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This article originally appeared on Advisor Perspectives.

"Ben felt that what I do now makes sense for my situation. It still has its founding in Graham, but it does have more of a qualitative dimension to it because, for one thing, we manage such large sums of money that you can't go around and find these relatively small value-price discrepancies anymore. Instead, we have to place larger bets, and that involves looking at more criteria, not all of them quantitative. Ben would say that what I do now makes sense, but he would say that it's much harder for most people to do." – Warren Buffett [1] responding on apparent divergence from Graham, emphasis ours.

"The number one idea is to view a stock as an ownership of the business and to judge the staying quality of the business in terms of its competitive advantage. Look for more value in terms of discounted future cash-flow than you are paying for. Move only when you have an advantage." –Charlie Munger

"Not everything that counts can be counted, and not everything that can be counted counts." – William Bruce Cameron [2]

Over the last few years, we have had a boom in global financial markets. This boom, much like the others in past, has not been limited to asset prices. We have had a boom in central banker's reputations, passive investing and ETFs. One could write at length about each one of these booms. However, this article will limit itself to a specific component of yet another boom – in the PHDs and quants in financial markets and the newly discovered "quality" factor.

In a classic case of man with a hammer in search of a nail, the quants and PHDs, equipped with significantly improved computing capability and their formulas, went on to work on financial data. They found a plethora of investment factors. As with everything else Wall

Street, they coined a nice-sounding name; evidence-based investing.

During this boom in investment factors, one of the factors that received a lot of attention these past few years was quality. Several academic research papers were and continue to be published touting the benefits of investing in the so-called quality factor.

As a reminder that investors have short-term memories, yet another investment fad is being lapped up by investors.

Wall Street, as it always does, cashed on this new fad. As investors could not get enough of this newly discovered investment factor, a host of ETFs and indices were launched promising the newly found investment nirvana.

The question that investors must ask is whether this makes sense? To answer it, we must first begin with the definition of quality.

Defining quality, the quantitative way

Let's start with the way many of the quantitatively oriented market participants define quality. Figure *1* shows the quality criteria used by some of the index/fund providers and academic researchers. As is seen, each of these participants defines quality differently.

In many ways, it reminds us of the ancient Indian fable of the blind men and the elephant. Just as each blind man creates his own version of reality from their limited experience and perspective, each one of the participants has their own definition of quality. Not surprisingly though, there is consistency in one aspect. Each one of these participants reported outperformance driven by their quality factors.

Figure 1: Definition of Quality by Various Index / ETF Providers

Definition of Quality Index / ETF / Fund / Research Paper	Quality Factors
Goldman Sachs ActiveBeta Equity Index	Gross profit *divided* by total assets, or return on equity for financial stocks or when gross profits not available
AQR Defensive Style Funds	Low-beta stocks of companies with stable businesses, high profitability, low operating and financial leverage, lower earnings-per-share variability and other measures of quality

