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Which Quality Signal Works in India? A Horse Race of Four Quality Measures

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ABSTRACT

Quality as in investment style focuses on identifying companies with superior quality characteristics that tend to outperform the relatively low quality companies selected on the basis of certain fundamental criteria. The present study attempts to compare the risk and return performance of four widely used quality measures, namely: gross profitability, the Piotroski F-score, Greenblatt's Magic Formula, and the quality-minus-junk (QMJ) score. The study has selected NSE-listed firms excluding financial firms as universe and covers period starting from October 2002 to December 2025. Equi-weighted quintile based portfolios were formed on quarterly basis for each quality measure and evaluated on return, risk and the Carhart four-factor model. All four high-quality portfolios outperform the NIFTY 500, but only the Piotroski F-score separates high- from low-quality firms: its high-minus-low spread earns 0.82% per month (t = 3.69) with a Sharpe ratio of 0.23, and a Carhart alpha of 0.92% (t = 4.33) with modest factor loadings. Gross profitability, the Magic Formula and QMJ produce no raw spread; also their positive Carhart alphas arise because the high-quality firms they comprise of tilt towards large and growth stocks, which underperformed small and value stocks in India over the period.

INTRODUCTION

When it comes to choosing a small number of items or objects from a large collection, humans naturally tend to categorize them into fewer groups based on certain common characteristics. This process of categorization provides a structure for complex decision-making, making it simpler and more manageable.

This process can be applied in financial markets when an investor needs to select a few securities from a large universe of available investments for their portfolio. The categorization helps the investor make a decision, as there is a large amount of information available. Using this information to select an optimal combination of securities seems like an overwhelming task. To simplify this, investors may categorise the assets into groups or categories based on how they react to market conditions. This makes it easier to select a well-diversified portfolio with fewer securities from each category.

The investment industry has named the process of organising securities into groups based on shared traits as 'Style Investing', with 'style' referring to the common characteristic used for categorisation. This technique involves investors making portfolio allocation decisions based on style rather than individual securities (Barberis & Shleifer, 2003). Equity-style investing, for instance, entails creating portfolios of stocks or equities by grouping them based on specific fundamental or technical characteristics, such as value, momentum, size, and quality.

Quality investing is an approach to investing that focuses on identifying companies with superior quality characteristics according to defined fundamental criteria. This strategy aims to invest in companies with strong competitive advantages and the potential to grow sustainably. While quality investing has not been formally recognized as a style of investing for a long time, it was formally identified as a driver of investment in the 1990s. A paper published in the Accounting Review in 1996 found that investing in stocks with good earnings quality is rewarded with abnormal returns. Since then, there have been numerous studies that have provided evidence on the effectiveness of this style while also proposing various ways to measure it (Novy Marx 2013, Fama, E.F. and French, K.R., 2015, Piotroski, J.D., 2000, Hou, K., Xue, C. and Zhang; L., 2015). Quality investing gained popularity after the dot com bubble of 2001 and the financial crisis of 2008, especially because it is considered a defensive style factor that outperforms in falling markets. Quality companies are resilient and well-positioned to withstand difficult market conditions, and compared with the Low Volatility factor, it delivers smoother returns across the business cycle. Although quality investing is the latest style among the other established styles, it has gained popularity and is considered to complement other factors such as value and size.

The quality factor strategy targets stocks that tend to be profitable and generate value for shareholders through various market and business cycles. This factor can be derived from different financial statement attributes, such as profitability or return on investment.

The measures of quality do overlap in the metrics used to measure quality but are not interchangeable, and are not equally rewarding as per international evidence (Kyosev, Hanauer, Huij & Lansdorp, 2016; Hsu, Kalesnik & Kose, 2019). Also, the evidence for the Indian Market is thin and mixed. Lalwani and Chakraborty (2018) report excess returns to the Grantham quality indicator and gross

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profitability among BSE-500 constituents, whereas Kaur, Seth and Singh (2024) find that quality on its own earns no meaningful risk-adjusted return on the Bombay Stock Exchange.

