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IDENTIFYING THE ROLE OF EXPECTATION ERRORS IN VALUE GLAMOUR RETURN USING FSCORE

Master’s Thesis
Department of Finance
March 2014
Identifying the role of expectation errors in value glamour return using Fscores.

Abstract

Existing literature documents that a portfolio of value stocks outperforms a portfolio of glamour stocks and market portfolio. Researchers have different opinions regarding, “what derives premium returns from a long short value glamour strategy?” The central objective of this paper is to seek the source of value glamour return effect. We have mix results for various hypotheses tested. Our main findings are: European stocks have extremely negative performance for long short value glamour strategy during 1991 and 2011, second, Fscores effectively separate potential winners from potential losers, third, error in investor expectations partially affect the performance of value glamour strategy but central source of value glamour performance is the riskiness of value stocks in comparison to risk levels of overall market or glamour stocks and lastly, investor sentiments do amplify future returns providing partial evidence in favor of market mispricing. We conclude that successful value investing requires ability to pick quality stocks from within a broader portfolio and exposure to higher risk.

Keywords

Book to market, Value, glamour, fundamentals, expectation errors, long, short, Fscores, investor sentiments, analysts’ earnings forecast errors.

Additional information

European data for the period 1991 to 2011
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1 INTRODUCTION

In this paper we seek returns of simple value glamour strategy in Europe amidst two major financial crises and Europe’s sovereign debt crisis. Value can be measured with the help of book to market (BM) ratio, earnings to price (E/P) ratio, dividend yields or cash flow to price ratio. Researchers such as Basu (1977); Rosenberg, Reid and Lanstein (1985); Chan, Hamao and Lakonishok (1991), Fama and French (1992) and Lakonishok, Shleifer and Vishny (1994) suggest that above mentioned measures applied to detect value have the ability to predict future stock returns. Overall their evidence suggests the ability of a portfolio of high book to market (value) firms to outperform low book to market (glamour) firms and market portfolio. Very recently Grantham (2010) provides evidence against researchers’ consensus agreement over the value glamour return effect.1

Although researchers agree on the presence of value glamour effect, what derives such differential return remains a debatable issue. Some researchers (for example, Fama & French 1995; Petkova & Zhang 2005 and Zhang 2005 etc.) are of the opinion that value glamour effect is nothing but compensation of holding risky high book to market stocks, whereas others argue that these returns are result of market mispricing. Fama et al. (1992) document that book to market ratio is the best predictor of value when compared with earning to price ratio, dividend yield or cash flow to price ratio. They also argue that book to market factor is compensation for financial distress risk. Overall, researchers in favor of risk based explanation argue that value glamour return effect exists due to different risk levels of value and glamour stocks.

Then there are researchers (for example, Lakonishok, Shleifer & Vishny 1994; LaPorta 1996; LaPorta, Lakonishok, Shleifer & Vishny 1997 and Dechow & Sloan 1997) who argue that value glamour effect is the result of market mispricing based on investors’ biased expectations about the future performance of a firm. Such mispricing arises due to overly optimistic or pessimistic investors’ expectations

1Value glamour effect is explained in third chapter under the caption of definition of key terms.
about the future performance, based on past performance of a firm. Thus value glamour effect captures the price corrections due to revision in errors of investor expectations.

We test following hypotheses, explained in third chapter:

1. Does simple long/short value glamour strategy earn positive returns?
2. High (low) Fscore firms tend to be winners (losers) in future?
3. Is value glamour effect concentrated among firms with ex ante identifiable expectation errors (incongruent strategy) and absent among firms with no such errors in investor expectations (congruent strategy)?
4. During the periods of high investor sentiment portfolio returns should be high (low) for the trading strategies that exploit expectation errors.
5. Do analysts’ earnings forecast errors (FE) and subsequent revisions (REV) show patterns similar to incongruent value glamour returns?

In order to find compelling evidence on actual source of value glamour return effect, Piotroski’s Fscores are used. Fscores are effective measure to capture the strength of firm’s fundamentals (Piotroski 2000). Our tests look for the evidence whether Fscores possess the ability to differentiate future winners from future losers. Third hypothesis looks for the role of expectation errors in value glamour return effect. This is done by using book to market ratio in combination of Fscores. When expectations based on market pricings are not in line with expectations based on firm fundamentals, it is assumed to be a bias in investors’ expectations. Thus with the help of BM and Fscore error in expectations can be ex ante detected. A value glamour strategy with such biased expectations should result highest value glamour return in order to support mispricing based explanation for value glamour effect. Additionally, a strategy without any ex ante identifiable expectation errors should not result any returns that are significantly different from zero. To provide further evidence, investor sentiment (Barker & Wurgler 2006) along with analysts’ earnings forecast errors and subsequent revisions are used as proxies to measure mispricing driven due to speculative demand in prices and biased expectations. A period of high investor sentiment should return higher future returns and vice versa.
Our tests results are mix and interesting. First of all, inconsistent with earlier evidence there is significant negative value glamour return. A portfolio of value stocks in our data performs negatively when compared with a portfolio of glamour stocks and overall market. In light of our results, Fscores successfully distinguish winners from losers consistent with Piotroski (2000). Thirdly, our results suggest that expectation errors have some role in value glamour effect. With our negative value glamour return, we have significant negative returns for tests used to capture effect of biased expectations, inconsistent with Piotroski (2012). Nevertheless, incongruent value glamour strategy earns highest returns2 when compared with congruent and unconditional value glamour strategy. This partially supports our hypothesis that a strategy where expectations based on market prices are not in accordance with expectations implied by firm fundamentals (ex ante identifiable expectation errors) should return best future performance to prove the role of market mispricing in value glamour returns. However, our results from congruent value glamour strategy fail to support the same hypothesis and are inconsistent with evidence provided by Piotroski (2012).

Our results from Analysts’ forecast errors and subsequent revisions are not significant and conclusive. Finally, results for investor sentiment as a proxy to capture role of investor’s expectations in future stock performance are consistent and significant. As in Baker et al. (2006), during periods of high investor sentiment there are amplified (albeit negative) subsequent returns and periods of low investor sentiment result less (negative) future returns. These results are consistent3 with our hypothesis and existing evidence.

The crux of our results suggests that a value glamour strategy going against investors’ expectations performs far better (earns less negative returns) than a strategy in line with investors’ expectations. This is small evidence in favor of mispricing hypothesis. Whereas negative value glamour returns during two major

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2Incongruent value glamour return is highest in comparative terms only. Actually our results are negative, this one is least negative.

3 Barker et al. (2006) argue high subsequent returns in periods of high investor sentiment. Our results actually show even larger subsequent losses in periods of high investor sentiment. Nevertheless this fact is justified by assuming that higher investor sentiment amplifies returns in absolute terms.
financial crises and one Sovereign debt crisis of Europe, puts strong weight to risk based explanation as the source of value glamour returns. Next chapter talks about literature review, various explanations of value glamour effect and Fscores. Third and fourth chapters talk about data, research methods, hypotheses and main results. Last chapter concludes the paper.
2 LITERATURE REVIEW

2.1 Various BM strategies

Stocks can be separated as value or glamour on the basis of some accounting based ratios, for example, book to market ratio, earnings to price ratio, dividend to price ratio and cash flow to price ratio. Basu (1977), Rosenberg et al. (1985) and Chan et al. (1991) document that such fundamental ratios can predict future stock returns. Most widely used ratio for this task is BM ratio. A stock having high book to market ratio is called value stock whereas a stock with low BM ratio is termed as a glamour stock. This fundamental division of stocks has been very useful for researchers in order to observe certain trends and behaviors of various types of stocks. For example there is extensive research available showing that a portfolio of high BM firms outperforms a portfolio of low BM firms (Rosenberg et al. 1984; Fama et al. 1992; Lakonishok et al. 1994).

As documented by Rosenberg et al. (1984) and Fama et al. (1992) value stocks outperform overall market and glamour stocks. Thus a strategy, that assumes long position in a portfolio of value stocks and short position in a portfolio of glamour stocks, earns positive return. This strategy is referred as value glamour strategy and such return is called value glamour return (premium). Existence of value glamour premium is well documented however the source of such premium is where researchers have different opinions. Market efficiency based and market mispricing based explanations are widely debated explanations for value glamour effect.

2.1.1 Market efficiency based explanation

Fama et al. (1992) are considered to have emphasized on the risky nature of value stocks. They used BM as variable to capture financial distress. They argue that value stocks are fundamentally riskier than overall market. Efficient markets hypothesis states that markets incorporate all information available about the fundamentals of a

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4 Value and glamour stocks are synonymous to high and low book to market stocks, respectively.

2.1.2 Market mispricing based explanation

Debont and Thaler (1985) and Lakonishok et al. (1994) are of the view that some investors take overly optimistic or pessimistic view about the good or bad performance of a firm thus making those firms as overbought or oversold. Contrarian investors, exploiting this behavioral mistake of naive investors, decide to take their positions against the overall market trend. Ultimately stocks revert to their true fundamentals resulting in such value glamour premium. LaPorta et al. (1997) show that with further fundamental information available during quarterly earnings announcement such suppressed (high book to market) stocks show positive surprises.

LaPorta et al (1997) document that value (glamour) firms earn positive (negative) one-year ahead-earnings announcement period returns. LaPorta (1996) and Dechow and Sloan (1997) conclude that systematic errors in market expectations about long-term earnings growth are the reasons for value glamour premium and contrarian investment strategies’ returns.

Piotroski (2000) argues that value glamour effect captures price corrections arising from the reversal of these expectation errors. Real strength of Value glamour strategy lies in the form of portfolios rather than individual stocks. Stickel (1990) argues that
analysts do not recommend single high BM stock as typical value firm
underperforms the market. Piotroski (2000) argues that major contribution in high
returns of value portfolio comes from certain winner high book to market stocks.
Overall, majority of firms in a value portfolio shows negative returns, but winners of
value portfolio have such big impact that causes value glamour premium.

Piotroski (2012) notes another fundamental difference in the variables or factors used
to value both high and low BM portfolios. Financial information for value stocks is
more useful (than for glamour stocks) as financial statement analysis about firm
fundamentals, leverage, profitability, cash flows and liquidity are used for the
valuations of value stocks. However, the valuation of glamour stocks relies primarily
on future sales, growth and future profitability potential. Asness (1997) states that
momentum is a big factor in growth stocks return predictability.

Taken together, the group of researchers believing in behavioral factors as major
source of value glamour premium state that over-reaction or under-reaction to new
financial information, investors’ too optimistic or pessimistic view about the future
performance of a stock based on past performance and different types of variables
required for valuations of value and glamour stocks are the main reasons for pricing
errors in stocks. Therefore a value glamour strategy that can exploit these valuations
errors has the potential to earn higher returns.