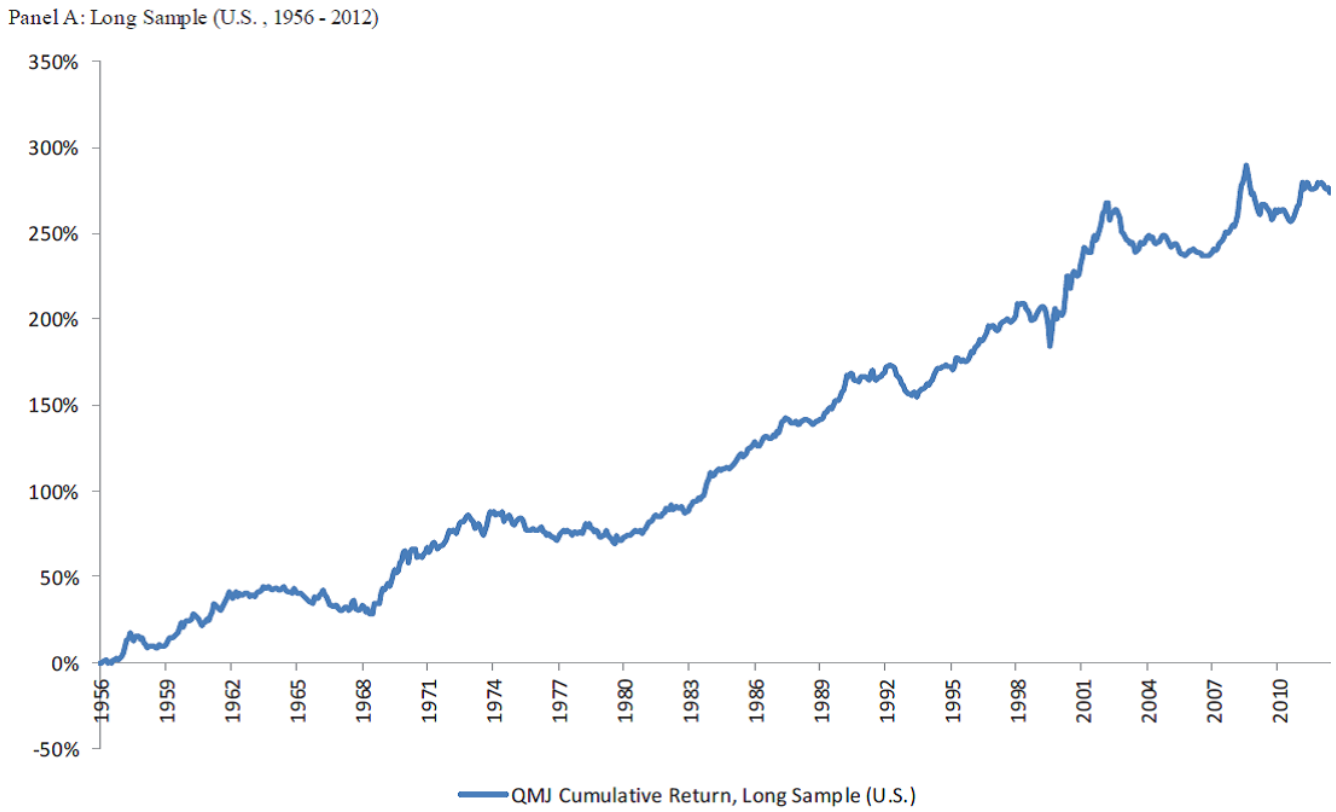
MSCI Quality Indices	High return on equity, stable year-over-year earnings growth, and low financial leverage
Robert Novy-Marx	Gross profit *divided* by total assets
Northern Trust	Management efficiency, profitability, and cash flow

Investment nirvana – Superior returns, lower risk

As the research on quality has resulted in a boom in investment products, it also found strong investment performance and lower risk.

Figure 2 shows the cumulative return of the quality minus junk factor (plotted as the cumulative sum of excess returns to avoid compounding issues) as reported by Clifford Asness, et al., in their research paper, *Quality Minus Junk*.

Figure 2: Cumulative Performance of Quality Minus Junk



Source: Quality Minus Junk, Cliffors Asness, Andrea Frazzinni, and Lasse H. Pedersen, October

9, 2013

Figure 3 shows the performance of various factor-mimicking portfolios as reported by Northern Trust. Each of the factor-mimicking portfolios reported higher returns with lower volatility.

Figure 3: Performance of Quality Factor Mimicking Portfolios

Table 3: Performance of Factor Mimicking Portfolios
S&P Quality Universe 1985 - 2012

	AVERAGE ANNUAL RETURNS						
	NTQS	DFA	AQR	MSCI	F-Score	ROE	S&P
Return	**9.4%**	6.3%	3.2%	4.9%	**8.4%**	5.5%	2.9%
Stdev	5.2%	8.4%	7.7%	8.3%	8.7%	8.5%	18.7%
Return/Stdev	**1.81**	0.75	0.41	0.59	**0.97**	0.64	0.15
	CORRELATIONS						
	AQR	DFA	NTQS	MSCI	F-Score	ROE	S&P
AQR	1.00						
DFA	0.55	1.00					
NTQS	0.62	0.49	1.00				
MSCI	0.54	0.54	0.54	1.00			
F-Score	0.27	0.50	0.37	0.45	1.00		
ROE	0.70	0.83	0.60	0.72	0.46	1.00	
S&P	0.33	0.26	0.25	0.18	0.09	0.38	1.00

Source: Northern Trust Quantitative Research
S&P Quality Rankings from Factset

Source: What is Quality? Northern Trust, 2014

With that, the case for quality is established as a superior return generating factor. Or is it?

