE) in the cross sections. The Hausman test is used to test the appropriateness of a fixed or random effects model.

We can test whether a fixed or random effects model is appropriate using a where \( X_{it} \) and \( Z_{it} \) as instruments yields a consistent estimate.

The hypotheses are:

\[ H_0 : \alpha_i \perp \perp X_{it}, Z_{it} ; H_a : \alpha_i \perp \perp X_{it}, Z_{it} \]

“If \( H_0 \) is true, both \( \hat{\beta}_{RE} \) and \( \hat{\beta}_{FE} \) are consistent, but only \( \hat{\beta}_{RE} \) is efficient. If \( H_a \) is true, \( \hat{\beta}_{RE} \) is consistent and \( \hat{\beta}_{FE} \) is not”, similar to Gupta, Bhatia (2013).

We also examine the event studies that have been conventionally used to investigate the response of the stock market to corporate events like restructuring or reorganisations, CSR initiatives, the issue of securities etc. (MacKinlay, 1997; McWilliams, Siegel, 1997). The EAR (Earnings Announcement Abnormal Returns) recorded over a 3-day, 5-day and 10-day window that is centred on the day of the announcement. We have calculated the drift for 30 days and 60 days and linked with the value and glamour anomaly.
The ES and EAR are classified in four groups \([++]\), \([+-]\), \([-+]\), \([- -]\) for both the “Profit-to-Book Value Ratio” and “Price-to-earnings Ratio”. We use the CAPM to derive the theoretical returns using a quarterly risk-free rate (Table 12). Table 10 and 11 respectively indicate the market performance and quarterly market returns for the NIFTY during the sample period.

4. Results and Discussions

We run a panel regression for estimating the Earning Response Coefficients (ERC) with fixed effects and random effects (Table 1). The Hausman (1978) test specifications have been used prior to the selection of fixed and random effects. On the basis of the Hausman statistic, we reject the fixed effects model and select the random effects specification for our analysis.

We find that the Earning Response Coefficients (ERCs) using the random effects model show the negative association of abnormal stock returns with surprise in accounting earnings announcements.

Value Glamour Anomaly
We find an interesting phenomenon that glamour stocks and value stocks behave on similar patterns contrary to the notion of differences in previous research (Table 2 and 3). Glamour stocks do not give any particular reaction to the earning surprise (ES) to the EAR (Earning Announcement Returns) evident from the similarity in all the three windows (3 day, 5 day & 10 day).

Table 1. Coefficients of panel regression – fixed effects and random effects.

| Estimated Variable | Coefficient – Fixed Effects | Coefficient – Random Effects | Random Effects Coefficient across Cross Section and time-series |
|-------------------|-----------------------------|-----------------------------|---------------------------------------------------------------|
| ERC               | 0.03041                     | –0.17999                     | –0.18546                                                      |

Source: Authors’ own computation, 2019.

Table 2. EAR for glamour stocks.

| 3 Day EAR | 5 Day EAR | 10 Day EAR |
|-----------|-----------|------------|
| [ES, EAR] | COUNT     | [ES, EAR]  | COUNT     | [ES, EAR] | COUNT |
| [++]      | 190       | [++]       | 176       | [++]      | 160   |
| [+–]      | 217       | [+–]       | 231       | [+–]      | 248   |
| [–+]      | 100       | [–+]       | 103       | [–+]      | 120   |
| [––]      | 113       | [––]       | 110       | [––]      | 92    |
| Total     | 620       | Total      | 620       | Total     | 620   |

Source: Authors’ own computation, 2019.