The current study compares four widely used quality measures — gross profitability, the Piotroski F-score, the Magic Formula and QMJ — in the Indian stock market. All four have been built from the same accounting data, on the same universe and with the same portfolio rules, so that differences in performance reflect the measures rather than their implementation. The sample covers NSE-listed non-financial firms from October 2002 to December 2025, including firms that later stopped trading, thus avoiding survivorship bias. Each measure is evaluated on three criteria: the return it earns, the risk it carries, and its alpha in the Carhart (1997) four-factor model.

The study concludes that the performance of four measures isn't identical in the Indian market: all four high-quality portfolios beat the market index, but only the F-score is able to a significant return spread between high- and low-quality firms. Also, it shows why the other three can appear profitable after factor adjustment while producing no raw spread: their high-quality portfolios tilt towards large and growth firms, and the Indian size and value premia work against them.

Purpose of the Study

The study examines whether quality investing earns a premium in the Indian equity market, and whether the answer depends on how quality is measured. Prior evidence for India is mixed and based on different measures and samples, so the study compares four widely used measures (gross profitability, the Piotroski F-score, the Magic Formula and QMJ) on a common sample of Indian listed firms from October 2002 to December 2025, using equal-weighted portfolios.

Objectives

1. To compare the returns and risk of portfolios formed on each quality measure, against each other and against the NIFTY 500 (Tables 2 and 3, Figure 1).
2. To test whether the returns of high-quality stocks, and the return gap between high- and low-quality stocks, can be explained by exposure to the market, size, value and momentum factors (Table 4, Carhart model).
3. To identify which measure of quality, if any, is best suited to the Indian market, and to draw implications for investors and future research.

Section 2 describes the four measures and related evidence. Section 3 sets out the data and methodology, Section 4 the results, Section 5 discusses them, and Section 6 concludes.

LITERATURE REVIEW

The Four Quality Measures

Gross Profitability. Gross Profitability is considered as one of the simplest and most robust measures of the quality by the practitioners. According to Novy Marx gross profitability has the same explanatory power as the traditional value investing strategies. Gross profitability is defined as revenue minus total cost of goods sold, scaled by total assets. The insight in this multiple is that there is no need to go further down the income statement as the lower numbers can get manipulated by using accounting tricks.

Piotroski F-Score. Piotroski's F-score is an accounting metrics developed as an indicator of quality. It consists of 9 binary variables, each one indicating strength or weakness of the company. A company gets 1 point if the variable is strong or positive and 0 point if the variable is weak or negative. The score of each variable is added up to get the final F-score. The nine variables have been divided into three categories namely: Profitability, Liquidity and Operating Efficiency. The Profitability consists of return on assets (ROA), change in the ROA, cash-flow from operations (CFO) and accruals and earnings before extraordinary items. Liquidity consists of changes in the firm's long-term debt levels, the change in the firm's current ratio and issuance of equity. And lastly operational efficiency is measured using gross margin and asset turnover. The companies which obtain total score of 8 to 9 in total are considered to be of high quality.

Magic Formula. Magic formula was give by Greenblatt in the year 2005. He believed that it would be intelligent for an investor to buy quality stocks at cheap rates. Hence he proposed a score that combined both the attributes. Hence, Magic Formula is a combination of two metrics namely ROIC describing quality and the Earning Yield describing cheapness. As per magic formula the companies which rank high in both these metrics collectively, are the ones that an investor should choose to invest his money.

Quality Minus Junk (QMJ). Asness *et al.* (2019) defined a quality stock as one investors should be willing to pay more for: profitable, growing, safe and paying out to shareholders. The QMJ score averages standardised ranks of profitability, growth, safety and payout measures and is the broadest of the four.

