REVELATION
INVESTMENT RESEARCH, INC.

Challenges and Opportunities of Quality Factor Investing

Issue

"Quality" has emerged in recent years as a label to describe equity strategies that emphasize holding stocks of companies with strong financials and sustainable competitive advantages ("wide moats"). Quality clearly has subjective elements, but that hasn't stopped researchers from attempting to capture quality through quantitative factors. There's no universal agreement regarding which factors best capture investment quality, but consensus has grown around profitability, leverage, and earnings stability factors as quality gauges. Do these simple quality metrics predict future returns or risk? Is there benefit in considering alternative factors to capture quality? Can overlaying value factors improve quality strategy performance?

Research Approach

I-Shares is the largest factor ETF provider, so we began our research by using the MSCI quality and value factor definitions shown in Table 1 that back the I-Shares QUAL and VLUE ETFs (details at www.MSCI.com). For comparison purposes, we used findings from recently published RIR research to create enhanced quality and value factor models shown in Table 2[1].

Table 1: MSCI Factor Definitions	
Quality	**Value**
ROE	Book/Price
Total Debt/Equity	FY1 EPS/Price
5Yr EPS Growth Variability	Oper Cash Flow/Enterprise Value

Table 2: RIR Enhanced Factor Models	
Quality	**Value**
ROE	Oper Income/Enterprise Value
Free Cash Flow/Equity	Free Cash Flow / Price
Long-term Debt/Total Assets	FY1 EPS/Price
3Yr Sales Variability	Shareholder Yield
12Q #EPS Increases	

The three main uses for equity investment factors are to:

- Describe a strategy's investment preferences (i.e., characteristics of favored holdings)
- Explain a strategy's performance in terms of its factor preference exposures
- Predict future relative returns and risk based on a strategy's factor preference exposures.

MSCI's factor models encompass all three uses, while RIR's factor models and research focus on the third as does this study.

We ran our backtests on the MSCI U.S. IMI members but excluded Finance and Real Estate firms since some measures used herein (e.g., Operating Income, Free Cash Flow, and Total Assets) aren't always comparable to firms in other industries. On a monthly basis starting in November 2001, we ranked stocks using each input factor and composite model into quintiles. We measured factor and composite model predictive strength over 3 and 12-month holding periods using Information Coefficients ("IC" is the correlation between ranks and subsequent returns), mean returns, return standard deviations, and risk-adjusted returns (alphas). We also tested factor strategy interaction by assigning stocks into 5 by 5 matrices by their independent quality and value ranks and then aggregating performance statistics for each matrix cell.

Results

The top row of Table 3 shows the MSCI quality factor has been *negatively* correlated with future returns (IC = -0.01), a result driven by the perverse performance of the Total Debt/Equity input factor[2]. These results are contrary to MSCI's claims that their quality factor has outperformed historically, but research methodology differences may explain that discrepancy. We do observe that MSCI's quality factor has been positively correlated with risk-adjusted returns (alpha), mostly because low quality stocks (quintile 5) have tended to highly volatile. Further confirming its defensive properties, we found MSCI's quality factor to be more effective in down than up markets (results not shown).

Table 3: Quality Factor Avg 12M Predictive Power (2001-2022)					
Quality Factor	**Performance Stat**	**Quin 1**	**Quin 2**	**Quin 3**	**Quin 4**	**Quin 5**
MSCI	Excess Return%	-0.9	-0.7	-1.1	0.5	2.2
MSCI	Alpha%	1.7	-0.1	-0.9	0.7	-1.5
MSCI	Return Volatility%	45.8	48.7	45.1	48.4	60.4
RIR Enhanced	Excess Return%	-0.0	-0.6	-0.7	-0.2	1.5
RIR Enhanced	Alpha%	4.1	2.2	0.4	-1.5	-5.4
RIR Enhanced	Return Volatility%	33.3	35.8	42.0	47.6	78.8

Using MSCI's quality factor performance as a baseline, how can investors who like the idea of investing in high quality stocks potentially improve performance? We explored two potential paths: changing how quality is defined and introducing valuation as a logical way to discriminate among high quality stocks.

