# The Impact of Business Cycles, Stock Market Phases and Crisis on the Value Premium: The Indian Experience

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**Abstract**

**Purpose** :This paper is an attempt to explore the relationship between the value premium and expected stock returns in the Indian stock market and evaluates whether the value premium disappears or not when the different economic conditions (Boom & Recession), market conditions (Bull & Bear) and 2008 Global financial crisis are considered.

**Methodology:** The annual data of 500 companies belonging to BSE-500 from 1999-2017 was collected and ten portfolios were constructed and sorted using six valuation proxies (P/B, P/E, D/P/, CF/P, S/P and EV/PBDITA). Standard CAPM and Dual beta market model were employed.

**Findings:** The empirical results confirm that irrespective of market conditions, value stock portfolios surpass growth stock portfolios in the Indian stock market by delivering significant abnormal returns.

**Practical implications:** The paper holds important implications for asset pricing literature and investors. The higher returns generated by value stocks during the crisis and recession period imply that investors can put faith in the value stocks during times of adversity. The future value of an investment is a function of its present price. The lower the price, the higher the returns will be. Therefore, value stocks are good investments whether it is boom or recession, bull or bear, crisis or non-crisis periods.

**Originality:** The paper is first of its kind to study the impact of business cycles, stock market phases and crisis on the value premium in the Indian stock market. The paper contributes to portfolio management and asset pricing literature for an emerging market.

**Keywords:** *Business Cycle, Economic Conditions, Stock Market Conditions, Global Financial Crisis, Value Investing*

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## 1. Introduction

Voluminous literature dating as far back as the 1930s great depression (Graham and Dodd, 1934) observes value premium for the U.S. market (Rosenberg, Reid and Lanstein, 1985; Fama and French, 1992, 1993, 2006, 2008; Lakonishok, Shleifer and Vishny, 1994; Chan and Lakonishok, 2004) and other advanced markets of the world like the U.K., Japan and European markets(Chan, Hamao and Lakonishok, 1991; Fama and French, 1998, 2012; Foye, 2016; Garcia, M.T.M and Oliveira, 2018). The value premium is observed when the returns on the value stocks exceed returns on the growth stocks. However, this pattern is not necessarily translated to the developing and emerging markets(Rouwenhorst, 1999; Chen, Petkova and Zhang, 2008; Ebrahim et al., 2014; Cakici, Tang and Yan, 2016; Hu et al., 2018). Studies are not in consensus whether the value premium is permanent and is here to stay (Fama and French, 1998; Athanassakos, 2009; Artmann, Finter and Kempf, 2012) or is short-lived and is gradually fading away(Yen, Sun and Yan, 2004; Leivo and Patari, 2009). However, without testing the robustness for the emerging markets, it is hard to agree with the above notion's universality. The emerging markets have less developed stock markets which have low liquidity and less industrialisation and higher transaction costs with high growth potential and more open for economic liberalisation (Bekaert, Harvey and Lundblad, 2007).Also, differential behaviours of stakeholders in the emerging markets require diverse measures to deal with market information(Reddy, Qamar and Rao, 2019).The motivation of the study lies in the seminal work of contrarian investing(Lakonishok, Shleifer and Vishny, 1994). In this paper, the authors argued "value stocks would be fundamentally riskier than glamour stocks if, firstly, they underperformed glamour stocks in some states of the world, and secondly, these are on an average in "bad" states, in which the marginal utility of wealth is high, making value stocks unattractive to risk-averse investors." Their results demonstrated that value stocks outperform growth stocks in every state of the U.S. economy. In India, studies have provided mixed signals regarding the presence of value effect (Banerjee, De and Bandyopadhyay, 2018; Sobti, 2018; Tripathi and Aggarwal, 2018, 2020). However, none of them investigated the impact of market and economic conditions on the value premium.

The Indian economy differs from the advanced nations on most grounds. Around 50% of the Indian stock market is promoter-owned and is a growing economy with a young population and lower per capita income. At present, India is one of the five major emerging national economies BRICS. According to the International Monetary Fund, 2019, the Indian economy is one of the fastest-growing trillion dollar economies in the world and the third-largest economy by purchasing power parity (7.98% of world GDP). The country ranks as the fifth-largest economy (2935.57 billion$ GDP). The tremendous economic growth experienced by India during the last three decades had

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a spill over effect on the stock market, lending and investment, financial system, and financial stability. The popularity of India as an investment destination can be witnessed by the steep rise in the foreign portfolio investment (FPIs) in India during the last 20 years (2000-01:2.6 billion US$; 2017-18:22.1 billion US$). Interestingly, when the global financial crisis hit the world in 2008–2009, the developed economies like the United States witnessed their economic growth drop to as low as _0.14%, however, India was resilient and showed a positive GDP growth rate of around 3.09% (World Development Indicators, World Bank). Motivated by the past empirical works in the advanced economies and the unique characteristics of the Indian economy, this paper explores the effect of economic conditions (boom & recession), market conditions (bull & bear) and global financial crisis on the value premium in the Indian capital market.

The paper is divided into five sections including Section 1 introduction. Section 2 presents the review of the literature. Section 3 describes the data and methodology used while Section 4 presents the empirical results obtained. Finally, Section 5 presents the summary and conclusion.

## 2. Review of literature

Several studies have studied the portfolio performance of value and growth stocks when the stock market conditions are factored in. In a study conducted in the U.S. for 1986-2003, the average annual returns of growth stock portfolios were higher than value stock portfolios for all trading frequencies during the rising market. The authors suggested an investment strategy wherein the investor should invest in growth stocks with high P/E during the booming economy and bullish market and in value stocks with low P/E during recession and bear market(Cheh, Kim and Zheng, 2008)high price/earnings (P/E.In a similar study of the U.S market (Arshanapalli and Nelson, 2007), the authors found that value stocks did not perform well as growth stocks during bull markets but surpassed them in bear markets. Value stocks outperformed growth stocks in non-recessionary periods and added to their lead during recessions using the data of January 1962-April 2005.An international study found that the returns for various investment styles such as momentum, earnings variation and leverage are cyclical but the returns for value stocks and growth stocks are not significantly different during expansionary and recessionary phases of the economic cycle in the U.S. (from February 1973 to December 2008), Europe (from January 1997 to December 2008) and Japan (from December 1984 to December 2008) respectively(Beckers and Thomas, 2010)The impact of the Asian crisis on returns to value strategies was studied for four Asian markets by employing the Average Price Level (APL) rank sorting. The study discovered value premium is time-varying and it becomes greater in the post-Asian crisis period across all four countries indicating high volatility during the crisis(Brown et al., 2008). On similar lines, another study

was conducted for Taiwanese equity data from July 1985-June 2009 covering 1997 the East Asian financial crisis and 2008 global financial crisis and value-based strategies earned significantly excess returns. B/M based value premium increased post the Asian and the 2008 financial crisis(Huang, 2011)"ISSN":"0927538X","abstract":"Us ing Taiwanese equity data, we find that value-minus-growth strategies (HML.Another study conducted using 1351 Canadian companies' data for 1985–2005 using P/E and P/B recorded a persistent strong value premium for the whole period, which also lasted in the bull and bear markets and recessions and recoveries(Athanassakos, 2009). In this study, the dual-beta market model (Bhardwaj and Brooks, 1993)is used to study the impact of different economic conditions on the value premium. The model has been extensively used for size effect(Kim and Burnie, 2002; Rutledge, Zhang and Karim, 2008; Switzer, 2010; Teh and Lau, 2017)US and UK but seldom used for value effect. This study shall be the first Indian study to examine the economic and market conditions-domestic and international using the dual-beta model.