Evidence

Recent studies have significantly increased our understanding of "quality" as an equity factor, demonstrating its multidimensional nature and its varying effectiveness across markets and definitions. Novy-Marx (2013) and Fama and French (2015) had established a robust profitability premium in the United States, Fama and French (2017) extended the five-factor model and its profitability factor to international markets, and Asness *et al.* (2019) documented significant risk-adjusted returns to a composite quality-minus-junk score across 24 countries. At the same time, Ball *et al.* (2015) showed that net income predicts returns as well as gross profit once both are scaled consistently, and that operating profitability has a stronger link with expected returns than either, while Hanauer and Lauterbach (2019) found that gross profitability is among the few anomalies whose returns

are pervasive across 28 emerging markets, signifying that the choice of metrics does matter and that choosing a wrong signal might drastically deteriorate the returns of the portfolio, as not all metrics are able to identify quality stocks as efficiently. A parallel strand has been built around quality measured from changes in fundamentals. Piotroski (2000) showed that, among high book-to-market firms, those with high F-scores outperform those with low F-scores by a wide margin. Further, Mohanram (2005) developed a comparable fundamental score for low book-to-market firms; and Piotroski and So (2012) subsequently showed that the return gap between value and glamour stocks is concentrated among firms whose prices are inconsistent with the strength of their fundamentals, pointing to mispricing rather than risk. Similarly, Hsu *et al.* (2019) emphasised profitability as the critical component of quality, while Kyosev *et al.* (2016) caution that not every proposed quality attribute is rewarded. In the Indian context, Lalwani and Chakraborty (2018) found excess returns to the Grantham indicator and gross profitability among BSE-500 firms after adjusting for market, size, value and momentum, whereas Kaur *et al.* (2024) found that quality alone earns little on the BSE but combines profitably with value. Collectively, these studies underscore the importance of selecting quality measures suited to the market being studied; yet because they examined different measures on different, mostly large-firm samples, there remains a gap in the literature on the efficacy of the metrics in Indian markets that needs further assessment, which the present study tries to fill.

MATERIALS AND METHODS

Data and Universe

Accounting data, prices and market capitalisation have been extracted the CMIE Prowess IQ database. The universe comprises non-financial firms (Prowess industry type 1) with an NSE symbol that were listed during the sample period: 3,234 firms in total, including firms that later stopped trading. At each formation date a firm enters the investable universe if it is listed on the NSE at that date and has traded on at least 50 days in the preceding twelve months, to ensure liquidity of the stocks. Monthly returns are computed from adjusted month-end closing prices. The market benchmark is the NIFTY 500 index, and the risk-free rate is the 91-day Treasury bill yield.

The Quality Signals

All four signals have been built using the figures from annual financial statements. Figures for the financial year ending in March have been used only from September formation onwards, a six-month publication lag. Gross profitability is (total income − cost of goods sold) ÷ total assets; firms that do not report cost of goods sold are excluded rather than assigned a zero cost. The F-score uses the nine components listed in Section 2.1. The Magic Formula is the mean percentile rank of earnings yield, EBIT ÷ enterprise value (market capitalisation at formation plus borrowings minus cash), and return on capital, EBIT ÷ (net working capital + net fixed assets). QMJ is the mean of four dimensions, each the mean of percentile-ranked components: profitability (gross profitability, return on assets, return on equity, cash flow to assets, gross margin and low accruals), growth (changes in gross profitability, return on assets and return on equity), safety (low leverage, low total liabilities to assets, low return-on-equity volatility and low market beta) and payout (dividends relative to profit and low net share issuance).

Portfolios

Portfolios have been formed at the end of every March, June, September and December from September 2002 to September 2025 held in the following for the next quarter. At each formation date, firms have been ranked on the signal and assigned to quintiles, with quintile 5 (Q5) holding the highest-quality firms and Q1 the lowest. Each quintile is equally weighted. Weights are set at formation and held for three months without rebalancing; a firm that stops trading is held at its last value with a zero return for the rest of the quarter rather than dropped. The resulting monthly series run from October 2002 to December 2025, 279 months. The long–short spread, Q5 − Q1, measures how well a signal separates high- from low-quality firms.