Is quality's superior performance a myth?

In an article by Research Affiliates, The Moneyball of Quality Investing, Vitali Kalesnik and Engin Kose presented evidence that quality is not a factor that reliably commands a premium. They identified 10 quality factors by scanning academic publications and investment manager's approaches:

Profitability
Margins
Growth in profitability
Growth in margins
Leverage
Financial constraints and distress
Earnings stability
Net payout/issuance
Growth activities (R&D, advertising expenses, etc.)
Accounting quality
They chose three to five metrics within each of the 10 categories. Figure 4 shows their findings. It shows the performance of each one of these metrics with measures associated with published studies highlighted in grey.

Of the nine metrics reported in the literature, eight had positive returns, and five were statistically significant. Of the 31 unpublished factors, 18 had positive performance, and only one was statistically significant. *These results are indistinguishable from random occurrences*.

They observed that measures that have a high positive return were more likely to be published, i.e., *there was a possibility of data snooping in research that supports quality.*

Figure 4: Performance of Various Quality Measures

Table 1. Performance by Quality Measure (U.S. Stocks, July 1965–January 2014)

Name	Mean	Vol	t-stat	Name	Mean	Vol	t-stat
Accounting Quality				**Financing/Capital Structure**			
Accruals	2.2%	9.7%	1.58	Equity Issuance	4.5%	9.7%	3.25**
Net Operating Assets	4.1%	9.8%	2.95**	Debt Issuance	3.2%	7.3%	3.06**
Accruals (Sloan 1996)	2.9%	11.4%	1.77	Change in L.T. Leverage	1.8%	6.5%	1.87
Accruals Decline/Growth	1.5%	8.9%	1.16	Market Leverage	−3.8%	13.9%	−1.88
Earnings Smoothness	0.8%	10.1%	0.58	Book Leverage	−1.5%	10.7%	−0.96
Growth in Margins				**Growth Activities**			
L.T. Change in Margin	0.0%	8.8%	−0.03	R&D Expense	0.4%	19.1%	0.14
S.T. Change in Asset Turnover	2.2%	9.4%	1.66	Capital Expense	−2.8%	9.3%	−2.07
S.T. Change in Margin	0.6%	8.5%	0.46	Advertising Expense	−0.1%	16.2%	−0.06
Growth in Profitability				**Earnings Stability**			
L.T. Change in ROA	−1.1%	11.7%	−0.64	S.T. Change in Inventory	4.3%	9.9%	3.01**
L.T. Change in ROE	−1.0%	10.3%	−0.65	Stability of Gross Profitability	0.7%	13.0%	0.36
L.T. Change in Cash Flow Profitability	4.2%	9.9%	2.91**	Stability of Cash Flow Profitability	0.0%	17.0%	0.02
L.T. Change in Gross Profitability	2.3%	12.2%	1.33	Stability of Margins	0.0%	9.1%	0.00
Margins				**Payout**			
ROR	1.2%	18.3%	0.47	Net Payout Ratio	2.2%	12.0%	1.26
Margins	−0.8%	10.2%	−0.55	Total Payout Ratio	0.9%	15.8%	0.39
Operating Margins	1.8%	18.6%	0.68	Dividend Payout Ratio	−0.9%	12.2%	−0.51
Financial Constraint/Distress				**Profitability**			
Kaplan Zingales Index	−1.0%	12.6%	−0.53	Gross profitability	3.2%	10.7%	2.09**
Debt Coverage Ratio	3.6%	15.4%	1.62	ROA	−0.7%	18.5%	−0.25
S.T. Change in Asset Liquidity	−2.2%	8.2%	−1.82	ROE	−1.6%	15.0%	−0.73
Net Cash Outfolow	2.6%	16.0%	1.13	Net ROE	2.1%	15.4%	0.96
Interest Coverage Ratio	−0.4%	16.7%	−0.15	Cash Flow profitability	4.1%	18.8%	1.51

Source: Research Affiliates using data from CRSP and Compustat.