Table 3. EAR for value stocks.

| 3 Day EAR | 5 Day EAR | 10 Day EAR |
|-----------|-----------|------------|
| [ES, EAR] | COUNT     | [ES, EAR]  | COUNT     | [ES, EAR] | COUNT |
| [++]      | 162       | [++]       | 156       | [++]      | 131   |
| [+–]      | 191       | [+–]       | 196       | [+–]      | 222   |
| [–+]      | 64        | [–+]       | 74        | [–+]      | 77    |
| [––]      | 93        | [––]       | 83        | [––]      | 81    |
| Total     | 510       | Total      | 510       | Total     | 510   |

Source: Authors’ own computation, 2019.
[++]: Both the Earning Surprise and Earning Announcement Drift are positive. It implies that the announcement was expected in a way it came and investors also reacted in the positive way.

[+–]: The Earning Surprise is positive and Earning Announcement Drift is negative. It implies that announcement was expected in a way it came. But investors did not react the same way.

[–+]: The Earning Surprise is negative but the Earning Announcement Drift is positive. It implies that announcement was not expected in a way it came but the market reacted in a positive way.

[––]: Both the Earning Surprise and Earning Announcement Drift are negative. It implies that announcement was not expected in a way it came and even the market did not react positively.

**Linking Value Glamour Anomaly & PEAD**

We link both the anomalies with following indications:

[++]+: It shows the ES and EAR along with the drift is positive. It shows that the market welcomed the announcement in a positive way and the stock might revalue to its real price or might be over-valued. It also shows that the effect of the announcement was there for a longer period of time.

[+–]–: It shows the ES and EAR both are positive but the drift is negative. It shows that the market welcomed the announcement in a positive way, but it saturated soon and hence the drift could not be positive.

[+–]+: It shows the ES is positive and the EAR is negative but the drift is positive. It shows that the market welcomed the announcement in a negative way, but the stock performed better leaving aside the announcement effect in a positive way.

[+–]–: It shows the ES is positive and the EAR and drift are negative. It shows that the market welcomed the announcement in a negative way and the stock also performed in the way announcement made for the next 30 or 60 days.

[–+]+: It shows the ES is negative but the EAR and drift are positive. It shows that the market welcomed the announcement in a positive way and the momentum carried on with the announcement.

[–+–]: It shows the ES is negative and the EAR is positive but the drift is negative. It

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**Post Earning Announcement Drift**

We have calculated the drift as the cumulative abnormal return for firm from second day to the nth day after the announcement of earnings. Two drifts are computed – 30 days and 60 days (Table 4). We argue that this period is sufficient to examine the impact of the market reaction after the earnings announcement.

The results indicate that the drift pattern is not linked with the value glamour anomaly. We, therefore, cannot significantly conclude for positive and negative drifts for the value stocks and glamour stocks.

**Table 4. Post earning announcement drift for glamour stocks & value stocks.**

| Drifts       | Glamour stocks | Value stocks |
|--------------|----------------|--------------|
| **Drift 30 days** |                |              |
| Positive     | 238            | 179          |
| Negative     | 382            | 331          |
| **Drift 60 days** |                |              |
| Positive     | 274            | 206          |
| Negative     | 346            | 304          |

*Source: Authors’ own computation, 2019.*
shows that the market welcomed the announcement in a positive way, but the stock performed in a negative way later on.

[––]: It shows the ES, EAR and drift are negative. It shows that the market welcomed the announcement in a negative way and it remained on the negative side for the next 30 or 60 days.

Table 5 and 6 show the linkage of the value glamour anomaly with the PEAD for value stocks and glamour stocks. The results look homogenous and it is difficult to predict the drift of the value stocks or glamour stocks in the Indian context. Nevertheless, the directions remain similar with the 3-day, 5-day and 10-day EAR. The [+-] – is maximum and [–+] – is minimum for all sets. It can also be derived that the stocks, which are overvalued or undervalued are properly priced after the earnings announcements. Zhipeng, Zhao (2011) have shown that post-earnings-announcement drifts significantly associate the value-glamour anomaly and by taking long position in stocks the traders are able to drive significant abnormal returns. In specific sub-periods, some authors have contrarily found that the PEAD leads to significant gains (Harshita et al., 2018). However, we argue that their findings are highly subjected to the period and sample stock selection.