## 3. Data and Methodology

**Data:** The sample data is obtained from PROWESS. It is widely acclaimed financial software of the Centre for Monitoring Indian Economy (CMIE). The sample period runs from June 1999 to March 2017. The BSE-500 index is taken as the Market portfolio. Comprising of the top 500 companies listed at BSE Ltd., this stock market index includes all the major industries in the Indian market. The monthly stock returns are computed using the equation:

$$R_{i,t} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}}$$

Where $R_{i,t}$ is the return on stock i in period t and $P_{i,t}$ and $P_{i,t-1}$ represents closing price on stock i in period t and t-1.The adjustments of dividends were not made in the returns as dividends were too small in relation to the total returns.

Similarly, market returns are computed using the above equation for BSE-500 equity index values. For risk-free return, implicit yields on 91-days treasury bills from the Reserve Bank of India (RBI) monthly Handbook of Statistics is used (rbi.org.in). This study has employed six valuation criterions and a brief description of all these criteria is given below:

### 3.1 Price to Book Value (P/B) Ratio

The book equity to market equity(BE.ME) ratio is frequently used to find the value of a company by comparing the book value of a firm's common stock to its market

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value(Loughran and Wellman, 2011; Gray and Vogel, 2012; Gharghori, Stryjkowski and Veeraraghavan, 2013; Pätäri and Leivo, 2017). This ratio is one of the prime ratios considered by investors to evaluate whether the stock's market price exceeds its book value. A high BE/ME ratio may signal that the company is experiencing problems regarding the fundamentals of the company. Conversely, a low BE/ME may signal that investors have huge hopes regarding the prospects of the company (Fama and French, 1992). Following the seminal work (Fama and French, 2007a, 2007b; Athanassakos, 2011), price-to-book ratio (P/B) to sort the stocks have been used.

### 3.2 Price to Earnings (P/E) Ratio

The Price to Earnings ratio is a market prospect ratio that compares the market price per share with the earnings per share. The lower P/E ratio gives a perception to the investors that they are paying less for earnings and consider it as a cheap stock. Conversely, high P/E stocks indicate that investors believe and expect the company's future earnings are decent and acceptable. The P/E as a valuation measure has been used extensively in the literature (Basu, 1977; Fama and French, 1998; Hou, Karolyi and Kho, 2011; Penman and Reggiani, 2013)

### 3.3 Dividend to Price (D/P) Ratio

A stock's dividend yield (D/P ratio) compares the dividend per share with the current price of the stocks. The relationship between D/P and returns has been studied extensively (Ball, 1978; Keim, 1985; Ang and Bekaert, 2007). The firms with higher D/Ps are often thought of as a signal that management believes in continuing with their dividend-paying ability.

### 3. 4 Cash Flow to Price (CF/P) Ratio

Cash flow is the reported earnings with all non-cash expenses such as depreciation and amortization added back. Most of the preliminary studies using CF/P were conducted in Japan (Chan, Hamao and Lakonishok, 1991; Lakonishok, Shleifer and Vishny, 1994) which later got extended to other parts of the world(Gregory, Harris and Michou, 2001; Hou, Karolyi and Kho, 2011).

### 3.5 Sales to Price (S/P) Ratio

Sales are considered to be more stable(Damodaran, 2012) and unlike earnings and book values, they are difficult to manipulate, therefore, the metric of the Sales-to-Price ratio is increasingly attracting attention in the financial domain(Senchack and Martin, 1987; Bird and Casavecchia, 2007; Gharghori, Stryjkowski and Veeraraghavan, 2013). S/P explained U.S. stock returns better than B/P or size (Barbee, Mukherji and Raines, 1996; Leledakis and Davidson, 2001; Dhatt, Kim and Mukherji, 2004).

### 3.6 Enterprise Value-Based Multiples

The enterprise value takes the company's debt into account. Due to the inclusion of debt, enterprise value gives a clear picture of the company. The most commonly used enterprise-based valuation multiples are EBIT/EV(Pätäri, Karell and Luukka, 2016) and EBITDA/EV(Leivo and Patari, 2009; Loughran and Wellman, 2011; Gray and Vogel, 2012)Novy-Marx, and Zhang (2010, and S/EV. EBITDA (Earnings before interest, taxes, depreciation, and amortisation) tells how much cash would be available to the owners to use either for servicing the debt or reinvestment purposes.

**Construction of Value-Sorted Portfolios:**

Decile portfolios are formed for all the valuation proxies for every year for all the sample stocks. In June end of Year T, companies are arranged in the ascending/ descending order based on the valuation measure under consideration. Subsequently, these arranged companies are split into ten equally-weighted portfolios namely P1 to P10. For these portfolios, equally-weighted monthly excess returns are assessed for the next twelve months (July of year T to June of year T+1).These are referred to as unadjusted returns. The portfolios have been constructed to be equally weighted since they contain fewer estimation errors compared to the value-weighted portfolios(Lakonishok, Shleifer and Vishny, 1994).Further, the three-factor model does a better job in explaining equally weighted portfolios than value-weighted portfolios(Fama and French, 1996).Firstly, the portfolios based on the stock's P/B ratio are formed. P1 is the extreme value stock portfolio comprising 10% of the total sample with the lowest P/B while P10, the extreme growth stocks portfolio comprises 10% companies with the highest P/B. A portfolio VMG is also constructed to assess the economic feasibility of value investment strategy (buying P1 & short selling P10). The portfolios are rebalanced in June-end of every year. Since the portfolios are formed and held annually, the annual holding period begins in July and ends in June. The sample companies are sorted in June of each year beginning in June1999 and this portfolio formation is repeated till June 2016. It is important to specify that the complete data was not available for all companies throughout the study period of 18 years and hence the effective number of companies used in the analysis ranges from 210 to 480. The robustness of the results is checked by five more proxies. The companies were ranked in ascending order for P/B, P/E, and EV/ PBIDTA and in descending order for Dividend yield, Cash Flow yield, and S/P. The returns on the market i.e. BSE-500 index have also been calculated monthly from July 1999 to March 2017. To use the yields on 91-days T-bills, the annualised yields are converted into monthly yields. The Financial Year in India runs from April to March. Nonetheless, the portfolio formation is carried out in June end so that investors can access the complete accounting information of the companies. Generally, there is a deferment in the publication of financial statements. This also helps to avoid the look-ahead bias.

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The Standard CAPM (Capital Asset Pricing Model) has been used to study the value effect (Sharpe, 1964; Lintner, 1965).

**Standard CAPM**

$R_{Pt}-R_{Ft}= \alpha_P+\beta_P (R_{Mt}-R_{Ft} )+\varepsilon_t(1)$

Where,

$R_{Pt}-R_{Ft}$ = Excess Portfolio Returns in period t

$R_{Mt}-R_{Ft}$ = Market Risk Premium in period t

$\alpha_P$ = Intercept term and is a measure of abnormal returns

$\beta_P$ = Beta coefficient that measures the sensitivity of portfolio return to market return

$\varepsilon_t$ = Error term.

The intercept ($\alpha_p$) is Jensen's risk-adjusted abnormal performance measure. (Jensen, 1968). A statistically significant value of $\alpha_p$ indicates the possibility of abnormal returns. The alphas and betas can vary over time because of the changes in the market and economic conditions. Therefore, a dual-beta market model (Bhardwaj and Brooks, 1993) is implemented.

**Effect of Economic Conditions:** The boom and recessionary periods for the Indian market are obtained from the Federal Reserve Bank of St. Louis. Boom and recession periods dates are given below:

**Boom :** July 1999-December 1999, February 2003-September 2007, April 2009-January 2011, July 2013-April 2016

**Recession:** January 2000-January 2003, October 2007-March 2009, February 2011-June 2013, May 2016-March 2017

The following modified dual-beta model is estimated:

$R_{Pt}-R_{Ft}= \alpha_0+ \alpha_1 D_R+\beta_0 (R_{Mt}-R_{Ft} )+ \beta_1 D_R (R_{Mt}-R_{Ft} )+\varepsilon_t (2)$

Where $D_R$ is equal to 1 for recession months and 0 for the boom months. $\alpha_0$, $\alpha_0 + \alpha_1$, represents excess return, and $\beta_0$, $\beta_0 + \beta_1$ represents beta coefficients for boom and recession respectively.