2.2 Review of earlier fundamental analysis

Various techniques and variables have been used by researchers to conduct different
types of fundamental analysis. Piotroski (2000) shows that return pattern of value
stocks is skewed: where mean market adjusted returns of value stocks are positive,
median market adjusted returns are negative. This indicates that a significant number
of value firms in a portfolio show negative returns due to their distressed nature and
fundamental riskiness (Fama & French 1993). Whereas, overall positive return is the
result of extraordinary positive performance by some winner value stocks. Piotroski
(2000) documents that one sixth of annual return comes in four 3-day periods around
quarterly earnings of the firm. Role of historical financial information and
subsequent future performance are positively related. This suggests that markets fail to efficiently incorporate the financial information available, thus under react to firm fundamentals. Therefore firm fundamentals can provide useful information in separating expected winners from losers.

Grantham (2010) also reports the return patterns of value stocks. He criticizes the approach of Graham and Dodd (1934) and mentions that high book to market effectively means lower trust of market on the assets of a (value) firm. He says that only quality value stocks perform well, but most of the times cheap price of a value stock is justified for its riskier fundamentals. Investors of value stocks should also beware of value trap. During severe socio-economic periods value stocks show huge negative returns. Grantham shows that during great depression of 1930 poor quality high book to marker stocks underperformed the market. Due to lack of solid financial health required to withstand the fall of time, many high book to market firms end up facing bankruptcy or fundamentally irreparable damage.

Understandably, for around more than a decade researchers have applied various techniques to distinguish potential winners from potential losers. Frankel and Lee (1998) purchased stocks whose prices appear to be lagging fundamentals. Piotroski (2000) emphasized that instead of trying to single out fewer stronger value stocks, opposite can be done more easily and effectively. He used a set of accounting variables to distinguish weaker value firms in order to remove the severe negative impact in the whole value portfolio.

Hayes (1998) and McNichols and O’Brien (1997) document that value firms are normally low volume generating, poor past performance record and small sized firms. Financial analysts are less willing to follow such firms. Thus any positive fundamental developments are kept hidden from or neglected by majority of investors. Managers of distressed firms face credibility issues when trying to voluntarily communicate forward looking information to capital markets (Koch 1999 and Miller & Piotroski 2002). Thus forecast based approach, mentioned by Frankel

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5 If hidden value in a stock never realizes and cheapness of the stock was for good reasons, investors of value stocks end up facing big losses.
and Lee (1998), does not work effectively for majority of value firms (Piotroski 2000).


Ou and Penman (1989) work with a combination of financial ratios created from historical financial statements and show that future changes in earnings can be accurately predicted. A similar statistical model could be used to successfully predict future excess returns (Holthausen & Larcker 1992). However, these techniques involve complex methods, require huge information and are difficult for investors to implement (Piotroski 2000).

Lev and Thiagarajan (1993) work with 12 financial signals useful for financial analysts. They document that these signals are correlated with returns even after controlling for current earning innovations, firm size and macroeconomic conditions. Abarbanell and Bushee (1997) find that above methodology has the ability to predict changes in future earnings and analysts’ forecast revisions. They also document that these signals earn significant abnormal returns. One famous fundamental indicator is Z-Score derived by Altman (1964). It shows significant results in predicting bankruptcy of a firm. Piotroski (2000) uses nine financial signals to form Fscore.

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6Twelve financial signals used by Lev and Thiagarajan (1993). One drawback of this methodology is that it requires professional work and involves complex methodologies which have high implementation costs
2.3 Fundamental score (Fscore)

High book to market firms are suffering from financial distress (Fama & French 1995 and Chen & Zhang 1998). Reason for this financial distress can be anything including declining or persistently low margins, profits, cash flows, financial leverage or/and liquidity of these firms. Instinctively, financial variables that demonstrate changes in these economic conditions should be helpful in predicting future performance of firms. This is the main idea used by Piotroski (2000) to identify useful financial signals with the help of basic accounting ratios.

Nine fundamental variables are chosen to measure three main areas of financial condition of a typical firm: profitability, financial leverage/liquidity, and operating efficiency. Usage of binary\(^7\) signals is adopted to make the approach easy to implement and interpret. A signal implication is assumed to be either good or bad depending on how it affects the future prices and profitability. An indicator variable for the signal is equal to one (zero) if the signal’s realization is good (bad). Aggregate signal measure for a specific firm is defined as the sum of the nine binary signals and is called Fscore of that firm. This aggregate signal (Fscore) is used to measure the overall quality of the firm’s financial position. Thus investment decision is taken based on the strength or weakness of a firm’s respective Fscore (Piotroski 2000).

The effect of any signal on profitability and prices can give confusing information. However the main assumption that high book to market firms are financially distressed at some levels helps in distinguishing the implication of a particular signal. For example Harris and Raviv (1990) document that an increase in leverage can be a positive signal. On the other hand, Myers and Majluf (1984) and Miller and Rock (1985) show that increase in leverage can be a negative signal for the future performance of the firm. For financially distressed firms, the negative implications of increased leverage seem more admissible than the benefits of reduction of agency

\(^7\) Despite the ambiguity and possibility of getting mixed signals, binary signals are used for the sake of avoiding complex methods. Alternative ways could be using weighted values rather than signals of 0 and 1.
costs or improved monitoring. Nevertheless, Piotroski (2000) takes into account that ambiguity of these signals may decrease predictive ability of these signals.

Piotroski (2000) takes nine financial performance signals belonging to following three main segments of financial statements:

- Profitability
- Leverage, liquidity and source of funds
- Operating efficiency

2.3.1 Profitability:

A firm operating in profit or positive cash flows, albeit, financially distressed, demonstrates its ability to generate funds internally and survive tough times. This positive trend in earnings can be interpreted as a signal of potential positive future performance. Four variables ROA, Change in ROA, CFO and Accruals, are used to measure these performance related factors of a particular stock.

- Return on Asset (ROA) is defined as income before extraordinary item divided by beginning of the year total assets.
- Cash flow from operations (CFO) is equal to Cash flow from operations scaled by beginning of the year total assets.
- Change in ROA is defined as current year’s ROA divided by previous year’s ROA.
- Accrual is defined as current year’s net income before extraordinary items less cash flow from operations divided by beginning of the year total assets.

If ROA and CFO are positive, it is considered a good sign and thus F_ROA and F_CFO are defined equal to one (1). If on the other hand ROA and CFO are negative, it is taken as a negative sign and for that reason F_ROA and F_CFO are allotted a value of zero (0). If Change in ROA greater than zero, meaning the firm is
having positive trend about return on assets, it is considered a positive signal and its Fscore is allocated a value of “1”, otherwise “0”. Relationship between earnings and cash flows is of considerable significance. Earnings that come as a result of accrual adjustment are bad sign for the future health of a stock (Sloan 1996). Sweeney (1994) mentions that for value stocks being financially distressed on average, incentive to manage earnings is even significant. Variable F_Accruals is equal to one if CFO is greater than ROA, otherwise it is zero.

2.3.2 Leverage, liquidity and source of funds:

Second segment examines firm structure and its ability to meet future debt obligations. This includes three variables; change in leverage, change in liquidity and offer for new equity. Because of distressed nature of value firms it can be assumed that an increase in leverage, a decrease in liquidity and reliance on external funds are bad signs about financial situation of the company.

- Change in leverage tells the change in long term debts of the company. It is measured as the change in ratio of total long term debt to average total assets.
- Change in Liquidity is the change in ratio between current assets to current liabilities.
- Equity Offer is the variable that tells whether a firm has issued new equity during the year.

A decrease (increase) in leverage is taken as positive (negative) sign and F_Lever is assigned one (zero) value. By raising external capital a financial distressed firm generates a signal of its inability to generate funds internally (Myers & Majluf1984 and Miller & Rock 1985). An improvement in the liquidity of the firm is considered as a positive sign, hence F_Liquid gets one and a zero in the opposite case. If a firm offers equity during the year it is considered a bad signal and hence F_Offer gets value of zero, otherwise one.
2.3.3 Operating efficiency:

Last two signals, change in margin and change in turnover, are used to see the changes in the efficiency of firm’s operations.

- Change in Margin is defined as current year’s gross margin ratio (gross margin divided by total sales) less the previous year’s gross margin ratio.
- Change in turnover is equal to current year asset turnover ratio (total sales divided by beginning of the year total assets) less the prior year’s asset turnover ratio.

Improving margins indicate potential improvements in factor costs, a reduction in inventory costs, or any rise in the price of the firm’s product. The indicator variable F_MARGIN equals one if change in margin is positive, zero otherwise. An improving asset turnover signals greater productivity from the asset base. Such an improvement can come from more efficient operations or an increase in sales. The indicator variable F_TURN equals one if change in turnover is positive, zero otherwise.

2.3.4 Aggregate Fscore:

All the binary variables defined above are aggregated to form a composite Fscore;

\[
Fscore = F_{ROA}+F_{ΔROA}+F_{CFO}+F_{ACCURUAL}+F_{ΔMARGIN}+F_{ΔTURN}+F_{ΔLEVER}+F_{ΔLIQUID}+F_{OFFER}.
\]

As there are total of nine underlying signals, aggregate Fscore of a firm can range from a low of 0 to a high of 9. Low Fscore (0, 1, 2 and 3) represents a firm with very few good signals or weak fundamentals. Contrarily, a high Fscore (7, 8 and 9) represents a firm with most good signals and thus strong fundamentals. To the extent current fundamentals predict future fundamentals, Fscores are expected to be positively associated with changes in future firm performance.
2.4 Motivation

Consistently markets have been mispricing stocks. Book to market ratio is a great way to predict future performance. Reason why a portfolio of high book to market stocks outperforms a portfolio of low book to market stocks is a matter of discussion in recent research. It is intriguing to see whether value glamour return effect holds ground in Europe. How this strategy works during the period of 1991 to 2011 which includes two major financial crises. With two parallel opinions regarding the source of value glamour, as mentioned above, it is interesting to see which one is more plausible and why? Market returns originate from two main sources; firm fundamentals and behavioral biases. A strategy, where value glamour returns are conditioned with firm fundamentals, has the ability to show how significant is the role of behaviors and how important part is played by fundamentals in not only value glamour return effect but also in return patterns of overall market.
3 DATA AND RESEARCH METHODS

3.1 Sample selection and returns calculation

From 1991 to 2011, annual data is taken from DataStream for European stocks. Stocks that have sufficient market prices and required financial information are kept. Total observations are 89437 with 31 initially required accounting variables. Firm year observations with missing information are kept as NA values. For each firm year observation book to market ratio, Standardized unexpected earnings (SUEs) are calculated. SUE is used to measure quarterly innovations in earnings.

Following Bernard and Thomas (1989; 1990) SUEs are calculated as realized earnings per share (EPS) minus EPS from four quarters prior, divided by its standard deviation over the prior eight quarters. Average SUE calculated over the four quarters immediately after portfolio formation is reported in this paper. In order to measure momentum (MM), preceding six months buy-and-hold market adjusted returns are calculated. Observations with negative BM are deleted. Remaining observations are ranked yearly according to BM ratio. Highest 30% BM ranked stock observations are called value stocks, from 30% to 70% ranked BM firms are called mid BM and lowest 30% BM firms are called glamour firms.