Performance Measures and the Carhart Model

For each portfolio the mean monthly returns have been estimated along with its Newey and West (1987) t-statistic (four lags), the standard deviation of monthly returns, the compound annual growth rate (CAGR) and the maximum drawdown, t. The Sharpe ratio has been calculated as the mean monthly excess return over the Treasury bill rate divided by the standard deviation of monthly excess returns; for the zero-investment spread, the spread itself is used. Risk-adjusted returns are estimated with the Carhart (1997) four-factor model, using the Indian market (MKT), size (SMB), value (HML) and momentum (WML) factors of Agarwalla *et al.* (2014), December 2025 release:

$$R_{p,t} - R_{f,t} = \alpha + \beta\, MKT_t + {}_s SMB_t + {}_h HML_t + {}_w WML_t + \varepsilon_t$$

For the Q5 − Q1 spread the dependent variable is the spread itself. The intercept α is the return not explained by the four factors; the loadings show each portfolio's exposure to them. Standard errors are Newey–West with four lags.

The portfolio return in month t is

$$R_{p,t} = \sum_{i=1}^{N_{p,\tau}} w_{i,t-1} r_{i,t} \qquad (1)$$

where $r_{i,t}$ is the return on stock i in month t.

Mean Monthly Return

$$\bar{R}_p = \frac{1}{T} \sum_{t=1}^{T} R_{p,t} \qquad (2)$$

where T=279 months (October 2002 – December 2025). Statistical significance is assessed with Newey and West (1987) t-statistics using four lags.

Sharpe Ratio (Monthly)

$$SR_p = \frac{\overline{R_p - R_f}}{\sigma(R_p - R_f)} \qquad (4)$$

where $R_{f,t}$ is the 91-day Treasury bill rate. For the Q5 − Q1 spread, which is already a zero-investment return, $R_{LS,t}$ is used directly in place of the excess return. The ratio is reported on a monthly basis and is not annualised.

Wealth Index

$$W_{p,t} = 100 \prod_{s=1}^{t} (1 + R_{p,s}), \qquad W_{p,0} = 100 \qquad (5)$$

Compound Annual Growth Rate

$$CAGR_p = \left(\frac{W_{p,T}}{100}\right)^{12/T} - 1 \qquad (6)$$

Maximum Drawdown

$$MDD_p = \min_{1 \le t \le T} \left(\frac{W_{p,t}}{\max_{s \le t} W_{p,s}} - 1 \right) \qquad (7)$$

Maximum drawdown is the largest percentage fall in the wealth index from a previous peak, and is reported as a negative number.

RESULTS AND DISCUSSION

The Signals

Table 1 illustrates summary statistics for the four signals. Coverage ranged from an average of 1107 firms per formation for the F-score to 1296 for gross profitability during the study period. Gross profitability is highly stable from one year to the next (rank correlation 0.85), while the F-score, built largely from changes in fundamentals, is not (0.17). The measures are only moderately correlated with each other, from 0.33 between the F-score and the Magic Formula to 0.62 between gross profitability and QMJ, since both share profitability components.

Returns

Table 2 reports the mean monthly return of each quintile. None of the four signals shows monotonicity across quintiles. Further, Only the F-score has its high-quality quintile as the highest mean return portfolio, earning 2.42% per month against 1.60% for the low-quality quintile, a spread of 0.82% (t = 3.69). About half of the spread comes from the step between Q1 and Q2, so much of the F-score's value lies in identifying the weakest firms. The other three measures do not show monotonicity in returns and neither does their Q5 earn highest returns amongst the sorted quitiles. The spreads for gross profitability (0.24%, t = 0.65), the Magic Formula (0.07%, t = 0.28) and QMJ (0.11%, t = 0.27) are small and insignificant, and their quintile returns are flat or hump-shaped.

Table 1: Signal coverage, persistence and cross-correlations

Signal	Firms (mean)	First	Last	1-yr persistence	GP	F-score	MF	QMJ
Gross profitability	1296	729	2361	0.85	1.00	0.38	0.48	0.62
Piotroski F-score	1107	666	1793	0.17	0.38	1.00	0.33	0.60
Magic Formula	1174	643	2222	0.61	0.48	0.33	1.00	0.47
QMJ	1220	720	2061	0.65	0.62	0.60	0.47	1.00

Notes: Firms is the number of firms with a signal per formation (mean, first formation, last formation). Persistence is the mean cross-sectional Spearman correlation between a signal and its value four quarters later. The last four columns are mean cross-sectional Spearman correlations between signals.