**Effect of Market Conditions:** For identifying bullish and bearish market conditions, the median return of the market index i.e. BSE 500 Index is used (Bhardwaj and Brooks, 1993). First, the market returns on the index are calculated for every month, and thereafter median market return is computed. The bull phase is the period of

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increasing market returns falling above the median market return and the bear phase is the period of decreasing market returns falling below the median market return. Each of the 213 months is classified as either a bull month or bear month if the market return in that particular month is higher or lower than the median market return to finally arrive at 106 bull months and 107 bear months. The following modified dual-beta model is estimated:

$$R_{Pt}-R_{Ft}= \alpha_0+ \alpha_1 D_B+\beta_0 (R_{Mt}-R_{Ft})+ \beta_1 D_B (R_{Mt}-R_{Ft})+\varepsilon_t (3)$$

Where $D_B$ is equal to 1 for the bull months and 0 for the bear months. $\alpha_0$, $\alpha_0 + \alpha_1$, represents excess return and $\beta_0$, $\beta_0 + \beta_1$, represents beta coefficients for bear and bull markets respectively

**Effect of Global Financial Crisis:** The global financial crisis 2007-08 originated in the USA as the subprime mortgage crisis soaked liquidity from the global financial system and battered down financial markets across the globe. The crisis period is taken as the period from December 2007 to May 2009 as identified by the National Bureau of Economic Research (NBER). Two dummy variables $D_1$ and $D_2$to account for three periods- the pre-crisis period (July 1999 to November 2007), the crisis period (December 2007 to May 2009), and the post-crisis period (June 2009 to March 2017). Following modified dual-beta market model is estimated:

$$R_{Pt}-R_{Ft}= \alpha_0+ \alpha_1 D_1+\alpha_2 D_2+\beta_0 (R_{Mt}-R_{Ft})+ \beta_1 D_1 (R_{Mt}-R_{Ft})+\beta_2 D_2 (R_{Mt}-R_{Ft})+\varepsilon_t (4)$$

Whereequals 1 for crisis months and 0 otherwise and equals 1 for Post-crisis months and 0 otherwise.$\alpha_0$, $\alpha_0 + \alpha_1$, $\alpha_0 + \alpha_2$ represents excess return and $\beta_0$,$\beta_0 + \beta_1$, $\beta_0 + \beta_2$ represents beta coefficients for pre-crisis period, crisis and post-crisis periods respectively.

## 4. Empirical Analysis and Results

Table 1 shows the mean and standard deviations. For the full period, the mean returns of P1are greater than P10for all valuation proxies except for dividend yield. Strong value effect is confirmed using five alternative measures and average returns follow a declining trend almost monotonically from P1 to P10. However, Dividend yield sorted portfolios exhibit value discount as mean returns of P10 is higher than P1. This could be attributed to the low dividend yields of Indian companies. Value stocks provide returns that are almost double the returns on growth stocks. Though the value premium is documented for five valuation proxy measures, S/P sorted portfolios registered the highest value premium in the full period. Portfolio-wise mean returns for all valuation proxies are positive and higher in the boom than in the recessionary period. During the boom, the average monthly returns are large for P1 vis-a-vis P10. The highest value premium is yielded by S/P based VMG portfolio in the boom and recession. Similar results have been obtained for bullish and bearish phases. The

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portfolio returns are positive and higher in the bullish phase than in the bearish phase wherein the returns are negative. Despite negative returns, a positive value premium is achieved by all proxies except P/B during the bear period. The mean returns for all portfolios were positive in pre-crisis which took a dip in the crisis and turned negative. During post-crisis, all portfolios have positive and higher mean returns than the crisis. The standard deviation for the full period exhibits a similar pattern to the mean returns with large values for value stock portfolios. The high D/P portfolios are revealing higher return variability. The standard deviation for all portfolios for other periods tells a similar story. The value stock portfolios have higher return variability than growth stock portfolios and exhibit the highest values during the crisis followed by pre-crisis and post-crisis. The value stocks portfolios outshined growth stocks portfolios and market portfolios during the entire 18-years study period. S/P based VMG portfolio has registered the highest alphas in the full period, in the boom and recession, in the bearish phase and post-crisis. P/B based VMG portfolio has yielded the highest abnormal returns in the bullish market, pre-crisis period and crisis. Overall, the value stock portfolios for five valuation proxies have surpassed the growth stock portfolios and the market in each period.

## Table 1: Mean and Standard Deviations (σ) of Monthly Returns (%) for Portfolios

| | Full Period | | Boom | | Recession | | Bull | | Bear | | Pre-crisis | | Crisis | | Post-crisis | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Portfolio** | **Mean** | **σ** | **Mean** | **Σ** | **Mean** | **σ** | **Mean** | **Σ** | **Mean** | **σ** | **Mean** | **σ** | **Mean** | **σ** | **Mean** | **Σ** |
| **Panel A: Price to Book Ratio** | | | | | | | | | | | | | | | | |
| P1 | 2.95 | 11.81 | 5.31 | 11.95 | 0.02 | 10.94 | 10.13 | 10.57 | -4.17 | 8.07 | 4.97 | 12.30 | -0.02 | 18.42 | 1.35 | 8.93 |
| P2 | 2.07 | 10.15 | 4.20 | 9.91 | -0.58 | 9.81 | 8.39 | 8.58 | -4.20 | 7.30 | 3.17 | 9.70 | -0.73 | 18.11 | 1.42 | 8.13 |
| P3 | 2.49 | 10.16 | 4.66 | 9.95 | -0.21 | 9.76 | 9.14 | 8.00 | -4.10 | 7.40 | 3.78 | 9.84 | 0.07 | 19.19 | 1.57 | 7.45 |
| P4 | 1.94 | 9.24 | 3.77 | 8.94 | -0.33 | 9.09 | 7.97 | 7.02 | -4.03 | 7.03 | 2.81 | 8.87 | 0.04 | 17.77 | 1.38 | 6.82 |
| P5 | 2.00 | 9.32 | 4.13 | 8.90 | -0.65 | 9.14 | 8.04 | 7.31 | -3.99 | 6.92 | 3.05 | 8.95 | -0.36 | 18.59 | 1.32 | 6.47 |
| P6 | 1.84 | 8.58 | 3.91 | 8.14 | -0.74 | 8.42 | 7.69 | 6.19 | -3.96 | 6.42 | 2.68 | 8.66 | -0.76 | 15.78 | 1.43 | 6.04 |
| P7 | 1.65 | 8.62 | 3.61 | 8.27 | -0.78 | 8.43 | 7.59 | 6.28 | -4.24 | 6.26 | 2.60 | 8.47 | -1.02 | 17.70 | 1.15 | 5.36 |
| P8 | 1.27 | 8.04 | 3.26 | 7.72 | -1.22 | 7.73 | 6.76 | 5.88 | -4.17 | 5.92 | 1.70 | 7.89 | -0.31 | 16.51 | 1.10 | 5.17 |
| P9 | 1.39 | 7.94 | 3.53 | 7.34 | -1.28 | 7.85 | 6.75 | 5.33 | -3.93 | 6.37 | 1.77 | 8.30 | -1.23 | 15.01 | 1.47 | 4.92 |
| P10 | 0.96 | 7.77 | 2.96 | 6.91 | -1.52 | 8.06 | 6.08 | 5.35 | -4.11 | 6.35 | 1.32 | 7.63 | -1.43 | 16.38 | 1.03 | 4.66 |
| VMG | 1.99 | | 2.34 | | 1.55 | | 4.05 | | -0.06 | | 3.64 | | 1.41 | | 0.32 | |
| **Panel B: Price to Earnings Ratio** | | | | | | | | | | | | | | | | |
| P1 | 3.07 | 10.51 | 5.52 | 10.56 | 0.03 | 9.63 | 9.52 | 9.18 | -3.32 | 7.37 | 4.38 | 10.44 | 0.52 | 18.93 | 2.15 | 7.80 |
| P2 | 2.35 | 9.67 | 4.27 | 9.61 | -0.04 | 9.19 | 8.59 | 7.92 | -3.84 | 6.85 | 3.37 | 9.29 | 0.06 | 18.57 | 1.69 | 7.11 |
| P3 | 2.35 | 8.79 | 4.43 | 8.54 | -0.24 | 8.39 | 7.95 | 6.71 | -3.21 | 6.86 | 3.28 | 8.69 | -0.66 | 16.93 | 1.92 | 6.00 |
| P4 | 2.05 | 8.82 | 4.17 | 8.50 | -0.59 | 8.49 | 7.75 | 6.87 | -3.60 | 6.64 | 2.90 | 8.64 | -0.12 | 16.91 | 1.55 | 6.28 |
| P5 | 2.02 | 8.81 | 3.86 | 8.37 | -0.26 | 8.80 | 7.92 | 6.48 | -3.82 | 6.66 | 3.11 | 8.57 | -0.86 | 17.00 | 1.40 | 6.19 |
| P6 | 1.53 | 8.26 | 3.65 | 7.72 | -1.09 | 8.15 | 7.16 | 5.56 | -4.03 | 6.54 | 1.94 | 8.01 | -1.36 | 16.12 | 1.65 | 5.83 |
| P7 | 1.48 | 8.15 | 3.36 | 7.48 | -0.85 | 8.35 | 7.05 | 5.97 | -4.04 | 5.98 | 1.96 | 8.16 | -0.31 | 15.55 | 1.31 | 5.65 |
| P8 | 1.34 | 7.86 | 3.23 | 7.39 | -1.00 | 7.79 | 6.86 | 5.30 | -4.12 | 5.93 | 1.82 | 7.91 | -0.58 | 14.97 | 1.20 | 5.38 |