In a liquidity context, the PEAD has been studied by authors such as Sadka (2006), who established that abnormal returns resulting from the PEAD anomaly was primarily due to the unexpected variable component of the market wide liquidity. Our sample represents NSE top 100 stocks that are inherently liquid. The non-existence of drifts derived in our case confirms the findings of Chordia et al. (2018), who established that the PEAD drifts were mainly linked to the highly illiquid stocks.

The confidence of private information by the traders and investors leads to drifts that create the anomaly (Liang, 2003). Our findings are in contrast to Jaisinghani (2016), who put emphasis on regulators action for handling this market inefficiency. In addition, Fricke et al. (2014) have shown that Google SVI disseminates information to the uniformed investors, thus reduces the market inefficiency. The risk associated with value glamour stocks are higher, which probably

### Table 5. Linking the value glamour anomaly with the PEAD for value stocks.

| EAR       | Drifts   | +[+]   | +[-]   | +[-]   | [-+]   | [-+]   | [+--]  | [+--]  | Total |
|-----------|----------|--------|--------|--------|--------|--------|--------|--------|-------|
| EAR 3 Day | Drift 30 | 65     | 96     | 64     | 126    | 18     | 47     | 31     | 62    | 510   |
|           | Drift 60 | 77     | 85     | 73     | 118    | 20     | 44     | 35     | 58    | 510   |
| EAR 5 Day | Drift 30 | 68     | 89     | 62     | 134    | 20     | 54     | 29     | 54    | 510   |
|           | Drift 60 | 73     | 83     | 77     | 120    | 24     | 50     | 31     | 52    | 510   |
| EAR 10 Day| Drift 30 | 63     | 68     | 67     | 155    | 22     | 54     | 27     | 54    | 510   |
|           | Drift 60 | 63     | 68     | 86     | 135    | 24     | 52     | 31     | 50    | 510   |

Source: Authors’ own computation, 2019.

### Table 6. Linking the value glamour anomaly with the PEAD for glamour Stocks.

| EAR       | Drifts   | +[+]   | +[-]   | +[-]   | [-+]   | [-+]   | [+--]  | [+--]  | Total |
|-----------|----------|--------|--------|--------|--------|--------|--------|--------|-------|
| EAR 3 Day | Drift 30 | 96     | 94     | 74     | 143    | 20     | 80     | 48     | 65    | 620   |
|           | Drift 60 | 93     | 97     | 100    | 117    | 28     | 72     | 54     | 59    | 620   |
| EAR 5 Day | Drift 30 | 95     | 81     | 75     | 156    | 20     | 83     | 48     | 62    | 620   |
|           | Drift 60 | 87     | 89     | 105    | 126    | 29     | 74     | 53     | 56    | 620   |
| EAR 10 Day| Drift 30 | 97     | 62     | 73     | 175    | 22     | 97     | 45     | 48    | 620   |
|           | Drift 60 | 83     | 76     | 110    | 138    | 38     | 82     | 44     | 49    | 620   |

Source: Authors’ own computation, 2019.
explains the abnormal returns enjoyed from investing strategies (Doukas et al., 2001).

From a traders’ perspective, we raise an important issue – the speed of adjustment. Fink et al. (2020) show that fundamental value changes are incorporated in the market prices at a lower speed resulting in trading strategies to be profitable. However, our results show that drifts are not directly observable. The speed of adjustment in case of our sample stocks is sufficient enough for traders to derive any superior profits.

5. Conclusion

We can conclude that the Indian market tends to be efficient with respect to earnings announcements and therefore does not produce excessive returns. Most of the selected firms listed on the NSE appear to be confirming the notion of immediate adaptation of the stock prices around the new expected quarterly earnings. Research on market efficiency expects the market to absorb the new information spontaneously, which is a phenomenon in developed markets. However, in the Indian context, the results are not homogeneous in all ways.