This procedure results in 31778 stock observations across 21 years from 1991 to 2011. Then stock portfolios are made according to firm fundamentals from Low Fscore, Mid Fscore and High Fscore. This is done by ranking all the stocks according to their Fscores from 0 to 9. Stocks having Fscores from 0 to 3 are gathered in a portfolio named Low Fscore. These stocks are assumed to have weakest fundamentals. Stocks having Fscores from 4 to 6 are put in a portfolio named Mid Fscore. Finally, stocks having Fscores from 7 to 9 are put in a portfolio with highest fundamentals under the name High Fscore.

8 Stocks, firms and companies carry same meaning and weight.
9 Mid BM is used synonymously as "middle" or middle BM in the paper.
One year Buy-and-Hold returns for each stock are calculated from the beginning of fifth month of each year till the same date of subsequent year. This gap of four months from the beginning of fiscal year is given with the intention that most information about firm financials is depicted in the stocks also that most of the financial information is available for the investors. If a firm gets delisted, its return is assumed to be zero. Market adjusted Buy and Hold return (ma-bahrA) for each year is defined as yearly buy and hold return less equally weighted (mean) market return over the corresponding time period.

3.2 Definition of key terms

Terms defined below are extensively used throughout this paper. Therefore it is recommended to become aware of these terms before moving to empirical design.

**EPS**

Earnings per Share is a ratio that divides total earning with total number of shares of that company. It is the portion of profits of a company for each outstanding share of the company. Calculated as follows:

\[
EPS = \frac{(Net \ income - preferred \ dividend)}{average \ outstanding \ shares}
\]

**SUE**

Standardized Unexpected Earning (SUE) is used as a measure to capture earnings surprises of a firm. SUE measures earnings surprises in terms of number of standard deviations above or below the consensus estimate of earnings. The absolute value of SUE measures the degree of unexpected earnings whereas the sign of SUE measures whether the unexpected earnings are above or below the consensus estimate. It is calculated by dividing the difference of a firm’s realized EPS and prior four quarters EPS with its standard deviation from prior eight quarters. As follows:

\[
SUE = \frac{(Actual \ EPS - EPS \ from \ previous \ four \ quarters)}{Standard \ deviation \ from \ last \ eight \ quarters}
\]

---

10 Ma-bahrA is used as the abbreviation for annual market adjusted buy and hold return in our work.
**MVE**  
Market Value of Equity is the total dollar/euro market value of a firm’s all outstanding shares at the end of a Fiscal year. It is calculated by multiplying the closing share price and total number of shares outstanding at the end of the fiscal year. i.e.

\[ MVE = Share \text{ price} \times total \text{ shares outstanding} \]

**BM**  
Book to market is a ratio that is used to find the value of a company by comparing the book value of a firm to its market value. It is derived by dividing book value of equity to market value of equity at the end of fiscal year. As follows:

\[ BM = \frac{book \text{ value of a firm}}{market \text{ value of the firm}} \]

**Assets**  
Total value of everything that a business owns is called total assets, reported at the end of each fiscal year.

**ROA**  
Return on Asset is an indicator about how profitable a company is relative to its total assets. It is derived by dividing net income before extraordinary items for the fiscal year preceding portfolio formation to the total assets at the beginning of year t. Given as follows:

\[ ROA = \frac{\text{net income} - \text{extraordinary items}}{\text{beginning year total assets}} \]

\[ \Delta ROA = ROA_t - ROA_{t-1} \]

Where t stands for the year of portfolio formation and (t-1) stands for the year previous to portfolio formation.
**Margin**  
Gross margin is the difference between revenue and costs of a company before accounting for certain other costs. It is equal to net sales of the firm less cost of goods sold for the fiscal year, i.e.

\[
\text{Gross margin} = \text{net sales} - \text{cost of goods sold}
\]

**ΔMargin**  
Change in margin tells the direction of gross margins of a firm. Whether the margins of a firm increasing or decreasing can be useful for taking investment decision regarding that firm. It is equal to gross margin of a firm for the year preceding portfolio formation, divided by net sales for the year, less the gross margin (divided by net sales) from year t-1.

\[
\Delta \text{Margin} = \frac{\text{gross margin}_t}{\text{net sales}_t} - \frac{\text{gross margin}_{t-1}}{\text{net sales}_{t-1}}
\]

Where t stands for the year of portfolio formation and (t-1) stands for the year previous to portfolio formation.

**CFO**  
Cash flow from operations indicate the amount of money a company brings in from ongoing, regular business activities, such as manufacturing and selling goods or providing a service. CFO does not include long-term capital or investment costs. It does include earnings before interest and taxes plus depreciation minus taxes. Cash flow from operations divided by total assets at the beginning of the year. It is given by the following formula:

\[
\text{Cash flow from operating activities} = \text{EBIT} + \text{Depreciation} - \text{Taxes}
\]

Where EBIT stands for earnings before interest and taxes.

**Current ratio**  
A liquidity ratio that measures a company's ability to pay short-term obligations. Current ratio is derived by dividing total current assets with total current liabilities of a firm. Formula is:

\[
\text{Current ratio} = \frac{\text{current assets}}{\text{current liabilities}}
\]
Also known as "liquidity ratio", "cash asset ratio" and "cash ratio".

**ΔLiquid**  Change in liquidity is equal to change in firm’s current ratio between the end of year t and year t-1. The improvement in a firm’s ability to pay its short term obligations is signaled by positive change in liquidity and vice versa. It is equal to:

\[ ΔLiquid = liquidity_t - liquidity_{t-1} \]

Where t stands for the year of portfolio formation and (t-1) stands for the year previous to portfolio formation.

**Debt to asset ratio**  A measurement representing the percentage of a corporation's assets that are financed with loans and financial obligations lasting more than one year. The ratio provides a general measure of the financial position of a company, including its ability to meet financial requirements for outstanding loans. A year-over-year decrease in this metric would suggest the company is progressively becoming less dependent on debt to grow their business, a healthy sign for the fundamentals of the company. Debt to asset ratio is calculated as follows:

\[ Debt to asset ratio = \frac{long\ term\ debt}{total\ assets} \]

**ΔLever**  Leverage is the amount of debt used to finance a firm's assets. A firm with significantly more debt than equity is considered to be highly leveraged. Change in leverage of a firm is equal to change in debt to assets ratio between year t and year t-1. Following formula explains the change in leverage:

\[ ΔLever = (Debt/assets_t) - (debt/assets_{t-1}) \]

Where t stands for the year of portfolio formation and (t-1) stands for the year previous to portfolio formation.
**Asset turnover ratio**  It is the amount of sales or revenues generated scaled by total assets of a company. The Asset Turnover ratio is an indicator of the efficiency with which a company is deploying its assets. The higher the ratio, the better it is, since it implies the company is generating more revenues per unit of assets. It is given by the formula:

\[ \text{Asset Turnover} = \frac{\text{total sales}}{\text{total assets}} \]

\( \Delta \text{Turn} \)  Change in firm’s asset turnover ratio between the end of year t and t-1. That is:

\[ \Delta \text{Turn} = \text{asset turnover}_t - \text{asset turnover}_{t-1} \]

Where t is the year of portfolio formation and t-1 is the year before portfolio formation.

**Accrual**  These are accounts on a balance sheet representing non-cash-based assets and liabilities used in accrual-based accounting. For example, accounts payable, accounts receivable, goodwill, future tax liability and future interest expense. Accrual is equal to net income before extraordinary items less cash flow from operations divided by total assets of a firm at the beginning of year t. i.e.

\[ \text{Accrual} = \frac{(\text{net income before extraordinary items} - \text{cash flow from operations})}{\text{total assets}} \]

**One year raw return**  One year raw return is simple buy-and-hold return for twelve months starting at the beginning of the fifth month after the end of fiscal year.

**Market-adjusted buy and hold return**  Annual raw buy-and-hold return of the firm less equally weighted (mean) market return over the corresponding period of time.
Value firm  A firm that trades at a lower market price relative to its fundamentals (i.e. book value, dividends, earnings, sales, etc.) and therefore considered undervalued by a value investor. Common characteristics of such stocks include a high dividend yield, high book-to-market (BM) ratio or high earnings-to-price ratio.

Glamour firm  Similarly a firm trading on higher market price relative to its current fundamentals (i.e. book value, dividends, earnings, sales, etc.) and thus considered overvalued by a value investor. Due to bright future growth prospects investors at the market put higher trust and confidence on such firms. A firm with low book to market ratio is considered as glamour firm.

Momentum  Momentum of a firm is equal to market adjusted return over prior six months. Momentum is the rate of acceleration of a firm's price or volume. Investors who trade based on momentum strategies believe that a firm’s price is more likely to keep moving in the same direction than to change directions. In technical analysis, momentum is considered an oscillator and is used to help identify trends.

Size  Different levels of market capitalization are used to determine the size of a firm. It is an integral determinant of asset allocation and risk/return parameters for firms or mutual funds. A firm could have large, medium or small size and are referred as large cap, mid cap and small cap firms, respectively. Size of a firm is calculated by taking log of its market capitalization.

Value glamour effect  When long position is assumed in a portfolio of value stocks and short position in a portfolio of glamour stocks for a certain period of time. Value stocks tend to outperform glamour stocks. This is termed as value glamour effect.

Consensus Forecast Error (FE)  Analysts’ consensus earnings forecast error is defined as company’s earnings per share next year minus the consensus forecast divided by total assets per share at beginning of the portfolio formation period.
Consensus forecast error = \( \frac{EPS_t - \text{consensus forecast } t-1}{\text{total assets } t-1} \)

**Revision in analyst’s earnings forecast (REV)**  
Revision in analysts’ earnings forecast is equal to total revision in consensus forecasts from the initial forecast measurement date until firm’s next annual earnings announcement date divided by total assets per share. It is calculated as follows:

\[
\text{Revision in forecast error} = \frac{\text{consensus forecast } t - \text{consensus forecast } t-1}{\text{total assets per share } t-1}
\]

### 3.3 Proxies used

Furthermore, it is also helpful to get familiar with main proxies used in the paper in order to better understand our methodology.

#### 3.3.1 Fscores

As explained in section 2.3, fundamental score of a firm measures the health of its fundamentals. Nine accounting variables (ROA, ΔROA, CFO, ACCRUAL, ΔMARGIN, ΔTURN, ΔLEVER, ΔLIQUID, and OFFER) are used to generate binary signals of 0 (zero) or 1 (one). If a firm gets a signal of “one” in any of the earlier mentioned accounting variables (for example, ROA) it is assumed as a good sign for fundamental health of that particular firm. Then all these nine binary signals are aggregated to form a combine Fscore. It ranges from 0 to 9. The equation for aggregate Fscore is given below:

\[
F_{\text{score}} = F_{\text{ROA}} + F_{\Delta \text{ROA}} + F_{\text{CFO}} + F_{\text{ACCRUAL}} + F_{\Delta \text{MARGIN}} + F_{\Delta \text{TURN}} + F_{\Delta \text{LEVER}} + F_{\Delta \text{LIQUID}} + F_{\text{OFFER}}.
\]

Where “F_” stands for the binary signal generated for any particular accounting variable. Moreover, firms are sorted on the basis of their Fscores. Firms having Fscores from 0 to 3 are considered Low Fscore firms. Low Fscore firms represent those stocks that have weakest fundamentals. Firms having Fscore values from 4 to 6
are named *Mid Fscore* firms. These firms have better fundamentals than Low Fscore firms. Lastly, firms having Fscores from 7 to 9 are considered strongest fundamental firms and they are named *High Fscore* firms.