Table 2: Mean monthly returns of equally weighted quality quintiles, October 2002 – December 2025 (%)

Signal	Q1 (low)	Q2	Q3	Q4	Q5 (high)	Q5 − Q1
Gross profitability	1.95	2.03	2.07	2.20	2.19	0.24 (0.65)
Piotroski F-score	1.60	2.04	2.03	2.24	2.42	0.82 (3.69)
Magic Formula	2.02	2.07	2.22	2.14	2.08	0.07 (0.28)
QMJ	1.84	2.12	2.21	2.14	1.95	0.11 (0.27)

Notes: Quintiles are formed quarterly on each signal and held for three months; Q5 holds the highest-quality firms. Newey–West t-statistic (four lags) in parentheses.

Risk and Risk-Adjusted Performance

Table 3 comprises of the comparison of the high-quality portfolios Q5 with the NIFTY 500. All four have outperformed the index during the study period, which returned 1.49% per month (CAGR 16.46%), but the four quality portfolios carry more risk: their monthly standard

deviations range from 7.03% for QMJ to 9.47% for the Magic Formula, against 6.48% for the index, and all have deeper maximum drawdowns than the index. On a risk-adjusted basis gross profitability (Sharpe ratio 0.22), the F-score (0.21) and QMJ (0.21) are close to each other and well above the index (0.15); the Magic Formula portfolio (0.17) is the most volatile and adds least after adjusting for risk. Figure 1 shows the cumulative effect: Rs.100 invested in September 2002 has grown to 27,387 in the F-score portfolio and 18,927 in the gross profitability portfolio, against 3,455 in the NIFTY 500.

The long–short has a different story than the long only portfolios. The F-score spread has the lowest volatility of the four (3.53% per month) and a Sharpe ratio of 0.23, comparable to the long-only portfolios but earned with no market exposure. The spreads of the other three measures have Sharpe ratios close to zero. Much of the high-quality portfolios' outperformance of the index is therefore not specific to quality: an equally weighted portfolio of Indian stocks holds many more small firms than a capitalisation-weighted index, and small firms have earned high returns over the period.

Table 3: Return and risk of the equally weighted quality portfolios and the NIFTY 500

Portfolio	Mean (%)	SD (%)	Sharpe	CAGR (%)	Max DD (%)
Panel A. High-quality quintile (Q5)					
Gross profitability	2.19 (4.20)	7.65	0.22	25.30	−64.55
Piotroski F-score	2.42 (4.00)	8.89	0.21	27.30	−70.16
Magic Formula	2.08 (3.22)	9.47	0.17	21.68	−71.67
QMJ	1.95 (4.08)	7.03	0.21	22.51	−61.80
NIFTY 500	1.49 (3.55)	6.48	0.15	16.46	−60.91
Panel B. Long–short spread (Q5 − Q1)					
Gross profitability	0.24 (0.65)	5.68	0.04	0.80	—
Piotroski F-score	0.82 (3.69)	3.53	0.23	9.47	—
Magic Formula	0.07 (0.28)	4.08	0.02	−0.19	—
QMJ	0.11 (0.27)	6.37	0.02	−1.32	—

Notes: Mean, SD (standard deviation) and Sharpe ratio are monthly; Newey–West t-statistic (four lags) in parentheses. Sharpe = mean excess return over the 91-day Treasury bill ÷ standard deviation of excess returns (for the spread, the spread itself). CAGR is compounded from monthly returns. Max DD is the largest fall in cumulative value from a previous peak, reported for the long-only portfolios.