Our results on the response of stock prices to earnings announcement are different to the findings of researchers around the globe, which may be due to the unique feature of the Indian stock market. It is interesting to mention that the PEAD phenomenon is monitored with an alternative portfolio formation approach. Contrarily, we use a much simpler expectations formation approach around earnings. Overall, we support the efficiency notion of the Indian stock markets with respect to the analysed market anomalies.

Our research is primarily confined to liquid stocks that nullify the possible superior gains from the anomalies motivating traders and investors to form trading strategies. In the further work, the research can be extended to lesser liquid stocks, which can further throw light on market efficiency.

| Name of the Company         | Sector                          |
|-----------------------------|---------------------------------|
| ABB India Ltd.              | Electric Equipment              |
| ACC Ltd.                    | Cement & Construction Materials |
| Adani Ports and Special Economic Zone Ltd. | Port                          |
| Ambuja Cements Ltd.         | Cement & Construction Materials |
| Ashok Leyland Ltd.          | Automobiles-Trucks/LCV          |
| Asian Paints Ltd.           | Paints                          |
| Aurobindo Pharma Ltd.       | Pharmaceuticals & Drugs         |
| Avenue Supermarts Ltd.      | Retailing                       |
| Axis Bank Ltd.              | Bank – Private                  |
| Bajaj Auto Ltd.             | Automobile Two & Three Wheelers |
| Bajaj Finance Ltd.          | Finance – NBFC                  |
| Bajaj Finserv Ltd.          | Finance – Investment            |
| Bank Of Baroda              | Bank – Public                   |
| Bharat Electronics Ltd.     | Engineering – Industrial Equipments |
| Bharat Heavy Electricals Ltd. | Engineering – Industrial Equipments |
| Bharat Petroleum Corporation Ltd. | Refineries               |
| Bharti Airtel Ltd.          | Telecommunication – Service Provider |
| Name of the Company                        | Sector                                      |
|-------------------------------------------|---------------------------------------------|
| Bharti Infratel Ltd.                      | Telecommunication – Service Provider        |
| Bosch Ltd.                                | Auto Ancillary                             |
| Britannia Industries Ltd.                 | Consumer Food                              |
| Cadila Healthcare Ltd.                    | Pharmaceuticals & Drugs                     |
| Cipla Ltd.                                | Pharmaceuticals & Drugs                     |
| Coal India Ltd.                           | Mining & Minerals                           |
| Colgate-Palmolive (India) Ltd.             | Household & Personal Products               |
| Container Corporation Of India Ltd.       | Logistics                                   |
| Cummins India Ltd.                        | Diesel Engines                              |
| Dabur India Ltd.                          | Household & Personal Products               |
| DLF Ltd.                                  | Construction – Real Estate                  |
| Dr. Reddys Laboratories Ltd.              | Pharmaceuticals & Drugs                     |
| Eicher Motors Ltd.                        | Automobile Two & Three Wheelers             |
| Emami Ltd.                                | Household & Personal Products               |
| GAIIl (India) Ltd.                        | Industrial Gases & Fuels                    |
| Glaxosmithkline Consumer Healthcare Ltd.  | Consumer Food                              |
| Glaxosmithkline Pharmaceuticals Ltd.       | Pharmaceuticals & Drugs                     |
| Glenmark Pharmaceuticals Ltd.              | Pharmaceuticals & Drugs                     |
| Godrej Consumer Products Ltd.             | Household & Personal Products               |
| Havells India Ltd.                        | Electric Equipment                          |
| HCL Technologies Ltd.                     | IT – Software                               |
| HDFC Bank Ltd.                            | Bank – Private                              |
| Hero MotoCorp Ltd.                        | Automobile Two & Three Wheelers             |
| Hindalco Industries Ltd.                  | Metal – Non Ferrous                         |
| Hindustan Petroleum Corporation Ltd.      | Refineries                                  |
| Hindustan Unilever Ltd.                   | Household & Personal Products               |
| Hindustan Zinc Ltd.                       | Metal – Non Ferrous                         |
| Housing Development Fin. Corporation Ltd. | Finance – Housing                           |
| ICICI Bank Ltd.                           | Bank – Private                              |
| Indiabulls Housing Finance Ltd.           | Finance – Housing                           |
| Indian Oil Corporation Ltd.               | Refineries                                  |
| IndusInd Bank Ltd.                        | Bank – Private                              |
| Infosys Ltd.                              | IT – Software                               |
| Interglobe Aviation Ltd.                  | Airlines                                    |
| ITC Ltd.                                  | Cigarettes/Tobacco                          |
| JSW Steel Ltd.                            | Steel & Iron Products                       |
| Kotak Mahindra Bank Ltd.                  | Bank – Private                              |
| Larsen & Toubro Ltd.                      | Engineering – Construction                  |
| LIC Housing Finance Ltd.                  | Finance – Housing                           |
| Lupin Ltd.                                | Pharmaceuticals & Drugs                     |
| Mahindra & Mahindra Ltd.                  | Automobiles – Passenger Cars                |
Table 7. List of top NSE sample companies (N=98). (Continuation)