### 3.3.2 Value and glamour firms

Stocks are ranked on the basis of their book to market ratios. Companies in bottom 30\(^{th}\) percentile of BM rank are considered as *low BM firms*, also called *glamour firms*. Whereas firms from 30\(^{th}\) to 70\(^{th}\) percentile of BM rank are considered as medium BM firms or *mid BM*. Lastly, firms in top 30\(^{th}\) percentile of BM ranks are considered *high BM* firms, also called *value firms*.

### 3.3.3 Weak investor expectations

As defined in the previous section firms having high book to market ratio are those on which investors are putting less trust. That means investors are not ready to pay one dollar for every one dollar of assets according to the books of a firm. This lack of trust is used as the proxy of weak investor expectations about the future performance of a stock. Therefore, firms with high BM ratios (Value firms) are considered to have weak investor expectations about future returns.

### 3.3.4 Strong investor expectations

Contrarily, there are certain firms regarding which investors are very confident and they are paying more than a dollar for every dollar value according to the books of that firm. This is due to high investor trust regarding the future performance of a stock. For this reason low book to market valuation is used as a proxy for strong investor expectation regarding future performance of a firm.
3.4 Hypotheses, empirical design and predictions

Researchers have extensively documented that value can be measured with the help of book to market (BM) ratio, earnings to price (E/P) ratio, dividend yields or cash flow to price ratio. For example, Basu (1977); Rosenberg, Reid and Lanstein (1985); Chan, Hamao and Lakonishok (1991), Fama and French (1992) and Lakonishok, Shleifer and Vishny (1994) suggest that above mentioned ratios have the predictive power regarding the future stock performance. Based on such existing evidence it is believed that a portfolio of high book to market (value) firms outperforms a portfolio of low book to market (glamour) firms and market portfolio. Despite the consensus agreement regarding value glamour effect, its source is still a matter of debate.

Some researchers (for example, Fama & French 1995; Petkova & Zhang 2005 and Zhang 2005 etc.) are of the opinion that value glamour effect is nothing but compensation for holding risky high book to market stocks, whereas others (for example, Lakonishok, Shleifer & Vishny 1994; LaPorta 1996; LaPorta, Lakonishok, Shleifer & Vishny 1997 and Dechow & Sloan 1997) argue that these returns are result of market mispricing based on investors’ biased expectations about the future performance of a firm. Such mispricing arises due to overly optimistic or pessimistic investors’ expectations about the future. Fama et al. (1992) document that book to market ratio is the best predictor of value when compared with earning to price ratio, dividend yield or cash flow to price ratio. In our first hypothesis we test the performance of value stocks against glamour stocks.

**Hypothesis (1):** Does simple long/short value glamour strategy earn positive returns?

It is extensively reported by researchers that a portfolio of high book to market firms (value firms) outperforms overall market and a portfolio of low book to market firms (glamour firms). In this study, first hypothesis to be tested is whether the same holds true for European stocks during the period of 1991 and 2011? It is tested by assuming long position on a portfolio of value stocks and a short position on a portfolio of glamour stocks for a period of 12 months.
Unconditional value glamour strategy = High book to market firms (long position) – Low book to market firms (short position)

**Hypothesis (2):** High (low) Fscore firms tend to be winners (losers) in future?

Piotroski (2000) documents that Fscores have strong predictive ability regarding the future performance of a firm. Fscore is aggregated score from binary signals used to detect the performance of nine simple accounting variables of a firm (ROA, ΔROA, CFO, ACCRUAL, ΔMARGIN, ΔTURN, ΔLEVER, ΔLIQUID and OFFER. Defined in details in section 2.3). Aggregate Fscore measures the fundamental strength of a company. In the second hypothesis it is to be tested whether Piotroski’s Fscores successfully differentiate potential winners from potential loser stocks. If that is the case then high Fscore firms must be able to show superior future performance in comparison to low Fscore firms during certain period of time.

\[
\text{High – low Fscore firms} = \text{Long position in a portfolio of high Fscores firms} - \text{short position in a portfolio of low Fscore firms}
\]

**Hypothesis (3):** Is value glamour effect concentrated among firms with ex ante identifiable expectation errors (incongruent strategy) and absent among firms with no such errors in investor expectations (congruent strategy)?

To the extent that value glamour effect is a result of mispricing and errors in expectations of investors, and these errors are linked with an under reaction to recent financial information, the value glamour effect should be concentrated among firms where expectations implied by BM are incongruent with the strength of firm fundamentals, signaled by Fscores. This indicates the ex-ante identifiable presence of expectation errors by investors. Moreover, under the mispricing based explanation value glamour effect should be non-existent among firms where expectations based on market prices are in accordance with the strength of firm fundamentals.

Following Piotroski (2012), stocks are sorted according to market based (BM ratio) and fundamentals based (Fscore) variables. This is done to look for patterns useful in
predicting future returns, ex ante errors in investor’s expectations and ex-post adjustment in expectations within and across BM and Fscore based portfolios. Three portfolios (glamour, mid BM and value portfolios) are arranged horizontally based on BM sorting. Vertically, low Fscore, mid Fscore and high Fscore portfolios are arranged after sorting on the basis of Fscores.

![Empirical design to describe ex ante identifiable error in investors’ expectations](image)

**Figure 1. Empirical design to describe ex ante identifiable error in investors’ expectations**

---

11E stands for expectations and E(E|BM) translates into expectations based on BM. Similarly, (E|FSCORE) means expectations implied by firm fundamentals (Fscores).
Firms in low BM portfolio are there due to higher market prices than their book values. This indicates markets are having high expectations regarding future performance from such firms. Similarly, high BM firms represent weaker market expectations regarding future stock performance. On the other hand, high Fscore portfolio represents stocks with strong fundamentals and low Fscore portfolio contains stocks with weak fundamentals. As indicated in Figure 1.

Strong Fscore firms with weak market based expectations are gathered in a portfolio. Since markets are putting low future performance expectations from such stocks whereas Fscores indicate that they possess strong fundamentals, It is assumed that such stocks are *undervalued* and should show better future earnings and performance. Another portfolio is made in which weak Fscore firms with low BM ratio are gathered. This portfolio is assumed to contain *overvalued* stocks since these firms are fundamentally weak but markets are putting high expectations on them.

In order to test the hypothesis (3) a long position is taken in undervalued stocks and short position is taken in overvalued stocks (see figure 1). This is termed as incongruent strategy having ex ante identifiable expectation errors. Diagonal portfolios in figure 1 represent stocks where investor expectations are in accordance with firm fundamentals. A long short value glamour strategy in these portfolios is called congruent value glamour strategy and it is expected to result no significant returns to prove the role of expectation errors in value glamour returns.

To find further evidence regarding the role of behavioral factors behind value glamour return we consider investor sentiments. Returns to different value glamour strategies are compared during different levels of investor sentiments. Baker et al. (2006) document that during periods of high investor sentiment there are high subsequent returns and periods of low investor sentiment result low future returns. This happens due to speculative demand in prices of stocks due to change in mode of investors, pure behavioral reasons. Thus investor sentiment drives prices farther away from firm fundamentals.
**Hypothesis (4):** During the periods of high investor sentiment portfolio returns should be high (low) for the trading strategies that exploit expectation errors.

Piotroski (2012) is of the opinion that investment strategies that exploit market mispricing should earn larger returns during periods of high investor sentiment and lower returns during periods of low investor sentiment. Since they believe expectation errors (behavioral reasons) to be the source of value glamour, they argue that during high investor sentiments investors have tendency to behave even more irrationally. Similarly in periods when investor sentiments are low behavioral factors should be having less visible impact on future stock performance.

In a quest to find further evidence in support of expectation errors being the source of value glamour premium, Piotroski (2012) use analysts’ earnings forecast errors and subsequent revisions in those errors. Financial analysts are supposed to be most well informed among investor community, since they are specialists. If they are possessing biased opinions about the future performance of certain kind of stocks, it is highly likely, investors are also prone to have similar biased expectations. For this reason, expectation errors can be a useful proxy in showing the role of expectation errors behind value glamour effect. Our last hypothesis compares patterns of analysts’ earnings forecast errors and subsequent revisions in those errors with return patterns of various value glamour strategies used.

**Hypothesis (5):** Do analysts’ earnings forecast errors (FE) and subsequent revisions (REV) show patterns similar to incongruent value glamour returns?

If these returns are due to ex ante errors in investor expectations, then expectation errors and measures of both return based and non-return based ex post revisions in expectation errors should be distributed across value glamour portfolios in a way that it explains the concentration of value glamour returns, by showing corroborating patterns. Analysts’ consensus earnings forecast errors (FE) and subsequent revision in earnings forecasts (REV) are measured using consensus EPS forecasts. If mispricing based explanation holds ground, forecast errors and subsequent revisions should provide patterns that are similar to returns obtained from incongruent
strategy. Analysts’ earnings forecast errors (FE) and subsequent revisions in those errors (REV) are calculated as follows:

\[
\text{Consensus forecast error (FE)} = \frac{\text{EPS}_t - \text{consensus forecast}_{t-1}}{\text{total assets}_{t-1}}
\]

\[
\text{Revision in forecast error (REV)} = \frac{\text{consensus forecast}_t - \text{consensus forecast}_{t-1}}{\text{total assets per share}_{t-1}}
\]

Insofar as these returns are result of reversal of market mispricing, ex ante identifiable expectation errors and ex post revisions should be strongest in these extreme incongruent portfolios, when market adjusts such biased expectations according to true firm fundamentals. Furthermore, revisions in expectations should be more evident in value firms than glamour firm portfolios. Per se, the incongruent value glamour strategy should result enormous value glamour returns, large expectation errors and subsequent revisions. Additionally, these differences should be larger than the results generated under unconditional value glamour strategy. Moreover, for the mispricing based hypothesis to hold true, value glamour strategy in portfolio where expectations based on market valuations are in accordance with expectations based on firm fundamentals (congruent value glamour strategy) should not result returns that are statistically different from zero. Since this portfolio contains stocks that supposedly have no expectation errors and thus no subsequent revisions.
4 EMPIRICAL RESULTS

4.1 Descriptive statistics

Panel A of table 1 provides descriptive statistics about the financial characteristics of the firms. Mean (median) market value of equity of all the firms in this data is 2455.84 (115.01) millions. Firms have mean (median) book to market values of 7.19 (0.62). This translates to the fact that data under consideration has a lot of high book to market firms or these value firms possess significantly large BM numbers. Average numbers for momentum and SUE are close to zero. One year ahead return on asset on average (-0.24) is a significant negative number.