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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P9 | 0.92 | 7.59 | 2.58 | 6.90 | -1.14 | 7.90 | 6.11 | 5.00 | -4.22 | 6.07 | 1.32 | 7.36 | -1.15 | 15.66 | 0.89 | 4.94 |
| P10 | 1.31 | 9.93 | 3.77 | 9.37 | -1.74 | 9.75 | 8.24 | 7.32 | -5.55 | 6.95 | 2.61 | 9.64 | -0.54 | 20.13 | 0.28 | 6.50 |
| VMG | 1.76 | | 1.75 | | 1.77 | | 1.28 | | 2.23 | | 1.78 | | 1.07 | | 1.87 | |
| **Panel C: Dividend Yield** | | | | | | | | | | | | | | | | |
| P1 | 1.78 | 8.63 | 3.33 | 8.50 | -0.14 | 8.39 | 7.33 | 6.99 | -3.71 | 6.24 | 2.73 | 8.28 | -0.40 | 15.77 | 1.18 | 6.72 |
| P2 | 2.04 | 9.21 | 4.10 | 9.09 | -0.51 | 8.71 | 8.14 | 7.30 | -3.99 | 6.56 | 2.97 | 9.61 | -0.30 | 15.70 | 1.50 | 6.61 |
| P3 | 1.84 | 8.54 | 3.79 | 8.48 | -0.58 | 7.99 | 7.56 | 6.64 | -3.83 | 6.10 | 2.82 | 8.76 | -0.11 | 15.23 | 1.16 | 6.03 |
| P4 | 1.57 | 8.19 | 3.55 | 7.98 | -0.88 | 7.78 | 6.99 | 5.94 | -3.80 | 6.38 | 1.98 | 8.01 | -0.51 | 15.02 | 1.53 | 6.25 |
| P5 | 1.47 | 8.17 | 3.44 | 7.70 | -0.97 | 8.09 | 6.96 | 5.79 | -3.97 | 6.35 | 1.85 | 8.04 | -0.52 | 15.83 | 1.45 | 5.75 |
| P6 | 1.59 | 8.55 | 3.70 | 8.11 | -1.02 | 8.37 | 7.21 | 6.51 | -3.97 | 6.44 | 2.16 | 8.03 | -0.98 | 17.73 | 1.47 | 5.89 |
| P7 | 1.79 | 9.22 | 4.02 | 8.73 | -0.97 | 9.05 | 7.95 | 7.06 | -4.31 | 6.70 | 2.90 | 8.55 | -1.13 | 19.80 | 1.16 | 5.96 |
| P8 | 2.16 | 9.62 | 4.34 | 8.99 | -0.55 | 9.68 | 8.51 | 7.55 | -4.13 | 6.94 | 3.64 | 9.74 | -0.37 | 18.91 | 1.05 | 5.86 |
| P9 | 2.11 | 10.30 | 4.65 | 9.99 | -1.05 | 9.80 | 8.79 | 8.10 | -4.51 | 7.62 | 3.30 | 10.40 | -0.90 | 20.00 | 1.40 | 6.62 |
| P10 | 2.43 | 10.85 | 4.82 | 10.36 | -0.54 | 10.71 | 9.69 | 8.28 | -4.76 | 7.90 | 3.90 | 11.06 | -0.44 | 19.66 | 1.41 | 7.50 |
| YVMG | -0.65 | | -1.49 | | 0.40 | | -2.36 | | 1.05 | | -1.17 | | 0.04 | | -0.22 | |
| **Panel D: Cash Flow Yield** | | | | | | | | | | | | | | | | |
| P1 | 2.72 | 10.66 | 4.64 | 10.75 | 0.33 | 10.05 | 9.35 | 9.03 | -3.85 | 7.66 | 4.29 | 10.60 | -0.04 | 17.98 | 1.56 | 8.33 |
| P2 | 2.67 | 10.41 | 5.11 | 10.16 | -0.37 | 9.90 | 9.13 | 8.61 | -3.74 | 7.73 | 3.66 | 10.41 | -0.35 | 18.81 | 2.17 | 7.64 |
| P3 | 2.39 | 9.49 | 4.64 | 9.17 | -0.40 | 9.13 | 8.32 | 7.85 | -3.49 | 6.98 | 3.41 | 9.36 | -0.42 | 17.62 | 1.83 | 6.89 |
| P4 | 2.05 | 9.60 | 4.24 | 9.58 | -0.66 | 8.90 | 8.14 | 7.91 | -3.97 | 6.96 | 3.16 | 9.75 | -1.26 | 17.62 | 1.50 | 6.59 |
| P5 | 2.03 | 9.05 | 4.06 | 8.78 | -0.50 | 8.73 | 7.87 | 6.91 | -3.75 | 6.95 | 3.11 | 9.49 | -0.87 | 15.45 | 1.42 | 6.30 |
| P6 | 1.77 | 8.20 | 3.81 | 7.69 | -0.76 | 8.12 | 7.26 | 5.93 | -3.66 | 6.30 | 2.32 | 8.12 | -0.18 | 15.99 | 1.57 | 5.62 |
| P7 | 1.74 | 7.93 | 3.56 | 7.44 | -0.52 | 7.93 | 7.15 | 5.45 | -3.62 | 6.16 | 2.41 | 8.23 | -0.39 | 14.85 | 1.42 | 5.08 |
| P8 | 0.92 | 7.55 | 2.65 | 7.29 | -1.24 | 7.29 | 5.98 | 5.87 | -4.10 | 5.35 | 1.09 | 7.61 | -1.00 | 14.27 | 1.10 | 5.20 |
| P9 | 1.12 | 7.85 | 2.96 | 7.32 | -1.17 | 7.88 | 6.32 | 5.75 | -4.03 | 6.05 | 1.41 | 7.95 | -0.34 | 16.04 | 1.10 | 4.69 |
| P10 | 0.93 | 8.79 | 2.85 | 8.17 | -1.46 | 8.96 | 7.14 | 6.00 | -5.23 | 6.49 | 1.68 | 8.68 | -1.39 | 17.40 | 0.57 | 5.87 |
| VMG | 1.79 | | 1.79 | | 1.79 | | 2.21 | | 1.38 | | 2.61 | | 1.35 | | 0.99 | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Panel E: Sales to Price Ratio** | | | | | | | | | | | | | | | | |
| P1 | 3.39 | 11.32 | 5.93 | 11.05 | 0.23 | 10.85 | 9.98 | 10.14 | -3.14 | 8.22 | 4.62 | 12.02 | -0.08 | 18.29 | 2.73 | 8.16 |
| P2 | 2.48 | 10.52 | 4.90 | 10.27 | -0.54 | 10.04 | 8.82 | 8.91 | -3.81 | 7.90 | 3.26 | 10.46 | 0.06 | 19.11 | 2.10 | 7.84 |
| P3 | 2.43 | 10.01 | 4.82 | 10.01 | -0.55 | 9.18 | 8.71 | 8.22 | -3.79 | 7.40 | 3.37 | 9.98 | -0.46 | 18.45 | 1.97 | 7.22 |
| P4 | 2.07 | 9.47 | 4.42 | 9.21 | -0.84 | 8.96 | 8.19 | 7.53 | -3.99 | 6.96 | 2.86 | 9.69 | -0.67 | 17.08 | 1.75 | 6.64 |
| P5 | 2.33 | 9.29 | 4.44 | 8.90 | -0.28 | 9.11 | 8.39 | 6.99 | -3.67 | 7.15 | 3.39 | 9.46 | -0.54 | 17.72 | 1.75 | 6.04 |
| P6 | 1.64 | 8.45 | 3.64 | 7.80 | -0.85 | 8.57 | 7.19 | 6.25 | -3.87 | 6.54 | 2.58 | 8.91 | -1.48 | 14.74 | 1.22 | 5.65 |
| P7 | 1.27 | 7.99 | 3.13 | 7.64 | -1.04 | 7.80 | 6.63 | 5.62 | -4.05 | 6.24 | 2.02 | 7.98 | -0.99 | 15.34 | 0.90 | 5.41 |
| P8 | 1.16 | 7.31 | 2.57 | 7.08 | -0.60 | 7.21 | 5.97 | 5.57 | -3.62 | 5.47 | 1.80 | 7.52 | -0.30 | 14.12 | 0.75 | 4.60 |
| P9 | 0.94 | 8.04 | 2.68 | 7.24 | -1.21 | 8.44 | 6.20 | 5.91 | -4.27 | 6.28 | 1.45 | 8.16 | -0.98 | 16.70 | 0.77 | 4.53 |
| P10 | 1.11 | 9.86 | 3.48 | 8.84 | -1.84 | 10.26 | 8.21 | 6.76 | -5.92 | 7.00 | 2.14 | 9.67 | -0.50 | 19.54 | 0.31 | 6.67 |
| VMG | 2.28 | | 2.45 | | 2.08 | | 1.77 | | 2.78 | | 2.48 | | 0.42 | | 2.42 | |
| **Panel F: Enterprise Value to PBDITA Ratio** | | | | | | | | | | | | | | | | |
| P1 | 2.31 | 10.25 | 4.52 | 10.13 | -0.43 | 9.72 | 8.82 | 8.29 | -4.15 | 7.57 | 3.92 | 10.25 | -0.41 | 17.93 | 1.10 | 7.62 |
| P2 | 2.67 | 9.35 | 4.93 | 9.19 | -0.13 | 8.78 | 8.72 | 7.43 | -3.31 | 6.89 | 3.63 | 9.44 | -0.15 | 16.78 | 2.18 | 6.76 |
| P3 | 2.57 | 9.62 | 4.99 | 9.35 | -0.43 | 9.11 | 8.86 | 7.50 | -3.65 | 7.12 | 3.59 | 9.34 | 0.05 | 17.56 | 1.96 | 7.38 |
| P4 | 2.11 | 9.51 | 4.24 | 9.46 | -0.54 | 8.89 | 8.23 | 7.49 | -3.95 | 7.13 | 3.20 | 9.29 | -0.42 | 18.44 | 1.43 | 6.66 |
| P5 | 1.80 | 8.83 | 3.73 | 8.47 | -0.60 | 8.68 | 7.63 | 6.51 | -3.98 | 6.81 | 2.61 | 8.49 | -1.04 | 17.06 | 1.47 | 6.42 |
| P6 | 1.69 | 9.18 | 3.70 | 8.90 | -0.80 | 8.91 | 7.75 | 7.26 | -4.32 | 6.57 | 2.20 | 8.60 | 0.01 | 19.16 | 1.46 | 6.35 |
| P7 | 1.55 | 8.52 | 3.59 | 8.16 | -0.98 | 8.27 | 7.32 | 6.33 | -4.16 | 6.26 | 2.43 | 8.47 | -0.90 | 15.99 | 1.08 | 6.01 |
| P8 | 1.60 | 8.58 | 3.61 | 8.07 | -0.91 | 8.55 | 7.48 | 6.36 | -4.23 | 6.20 | 2.48 | 9.57 | -0.85 | 14.23 | 1.12 | 5.25 |
| P9 | 1.12 | 8.30 | 3.05 | 7.68 | -1.27 | 8.43 | 6.57 | 6.09 | -4.27 | 6.49 | 1.59 | 8.06 | -1.53 | 17.32 | 1.13 | 5.25 |
| P10 | 1.19 | 9.28 | 3.37 | 8.54 | -1.52 | 9.45 | 7.72 | 6.49 | -5.28 | 6.74 | 2.24 | 9.11 | -0.56 | 19.27 | 0.39 | 5.70 |
| VMG | 1.12 | | 1.15 | | 1.08 | | 1.10 | | 1.14 | | 1.68 | | 0.15 | | 0.71 | |
| N | 213 | | 118 | | 95 | | 106 | | 107 | | 101 | | 18 | | 94 | |
| Market | 1.41 | 7.62 | 3.04 | 6.90 | -0.61 | 7.97 | 7.12 | 4.51 | -4.25 | 5.56 | 2.20 | 7.88 | -0.92 | 14.38 | 1.00 | 4.83 |
| Risk free rate | 0.58 | 0.14 | 0.54 | 0.16 | 0.62 | 0.11 | 0.55 | 0.15 | 0.60 | 0.14 | 0.55 | 0.13 | 0.56 | 0.15 | 0.61 | 0.14 |