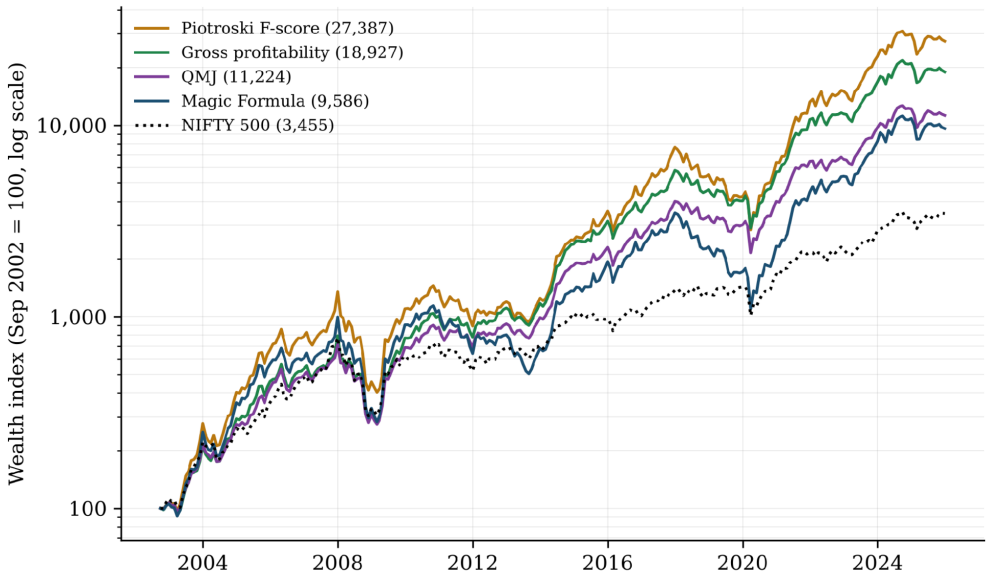


Figure 1: Wealth index of the equally weighted high-quality portfolios and the NIFTY 500 (September 2002 = Rs. 100, log scale)

Notes: Cumulative value of 100 invested at the end of September 2002 in each signal's equally weighted Q5 portfolio and in the NIFTY 500, to December 2025. End values are shown in the legend.

Carhart Four-Factor Regressions

Table 4 reports the Carhart regressions. Panel A shows that every high-quality portfolio earns a positive and significant

alpha, from 0.40% per month for the Magic Formula to 0.60% for gross profitability. These portfolios load heavily on SMB (0.51 to 0.75), reflecting that their equal weighting, and their alphas should be read alongside the spreads in Panel B, which remove the component common to all equally weighted portfolios.

As per Panel B the F-score spread has earned an alpha of 0.92% per month (t = 4.33) which is close to its raw spread of 0.82% along with modest factor loadings (SMB −0.14, HML −0.30, WML 0.13). This shows that its premium is not a disguised size, value or momentum exposure and is a genuine quality premia. The spreads of the other three measures have also earned positive alphas — 0.76% for gross profitability (t = 2.66), 0.58% for the Magic Formula (t = 2.37) and 0.74% for QMJ (t = 2.58) but these arise differently. Their raw spreads are close to zero, and they load negatively on SMB and HML: for gross profitability −0.24 and −0.56, while for QMJ the SMB and HML loadings are at −0.44 and −0.64 respectively. The high-quality firms in these portfolios are larger and more growth-oriented than their low-quality firms, and because small and value stocks earned high returns in India over the period, these tilts held the raw spreads down. The Carhart model credits the spreads for carrying them, which produces the alphas.

Table 4: Carhart four-factor regressions, equally weighted portfolios (% per month)

Signal	α	β_{MKT}	s (SMB)	h (HML)	w (WML)	Adj. R2
Panel A. High-quality quintile (Q5) excess return						
Gross profitability	0.60 (5.96)	0.86 (34.04)	0.64 (18.75)	0.19 (6.07)	−0.06 (−2.26)	0.95
Piotroski F-score	0.60 (4.95)	0.96 (40.93)	0.72 (20.83)	0.33 (8.33)	−0.07 (−2.44)	0.95
Magic Formula	0.40 (3.04)	0.95 (28.06)	0.75 (19.41)	0.39 (9.98)	−0.21 (−5.65)	0.95
QMJ	0.48 (5.02)	0.84 (32.79)	0.51 (16.60)	0.13 (4.44)	−0.08 (−3.35)	0.96
Panel B. Long–short spread (Q5 − Q1)						
Gross profitability	0.76 (2.66)	−0.12 (−2.40)	−0.24 (−3.40)	−0.56 (−7.31)	0.09 (1.95)	0.47
Piotroski F-score	0.92 (4.33)	0.02 (0.58)	−0.14 (−2.78)	−0.30 (−5.52)	0.13 (3.84)	0.34
Magic Formula	0.58 (2.37)	−0.01 (−0.24)	−0.18 (−2.46)	−0.34 (−5.02)	−0.16 (−2.88)	0.21
QMJ	0.74 (2.58)	−0.12 (−2.42)	−0.44 (−5.95)	−0.64 (−8.31)	0.08 (1.71)	0.56