research affiliates

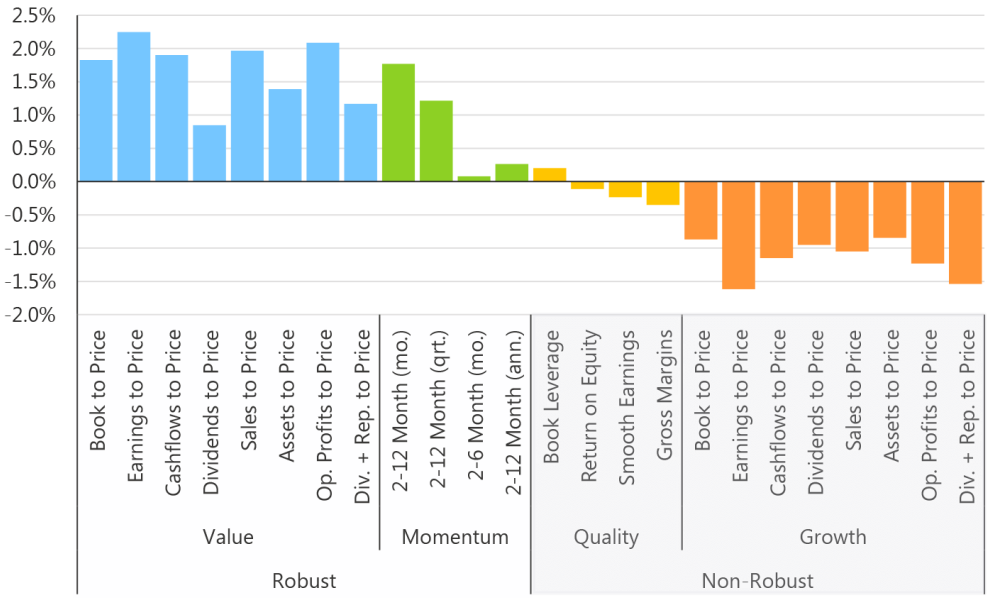
Source: Research Affiliates, The Moneyball of Quality Investing [3]

In another of the articles by Research Affiliates, How Not to Get fired with Smart Beta Investing, John West, Vitali Kalesnik and Mark Clements concluded that quality and growth strategies were non-robust.Figure 5 summarizes their findings with respect to various investment factors. As is seen, the authors found that three of the four quality factors resulted in negative value-add.

Figure 5: Value-Add of Various Factors

Not all “popular” factor strategies are robust sources of return.

Long-Only Portfolio Value-Add versus Cap-Weighted Benchmark, 1967–2016



Source: Research Affiliates, LLC, based on data from CRSP and Compustat.
Note: The four random portfolios generated to represent the selections of Orlando, the stock-picking cat (King, 2013), have a value-add very close to zero, and thus are not displayed in this figure.

Source: Research Affiliates, The Moneyball of Quality Investing [4]

The Quality conundrum

Why is one set of research finding superior performance and another suggesting that it is all a clever deception?