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Alphas over different periods using both single beta model and dual-beta market model as explained in equations (1) to (4) are reported for different valuation measures in Table 2.The Standard CAPM results show value portfolios have a higher alpha estimate than growth portfolios. The modified dual-beta market models are employed to estimate alphas for the economic cycles of boom and recession, bull and bear market and global financial crisis.

**4.1 Price to Book Value (Panel A of Table 2)**

P1 has an alpha of 1.9% whereas P10 has an alpha of0.10%. The value portfolios have higher alphas than growth portfolios in the boom. Value firms perform significantly better than growth firms in the boom than in the recessionary period. The alphas are marginally higher in the bull period than the bear period but no portfolio has significant differential returns ($\alpha_{bull\text{-}bear}$). Throughout pre-crisis, P1was yielding significant alphas of 3.2% whereas P10 produced -0.10% returns. Further, VMG generated a significant alpha of 3.3%. The alphas reduced considerably once the crisis hit. For the crisis, P1 (P10) has an alpha of 1.8% (0.2%). The VMG produced significant alphas of 1.5% for the crisis. Post-crisis, growth stocks outperformed value stocks. During the post-crisis period, alphas of value (growth) stock portfolios declined (increased) than their corresponding crisis values.P10 has a significant alpha of 0.7%throughoutpost-crisis as against 0.2% of crisis.