Notes: Time-series regressions of monthly returns on the market (MKT), size (SMB), value (HML) and momentum (WML) factors of Agarwalla, Jacob and Varma (2014), December 2025 release. Panel A uses the Q5 return minus the risk-free rate; Panel B uses the zero-investment Q5 − Q1 spread. Newey–West t-statistics (four lags) in parentheses.

Discussion

The F-score is the only measure which has premium in all three metrics i.e. raw returns, in risk-adjusted returns as well as in the Carhart model. This outperformance of F-score can be explained by the methodology used for building it. It is the only one that is based on fundamentals improvement: improving profit, leverage, turnover and margin, and without any new equity injections, while the others do not measure the quality so well. Also, it is the signal that's most likely to be false, meaning it's a way of recognizing firms whose situation is evolving but not firms that are consistently profitable. It is also consistent with the idea that most of the spread is derived from the ability to avoid the weakest companies, thereby implying that the signal could be as helpful in avoiding bad companies as in discovering good ones.

Gross profitability, QMJ and the Magic Formula indicate the quality of the firm; high-quality firms are disproportionately large, growth-oriented in India. In this sample, small and value stocks have had high returns, thus portfolios constructed based on quality have been working against two strong premia. The Carhart alphas demonstrate that, after taking these tilts into account, the level measures do have a premium – as Novy-Marx (2013) suggests that profitability and value are complementary – but an investor who simply purchases the top fifth of the level measures does not get the premium. Moreover, Ball *et al.* (2015) demonstrate that gross profitability is a meaningful predictor only partially because of its deflator, total assets, which is related to firms' valuation; this is consistent with the value-factor exposure of the gross profitability spread as shown in Table 4.

The findings contrast with Lalwani and Chakraborty (2018) who conclude that these indicators (Grantham indicator and gross profitability) show excess returns among the constituents of BSE-500. The size tilt for a profitability sort is small among large companies, but large and on the downside in a broad universe and can balance out the results. They are also different from the omnipresent gross profitability premium they document in emerging markets for the 2019 sample (Hanauer and Lauterbach 2019), indicating that the Indian result may be due to the power of the size and value premia for the sample period. They are in line with Kaur *et al.* (2024) who conclude that there was little reward to quality on the BSE; and with evidence internationally that not all definitions of quality are rewarded (Kyosev *et al.*, 2016; Hsu *et al.*, 2019).

CONCLUSION

This study compared four quality measures on NSE-listed non-financial firms from October 2002 to December 2025 using equally weighted quintile portfolios. All four high-quality portfolios outperformed the NIFTY 500

with higher risk, but only the Piotroski F-score earned a significant spread between high- and low-quality firms, with a Carhart alpha close to its raw spread and modest factor loadings. Gross profitability, the Magic Formula and QMJ produced no raw spread; their positive Carhart alphas reflect their tilt towards large and growth firms rather than a premium an investor could capture by buying the top quintile. Quality pays in India, but mainly through a measure of improving fundamentals rather than through the level of profitability. Also, quality may be used to diversify and reduce the downside risk rather than to increase returns. Thus it can be used as a diversification tool alongside other riskier factors rather than a standalone investment strategy. The strategy is however effective in screening out the companies that an investor must avoid based on profitability, cash flows and other quality dimensions.

Future work could examine value-weighted and net-of-cost portfolios, size- and value-neutral quality portfolios, and combinations of the F-score with value and momentum.

REFERENCES

Agarwalla, S. K., Jacob, J., & Varma, J. R. (2013). *Four factor model in Indian equities market* (Working Paper No. 2013-09-05). Indian Institute of Management Ahmedabad.