There is a slightly positive average ROA (0.009) for all the firms. However, change in ROA (-0.77) for the year is extremely negative. Proportion of firms with positive change in ROA (0.40) is lowest in comparison to other variables. Majority of firms (64.2%) had positive signal for accruals, showing an overall decrease in accruals. Finally, an average firm witnessed increase in rest of the financial indicators used.

Panel B and Panel C present one year ahead market adjusted returns, one year ahead average standardized unexpected earnings and one year ahead return on asset based on book to market (panel B) and Fscore (panel C). Inconsistent with the evidence provided by Piotroski (2012) book to market ratio fails to predict positive future returns or quarterly earning innovations.

Panel B shows that both value and mid BM firms post significant negative one year ahead market adjusted returns (-0.236 and -0.087) and return on assets (-0.605 and 0.004). Same numbers for glamour firms are notably acceptable. In this case, value firms are underperforming market and glamour firms. Given negative performance by overall market, glamour firms are outperforming both overall market and high book to market firms. Interestingly, there is large, negative (-0.272) and significant value glamour strategy return. In light of this result, our first hypothesis (value glamour strategy earns positive returns) is rejected.
Table 1. Financial and return characteristics of all firms (1991-2011).

**Panel A: Descriptive statistics of all firms**

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>stddev</th>
<th>25th Pctl.</th>
<th>median</th>
<th>75th Pctl.</th>
<th>+ve signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVE</td>
<td>2,455.843</td>
<td>10,086</td>
<td>23.57</td>
<td>115.015</td>
<td>801.04</td>
<td>NA</td>
</tr>
<tr>
<td>BM</td>
<td>7.193</td>
<td>470.193</td>
<td>0.347</td>
<td>0.621</td>
<td>1.080</td>
<td>NA</td>
</tr>
<tr>
<td>MM</td>
<td>0.004</td>
<td>0.311</td>
<td>-0.142</td>
<td>0.018</td>
<td>0.162</td>
<td>NA</td>
</tr>
<tr>
<td>SUE</td>
<td>-0.001</td>
<td>0.678</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>NA</td>
</tr>
<tr>
<td>ROAt+1</td>
<td>-0.245</td>
<td>87.601</td>
<td>-0.001</td>
<td>0.033</td>
<td>0.078</td>
<td>NA</td>
</tr>
<tr>
<td>ROA</td>
<td>0.009</td>
<td>2.430</td>
<td>-2.251</td>
<td>0.030</td>
<td>0.068</td>
<td>0.521</td>
</tr>
<tr>
<td>ΔROA</td>
<td>-0.772</td>
<td>56.539</td>
<td>-0.722</td>
<td>-0.108</td>
<td>0.262</td>
<td>0.404</td>
</tr>
<tr>
<td>CFO</td>
<td>0.035</td>
<td>0.788</td>
<td>0.006</td>
<td>0.057</td>
<td>0.111</td>
<td>0.511</td>
</tr>
<tr>
<td>Accrual</td>
<td>-0.030</td>
<td>0.392</td>
<td>-0.068</td>
<td>-0.025</td>
<td>0.017</td>
<td>0.642</td>
</tr>
<tr>
<td>ΔTurn</td>
<td>2.425</td>
<td>347.127</td>
<td>-0.099</td>
<td>0.002</td>
<td>0.107</td>
<td>0.525</td>
</tr>
<tr>
<td>ΔMargin</td>
<td>1.437</td>
<td>234.300</td>
<td>-0.085</td>
<td>-0.002</td>
<td>0.066</td>
<td>0.514</td>
</tr>
<tr>
<td>ΔLever</td>
<td>14.571</td>
<td>1024.962</td>
<td>-0.213</td>
<td>-0.032</td>
<td>1.534</td>
<td>0.530</td>
</tr>
<tr>
<td>ΔLiquid</td>
<td>1.772</td>
<td>137.553</td>
<td>-0.133</td>
<td>-0.003</td>
<td>0.141</td>
<td>0.397</td>
</tr>
<tr>
<td>Issuance</td>
<td>0.517</td>
<td>0.500</td>
<td>0.000</td>
<td>1.000</td>
<td>1.000</td>
<td>0.517</td>
</tr>
</tbody>
</table>

**Panel B: Future returns, standardized unexplained earnings (SUEs) and ROA by value glamour**

<table>
<thead>
<tr>
<th></th>
<th>One Year Ahead Market Adjusted returns</th>
<th>One Year Ahead Average SUE</th>
<th>One Year Ahead ROA</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>All firms</td>
<td>-0.101</td>
<td>-0.001</td>
<td>-0.245</td>
<td>31,010</td>
</tr>
<tr>
<td>Value</td>
<td>-0.236</td>
<td>0.012</td>
<td>-0.605</td>
<td>8,784</td>
</tr>
<tr>
<td>Middle</td>
<td>-0.087</td>
<td>0.000</td>
<td>0.004</td>
<td>11,842</td>
</tr>
<tr>
<td>Glamour</td>
<td>0.036</td>
<td>-0.014</td>
<td>-0.213</td>
<td>7,400</td>
</tr>
<tr>
<td>Value-glamour</td>
<td>-0.272</td>
<td>0.027</td>
<td>-0.332</td>
<td></td>
</tr>
<tr>
<td>(t-stat)</td>
<td>(-61.232)</td>
<td>(-2.136)</td>
<td>(-0.246)</td>
<td></td>
</tr>
</tbody>
</table>
Table 1. Financial and return characteristics of all firms (1991-2011).

### Panel C: Future Returns, Standardized Unexplained Earnings (SUEs) and ROA by FSCORE

<table>
<thead>
<tr>
<th></th>
<th>One year ahead market adjusted returns</th>
<th>One year ahead average SUE</th>
<th>One year ahead ROA</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>All firms</td>
<td>-0.101</td>
<td>-0.001</td>
<td>-0.245</td>
<td>31 010</td>
</tr>
<tr>
<td>Fsocre:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>-0.040</td>
<td>0.000</td>
<td>0.063</td>
<td>106</td>
</tr>
<tr>
<td>1</td>
<td>-0.073</td>
<td>0.000</td>
<td>0.107</td>
<td>661</td>
</tr>
<tr>
<td>2</td>
<td>-0.130</td>
<td>0.000</td>
<td>0.021</td>
<td>1 677</td>
</tr>
<tr>
<td>3</td>
<td>-0.153</td>
<td>0.031</td>
<td>-0.002</td>
<td>2 774</td>
</tr>
<tr>
<td>4</td>
<td>-0.138</td>
<td>-0.021</td>
<td>0.023</td>
<td>3 422</td>
</tr>
<tr>
<td>5</td>
<td>-0.112</td>
<td>0.000</td>
<td>1.832</td>
<td>3 543</td>
</tr>
<tr>
<td>6</td>
<td>-0.061</td>
<td>-0.011</td>
<td>0.002</td>
<td>3 134</td>
</tr>
<tr>
<td>7</td>
<td>-0.024</td>
<td>0.000</td>
<td>0.129</td>
<td>2 258</td>
</tr>
<tr>
<td>8</td>
<td>0.003</td>
<td>0.000</td>
<td>0.069</td>
<td>1 207</td>
</tr>
<tr>
<td>9</td>
<td>-0.028</td>
<td>0.000</td>
<td>0.084</td>
<td>276</td>
</tr>
<tr>
<td>Low(0-3)</td>
<td>-0.121</td>
<td>0.007</td>
<td>-0.966</td>
<td>14 186</td>
</tr>
<tr>
<td>Mid(4-6)</td>
<td>-0.105</td>
<td>-0.011</td>
<td>0.654</td>
<td>10 099</td>
</tr>
<tr>
<td>High(7-9)</td>
<td>-0.015</td>
<td>0.000</td>
<td>0.107</td>
<td>3 741</td>
</tr>
<tr>
<td>High-Low</td>
<td>0.106</td>
<td>-0.007</td>
<td>1.073</td>
<td></td>
</tr>
<tr>
<td>(t-stat)</td>
<td>(-15.58)</td>
<td>(-5181.57)</td>
<td>(-21.606)</td>
<td></td>
</tr>
</tbody>
</table>

Panel A from table 1 presents descriptive statistics for our data for the years 1991-2011. Market value of equity (MVE), presented in millions, measures size of a company. Book to market ratio (BM) is measured by dividing book value with market value of a company. Momentum (MM) is equal to market adjusted return of preceding six months. Standardized unexpected earnings is calculated as realized earnings per share (EPS) less prior four months EPS, divided by standard deviation of EPS for prior eight quarters. Return on assets (ROA, ROA) is calculated as one year ahead net income divided by total current assets. The remaining descriptive statistics relate to nine financial signals used to calculate Fsocre. Fsocre is an aggregate score from nine binary signals generated from nine accounting variables (ROA, AROA, CFO, ACCRUAL, ΔMARGIN, ΔTURN, ΔLEVER, ΔLIQUID and OFFER) used, that point to the financial health of a company. Panel B and Panel C present market adjusted annual buy and hold returns, average future standardized unexpected earnings (SUEs) and average return on assets (ROA) across book to market and Fsocre portfolios, respectively. Raw returns are equal to twelve month buy and hold returns of a company. Market adjusted buy and hold returns are defined as raw return less mean market return for the same period. Raw return compounding starts four month after the most recent fiscal year.
end. Compounding of raw returns starts from the beginning of fifth month of the fiscal year. If a firm gets delisted before the end of the twelve month compounding period, its return is assumed to be zero. Observations are sorted in book to market portfolios based on the preceding year’s distribution of book to market ratios. If a company’s book to market ratio, of the preceding year, is below the 30th percentile, between the 30 and 70th percentile or above the 70th percentile, it is placed in the Glamour portfolio, mid BM and Value portfolio, respectively. Similarly, an observation is allocated to low Fscore, mid Fscore or high Fscore portfolio if the firm’s Fscore is less than or equal to 3, between four to seven or greater than or equal to seven, respectively. T-stats from t-tests of means are reported in parenthesis. N stands for number of firms.

Panel C, however, presents a better picture. In line with the results of Piotroski (2000, 2012) Fscores show strong predictive power for future earnings and future return on assets. Low Fscore firms post -12% one year ahead market adjusted return and huge negative one year ahead return on asset (-0.966). Same numbers for glamour firms (-0.015 and 0.107) present a much better picture. Second hypothesis (high Fscore firms are future winners) is proved true. A high-low Fscore strategy earns positive (0.106) one year ahead market adjusted return and large (1.073) one year ahead return on asset. Both numbers are significant at 5% confidence interval with very high t statistics. Numbers for one year ahead average SUE are not very different from zero.

Figure 2 shows yearly performance of market portfolio, value stock portfolio and glamour stock portfolio for the period of 1991 to 2011. Mean adjusted one year buy and hold return is largely positive in only 5 years out of 21 years. Market return is mostly negative. In that situation a portfolio of value stocks has significantly underperformed overall market. Whereas glamour stocks portfolio has shown some positive and superior performance when compared with portfolios of overall market and value stocks. Where most of the existing evidence points to the overall outperformance of value stocks when compared with market and glamour portfolios, this paper shows the performance of value stocks in riskier market. When overall market is negative risky fundamentals of value stocks get amplified and they become prone to severe negative performance. Glamour stocks have superior fundamentals thus they are well equipped to fight the challenges raised by systematic risks.
Figure 2. Annual realizations of value returns, market adjusted buy and hold return and glamour returns for the period 1991-2011.