**4.2 Price to Earnings Ratio (Panel B of Table 2)**

P/E sorted P1has an alpha of 2.1% as against 0.3% of P10. The VMG is producing an alpha of 1.8% during the full period. The alpha of boom for all portfolios is significant. However, in the recessionary period, the alphas of P1, P2 and P5 are significant only. The VMG portfolio has an alpha of 1.6% during the boom and 1.5% in the recession. P1 has a significant alpha of 1.7% during the bearish phase whereas P10 yield negative alpha of 0.2%leading to a 1.9% monthly value premium. During the bullish phase, only P8 has a significant alpha of 1.7%. During pre-crisis, only value stock portfolios (P1 to P5) produced significant alphas. P1 is yielding significant alpha of 2.8% and the VMG is producing a 1.9% monthly value premium during pre-crisis. During the crisis period, the alphas of P1, P2 and P5 reduced considerably, however, the alphas of P7 and P10 increased significantly. But the differential alphas ($\alpha_{crisis\text{-}precrisis}$) were insignificant. The alphas are significant for all portfolios except P10 during post-crisis which has significant and negative differential alpha($\alpha_{postcrisis\text{-}precrisis}$). VMG reaped a 1.8% monthly value premium during post-crisis.

**4.3 Dividend Yield (Panel C of Table 2)**

Here, P10's alpha is 1.4% which is higher than P1's 0.9% alpha. During the boom period also, the alphas of growth stock portfolios are significantly higher than the

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alphas of value stock portfolios. The VMG strategy is producing negative and significant returns of 0.8%. This implies growth firms outperform value firms. During the recession, P1 is yielding significant returnsof0.9%.The differential alphas of recession and boom is significant and negative for P6, P8 and P9. These portfolios were adversely affected by recessionary conditions. Checking for market phases impact, moderate portfolios (P4, P5, P6, P7 and P8) produced significantly positive alphas during the bearish months. However, P2, P3 and P4 reaped significant alphas in the bullish months. During pre-crisis, P10 has an alpha of 2% as against 1.4% of P1. Compared to pre-crisis, the alphas are significantly lower (higher) for growth (value) stocks in the crisis. Although during post-crisis, alphas of all the portfolios are significant and lower than their corresponding pre-crisis alphas, the differential alpha is significant for P8 only.

### 4.4 Cash Flow to Price Ratio (Panel D of Table 2)

The alphas of value stock portfolios outperformed growth stock portfolios and reap the significant value premium of 1.7% in the full period. During the boom, all portfolios except P10 are yielding significant positive returns and P2 and P3 produced the highest alpha (1.9%). During the recession, only P1 produced significant alpha of 1.5%. The VMG portfolio reaped significant alpha of 1.7% (1.1%) during the recession (boom). Testing the impact of market conditions, P2 has an alpha of 1.6% during the bearish phase. The VMG portfolio has a significant alpha of 1.4% during the bearish phase. During the bullish phase, three portfolios (P3,P6 and P7) yielded significant alphas, the highest being registered by P3 (1.9%). In pre-crisis, P8, P9 and P10 performed poorly and produced insignificant and negative returns as against the significant returns of other portfolios. The value premium registered in pre-crisis for VMG is 2.6% per month. During the crisis, five portfolios yielded significant positive alphas and P2 has the highest alpha of 1.5%. The differential return ($\alpha_{crisis\text{-}precrisis}$) was significantly higher for P9 only. All portfolios except P10 produced significant returns post the crisis, the highest returns of 1.6% were produced by P2. The VMG portfolio has an alpha of 0.8%. In the post-crisis period, the differential return ($\alpha_{postcrisis\text{-}precrisis}$) was significantly lower (higher) for P1 (P8 and P9).

### 4.5 Sales to Price Ratio (Panel E of Table 2)

P1 has an alpha of 2.4% whereas P10 has an alpha of 0.10%. The alphas of most portfolios are significantly higher in the boom. During recessionary conditions, the returns remained significant for P1 and P5only.The VMG reaped a value premium of 1.8% during the recession. When the market conditions are accounted for, the alphas of value stock portfolios are significant during the bearish phase. The alphas are significantly higher in the bull period for P4 and P5. In pre-crisis, P1 has an alpha of 2.9% against 0.3%. The returns are significant for the first six portfolios (P1 to P6).

The differential alpha ($\alpha_{crisis\text{-}precrisis}$) of the VMG portfolio is significant and negative suggesting returns on VMG reduced considerably during the crisis. The returns on all value stock portfolios remained significant during the crisis. P8 and P10 registered significant alphas in the crisis. The performance of returns improved post the crisis.

**4.6 Enterprise Value to PBDITA Ratio (Panel F of Table 2)**

During the full period, P1 has 1.3% alpha whereas P10 has an alpha of 0.2% leading to a 1.1% value premium. All the portfolios reaped significant returns and positive value premium during the boom. During the recession, P2 yielded significant returns only. The positive and significant alphas are present for P2, P3, P5 and P9during the bearish phase suggesting abnormal returns are greater for value stock portfolios than growth stock portfolios. Surprisingly, during the bullish period, only P3 and P7 registered significant alphas, wherein returns on P3 are greater than P7. During pre-crisis, P1 has an alpha of 2.3 % against 0.5% of P10. Compared to pre-crisis, the alphas are lower (higher) for value (growth) stock portfolios in the crisis period. However, the alphas are significant for P2, P3 and P10 only. During post-crisis, alphas of value (growth) stock portfolios are significant and lower (higher) than their corresponding pre-crisis alphas. The differential alpha is significant and lower for P1.