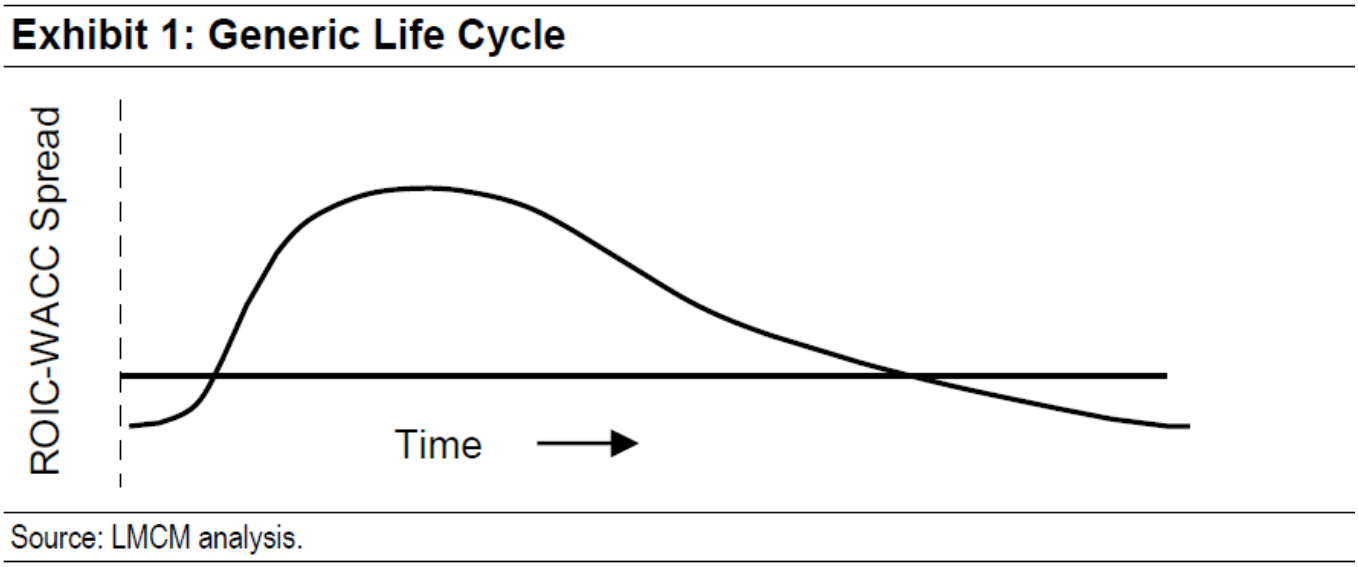
To understand this phenomenon, let’s go back to a much more ancient framework, that of mean-reversion.

Death, taxes and reversion to mean

In Death, Taxes and Reversion to the Mean, Michael Maubossion provided the tour de force

on the tendency of return on invested capital to revert to the mean.Figure 6 shows the all-too-familiar framework of lifecycle return of businesses. As Maubossin stated, “Young companies often apply substantial resources to their business without immediate payoff, hence generating returns below the cost of capital. In mid-life, companies earn excess returns as their investments bear fruit. Finally, competitive forces and/or shifts in the marketplace drive returns down to the cost of capital. In situations where returns sink below the cost of capital, bankruptcy, consolidation and disinvestment often serve to lift returns back to cost-of capital levels.”

Figure 6: Life Cycle and Excess Returns



Source: Legg Mason, Mauboussin on Strategy, Death, Taxes, and Reversion to Mean [5]

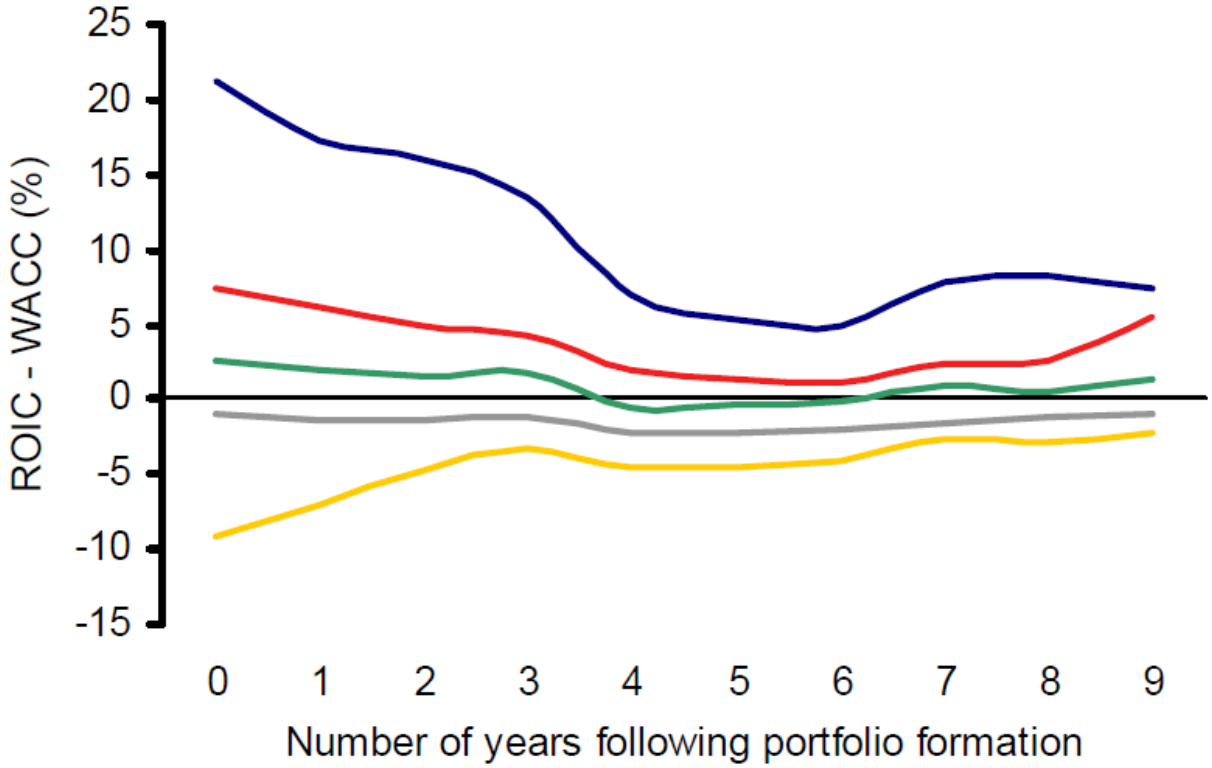
As the quantitative strategies focused on quality are looking to identify companies that have been generating superior profitability and/or returns on capital, it is possible that they end up picking many businesses that are in the late stages of their mid-life, identifying them as good investments just as the competitive forces are gearing up to drive returns down.