Figure 3. Yearly realizations for market adjusted buy and hold return, high and low Fscore glamour firms.
Figure 4. Yearly realizations for market adjusted buy and hold return, high Fscore value firms and low Fscore value firms.

Figure 3 and 4 look for the effectiveness of Fscores. Separately for portfolios of glamour and value stocks, high and low Fscores are applied. Figure 3 shows the ability of Fscores to separate winner glamour stocks from loser glamour stocks on a yearly basis. Similarly, figure 4 contains yearly performance of high Fscore and low Fscore value stock portfolios. It can be seen that high Fscore portfolios of both value stocks and glamour stocks outperform low Fscore counterparts. Evidence about the efficiency of Fscores is more significant in glamour stock portfolios as compared to that of value stock portfolios.

4.2 Future returns to value glamour strategy conditional upon likely presences of ex ante expectation errors

Existing literature documents that value stocks outperform overall market and glamour stocks. Piotroski (2000) mentions that value stock return can be increased with the help of Fscores. Piotroski (2012) shows that superior performance of value stocks is attributed to ex-ante identifiable expectation errors. In this paper, using
European data, it is shown that portfolio of value firms perform poorly when compared with overall market and glamour firms.

Following Piotroski (2012), value glamour returns are analyzed after conditioning firm fundamentals (Fscores) to see if expectations implied by market price are in accordance with the expectations implied by firm fundamentals. Table 2 presents one year ahead market adjusted value glamour strategy returns after conditioning upon firm fundamentals. Since unconditional value glamour return (-0.275) is negative, value glamour effect for low, mid and high Fscore portfolios is also negative and significant at 1% level. It can be observed that despite negative value glamour returns BM ratio do has its predictive power for future returns, albeit, opposite in direction.

Fscores are effectively differentiating future winners from losers, as high-low future returns for both value and glamour portfolios are positive (0.073 and 0.081) and significant. Only significant positive return (0.100) is coming from high Fscore portfolio of glamour stocks. Low, mid and high Fscore portfolios of value stocks are showing huge negative returns. Again high Fscore portfolio of value stocks shows least negative numbers (-0.173).

Table 2 contains the most striking result in this paper, regarding our third hypothesis. Consistent with Piotroski (2012), value glamour effect is strongest among firms with ex ante incongruence between performance expectations based on market price and strength of firm fundamentals. The incongruent strategy where fundamentals based expectations are in contradiction with market based expectations (i.e. long position in fundamentally strong value stocks and short position in fundamentally weak glamour stocks) average one year buy and hold return (-0.191) outperforms both unconditional and congruent value glamour strategy returns. This better performance of incongruent strategy is the evidence for systematic biases in market prices. Contrarily, a congruent strategy in which market based expectations are in accordance with fundamentals based expectations earns a staggering -0.346 one year ahead buy and hold market adjusted return. This huge negative and statistically
significant return of congruent value glamour strategy is not in line with our mispricing hypothesis and evidence documented by Piotroski (2012).

Table 2. Returns to value glamour strategy conditional upon firm fundamentals (Fscores).

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>mid</th>
<th>glamour</th>
<th>V-G diff</th>
<th>(t-statistic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unconditional</td>
<td>-0.240</td>
<td>-0.087</td>
<td>0.035</td>
<td>-0.275</td>
<td>(-21.714)</td>
</tr>
<tr>
<td>Fscore:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>low(0-3)</td>
<td>-0.246</td>
<td>.</td>
<td>0.018</td>
<td>-0.264</td>
<td>(-44.752)</td>
</tr>
<tr>
<td>mid(4-6)</td>
<td>-0.237</td>
<td>.</td>
<td>0.033</td>
<td>-0.270</td>
<td>(-35.691)</td>
</tr>
<tr>
<td>high(7-9)</td>
<td>-0.173</td>
<td>.</td>
<td>0.100</td>
<td>-0.272</td>
<td>(-18.780)</td>
</tr>
<tr>
<td>High-Low</td>
<td>0.073</td>
<td>0.081</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(t-statistic)</td>
<td>(-5.063)</td>
<td>(-6.883)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Congruent VG strategy*  
-0.346  (-58.551)

*Incongruent VG Strategy*  
-0.191  (-13.161)

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>glamour</th>
<th>mid BM</th>
<th>value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fscore:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>low(0-3)</td>
<td>4 763</td>
<td>.</td>
<td>3 585</td>
<td></td>
</tr>
<tr>
<td>mid(4-6)</td>
<td>3 141</td>
<td>.</td>
<td>2 631</td>
<td></td>
</tr>
<tr>
<td>high(7-9)</td>
<td>880</td>
<td>.</td>
<td>1 184</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 presents one-year ahead annual market-adjusted buy-and-hold returns to a book to market (BM) investment strategy, conditional upon the strength of the company’s fundamentals (Fscores) for the period of 1991-2011. Observations are sorted in book to market portfolios based on the preceding year’s distribution of book to market values. An observation is allocated into the glamour, mid or value portfolio if the firm’s book to market ratio is below the 30th percentile, between the 30th and 70th percentile, or above the 70th percentile, respectively, of the preceding year’s distribution. An observation is allocated to the low Fscore, mid Fscore or high Fscore portfolio if the firm’s Fscore is less than or equal to three, between four to seven, or greater than or equal to seven, respectively. Raw returns are defined as the firm’s twelve month buy-and-hold stock return and market adjusted returns are measured as raw returns mean market return. Return compounding starts from the beginning of fifth months after the most recent fiscal year end. If the firm delists prior to the end of the respective twelve compounding period, the delisting return is assumed to be zero. The incongruent value glamour strategy consists of a long position in value firms with high Fscores and a short position in glamour firms with
low Fscores. The congruent value glamour strategy consists of a long position in value firms with low Fscores and a short position in glamour firms with high Fscores. T-statistics are shown in parentheses. High t values (with p-values less than 0.0001) indicate that values are significant at 1% confidence interval. N stands of number of firms.

Figure 5 presents each year performance of unconditional value glamour strategy, congruent and incongruent value glamour strategy. Almost all the numbers are negative here. However incongruent strategy can be seen performing consistently better in comparison with other strategies in the figure. Consistent with the findings of table 2 congruent value glamour strategy remains the worst performer even on yearly basis.

Despite visibly different performance of congruent, incongruent and unconditional value glamour strategy, it is useful to see the role of omitted firm characteristics. A multivariate cross-sectional regression model that controls for certain firm characteristics, for example, firm size, momentum and recent quarterly earnings changes (i.e. post-earnings announcement drift). Regression equation is:

$$R_{it+1} = \beta_1 \text{Glamour}_{it} + \beta_2 \text{Glamour}_{it} \cdot \text{LowScore}_{it} + \beta_3 \text{Glamour}_{it} \cdot \text{MidScore}_{it} + \beta_4 \text{Middle}_{it} + \beta_5 \text{Middle}_{it} \cdot \text{LowScore}_{it} + \beta_6 \text{Middle}_{it} \cdot \text{HighScore}_{it} + \beta_7 \text{Value}_{it} + \beta_8 \text{Value}_{it} \cdot \text{MidScore}_{it} + \beta_9 \text{Value}_{it} \cdot \text{HighScore}_{it} + \beta_{10} \text{SIZE}_{it} + \beta_{11} \text{MM}_{it} + \beta_{12} \text{SUE}_{it} + \epsilon_{it}$$

(1)

SIZE equals the log of market capitalization of a firm. Momentum (MM) and standardized unexpected earnings (SUE) are defined earlier in key terms. Table 3 presents average coefficients, average returns and their respective t-statistics from annual cross-sectional estimations of equation (1). R equals firm i’s cumulative one year ahead raw return in year t. The reason behind using a four month information lag is to match return realizations to the most recently available annual financial statement information at portfolio formation. Indicator variables Value, Middle and Glamour get value of 1 if the firm’s BM ratio is in top 30 percentile, between 30 to 70 percentile and bottom 30 percentile of the prior year’s distribution of book to market realizations. The indication variables Lowscore, Midscore and Highscore are equal to one if the firm’s Fscore is less than or equal to three, between four and six or
greater than or equal to seven, respectively. Interaction of these indicator variables with Fscores is used to capture disparity between firm fundamentals and market prices.

Figure 5. Yearly performance of unconditional, incongruent and congruent value glamour strategies.

The coefficients of Value, Middle and Glamour, in this cross-sectional regression, capture the fixed return effect accruing to a specific value glamour portfolio. The interaction terms capture the differential return effects of those firms that are assumed to suffer from expectation based errors in valuation within a given value glamour portfolio. Glamour firms with low Fscore are performing poorly (with significant negative average coefficient on glamour*lowscore (-0.056)) when compared with performance of high Fscore glamour firms. While Value firms with stronger fundamentals systematically outperform value firms with weak fundamentals (indicated by significant positive average coefficient on value*highscore). These results are consistent with Piotroski (2012).
Table 3. Returns to value glamour strategy conditional on firm fundamentals: Multivariate regression analysis

<table>
<thead>
<tr>
<th></th>
<th>Annual Cross-Sectional Estimations</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Glamour</td>
<td>0.185</td>
<td>0.208</td>
<td>0.208</td>
<td>0.203</td>
</tr>
<tr>
<td></td>
<td>(14.03)</td>
<td>(14.61)</td>
<td>(14.64)</td>
<td>(14.17)</td>
</tr>
<tr>
<td>Glamour*lowscore</td>
<td>-0.056</td>
<td>-0.057</td>
<td>-0.055</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-3.01)</td>
<td>(-3.05)</td>
<td>(-2.91)</td>
<td></td>
</tr>
<tr>
<td>Glamour*midscore</td>
<td>-0.066</td>
<td>-0.067</td>
<td>-0.067</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-3.54)</td>
<td>(-3.57)</td>
<td>(-3.56)</td>
<td></td>
</tr>
<tr>
<td>Middle</td>
<td>0.293</td>
<td>0.291</td>
<td>0.291</td>
<td>0.285</td>
</tr>
<tr>
<td></td>
<td>(24.29)</td>
<td>(23.75)</td>
<td>(23.71)</td>
<td>(23.00)</td>
</tr>
<tr>
<td>Middle*lowscore</td>
<td>-0.081</td>
<td>-0.082</td>
<td>-0.077</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-3.55)</td>
<td>(-3.60)</td>
<td>(-3.35)</td>
<td></td>
</tr>
<tr>
<td>Middle*highscore</td>
<td>-0.104</td>
<td>-0.105</td>
<td>-0.119</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-3.07)</td>
<td>(-3.08)</td>
<td>(-3.29)</td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td>0.219</td>
<td>0.226</td>
<td>0.228</td>
<td>0.215</td>
</tr>
<tr>
<td></td>
<td>(15.28)</td>
<td>(14.18)</td>
<td>(14.20)</td>
<td>(13.30)</td>
</tr>
<tr>
<td>Value*midscore</td>
<td>-0.007</td>
<td>-0.008</td>
<td>-0.009</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-0.24)</td>
<td>(-0.29)</td>
<td>(-0.30)</td>
<td></td>
</tr>
<tr>
<td>Value*highscore</td>
<td>0.019</td>
<td>0.016</td>
<td>-0.002</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.36)</td>
<td>(0.30)</td>
<td>(-0.03)</td>
<td></td>
</tr>
<tr>
<td>Decile(size)</td>
<td>0.001</td>
<td>0.002</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.01)</td>
<td>(1.49)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decile(momentum)</td>
<td></td>
<td>-0.002</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-2.21)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decile(SUE)</td>
<td></td>
<td>0.005</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-4.74)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adj R²</td>
<td>0.0503</td>
<td>0.052</td>
<td>0.052</td>
<td>0.053</td>
</tr>
<tr>
<td>V-G strategy</td>
<td>0.034</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(13.24)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3 presents average coefficients from annual estimations of the following cross-sectional model for our sample spanning 1991 to 2011:

