

QUALITY Control



Can new research help investors define a "quality" stock?

By Susan Trammell, CFA

Unless you're a deep-value investor, you're probably already filtering for quality in your value screens. Benjamin Graham spoke of hunting for quality stocks at a reasonable price, so quality investing isn't new. But where quality fits into a trading strategy or even how it is defined differs among asset management and research firms. We can take a stab at it by describing quality investing as a framework for discerning a company's potential for strong future profitability.

Although ranking stocks on the basis of a quality score may not be new, the practice was given a shot in the arm in the early 2000s with the collapse of firms like Enron, whose market caps far exceeded their fundamental valuations. Joseph Piotroski's so-called F-Score, introduced in 2002, and Joel Greenblatt's "magic formula investing," which debuted in 2005—and their variations—became popular tools for analyzing companies' financial health.

Portfolio managers have their own magic formulas for testing the strength of firm characteristics that drive returns. But whether the formulas are newly minted or have pedigrees that go back decades, they continue to evolve on the basis of new research, further backtesting, and tail events. We looked at some recent research into quality investing to report how the findings are shaping investment strategies at some representative firms.

EVOLUTION OF A PREDICTIVE VARIABLE

Although growth investing and value investing have at times outperformed each other for long stretches, value has outperformed growth over the long haul. According to the two general theories about the value premium, value stocks are discounted relative to their fundamentals because the market is pricing in the presumption of unperceived risk in those securities or because the market has erroneous expectations about future earnings. Eventually, the market corrects its error and fully prices in quality, and so the undervalued stocks outperform in the future.

Measures of firm quality may help investors analyze sources of risk or improve estimates of future profitability. Holding all else equal, similarly priced firms with lower operating risk and higher, more stable profitability should generate higher average returns than unprofitable firms. Thus, screening for quality can help improve value-oriented trading strategies. This conclusion is counterintuitive to popular explanations of the value premium.

Robert Novy-Marx, a finance professor at the Simon Graduate School of Business, University of Rochester, New York, was playing with some theoretical models related to the value premium when he began to focus on the ratio of cost of goods sold (COGS) to assets. Although prior accounting studies had looked at the revenue-to-assets ratio as a predictor of future profitability,

there was no research on gross profitability, which Novy-Marx defines as revenues minus COGS, scaled by assets. Because gross margins are driven by pricing power and asset turnover measures capital productivity, multiplying gross margins by asset turnover should have greater power as an explanatory variable than either ratio alone.

In “The Other Side of Value: The Gross Profitability Premium” (*Journal of Financial Economics*, 2013), Novy-Marx shows that controlling for gross profitability helps explain a wide range of trading strategies and most earnings-related anomalies. The data suggest that gross profitability has roughly the same power as the ratio of book value to market cap (a basic ratio for identifying under- or over-valued securities) in predicting the cross-section of average returns. Moreover, the ratio of gross profits to assets was found to be stronger than other earnings variables, such as free cash flow or EBITDA, in predicting the relative performance of various stocks.

THE GROSS PROFITABILITY PREMIUM

In the data, gross profitability is a powerful predictor of long-run growth in gross profits vis-à-vis net sales, earnings, free cash flow, and dividends. In other words, sorting a value-oriented group of stocks on gross profitability is essentially a growth strategy. Profitability strategies sell firms with a higher cost of doing business (essentially, those with higher COGS) and acquire firms that use assets more productively. Sorting a group of value stocks on gross profitability ranks stocks by growth prospects. Novy-Marx observed that a portfolio of value firms with good growth prospects has significantly higher average returns and lower volatility than a portfolio of value stocks with poor growth prospects.

To consider the performance of value-weighted portfolios sorted on profitability, Novy-Marx examined portfolios constructed from a large sample of NYSE equities over July 1963–December 2010 and sorted into quintiles on the basis of gross profitability. The portfolio of stocks with the highest gross profitability produced an average excess return relative to the portfolio of stocks with the lowest gross profitability of 0.31% a month, with a test statistic spread of 2.49—despite the fact that the strategy was a growth strategy.

Adding a profitability strategy to an existing value strategy also reduces overall portfolio volatility—despite doubling the investor’s exposure to risky assets. The monthly average return to the value strategy is 0.41% a month, with a standard deviation of 3.27%, compared with a standard deviation of 2.94% for the highest-profitability portfolio. An investor using the two strategies together would capture both strategies’ returns, 0.71% a month, with no additional risk.