## Table 2: Alphas for Value Based Portfolios for Different Periods

| Portfolio | Full Period | | Economic Cycle | | | Bull-Bear | | | Global Financial Crisis | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\alpha_{full}$ | $\beta_{full}$ | $\alpha_{boom}$ | $\alpha_{recession-boom}$ | $\alpha_{recession}$ | $\alpha_{bear}$ | $\alpha_{bull-bear}$ | $\alpha_{bull}$ | $\alpha_{precrisis}$ | $\alpha_{crisis-precrisis}$ | $\alpha_{crisis}$ | $\alpha_{postcrisis-precrisis}$ | $\alpha_{postcrisis}$ |
| **Panel A: Price to Book Ratio** | | | | | | | | | | | | | |
| P1 | 0.019*** | 1.21*** | 0.018** | -0.005 | 0.012 | 0.008 | 0.003 | 0.011 | 0.032*** | -0.014 | 0.018. | -0.024** | 0.007 |
| P2 | 0.011** | 1.089*** | 0.012* | -0.006 | 0.006 | 0.005 | -0.001 | 0.004 | 0.017* | -0.006 | 0.01 | -0.008 | 0.008. |
| P3 | 0.015*** | 1.137*** | 0.015*** | -0.005 | 0.01. | 0.01. | 0.003 | 0.013 | 0.021*** | -0.002 | 0.019. | -0.011 | 0.01** |
| P4 | 0.01** | 1.038*** | 0.009** | -0.001 | 0.008 | 0.009. | 0.003 | 0.012 | 0.013* | 0.004 | 0.018** | -0.004 | 0.008** |
| P5 | 0.011*** | 1.064*** | 0.012*** | -0.007 | 0.005 | 0.01* | -0.005 | 0.005 | 0.015** | 0 | 0.014** | -0.007 | 0.008** |
| P6 | 0.01*** | 0.993*** | 0.013*** | -0.009 | 0.003 | 0.007 | 0.007 | 0.015* | 0.011* | -0.003 | 0.008 | -0.001 | 0.009** |
| P7 | 0.007** | 1.034*** | 0.008** | -0.004 | 0.004 | 0.006. | 0 | 0.005 | 0.01* | -0.002 | 0.007 | -0.002 | 0.007** |
| P8 | 0.004* | 0.947*** | 0.007* | -0.008. | -0.001 | 0.002 | 0.001 | 0.004 | 0.002 | 0.01 | 0.013* | 0.004 | 0.007** |
| P9 | 0.006** | 0.94*** | 0.011*** | -0.013** | -0.001 | 0.009** | 0.002 | 0.012* | 0.002 | 0 | 0.002 | 0.008. | 0.011*** |
| P10 | 0.001 | 0.94*** | 0.006* | -0.01* | -0.003 | 0.007. | -0.012 | -0.004 | -0.001 | 0.003 | 0.002 | 0.008. | 0.007* |
| VMG | 0.017** | 0.27*** | 0.011. | 0.004 | 0.016. | 0 | 0.015 | 0.016 | 0.033*** | -0.017 | 0.015. | -0.033** | 0 |
| **Panel B: Price to Earnings Ratio** | | | | | | | | | | | | | |
| P1 | 0.021*** | 1.131*** | 0.022*** | -0.01 | 0.011. | 0.017** | -0.006 | 0.01 | 0.028*** | -0.004 | 0.024** | -0.012 | 0.016** |
| P2 | 0.014*** | 1.058*** | 0.013** | -0.002 | 0.011. | 0.006 | 0.003 | 0.009 | 0.019** | 0 | 0.018. | -0.007 | 0.011** |
| P3 | 0.015*** | 0.999*** | 0.017*** | -0.008 | 0.008 | 0.018*** | -0.004 | 0.013 | 0.018** | -0.008 | 0.01 | -0.003 | 0.014*** |
| P4 | 0.012*** | 0.995*** | 0.015*** | -0.01 | 0.005 | 0.01* | -0.002 | 0.007 | 0.014** | 0 | 0.015* | -0.003 | 0.011** |
| P5 | 0.011*** | 1.02*** | 0.011*** | -0.002 | 0.008. | 0.01* | 0.001 | 0.012 | 0.016*** | -0.008 | 0.008. | -0.007 | 0.009*** |
| P6 | 0.007** | 0.986*** | 0.011** | -0.01* | 0 | 0.009* | 0 | 0.009 | 0.004 | -0.002 | 0.002 | 0.007 | 0.012*** |
| P7 | 0.006** | 0.946*** | 0.009*** | -0.006 | 0.002 | 0.002 | 0.004 | 0.007 | 0.005 | 0.006 | 0.012* | 0.003 | 0.008*** |
| P8 | 0.005* | 0.927*** | 0.008** | -0.007 | 0 | 0.004 | 0.012* | 0.017** | 0.004 | 0.005 | 0.009 | 0.003 | 0.008*** |
| P9 | 0.001 | 0.916*** | 0.002 | -0.002 | 0 | 0.006. | 0 | 0.006 | 0 | 0.004 | 0.004 | 0.005 | 0.005* |



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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P10 | 0.003 | 1.188*** | 0.006. | -0.01. | -0.003 | -0.002 | 0.001 | -0.001 | 0.008 | 0.006 | 0.014. | -0.01. | -0.001 |
| VMG | 0.018*** | -0.057 | 0.016** | 0 | 0.015* | 0.019*** | -0.008 | 0.011 | 0.019** | -0.01 | 0.009 | -0.001 | 0.018*** |
| **Panel C: Dividend Yield** | | | | | | | | | | | | | |
| P1 | 0.009** | 0.948*** | 0.007* | 0.001 | 0.009. | 0.005 | 0.002 | 0.007 | 0.014** | -0.002 | 0.011 | -0.007 | 0.007* |
| P2 | 0.011*** | 1.027*** | 0.013** | -0.006 | 0.006 | 0.006 | 0.007 | 0.013. | 0.013* | -0.001 | 0.012 | -0.003 | 0.01** |
| P3 | 0.01** | 0.968*** | 0.011** | -0.006 | 0.004 | 0.005 | 0.006 | 0.011. | 0.013* | 0 | 0.014** | -0.006 | 0.007* |
| P4 | 0.007** | 0.944*** | 0.009** | -0.008 | 0.001 | 0.009* | 0.002 | 0.011. | 0.006 | 0.003 | 0.009. | 0.004 | 0.01** |
| P5 | 0.006** | 0.967*** | 0.009** | -0.007 | 0.001 | 0.008* | -0.001 | 0.006 | 0.004 | 0.006 | 0.01* | 0.006 | 0.01*** |
| P6 | 0.007* | 0.998*** | 0.01** | -0.009. | 0 | 0.009* | -0.005 | 0.003 | 0.007 | 0 | 0.007 | 0.002 | 0.01*** |
| P7 | 0.008*** | 1.085*** | 0.011*** | -0.008. | 0.002 | 0.007. | -0.005 | 0.001 | 0.013*** | -0.005 | 0.008 | -0.006 | 0.007** |
| P8 | 0.012*** | 1.11*** | 0.014*** | -0.006 | 0.007 | 0.01* | -0.003 | 0.007 | 0.019*** | -0.004 | 0.015* | -0.013* | 0.006* |
| P9 | 0.011*** | 1.159*** | 0.014*** | -0.012. | 0.002 | 0.008 | 0 | 0.007 | 0.016** | -0.005 | 0.01 | -0.007 | 0.009** |
| P10 | 0.014*** | 1.233*** | 0.016** | -0.007 | 0.009 | 0.007 | 0.005 | 0.012 | 0.02** | -0.005 | 0.015. | -0.011 | 0.008* |
| YVMG | -0.004 | -0.285*** | -0.008* | 0.009 | 0 | -0.002 | -0.002 | -0.004 | -0.006 | 0.002 | -0.003 | 0.004 | -0.001 |
| **Panel D: Cash Flow Yield** | | | | | | | | | | | | | |
| P1 | 0.017*** | 1.136*** | 0.014** | 0.001 | 0.015* | 0.01 | 0 | 0.011 | 0.026*** | -0.009 | 0.017 | -0.016* | 0.009* |
| P2 | 0.017*** | 1.134*** | 0.019*** | -0.011 | 0.008 | 0.016* | -0.003 | 0.012 | 0.02** | -0.005 | 0.015** | -0.004 | 0.016*** |
| P3 | 0.015*** | 1.005*** | 0.019*** | -0.012 | 0.006 | 0.012* | 0.007 | 0.019. | 0.02** | -0.007 | 0.013* | -0.007 | 0.013*** |
| P4 | 0.011** | 1.062*** | 0.012** | -0.007 | 0.004 | 0.008. | -0.003 | 0.005 | 0.016** | -0.011 | 0.004 | -0.005 | 0.01** |
| P5 | 0.011*** | 1.017*** | 0.013** | -0.007 | 0.006 | 0.011* | 0 | 0.012 | 0.015** | -0.008 | 0.006 | -0.006 | 0.009*** |
| P6 | 0.009*** | 0.946*** | 0.013*** | -0.01* | 0.003 | 0.01** | 0.004 | 0.015. | 0.009* | 0.004 | 0.014** | 0.002 | 0.011*** |
| P7 | 0.009*** | 0.922*** | 0.012*** | -0.006 | 0.005 | 0.01** | 0.008 | 0.018** | 0.009* | 0.001 | 0.01* | 0 | 0.01*** |
| P8 | 0.002 | 0.85*** | 0.003 | -0.006 | -0.003 | -0.001 | 0.009 | 0.007 | -0.001 | 0.005 | 0.004 | 0.008. | 0.007** |
| P9 | 0.003 | 0.935*** | 0.004* | -0.005 | 0 | 0.007* | -0.007 | 0 | 0 | 0.013* | 0.012* | 0.007* | 0.007*** |
| P10 | 0 | 1.056*** | 0.002 | -0.003 | -0.001 | -0.003 | 0.006 | 0.002 | 0 | 0.002 | 0.003 | 0 | 0.001 |
| VMG | 0.017*** | 0.08 | 0.011* | 0.005 | 0.017* | 0.014. | -0.005 | 0.008 | 0.026** | -0.012 | 0.013 | -0.017. | 0.008. |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Panel E: Sales to Price Ratio** | | | | | | | | | | | | | |
| P1 | 0.024*** | 1.133*** | 0.028*** | -0.013 | 0.014. | 0.019* | 0 | 0.019 | 0.029** | -0.012 | 0.017. | -0.007 | 0.022*** |
| P2 | 0.015*** | 1.108*** | 0.018*** | -0.012 | 0.006 | 0.014* | -0.001 | 0.012 | 0.017* | 0.002 | 0.019. | -0.001 | 0.015** |
| P3 | 0.015*** | 1.091*** | 0.017*** | -0.011 | 0.005 | 0.012* | -0.001 | 0.011 | 0.018** | -0.004 | 0.013. | -0.003 | 0.014*** |
| P4 | 0.011*** | 1.051*** | 0.015*** | -0.012. | 0.002 | 0.01* | 0.004 | 0.015. | 0.013* | -0.002 | 0.01. | 0 | 0.012*** |
| P5 | 0.014*** | 1.032*** | 0.017*** | -0.008 | 0.008. | 0.011. | 0.006 | 0.017. | 0.018** | -0.006 | 0.012* | -0.005 | 0.013*** |
| P6 | 0.008** | 0.981*** | 0.01*** | -0.007 | 0.002 | 0.01* | -0.002 | 0.007 | 0.01* | -0.01 | 0 | -0.002 | 0.008** |
| P7 | 0.004* | 0.94*** | 0.006* | -0.006 | 0 | 0.006 | 0 | 0.005 | 0.005 | 0 | 0.005 | 0 | 0.005* |
| P8 | 0.004* | 0.841*** | 0.003 | 0 | 0.003 | 0.003 | -0.001 | 0.001 | 0.005 | 0.005 | 0.011* | -0.001 | 0.004* |
| P9 | 0.001 | 0.927*** | 0.002 | -0.004 | -0.001 | 0.005 | 0 | 0.004 | 0 | 0.006 | 0.006 | 0.003 | 0.004* |
| P10 | 0.001 | 1.195*** | 0.006. | -0.009. | -0.003 | -0.004 | 0.01 | 0.005 | 0.003 | 0.011 | 0.014* | -0.004 | -0.001 |
| VMG | 0.023*** | -0.061 | 0.022*** | -0.004 | 0.018. | 0.024** | -0.009 | 0.014 | 0.026** | -0.024* | 0.002 | -0.002 | 0.023*** |
| **Panel F: Enterprise Value to PBDITA Ratio** | | | | | | | | | | | | | |
| P1 | 0.013** | 1.116*** | 0.015** | -0.007 | 0.008 | 0.007 | 0.001 | 0.009 | 0.023** | -0.009 | 0.013 | -0.017* | 0.005 |
| P2 | 0.018*** | 1.041*** | 0.021*** | -0.011 | 0.01* | 0.013* | 0 | 0.012 | 0.02*** | -0.005 | 0.015* | -0.003 | 0.017*** |
| P3 | 0.016*** | 1.071*** | 0.02*** | -0.013. | 0.007 | 0.014** | 0.006 | 0.021* | 0.02*** | -0.002 | 0.017* | -0.006 | 0.014** |
| P4 | 0.012*** | 1.069*** | 0.012** | -0.006 | 0.006 | 0.009 | -0.003 | 0.005 | 0.017** | -0.002 | 0.014 | -0.007 | 0.009** |
| P5 | 0.009** | 1.011*** | 0.01** | -0.004 | 0.005 | 0.01* | 0.002 | 0.012 | 0.011* | -0.005 | 0.006 | -0.001 | 0.01** |
| P6 | 0.008* | 1.042*** | 0.008* | -0.004 | 0.003 | 0.003 | 0 | 0.003 | 0.007 | 0.011 | 0.018 | 0.002 | 0.009*** |
| P7 | 0.007** | 0.982*** | 0.009** | -0.008 | 0.001 | 0.004 | 0.005 | 0.01 | 0.01* | -0.003 | 0.007 | -0.003 | 0.006** |
| P8 | 0.007** | 1.001*** | 0.01*** | -0.007 | 0.002 | 0.005 | 0.006 | 0.012* | 0.007. | -0.001 | 0.005 | 0 | 0.007** |
| P9 | 0.003 | 0.976*** | 0.004. | -0.006 | -0.001 | 0.007. | -0.005 | 0.001 | 0.001 | 0 | 0.002 | 0.005 | 0.007** |
| P10 | 0.002 | 1.13*** | 0.005. | -0.006 | -0.001 | 0 | 0 | -0.001 | 0.005 | 0.008 | 0.013. | -0.005 | 0 |
| VMG | 0.011* | -0.014 | 0.01. | 0 | 0.009 | 0.008 | 0.001 | 0.01 | 0.018* | -0.018 | 0 | -0.012 | 0.005 |
| '.', '*', '**', and '***' indicate significance at 10%, 5%, 1% and 0.1% respectively. | | | | | | | | | | | | | |