\[
R_{it+1} = \beta_1 \text{Glamour}_{it} + \beta_2 \text{Glamour}_{it} \times \text{LowScore}_{it} + \beta_3 \text{Glamour}_{it} \times \text{MidScore}_{it} + \beta_4 \text{Middle}_{it} \\
+ \beta_5 \text{Middle}_{it} \times \text{LowScore}_{it} + \beta_6 \text{Middle}_{it} \times \text{HighScore}_{it} + \beta_7 \text{Value}_{it} + \beta_8 \text{Value}_{it} \times \text{MidScore}_{it} \\
+ \beta_9 \text{Value}_{it} \times \text{HighScore}_{it} + \beta_{10} \text{SIZE}_{it} + \beta_{11} \text{MM}_{it} + \beta_{12} \text{SUE}_{it} + \epsilon_{it}
\]

For annual estimations, \( R_{it+1} \) is the firm’s cumulative one-year ahead raw return, with return compounding starting from the beginning of fifth month of the most recent fiscal year end. If the firm delists prior to the end of the respective compounding period, the delisting return is assumed to be zero. Observations are sorted in book to market portfolios based on the preceding year’s distribution of book to market values. A firm year observation is
allocated into the glamour, mid or value portfolio if the company’s book to market ratio is below the 30th percentile, between the 30th and 70th percentile, or above the 70th percentile, respectively, of the preceding year’s distribution. The indicator variables glamour, mid and value are equal to one if the firm year corresponds to that particular book to market portfolio, zero otherwise. The indicator variables LowScore, MidScore and HighScore are equal to one if the company’s Fscore is less than or equal to three, between four and six, or greater than or equal to seven, respectively. SIZE is the log of market capitalization and MM is the firm’s market-adjusted return over the prior six months. SUE is the company’s most recent standardized unexpected earnings, calculated as realized EPS minus EPS from four-quarters prior divided by its standard deviation over the prior eight quarters. Each year, SIZE, MM, and SUE are assigned to deciles ranging from zero (lowest) to ten (highest). T-statistics are reported in parenthesis. Numbers carrying high t values also have extremely low p-values and thus are statistically significant at one percent level.

In terms of raw annual returns there is some positive value glamour premium. Moreover, the raw annual returns for those value glamour portfolios where expectations implied by market prices are incongruent with expectations implied by firm fundamentals are slightly more positive than unconditional value glamour strategy, indicating the role of biased investor expectations. This is consistent with the result of table 2 where incongruent strategy returns are least negative when compared with returns of congruent and unconditional value glamour strategies. As shown in (3) and (4) column of table 3, all inferences are robust even after controlling for firm size, momentum and standardized unexpected earnings.

Summarizing so far results, first, unconditional value glamour strategy shows significant negative returns inconsistent with the evidence provided by Rosenberg et al. (1984); Fama et al. (1992; 1995); Lakonishok et al. (1994); Penman (1996) and Piotroski (2012). Figures 2, 3, 4 and 5 effectively show that during negative market performance riskier nature of value stocks becomes amplified and dominate portfolio returns. In a situation where systematic risks are high, fundamentals have decisive role rather than behaviors. This is evident by the result that low book to market firms are consistently showing superior performance.

Second, consistent with the results of Piotroski (2000) Fscore have strong predictive power for differentiating between potential winners and losers. High Fscore firms tend to outperform low Fscore firms as suggested by the results of table 1, table 2, figure 2, figure 3 and figure 4. Here too higher fundamental firms show superior returns in comparison with weak fundamental firms. Third, value glamour strategy
where expectations implied by market prices are incongruent with expectations based on firm fundamentals performs (-0.191) better than unconditional value glamour strategy(-0.275) and performs even better than congruent value glamour strategy where expectations based on market prices are congruent with expectations based on Fscores (-0.346). This is the slight evidence in favor of expectations based explanation of value glamour returns advocated by Piotroski (2012). Lastly, our results suggest that market participants, to some extent, tend to label value glamour portfolios as a bunch of similar stocks and under react to their different fundamentals. This under reaction to contrarian information results in predictable pricing revisions among the firms embedded in the incongruent value glamour portfolios.

4.3 Evidence on expectations errors across value glamour portfolios

4.3.1 Expectation errors and investor sentiments

Investors’ sentiments are used as a proxy to measure speculative demand on market prices. This in turn points to the biased investor expectations about future performance of a firm. Baker et al. (2006) argue that periods of high investor sentiment can result such market prices where expectations about future performance deviate further away from firm fundamentals. Similarly, it is assumed that trading strategies that exploit firm fundamentals and book to market ratio should produce better returns during periods of high investor sentiment. Following the methodology of Baker et al. (2006) portfolios are sorted into periods of high, mid and low investor sentiment and return patterns are analyzed for unconditional, congruent and incongruent value glamour strategies. Table 4 presents evidence using annual investor sentiment indices, during 1991 to 2011, taken from the web page \(^{12}\) of Jeffrey Wurgler.

\(^{12}\)Data on annual investor sentiment is obtained from Jeffrey Wurgler’s website: http://pages.stern.nyu.edu/~jwurgler/.
As mentioned earlier unconditional, congruent and incongruent value glamour strategies perform negatively in our results (table 2). Congruent strategy performs worst followed by the poor performing unconditional value glamour strategy. Whereas incongruent strategy, where market prices based expectations are not in line with fundamentals based expectations, performs best among these three showing least negative returns.

Results in table 4 are consistent\(^\text{13}\) with our fourth hypothesis and also in line with the evidence provided by Baker et al. (2006) and Piotroski (2012). Although our results are opposite in direction, they point to the same conclusion. Congruent value glamour strategy remains worst performer after taking investor sentiments in account. It results (-0.299) most negative performance during periods of high investor sentiment. Unconditional value glamour strategy that presents second most negative result (-0.269) shows similar performance during periods of high investor sentiment. Lastly, incongruent value glamour strategy during high investor sentiments presents “so called” best results (-0.248) among all three strategies. Similar pattern is observed during periods of low investor sentiments.

Table 4. Returns to various value glamour strategies conditional upon level of investor sentiments.

<table>
<thead>
<tr>
<th>Investor sentiment:</th>
<th>Value-glamour</th>
<th>Congruent value-glamour</th>
<th>Incongruent value-glamour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>-0.165</td>
<td>-0.220</td>
<td>-0.073</td>
</tr>
<tr>
<td>Medium</td>
<td>-0.221</td>
<td>-0.286</td>
<td>-0.108</td>
</tr>
<tr>
<td>High</td>
<td>-0.269</td>
<td>-0.299</td>
<td>-0.248</td>
</tr>
<tr>
<td>High-low</td>
<td>-0.104</td>
<td>-0.079</td>
<td>-0.175</td>
</tr>
<tr>
<td>t-statistics</td>
<td>(-2.167)</td>
<td>(-2.050)</td>
<td>(-2.905)</td>
</tr>
</tbody>
</table>

Table 4 presents annual market-adjusted buy-and-hold returns to various book to market investment strategies, conditional on the level of investor sentiment in the market, over the period 1991 to 2011. Investor sentiment is measured in light of the index used in Baker and Wurgler (2006). Investor sentiment is measured in the month preceding portfolio formation. The congruent value glamour strategy consists of a long position in value firms with low Fscore and a short position in glamour firms with high Fscore. The incongruent value glamour strategy

\(^{13}\) Only partially consistent.
consists of a long position in value firms with high Fscore and a short position in glamour firms with low Fscore. T-statistics are shown in parentheses and are based on the 21-year time-series. Numbers are significant at 5% level.

As Baker et al. (2006) argue, periods of high investor sentiment bring higher future returns and periods of low investor sentiments bring low future returns. Our results are consistent in a way that during periods of high investor sentiment there are large negative returns and vice versa. As unconditional value glamour strategy has negative returns, high investor sentiments amplify those negative returns. This result slightly favors the systematic mispricing arguments of Piotroski (2012) that investor expectations do play their role in value glamour returns. Contrary to Piotroski’s findings, returns of congruent value glamour strategy, despite being the strategy where there are “supposedly” no expectation biases by investors, are also influenced with high, mid and low investor sentiments.

4.3.2 Evidence from analysts’ forecast errors (FE) and revision (REV)

To further provide the evidence on expectations errors across VG portfolios, expectation errors and revisions are measured using analyst earnings forecast errors (FE) and forecast revisions (REV). In Piotroski (2012) evidence provided by these non-return-based proxies is strongly in favor of mispricing based explanation of value glamour effect. This analysis is performed as in Doukas, Kim and Pantzalis (2002). The benefit of this analysis is that expectation errors and revisions for a set of sophisticated investors can be directly examined. Alternatively, as in Piotroski (2012) earnings announcement period returns can be used as a proxy for measuring expectation errors and revisions.

LaPorta et al. (1997) examine earnings announcement period returns conditional upon BM ratios of stocks and document that value (glamour) stocks have positive (negative) earnings announcement returns for one year period. This work is extended by Piotroski (2012) to examine earning announcement returns conditional upon the strength of firm fundamentals (Fscores). They use a short window of three days around earnings announcements. Piotroski (2012) further states that FE and REV provide direct and more reliable insights into expectation errors and revision patterns.
as opposed to expectation errors and revisions observed through a short window stock price changes. Lang and Lundholm (1996) mention that not all firms have equal analyst coverage forecasts. Since analysts tend to cover large and profitable firms, resulting sample would be biased towards large, profitable firms.