Profitability generally performs well in periods when value performs poorly, and vice versa. The mixed profitability/value strategy never had a losing five-year period over the sample. Because the performance of strategies based on gross profitability is strongly negatively correlated with value, including the ratio of gross profits to assets as a quality consideration alongside valuation signals can provide a hedge for value investors.

TRUE ECONOMIC PROFITABILITY

In the new economy, where intellectual capital may be a company’s most valuable asset, the ratio of gross profits to assets picks up on dimensions of growth that valuation methods constructed on book values may miss. Gross profitability is unencumbered by bottom-line distortions caused by classifying costs as operating or capital expenses. It may also be less susceptible to window dressing than other measures of profitability, such as operating or net earnings.

“Analysts have focused on earnings quite a bit as a measure of profitability, but I don’t think it is very informative. It treats many things that I think of as investment—things you should be doing because they increase your future profitability, like investing in your labor force—as expenses,” says Novy-Marx. “Such expenses reduce GAAP earnings, making the company appear less profitable. Gross profits is the cleanest accounting measure of true economic profitability.”



Novy-Marx’s research on gross profitability has been cited by Dimensional Fund Advisors (DFA) and AQR, among other firms. DFA has long looked at the relation between current profitability and subsequent returns. In “Profitability, Investment and Average Returns” (*Journal of Financial Economics*, 2006), Eugene Fama and Kenneth French, who are consultants to DFA, examined profitability in the context of the valuation equation and investments. Around the time the study was published, DFA started to exclude some companies that were trading at high prices and that had very low profit levels or cash flows.

“There are several measures [of profitability] that work well empirically for this purpose,” Eduardo Repetto, co-CEO and chief investment officer of Austin, Texas-based DFA, says. “At the time, we did not have a unifying view as we have now. After analyzing many of them, we felt very comfortable with direct profitability—or, as Ken and Gene call it, operating profitability—as a measure of recurring profits scaled by the company book value, as a proxy for expected profitability.”

Illustration by Timothy Cook

DFA computes direct profitability as operating income before depreciation and amortization minus interest expense, divided by book value. In the white paper “Applying Direct Profitability to Value Stocks” (2013), Gerard O’Reilly and Savina Rizova reported that a portfolio constructed of high-profitability value stocks produced an average annual return of 17%, compared with an average annual return of 11.7% for a portfolio of low-profitability stocks, over 1975–2012. Direct profitability’s predictive power appears to be even more robust in other developed markets and in emerging markets.

“The insights gleaned from the valuation equation are very important,” Repetto says. “They give you a framework on what to look for and what should be related to the expected return of a company.”

BUILDING A SYNTHESIS

In their working paper “Quality Minus Junk,” Cliff Asness, Andrea Frazzini, and Lasse Pedersen hypothesized that there are four drivers of quality—profitability, growth, safety, and payout—and that, all else being equal, stocks with a higher degree of each of these characteristics should command a higher price. (These measures are drawn from the literature, including the work of Novy-Marx, who has consulted with the Greenwich, Connecticut–based AQR.) They then constructed a trading strategy that is long high-quality stocks and short low-quality stocks to test whether high-quality stocks significantly outperform low-quality stocks.

“We combed the literature and synthesized four lines of research,” Asness says. “These are the things you should pay more for, regardless that some may be offsetting. In theory, every company shouldn’t sell for the same multiple when there’s a very low price-to-book. Not all companies are equal.”

Three to six measurements were collected for each of the four quality factors. These measurements included gross profits over assets (profitability), five-year growth of return on equity (growth), low idiosyncratic volatility (safety), and equity net issuance (payout). A single quality score was calculated for each stock in each month for a large dataset of companies in the United States (starting in 1951) and 24 other countries (starting in 1986).

In a preliminary analysis, Asness, Frazzini, and Pedersen examined whether the quality characteristics were persistent over time and found that stocks categorized as high quality at time t tend to remain high quality up to 10 years later. The authors also examined whether quality is related to stock prices. Using regression analysis, they found that quality is positively related to stock prices, even when including additional control variables (firm size and previous returns) and country–industry fixed effects.

They then built six stock portfolios on the basis of size (large and small market capitalization) and three quality levels: the top 30%, the bottom 30%, and the middle 40%. The researchers’ strategy went long quality stocks (those in the top 30%, with large and small market cap) and short “junk” stocks (those in the bottom 30%, with large and small market cap). The returns of the QMJ (quality minus junk) factor strategy were positive and significantly different from zero for both the US sample and the international sample.

QUALITY IS A WAY TO ADD VALUE OVER TIME, ESPECIALLY WHEN YOU MARRY IT WITH VALUATION.