| Name of the Company | Sector |
|---------------------|--------|
| Marico Ltd.         | Solvent Extraction |
| Maruti Suzuki India Ltd. | Automobiles – Passenger Cars |
| Motherson Sumi Systems Ltd. | Auto Ancillary |
| MRF Ltd.            | Tyres& Allied |
| NHPC Ltd.           | Power Generation/Distribution |
| NMDC Ltd.           | Mining & Minerals |
| NTPC Ltd.           | Power Generation/Distribution |
| Oil & Natural Gas Corporation Ltd. | Oil Exploration |
| Oil India Ltd.      | Oil Exploration |
| Oracle Financial Services Software Ltd. | IT – Software |
| Petronet LNG Ltd.   | Industrial Gases & Fuels |
| Piramal Enterprises Ltd. | Chemicals |
| Power Finance Corporation Ltd. | Pharmaceuticals & Drugs |
| Power Grid Corporation Of India Ltd. | Finance Term Lending |
| Procter & Gamble Hygiene & Health Care Ltd. | Power Generation/Distribution |
| Punjab National Bank | Household & Personal Products |
| Reliance Industries Ltd. | Bank – Public |
| Rural Electrification Corporation Ltd. | Finance Term Lending |
| Shree Cement Ltd.   | Cement & Construction Materials |
| Shriram Transport Finance Company Ltd. | Finance – NBFC |
| Siemens Ltd.        | Electric Equipment |
| State Bank Of India | Bank – Public |
| Sun Pharmaceutical Industries Ltd. | Pharmaceuticals & Drugs |
| Sun TV Network Ltd. | TV Broadcasting & Software Prod. |
| Tata Consultancy Services Ltd. | IT – Software |
| Tata Motors Ltd.    | Automobiles-Trucks/LCY |
| Tata Power Company Ltd. | Power Generation/Distribution |
| Tata Steel Ltd.     | Steel & Iron Products |
| Tech Mahindra Ltd.  | IT – Software |
| Titan Company Ltd.  | Diamond & Jewelry |
| Torrent Pharmaceuticals Ltd. | Pharmaceuticals & Drugs |
| Ultratech Cement Ltd. | Cement & Construction Materials |
| United Spirits Ltd. | Breweries & Distilleries |
| UPL Ltd.            | Pesticides & Agrochemicals |
| Vedanta Ltd.        | Metal – Non Ferrous |
| Wipro Ltd.          | IT – Software |
| Yes Bank Ltd.       | Bank – Private |
| Zee Entertainment Enterprises Ltd. | TV Broadcasting & Software Prod. |

*Source: Authors' own estimation, 2019.*
Table 8. List of classified value stocks and glamour stocks.