In our next set of tests, we kept MSCI's conceptual framework that quality is captured by profitability, leverage, and stability, but we substituted alternative input factors to capture these quality dimensions. The bottom of Table 2 shows potential performance improvement is available by gauging quality with different input factors. Our enhanced quality factor had significant positive correlation with subsequent returns (IC = 0.08, T-Stat = 3.5), though outliers like Gamestop kept mean returns from declining across the quintiles (using median, cap-weighted, or 3-month returns eliminates this statistical issue). Because the enhanced quality factor has been an extremely effective volatility predictor, average risk-adjusted returns – alpha – have been strongly aligned with the enhanced quality factor's rankings. The enhanced quality factor also showed much stronger performance in down than up markets.

Note that we made no attempt to optimize the enhanced quality factor's inputs. We simply reviewed prior RIR research for profitability and stability factors that historically have worked well and applied them here. Therefore, the performance improvement obtained from a single iteration suggests that further research into alternative quantitative definitions of quality could be very fruitful.

Consumers know that higher quality products tend to cost more and that additional quality isn't always worth the additional cost. In the spirit of Growth-At-a-Reasonable-Price investing, in our last set of tests we overlaid MSCI's value factor on MSCI's quality factor and our enhanced value factor on our enhanced quality factor. Our hypothesis was that high quality stocks with cheaper valuation would outperform those with higher valuation.

Surprisingly, we found value to be ineffective in discriminating future returns within stocks of a given quality level. For example, among stocks of the highest quality (Quintile 1), current valuation provided little help in identifying better performing stocks. The top of Table 4 shows that the cheapest stocks according to MSCI's value factor significantly underperformed the average stock within MSCI's highest quality quintile. The bottom of Table 4 shows our enhanced value factor being of little use in identifying the best performing stocks ranked highly by our enhanced quality factor. Given that both value factors have had positive predictive power and little correlation with the quality factors, the lack of synergy when used in combination is puzzling. Much to our disappointment, value and quality as defined in this study don't seem to mix.

Table 4: Value Factor Performance within High Quality Quintile						
Quality Factor	Performance Stat	Quin 1	Quin 2	Quin 3	Quin 4	Quin 5
MSCI	Excess Return%	-3.0	-2.6	-0.3	-0.8	0.7
MSCI	Return Volatility%	43.1	35.4	35.7	37.5	61.7
RIR Enhanced	Excess Return%	0.1	-0.3	-0.3	1.1	-1.7
RIR Enhanced	Return Volatility%	32.9	28.1	30.2	38.9	44.0

Conclusion

Investing in quality companies sounds like a sensible strategy and many successful investors like Warren Buffett claim to do so. But using quantitative factors to capture investment quality is not easy. In this study we have shown that one well-known quality factor formulation has historically had little correlation to average future returns. As further evidence, the QUAL ETF based heavily on that quality factor has slightly underperformed the S&P 500 since its 2013 launch.

RIR believes that quantitative investors face significant challenges in building "quality equity" strategies. First, quants must find factors that capture quality in a way that's meaningful to fundamental investors, i.e., favoring stocks that non-quants would agree are high quality companies. Given the many subjective elements encompassed by the quality label (e.g., sustainable competitive advantage, shareholder friendly management, etc.), capturing quality with a few factors is probably asking too much, especially for comparing companies across different industries. Second, these same quality factors must have positive correlations to future returns to drive a successful active strategy. Unfortunately, some factors touted as capturing investment quality, such as low financial leverage, have not performed well historically, i.e., low debt stocks are not mispriced.

The good news is that there is hope for quantitative quality investing. Even simple quality factor models tend to have desirable characteristics such as solid down market performance and positive correlation to risk-adjusted returns. We also showed that alternative quality factor formulations can improve predictive power while remaining true to the quality concept. On the other hand, we also learned that overlaying additional investment criteria on high quality stocks, such as valuation factors, may not work as well as expected. Nonetheless, RIR is confident that researchers willing to dig deep can build factor models that capture investment quality *and* excess returns.

---

[1] See May 2018, Jan 2019, Mar 2020, July 2020, and June 2021 Research Briefs
[2] See Dec 2021 Research Brief