Finally, the researchers conducted a time-series regression to determine whether variations over time in the price of quality are due to measurement noise or reflect prevailing market conditions. The regression coefficient associated with the price of quality was, as expected, negative and significant, which means that a higher price of quality in the present is associated with lower future expected returns for the QMJ factor portfolio. This result shows that variations in price of quality are not driven by noise alone.

“There is little rational justification for why high-quality stocks should command a high return,” Frazzini says. “In the paper, we show that despite earning a large return premium, high-quality stocks appear safer, not riskier, than junk stocks. This is hard to reconcile with a risk-based explanation of the quality premium. In short, the high returns earned by quality stocks are still a puzzle.”

Adds Asness: “We find that high quality is associated with high prices, but not high enough. As a result, high-quality stocks earn high subsequent returns. We believe quality is different enough to crack the big time of anomalies—market, size, value, and momentum. We advocate adding QMJ as a fifth factor to the model.”

A FUNDAMENTAL APPROACH

MFS has stayed true to its roots as a fundamental bottom-up investment company since its founding in 1924. Most of the Boston firm’s investment styles are quality oriented. In the white paper “Quality and Value: The Essence of Long-Term Equity Returns” (October 2013), Katrina Mead, CFA, Jonathan Sage, CFA, and Mark Citro presented their findings from a review of the 1,000 largest US equities (by market cap) over 1975–2013. Value was a higher driver of performance than quality, but companies that were both high quality and inexpensively valued with respect to fundamentals delivered the most consistent outperformance. Over the 38-year period, owning stocks that met the high-quality/low-valuation criteria would have resulted in cumulative excess returns of nearly 432%, or an annualized out-performance of more than 510 bps.

“When we wrote the paper, we were trying to quantify how much value a strategy that was focused on both quality and valuation could have added historically as compared to ones focused on just quality or just valuation. To capture the quality characteristics, we focused on quantitative metrics that MFS broadly equates with quality companies,” says Mead, a member of MFS’s large-cap US and global value portfolio management teams. “We have developed an appreciation for those attributes that lead to outperforming portfolios and reduced volatility. Quality is a way to add value over time, especially when you marry it with valuation.”

Mead, Sage, and Citro used three quantitative characteristics that correlate well with characteristics of high-quality companies that MFS's fundamental process identifies. Return on equity (ROE), stability of ROE, and balance sheet strength capture company characteristics that are consistent with those that MFS's investment team considers high quality. Mead walked us through each metric.

Although return on invested capital (ROIC) may be a better metric than ROE for evaluating the level of returns a business is capable of generating over time, ROIC is more labor intensive to compute and isn't available historically for a large subsection of companies in the market. In contrast, ROE is readily available for a majority of companies going

INVESTORS UNDERAPPRECIATE HOW SUSTAINABLE AND PERSISTENT THE RETURNS OF HIGHER-QUALITY COMPANIES TEND TO BE.

back many years. The variability of ROE over time captures how consistently companies have generated returns that exceed their cost of capital. A strong balance sheet is an important protector of a franchise—it puts a company in a better financial position to control its own destiny.

“Highly leveraged businesses don't have a great deal of flexibility. When something unexpected happens, it can put a lot of stress on the company to do uneconomic things to satisfy creditors,” Mead says. “Having a good balance sheet helps to increase your confidence level that the company has the ability to sustain itself over time. It's an important source of downside protection.” The ratio of assets to equity is used to measure the strength of a company's balance sheet and is readily available for a large number of companies going back many decades.

Quality alone is insufficient for outperformance. The effect of owning high-quality stocks regardless of valuation can be startling. When the authors shortened the time frame to 1975–1980—excluding the period that coincided roughly with the bull market propelled by the Nifty Fifty, which resulted in extended valuations for the highest-quality companies—the cumulative excess returns from a quality-only investment strategy soared to 24%, compared with only 2.1% over the original 38-year period. Investing in quality without considering valuation would not have been a winning strategy.

“I think investors underappreciate how sustainable and persistent the returns of higher-quality companies tend to be,” Mead says. “If you can own that persistence, the compounding effects over time can be significant. We believe the opportunity is getting better as the investment time frame of the market becomes shorter and shorter term.”

COMPETITIVE MOATS

With an ever-greater proportion of the valuation process taking place behind computer screens, investors are looking for quantitative data that will help them better

assess—without meeting managers or talking with competitors—what a business is capable of.