Using IBES\textsuperscript{14} summary estimates, consensus EPS forecasts in the month preceding portfolio formation are measured. Then two measures of expectation errors enclosed in consensus EPS forecasts: the consensus forecast error\textsuperscript{15} (FE) and the future revision in the analysts’ earnings forecast (REV), are created. As follows:

\begin{equation}
\text{Consensus forecast error} = \frac{(\text{EPS}_t - \text{consensus forecast}_{t-1})}{\text{total assets}_{t-1}}
\end{equation}

\begin{equation}
\text{Revision in forecast error} = \frac{(\text{consensus forecast}_t - \text{consensus forecast}_{t-1})}{\text{total assets per share}_{t-1}}
\end{equation}

Table 5 containing the results for analysts’ earnings forecast errors and subsequent revisions is available in appendix. Results about forecast errors and their respective revisions are neither statistically significant nor conclusive. These results are not consistent with the evidence provided by Piotroski (2012). Also they fail to provide any pattern against such evidence.

\textsuperscript{14}Institutional brokers’ estimate system and it is taken from Thomson Reuters’ databases

\textsuperscript{15}Forecast errors and revisions are divided by assets per share to develop measures of expectation errors that are not reliant on company’s share price (Cheong and Thomas, 2011; Ball, 2011). Scaling forecast errors and revisions by share prices produces qualitatively similar results.
5 CONCLUSIONS

Comprehensive research conducted on value glamour stocks documents that a portfolio of value stocks consistently outperforms overall market and a portfolio of glamour stocks. The source of such value glamour premium remains a point of debate. Some researchers (for example, Chan 1988; Ball et al. 1989; Fama et al. 1992 and Penman 1996) are of the view that such premium is due to fundamentally riskier nature of high book to market firms. On the other hand, many researchers (Debont & Thaler 1985; Lakonishok et al. 1994; LaPorta et al. 1997; Dechow et al. 1997 and Piotroski 2000; 2012) believe that outperformance of a portfolio of value stocks as compared to a portfolio of glamour stocks has to do with systematic mispricing. Such mispricing is attributed to overly pessimistic (optimistic) expectations regarding the future performance of value (glamour) stocks. It is argued that investor’s behavioral reasons derive subsequent superior value returns. There are few researchers (e.g. Grantham 2010) documenting the underperformance of value stocks in comparison to glamour stocks.

Following Piotroski (2000) Fscores are assumed to have the ability to differentiate a portfolio of winner stocks from a portfolio of losers. Our methodology uses nine simple accounting variables in order to generate nine binary signals in order to come up with a final aggregate Fscore that is used as a proxy for the relative strength of a firm. Dechow et al. (1997) document that stock prices reflect naive resilience on analyst’s biased growth forecasts also that these biases effectively explain some part of value glamour return effect. However, Doukas et al. (2002) do not find any visible differences in expectation errors across value glamour portfolios.

Piotroski (2012) documents the significant positive role of expectation errors in value glamour premium. They argue that high or low pricing multiples need to be judged contextually; book to market multiples when seen along with their fundamentals (Fscores) can distinguish ex ante biased market pricings. If expectation errors derive value glamour premium, then value glamour effect should be concentrated among firms where expectations based on market pricing are incongruent with expectations
based on firm fundamentals. Moreover, value glamour effect should be absent (with no significant returns) in firms where such expectations are congruent.

Furthermore, as in Baker et al. (2006), investor sentiments are exploited in order to highlight systematic mispricing in order to find supporting evidence regarding biased expectations being the source of value glamour premium. Lastly, Analysts’ earnings forecast errors (FE) and subsequent revisions (REV) are used as a proxy to find evidence for investors’ biased expectations about the future performance of value glamour portfolios.

First and most important result provides evidence that a portfolio of high book to market (value) stocks fails to outperform a portfolio of low book to market (glamour) stocks. Thus there is significant and negative value glamour return, in European stocks during 1991-2011, inconsistent with most of the existing literature pertaining to value glamour effect. This result is consistent with the argument that poor quality high book to market stocks perform extremely poorly during severe market conditions and the evidence provided by Grantham (2010). Consistent with Piotroski (2000), there is strong evidence about the ability of Fscores to effectively differentiate a portfolio of future winners from a portfolio of future losers.

Although unconditional value glamour return is negative in our results, there still is some evidence about the role of ex ante identifiable expectation errors in value glamour return. The incongruent strategy, where expectations based on market pricing are incongruent with expectations based on firm fundamentals, performs best showing least negative returns. However, congruent strategy which was assumed (under mispricing hypothesis) to have no significant returns, shows worst returns among all three unconditional, incongruent and congruent value glamour strategies.

While working with analysts’ earnings forecast errors (FE) and subsequent revisions (REV), there is no conclusive evidence in support or against the role of expectation errors in value glamour returns. Our results related to investor sentiments provide evidence about the behavioral biases of investors. Consistent with our assumptions and Piotroski (2012), periods of high investor sentiments derive amplified returns.
Thus all three value glamour strategies have even larger negative returns during periods of high investor sentiments. In periods of low investor sentiments all the three value glamour investment strategies earn lesser negative returns and congruent strategy remains worst performer.

Important implication of our results is that during negative markets, when systematic risks are very high, value stocks significantly underperform glamour stocks. In such situation role of expectation errors is overshadowed with the risk based explanations. Stocks that have strongest fundamentals, survive. It is described by the phrase, “survival of the fittest”. Despite the poor performance of value stocks, high quality value stocks (distinguished by Fscores) perform better.

Our results endorse the risk based argument (Fama et al. 1992) that value glamour return is actually the return for bearing risky stocks. When riskier macroeconomic situations arise, majority of the value stocks fail to hold ground. Many fundamentally weak firms go bankrupt and larger proportion of value stocks portfolio face such a severe financial damage that they are unable to bounce back for many years. On the other hand, glamour stocks have strong fundamentals, thus they are better equipped to combat severe macroeconomic challenges or systematic risks. They have the ability to quickly bounce back providing superior returns when compared to value stocks or overall market.
REFERENCES


APPENDIX

Table 5. Analysts’ consensus earnings forecast errors (FE) and revisions (REV)

Panel A: Forecast errors

<table>
<thead>
<tr>
<th></th>
<th>value</th>
<th>mid</th>
<th>glamour</th>
<th>value-glamerour</th>
</tr>
</thead>
<tbody>
<tr>
<td>all firms</td>
<td>-123584.63</td>
<td>.</td>
<td>-8.623</td>
<td>-123576.007</td>
</tr>
<tr>
<td></td>
<td>(-1.02)</td>
<td></td>
<td>(-1.11)</td>
<td>(0.19)</td>
</tr>
<tr>
<td>Fscore:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>low(0-3)</td>
<td>12.563</td>
<td>.</td>
<td>1.679</td>
<td>10.884</td>
</tr>
<tr>
<td></td>
<td>(1.40)</td>
<td></td>
<td>(0.94)</td>
<td>(1.30)</td>
</tr>
<tr>
<td>mid(4-6)</td>
<td>-333794.76</td>
<td>.</td>
<td>-29.783</td>
<td>-333764.977</td>
</tr>
<tr>
<td></td>
<td>(-1.02)</td>
<td></td>
<td>(-1.44)</td>
<td>(-0.59)</td>
</tr>
<tr>
<td>high(7-9)</td>
<td>2.184</td>
<td>.</td>
<td>11.308</td>
<td>-9.124</td>
</tr>
<tr>
<td></td>
<td>(0.87)</td>
<td></td>
<td>(1.57)</td>
<td>(-1.40)</td>
</tr>
<tr>
<td>High-Low</td>
<td>10.379</td>
<td>.</td>
<td>9.629</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.03)</td>
<td></td>
<td>(0.75)</td>
<td></td>
</tr>
<tr>
<td>congruent VG</td>
<td></td>
<td></td>
<td></td>
<td>1.255</td>
</tr>
<tr>
<td>strategy</td>
<td></td>
<td></td>
<td></td>
<td>(0.97)</td>
</tr>
<tr>
<td>Incongruent VG</td>
<td></td>
<td></td>
<td></td>
<td>0.505</td>
</tr>
<tr>
<td>Strategy</td>
<td></td>
<td></td>
<td></td>
<td>(1.09)</td>
</tr>
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</table>

Panel B: Revisions in forecast errors

<table>
<thead>
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<th>mid</th>
<th>glamour</th>
<th>value-glamerour</th>
</tr>
</thead>
<tbody>
<tr>
<td>allfirms</td>
<td>-0.196</td>
<td>.</td>
<td>2.228</td>
<td>-2.418</td>
</tr>
<tr>
<td></td>
<td>(0.39)</td>
<td></td>
<td>(6.18)</td>
<td>(-2.08)</td>
</tr>
<tr>
<td>Fscore:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>low(0-3)</td>
<td>-0.118</td>
<td>.</td>
<td>2.991</td>
<td>-3.110</td>
</tr>
<tr>
<td></td>
<td>(0.12)</td>
<td></td>
<td>(4.01)</td>
<td>(-0.63)</td>
</tr>
<tr>
<td>mid(4-6)</td>
<td>0.456</td>
<td>.</td>
<td>2.061</td>
<td>-1.605</td>
</tr>
<tr>
<td></td>
<td>(1.94)</td>
<td></td>
<td>(5.31)</td>
<td>(-1.04)</td>
</tr>
<tr>
<td>high(7-9)</td>
<td>0.734</td>
<td>.</td>
<td>0.720</td>
<td>0.014</td>
</tr>
<tr>
<td></td>
<td>(2.79)</td>
<td></td>
<td>(7.24)</td>
<td>(0.89)</td>
</tr>
<tr>
<td>High-Low</td>
<td>0.852</td>
<td>.</td>
<td>-2.271</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.82)</td>
<td></td>
<td>(-0.73)</td>
<td></td>
</tr>
<tr>
<td>congruent VG</td>
<td></td>
<td></td>
<td></td>
<td>-0.838</td>
</tr>
<tr>
<td>strategy</td>
<td></td>
<td></td>
<td></td>
<td>(-2.03)</td>
</tr>
<tr>
<td>Incongruent VG</td>
<td></td>
<td></td>
<td></td>
<td>-2.257</td>
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<tr>
<td>Strategy</td>
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<td></td>
<td></td>
<td>(-1.43)</td>
</tr>
</tbody>
</table>

N | value | mid | Glamour |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>low(0-3)</td>
<td>2406</td>
<td>.</td>
<td>2444</td>
</tr>
<tr>
<td>mid(4-6)</td>
<td>2085</td>
<td>.</td>
<td>1919</td>
</tr>
<tr>
<td>high(7-9)</td>
<td>1007</td>
<td>.</td>
<td>504</td>
</tr>
</tbody>
</table>
Table 5 presents consensus analyst forecast errors (FE) and revisions (REV) across a book to market (BM) investment strategy, conditional upon the strength of company’s fundamentals measured by Fscores for the period from 1991 to 2011. Analyst forecast errors and revisions are calculated six months following the preceding fiscal year end. Forecast Error (FE) is defined as (Actual EPS-Consensus Forecast)/(total assets per share) and Forecast Revision (REV) is defined as the final consensus estimate minus the consensus at portfolio formation scaled by total assets per share. T-statistics are presented in parentheses. Rest of the variables is as defined earlier in the paper. These values have very low t values and comparatively higher p-values, making most of the values statistically insignificant.