Figure 7 shows this reversion to mean in action on return on invested capital (ROIC). Summarizing the research methodology, Maubossin stated, “We start by ranking companies into quintiles based on their 1997 ROIC. We then follow the median ROIC for the five cohorts

through 2006. While all of the returns do not settle at the cost of capital (roughly eight percent) in 2006, they clearly migrate toward that level."

Figure 7: RoIC's Reversion to Median

Exhibit 2: Median ROIC Reversion



Source: LMCM analysis.

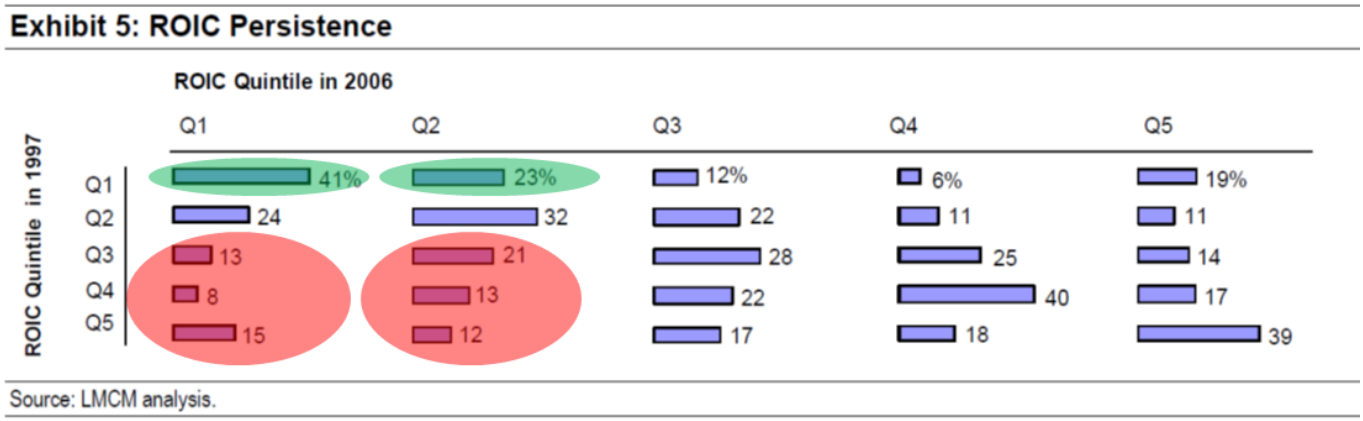
Source: Legg Mason, Mauboussin on Strategy, Death, Taxes, and Reversion to Mean [6]

Where quality is

Mean reversion is a strong force. However, not every business's ROIC reverts to mean. As seen in

Figure 8, 41% of companies that started in Q1 stayed in Q1 10 years later. However, only about half of these persisted in Q1 for all of that time, i.e., just about 5% of all companies in the sample. Clearly, it is a very small subset of businesses that have the ability to sustain super normal returns on capital.