GMO makes a strong case for using quantitative measures as a way to identify companies that operate in what Warren Buffett calls *competitive moats*. These companies exhibit persistent, above-market profitability because of such sustainable advantages as brand recognition, intellectual capital, and entrenched networks. GMO argues that these companies are often overlooked by the market because they are stable generators of profits that lack volatility and are thus penalized by risk takers in the market. In theory, high-quality stocks may be underrewarded in the short term. When the market realizes its error and prices in the premium that high-quality stocks should command, investors are rewarded.

Based in Boston, GMO launched its first quality fund in 2004, but it dates its fundamental approach to quality investing to the early 1980s, a watershed period when many managers took a fresh look at their models as they exited the bull market of the late 1970s. Today, GMO's valuation framework has three anchors: historical profitability as measured by ROE, return on assets, return on sales, and levels of profit margins throughout the income statement; profit stability throughout economic cycles; and the use of leverage to generate earnings.

“All companies introduce leverage, but we're trying to get as nuanced a view of leverage as possible,” Kimball Mayer says. “We're looking at operating leverage, the treatment of leases, and whether the company is using financial engineering to lower the volatility of its earnings. We find that sustainable higher profitability is generally associated with a minimal use of leverage.”

GMO's white paper “Profits for the Long Run: Affirming the Case for Quality” (June 2012), which Mayer co-authored, theorizes that the factors that predict the survivability of corporate profitability under any scenario can be identified *a priori*. The paper presents the relative returns of the largest 1,000 companies (by market cap) in the United States over 1965–2011 and of all companies in the EAFE Index over 1985–2011 with respect to profitability, profit volatility, leverage, a combined quality score, and beta exposure. All companies were sorted into approximate quartiles and their relative performances compared.

The low-risk portfolio outperformed the high-risk portfolio across both markets in each factor, the combined quality score, and beta.

RED FLAGS

Although Research Affiliates has published little of its research on quality because of its proprietary nature, the leader of that research team, Vitali Kalesnik, shared some of the firm's findings in correspondence. When studying quality, the Newport Beach, California-based firm uses composite signals for three factors—distress, growth, and accounting red flags—and combines the signals with perennial value measures to differentiate high-quality stocks that have low market prices relative to their fundamentals.

First, financial distress. On average, firms that have lower return volatility and higher debt-servicing capacity, rely less

on external financing, and are able to pay out dividends or repurchase stocks—and older firms—are less distressed. Using portfolio tests, Research Affiliates has observed that distressed value stocks have a 14.40% annual return, on average, compared with nondistressed value stocks, which have a 15.75% average annual return. As a result, screening for distress increases the portfolio return by about 135 bps and significantly lowers portfolio volatility from 22.36% to 17.80%.

Next, the firm constructs a composite signal of growth prospects. Profitable firms with a solid track record of consistent earnings growth, stable levels of inventories, and investments in intangibles related to future profitability, such as branding and R&D, are likely to be growing firms. The portfolio analysis is then repeated. Excluding firms with poor growth prospects adds 196 bps while decreasing volatility from 21.12% to 18.95%.

Finally, Research Affiliates looks for accounting red flags, defined as persistent deviations of earnings from cash flows. The firm uses several accounting variables—including accruals, net operating assets, change in accruals, and earnings smoothness—as measurements. Among value stocks, excluding firms with questionable accounting increases the portfolio return by 225 bps and reduces volatility from 20.21% to 19.78%.

The value added by screening for the three quality factors appears to be consistent when the screening is repeated in studies of the firm's international, small-company, and

emerging-market portfolios.

Some question whether quality should even command a premium. Quality should earn incremental rewards only when it takes the market by surprise, says Rob Arnott, CFA, principal at Research Affiliates. "The risk of default is probably not going to take anyone by surprise, so that probably won't earn outside returns. Growth is pretty fully priced. The market probably doesn't pay close enough attention to accounting manipulation. Each quality factor may have a different impact on future returns. Are we likely to be rewarded for any of these three?"

FOR WHAT IT'S WORTH

The classic fundamental shop that builds a portfolio of carefully selected stocks is becoming rarer. Indexing, quantitative models, and momentum investing are rising themes as managers seek to construct best-of-breed portfolios. New research will continue to shape quant-driven screens to assess firm quality. But even these tools may have their limits.

"We're constantly doing research and tweaking our models because models can be fooled," GMO's Mayer points out. "Industry groups may benefit from extraordinary cycles as homebuilders did during the housing bubble, and so human intervention is needed. That said, it's pretty hard to become a quality company and it's hard to 'un-become' a quality company. High-quality companies are long-term generators of capital. That's worth something to me."

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