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## 5. Discussion and Conclusion

The paper analysed the impact of different business cycles, stock market phases, and crisis on the value premium in the Indian stock market. Looking at the $\alpha_{boom}$ results, barring a few growth stock portfolios, the alphas are positive and significant for all portfolios. In sharp contrast, the alphas are rarely significant and positive during the recession and decline drastically in recessionary conditions. Thus, it can be inferred that irrespective of boom or recession; value portfolios have an edge over growth portfolios in generating positive excess returns.

Moving on to the impact of bull and bear market phases on the value premium, except for a few growth stock portfolios, the alphas are generally positive in both bull and bear periods. Similar to the economic condition, the alpha values fall in the bearish phase too, as P10 generates negative returns when sorted using P/E, CF/P, and S/P. Interestingly, the value stock portfolios have managed to produce significant excess returns in the bearish phase suggesting value stock portfolios are a good investment when the markets are down.

The alphas are significantly positive in pre-crisis for all value stock portfolios of all valuation proxies. During the crisis, alphas were significant for a few portfolios only. In post-crisis, most of the portfolios are producing significant alphas. While the value premium is significant for five valuation measures during pre-crisis, it remained positive and significant for only P/B during the crisis/E, CF/P and S/P based value premium were significant during post-crisis. This implies that investors put faith in the value stocks in times of adversity

Overall, this paper discussed whether value stock portfolios can outperform the growth stock portfolios during different business economic and market conditions- domestic and international. Consistent with previous studies (Lakonishok, Shleifer and Vishny, 1994; Santos and Montezano, 2011; Hsieh, 2015), the empirical results show that value stock portfolios outperformed growth stock portfolios in each state of the Indian economy analysed and even managed to produce higher returns in adverse conditions- recession, bear period, or crisis. The alphas of value stock portfolios were found to be higher than their growth counterparts. The study also found that the returns for value stocks and growth stocks are not significantly different during expansionary and recessionary phases of the Indian economic cycle (Beckers and Thomas, 2010).

The paper is not free from certain limitations. Firstly, due to the non-availability of data in the public domain, the period before 1999 could not be considered. Secondly, the study has used data of BSE-500 companies only; however, future researchers can include both NSE and BSE companies. Moreover, the study did not control for firm size while forming portfolios; therefore, value-weighted portfolios can be formed in the future.

To conclude, Value Investing is a winning strategy when the markets are facing adverse conditions. The investor should keep in mind that stocks become riskier as their price rises and less risky as their prices fall. A value investor usually dreads a recessionary and crisis-prone market and welcomes a boom and non-crisis market. However, these adverse conditions are good news for value investors. Because of the overall decline in stock prices, these periods are a considerably safer time to build wealth. As an old saying goes, *markets go up through the staircase and come down on an elevator*. Unnerving that it is, value investing helps investors navigate through this falling market. The recession and bearish market phase offer a good opportunity for value investors to buy more of the stocks since the stock prices for value stocks are cheaper. Value stocks can act as a hedge in these uncertain times. This has constructive implications for investors and portfolio managers as they can follow the value investment strategy that may provide extra-normal returns while managing their portfolios.

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