| List of companies (value stocks)                          | List of companies (glamour stocks)                          |
|-----------------------------------------------------------|-----------------------------------------------------------|
| Indiabulls Housing Finance Ltd.                          | Bajaj Finserv Ltd.                                        |
| Housing Development Finance Corporation Ltd.              | United Spirits Ltd.                                       |
| Adani Ports and Special Economic Zone Ltd.                | Avenue Supermarts Ltd.                                   |
| Petronet LNG Ltd.                                         | Emami Ltd.                                               |
| Aurobindo Pharma Ltd.                                     | ABB India Ltd.                                            |
| HCL Technologies Ltd.                                     | Titan Company Ltd.                                        |
| Bharti Infratel Ltd.                                      | Havells India Ltd.                                        |
| Glenmark Pharmaceuticals Ltd.                             | Procter & Gamble Hygiene & Health Care Ltd.               |
| Tech Mahindra Ltd.                                        | Hindustan Unilever Ltd.                                  |
| Yes Bank Ltd.                                             | Glaxosmithkline Pharmaceuticals Ltd.                     |
| Hindustan Zinc Ltd.                                       | Britannia Industries Ltd.                                 |
| Infosys Ltd.                                              | Godrej Consumer Products Ltd.                             |
| Bharat Petroleum Corporation Ltd.                         | Asian Paints Ltd.                                        |
| Mahindra & Mahindra Ltd.                                  | Pidilite Industries Ltd.                                 |
| Wipro Ltd.                                                | Colgate-Palmolive (India) Ltd.                            |
| Lupin Ltd.                                                | Marico Ltd.                                              |
| Shriram Transport Finance Company Ltd.                    | Dabur India Ltd.                                          |
| JSW Steel Ltd.                                            | Motherson Sumi Systems Ltd.                               |
| Hindustan Petroleum Corporation Ltd.                      | Ultratech Cement Ltd.                                    |
| LIC Housing Finance Ltd.                                  | Bosch Ltd.                                               |
| ICICI Bank Ltd.                                           | Bajaj Finance Ltd.                                        |
| Reliance Industries Ltd.                                  | Glaxosmithkline Consumer Healthcare Ltd.                 |
| Power Grid Corporation Of India Ltd.                      | Siemens Ltd.                                             |
| NMDC Ltd.                                                 | Sun TV Network Ltd.                                       |
| GAIL (India) Ltd.                                         | Eicher Motors Ltd.                                        |
| Vedanta Ltd.                                              |                                                          |
| Indian Oil Corporation Ltd.                               |                                                          |
| Tata Motors Ltd.                                          |                                                          |
| NTPC Ltd.                                                 |                                                          |
| NHPC Ltd.                                                 |                                                          |
| Oil & Natural Gas Corporation Ltd.                        |                                                          |
| Oil India Ltd.                                            |                                                          |
| Rural Electrification Corporation Ltd.                    |                                                          |
| Power Finance Corporation Ltd.                            |                                                          |