Figure 8: ROIC Persistence – The Search for Quality



Source: Legg Mason, Mauboussin on Strategy, Death, Taxes, and Reversion to Mean [7]

Defining quality, MAEG's way

While Mauboussin found that persistence occurs, the factors that drive that persistence did not reveal themselves. What drives persistence in return on capital? What helps a good business stay a good business?

We are sure that the modelers among us cannot wait to find the specific factor that lends itself to be modeled. However, as the highlighted text from Warren Buffett's quote makes it clear, not all factors involved in the assessment of a quality business are quantitative.

Indeed, if we had to boil down the attribute of a high-quality business to a single factor, it is its *sustainable competitive advantage* – a factor that does not lend itself to quantitative modeling. As Munger's quote highlights, it is of utmost importance to be able to judge the *staying ability of the competitive advantage* of the business.

A strong competitive advantage and its sustainability are the most important attributes of a high-quality business. Much of the investment returns that accrue to investors from the quality factor depend on the ability of the business to persist with its supernormal returns on capital. However, the excess returns on capital can persist only if the business is able to keep competition at bay, i.e., the ability of the business to sustain its competitive advantage.

While it is possible to develop quantitative models that can differentiate businesses that possess sustainable competitive advantages from those that don't, this is best done within a well-structured human-decision-making process that recognizes its cognitive limitations. Our research paper on the limited rationality of the human mind investigated the design of such a process such that errors of cognition are minimized.

Additionally, in our article, Why Most Quantitative Investing and Trading Systems Fail, we discussed the fallacy that many quantitative systems engage in when they try to define quality. We reproduce the relevant section below:

> Defining quality – The quantitative way
>
> Most, if not all, quantitative systems are designed by selecting factors that were present in successful investments/trades over the selected back-test period. Typically, a system developer will pick up a host of factors and run simulations in order to identify which factors were associated with better investment returns.
>
> To further expound upon this process, let's consider the case of quality as an investment factor. It has received a lot of attention by academics as well as developers of quantitative investment strategies. It is the latest fad in the jungle of investment factors.
>
> Most quantitative strategies that promise to utilize quality as the dominant selection factor employ returns on capital or some variation of it. This is driven by the finding that companies that generated higher returns on capital have been associated with higher subsequent investment returns. Of course, as quantitative managers try to step over each other in an effort to showcase the superiority of their system, most of them gravitate towards significantly more complex systems, introducing a multitude of factors in their models.

The idea that a high-quality business generates higher returns on capital passes the muster of commonsense as well. Let's say that the average return on capital of all businesses is 10%. What this means is that when you invest $100,000 in a business, on average, you will expect to earn US$10,000 from your investment. But what if the business that you invested your $100,000 was earning you $15,000 instead? Most quantitative systems, as they define quality currently, will likely conclude that we have a high-quality business on our hands.

The fallacy of the converse

Clearly, for a business to be considered superior, it needs to generate returns on capital that are greater than the average business. While this statement, if correct, establishes that all high-quality businesses are associated with high returns on capital, it does not follow that all businesses that earn high returns on capital are high quality businesses. But, that's exactly what most quantitative systems are likely to conclude. As high returns on capital are likely to be present in every high-quality business, the quantitative system will likely conclude that every business that earns excess returns on capital is a high-quality business. This argument is not very different from saying that because I play using Wilson racquets, I am Roger Federer!

This kind of an argument construction falls in the trap of fallacy of the converse, also known as affirming the consequent. Consider the following argument form:

1. If Dog, Four Legs (another way of saying that dogs have four legs).

2. Four Legs (I found something with four legs).

3. Therefore, Dog (this thing is a dog).

Obviously, this is an invalid argument. Not everything that has four legs is a dog. Similarly, not every company that is earning returns on capital in excess of cost of capital is a high quality business.

High returns on capital – Necessary but not sufficient condition

As Daniel Kahneman said, wherever we have “sufficient” information to build a model, it will perform better than most people. We posit a key question here: while ability to earn higher returns on capital is a necessary condition for the presence of a high-quality business, is it the sufficient condition?