Agarwalla, S. K., Jacob, J., & Varma, J. R. (2014). *Indian Fama–French and momentum factors* [Data set and methodology]. Indian Institute of Management Ahmedabad. Data release December 2025.

Asness, C. S., Frazzini, A., & Pedersen, L. H. (2019). Quality minus junk. *Review of Accounting Studies, 24*(1), 34–112. https://doi.org/10.1007/s11142-018-9470-2

Ball, R., Gerakos, J., Linnainmaa, J. T., & Nikolaev, V. V. (2015). Deflating profitability. *Journal of Financial Economics, 117*(2), 225–248. https://doi.org/10.1016/j.jfineco.2015.02.004

Barberis, N., & Shleifer, A. (2003). Style investing. *Journal of Financial Economics, 68*(2), 161–199. https://doi.org/10.1016/S0304-405X(03)00064-3

Carhart, M. M. (1997). On persistence in mutual fund performance. *The Journal of Finance, 52*(1), 57–82. https://doi.org/10.1111/j.1540-6261.1997.tb03808.x

Fama, E. F., & French, K. R. (2006). Profitability, investment and average returns. *Journal of Financial Economics, 82*(3), 491–518.

Fama, E. F., & French, K. R. (2015). A five-factor asset pricing model. *Journal of Financial Economics, 116*(1), 1–22. https://doi.org/10.1016/j.jfineco.2014.10.010

Fama, E. F., & French, K. R. (2017). International tests of a five-factor asset pricing model. *Journal of Financial Economics, 123*(3), 441–463.

Greenblatt, J. (2006). *The little book that beats the market. John Wiley & Sons.*

Hanauer, M. X., & Lauterbach, J. G. (2019). The cross-section of emerging market stock returns. *Emerging Markets Review, 38*, 265–286. https://doi.org/10.1016/j.ememar.2018.11.009

Hou, K., Xue, C., & Zhang, L. (2015). Digesting anomalies: An investment approach. *The Review of Financial Studies, 28*(3), 650–705. https://doi.org/10.1093/rfs/hhu068

Hsu, J., Kalesnik, V., & Kose, E. (2019). What is quality? *Financial Analysts Journal, 75*(2), 44–61. https://doi.org/10.1080/0015198X.2019.1567194

Kaur, S., Seth, S., & Singh, J. (2024). Value and quality investing strategy in Indian stock market. *Managerial Finance, 50*(9), 1662–1680. https://doi.org/10.1108/MF-02-2023-0112

Kyosev, G., Hanauer, M. X., Huij, J., & Lansdorp, S. (2016). *Quality investing: Industry versus academic definitions* [Working paper]. Robeco Quantitative Investments.

Lalwani, V., & Chakraborty, M. (2018). Quality investing in the Indian stock market. *Managerial Finance, 44*(2), 127–141. https://doi.org/10.1108/MF-07-2017-0248

Mohanram, P. S. (2005). Separating winners from losers among low book-to-market stocks using financial statement analysis. *Review of Accounting Studies, 10*(2), 133–170. https://doi.org/10.1007/s11142-005-1526-4

Newey, W. K., & West, K. D. (1987). A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix. *Econometrica, 55*(3), 703–708. https://doi.org/10.2307/1913610

Novy-Marx, R. (2013). The other side of value: The gross profitability premium. *Journal of Financial Economics, 108*(1), 1–28. https://doi.org/10.1016/j.jfineco.2013.01.003

Piotroski, J. D. (2000). Value investing: The use of historical financial statement information to separate winners from losers. *Journal of Accounting Research, 38*(Supplement), 1–41. https://doi.org/10.2307/2672906

Piotroski, J. D., & So, E. C. (2012). Identifying expectation errors in value/glamour strategies: A fundamental analysis approach. *The Review of Financial Studies, 25*(9), 2841–2875. https://doi.org/10.1093/rfs/hhs061

Shumway, T. (1997). The delisting bias in CRSP data. *The Journal of Finance, 52*(1), 327–340.

Sloan, R. G. (1996). Do stock prices fully reflect information in accruals and cash flows about future earnings? *The Accounting Review, 71*(3), 289–315.