*Source: Authors’ own estimation, 2019.*
| Name                                       | P/E   | P/B  | Name                      | P/E   | P/B  |
|--------------------------------------------|-------|------|---------------------------|-------|------|
| ABB India Ltd.                             | 88.05 | 10.08| Infosys Ltd.              | 16.1  | 3.31 |
| ACC Ltd.                                   | 43.46 | 3.59 | Interiglobe Aviation Ltd. | 27.65 | 12.24|
| Adani Ports and SEZ Ltd.                   | 23.49 | 4.5  | ITC Ltd.                  | 30.74 | 7.07 |
| Ambuja Cements Ltd.                        | 39.77 | 2.51 | JSW Steel Ltd.            | 22.99 | 2.89 |
| Ashok Leyland Ltd.                         | 32.8  | 6.02 | Kotak Mahindra Bank Ltd.  | 35.19 | 4.21 |
| Asian Paints Ltd.                          | 55.44 | 13.49| Larsen & Toubro Ltd.      | 29.43 | 3.89 |
| Aurobindo Pharma Ltd.                      | 19.6  | 4.08 | LIC Housing Finance Ltd.  | 14.89 | 2.59 |
| Avenue Supermarts Ltd.                     | 152.08| 18.96| Lupin Ltd.                | 23.17 | 3.03 |
| Axis Bank Ltd.                             | 40.15 | 2.81 | Mahindra & Mahindra Ltd.  | 25.84 | 3.12 |
| Bajaj Auto Ltd.                            | 24.64 | 5.25 | Marico Ltd.               | 52.38 | 14.73|
| Bajaj Finance Ltd.                         | 45.48 | 6.55 | Maruti Suzuki India Ltd.  | 37.8  | 7.66 |
| Bajaj Finserv Ltd.                         | 600.91| 27.87| Motherson Sumi Sys Ltd.   | 50.51 | 9.21 |
| Bank Of Baroda                             | 41.29 | 1.07 | MRF Ltd.                  | 30.24 | 3.33 |
| Bharat Electronics Ltd.                    | 25.25 | 5.54 | NHPC Ltd.                 | 10.3  | 1.22 |
| Bharat Heavy Electricals Ltd.              | 75.85 | 1.18 | NMDC Ltd.                 | 18.59 | 2.09 |
| Bharat Petroleum Corp. Ltd.                | 10.98 | 3.3  | NTPC Ltd.                 | 13.27 | 1.45 |
| Bharti Airtel Ltd.                         | 141.23| 2.81 | ONGC                      | 12.97 | 1.2  |
| Bharti Infratel Ltd.                       | 25.26 | 3.9  | Oil India Ltd.            | 18.06 | 0.97 |
| Bosch Ltd.                                 | 46.08 | 6.55 | Oracle Fin. Ser. Soft. Ltd.| 28.75 | 8.85 |
| Britannia Industries Ltd.                  | 62.27 | 19.67| Petronet LNG Ltd.         | 19.47 | 4.26 |
| Cadila Healthcare Ltd.                     | 33.66 | 5.78 | Pidilite Industries Ltd.  | 54.25 | 12.42|
| Cipla Ltd.                                 | 43.79 | 3.77 | Piramal Enterprises Ltd.  | 185.8 | 3.51 |
| Coal India Ltd.                            | 21.86 | 6.65 | Power Finance Corp.Ltd.   | 17.19 | 0.8  |
| Colgate-Palmolive (India) Ltd.             | 53.75 | 19.79| Power Gr.Corp. of Ind. Ltd.| 12.88 | 2.1  |
| Container Corp. Of India Ltd.              | 36.19 | 3.92 | P&G Health Care Ltd.      | 67.9  | 47.55|
| Cummins India Ltd.                         | 34.45 | 6.6  | Punjab National Bank      | 37.98 | 1.02 |
| Dabur India Ltd.                           | 51.31 | 12.18| Reliance Industries Ltd.  | 17.93 | 2.18 |
| DLF Ltd.                                   | 87.61 | 3.12 | Rural Electr. Corp. Ltd.  | 5.57  | 0.89 |
| Dr. Reddys Laboratories Ltd.               | 34.82 | 3.47 | Shree Cement Ltd.         | 49.62 | 7.46 |
| Eicher Motors Ltd.                         | 39.8  | 12.28| Shriram Trans. Fin. Co. Ltd.| 26.33 | 2.94 |
| Emami Ltd.                                 | 89.16 | 16.12| Siemens Ltd.              | 41.29 | 6.08 |
| GAIL (India) Ltd.                          | 23.72 | 2.03 | State Bank Of India       | 67.83 | 1.33 |
| Glaxosmithkline Cons. Heal.Ltd.            | 43.92 | 9.02 | Sun Pharm Industries Ltd. | 43.58 | 3.76 |
| Glaxosmithkline Pharm. Ltd.                | 64.61 | 11.09| Sun TV Network Ltd.       | 40.5  | 9.24 |
| Glenmark Pharmaceuticals Ltd.              | 14.75 | 3.56 | Tata Consultancy Serv.Ltd.| 23.27 | 7.33 |
| Godrej Consumer Products Ltd.              | 55.64 | 13.76| Tata Motors Ltd.          | 12    | 1.53 |
| Havells India Ltd.                         | 73.73 | 11.13| Tata Power Company Ltd.   | 34.05 | 1.82 |
| HCL Technologies Ltd.                      | 15.43 | 3.98 | TSE                       | 33.02 | 1.96 |
| HDFC Bank Ltd.                             | 33.1  | 5.51 | Tata Steel Ltd.           | 75.95 | 2.28 |
| Hero MotoCorp Ltd.                         | 21.19 | 6.4  | Tech Mahindra Ltd.        | 18.72 | 3.38 |
| Hindalco Industries Ltd.                   | 31.29 | 1.29 | Titan Company Ltd.        | 77.98 | 17.57|
Table 9. P/E and P/B ratio of companies (at the time of the classification). (Continuation)

| Name                                    | P/E  | P/B  | Name                                    | P/E  | P/B  |
|------------------------------------------|------|------|------------------------------------------|------|------|
| Hindustan Petroleum Corp. Ltd.           | 7.32 | 2.79 | Torrent Pharm. Ltd.                      | 29.42| 5.36 |
| Hindustan Unilever Ltd.                  | 65.89| 44.06| Ultratech Cement Ltd.                    | 47.94| 4.64 |
| Hindustan Zinc Ltd.                      | 12.94| 3.36 | United Spirits Ltd.                      | 544.54| 30.53|
| Housing Dev. Fin. Corp Ltd.              | 26.34| 4.76 | UPL Ltd.                                 | 106.41| 5.21 |
| ICICI Bank Ltd.                          | 22.82| 2.29 | Vedanta Ltd.                             | 18.49| 1.99 |
| Indiabulls Housing Finance Ltd.          | 18.94| 4.85 | Wipro Ltd.                               | 16.85| 3.07 |
| Indian Oil Corporation Ltd.              | 9.52 | 1.86 | Yes Bank Ltd.                            | 20.85| 3.37 |
| IndusInd Bank Ltd.                       | 30.36| 4.59 | Zee Entertainment Ent. Ltd.              | 21.28| 7.51 |

Source: Authors’ own estimation, 2019.

Table 10. Quarterly market returns (NSE – Nifty).

|        | 1     | 2     | 3     | 4     |
|--------|-------|-------|-------|-------|
| 2014   | −4.34%| +2.72%| +7.66%| +0.10%|
| 2015   | +5.87%| +11.46%| +5.95%| +2.86%|
| 2016   | +4.60%| −2.42%| −9.91%| +4.80%|
| 2017   | −3.19%| +7.67%| +4.34%| −6.07%|
| 2018   | +11.40%| +3.71%| +2.78%| +7.31%|

Source: Authors’ own estimation, 2019.

Table 11. Market performance.

|        | NSE 100 |        | Nifty  |        |
|-------|---------|-------|--------|-------|
| Variables | 2013 | 2014 | 2015 | 2016 | 2017 | Average |
| P/E    | 18.22  | 21.09 | 21.60 | 22.40 | 28.32 | 22.33 |
| P/B    | 2.86   | 3.35  | 3.12  | 3.13  | 3.56  | 3.20  |
| Dividend Yield | 1.47 | 1.24  | 1.48  | 1.40  | 1.06  | 1.33  |

Source: Authors’ own estimation, 2019.
Table 12. Risk free rates (%) for computing the expected earnings using CAPM.

| Year | Q1   | Q2   | Q3   | Q4   |
|------|------|------|------|------|
| 2014 | 7.96 | 7.45 | 8.62 | 8.84 |
| 2015 | 9.07 | 8.42 | 8.48 | 8.02 |
| 2016 | 7.74 | 7.77 | 7.64 | 7.73 |
| 2017 | 7.46 | 7.42 | 6.96 | 6.52 |
| 2018 | 6.69 | 6.51 | 6.67 | 7.32 |

Source: Authors’ own Estimation, 2019.

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