Before you jump to a conclusion, we thought it instructive to share with you the business experience of Baijnath’s father. Back in the 1970s, in a small town of Northern India, the elder Mr. Ramraika started a business selling clothes. His industry showed up in his business performance, and he was quickly able to earn returns on capital that were well above the cost of capital. The necessary condition of high returns on capital was met. But did he have a high-quality business?

Over the next few years, the business landscape changed. Attracted by the success of businessmen like the elder Ramraika, many more entrepreneurs entered the business, using either their own capital or borrowings. The same town, which had about five such businesses in the seventies, now houses more than 100 such businesses. So while the target customer base increased by a factor of three, the number of competitors increased more than 20-fold! Not surprisingly, the end result of this process was sub-par returns for everyone involved.

What happened? Why did the number of competitors mushroom? The answer lies in the absence of barriers to entry. The barriers to entry, if there were any, were surmountable. It was possible for other entrepreneurs to enter the business. As additional capital flowed in, returns on capital were driven down.

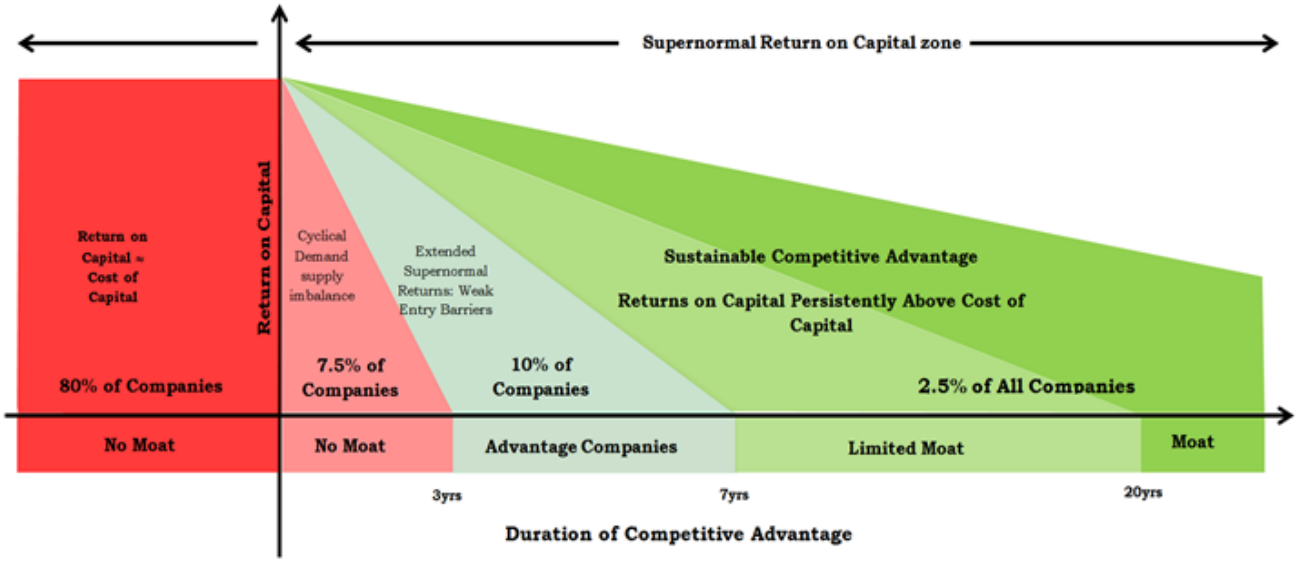
Clearly, it was not a high-quality business. It was a business that was enjoying a temporary competitive advantage that emanated from a demand-supply mismatch, a situation that had an over-rectification as capital flowed to reap the perceived excess rewards.

Return on capital distribution: Why the quality does not lend itself to modeling

Figure 9 shows a hypothesized distribution of return on capital. Approximately 80% of businesses earn returns at or below the cost of capital. Of the remaining 20%, approximately 7.5% are enjoying cyclical demand and supply imbalances that typically resolve themselves

in about three years. Clearly, if this subset of companies were to be priced as quality businesses, they will pose a serious risk to the investment portfolio. However, a quantitative strategy, if effectively designed, can sidestep such businesses.

Figure 9: Hypothesized Return of Capital Distribution



Source: Multi-Act EquiGlobe Limited

It is the other 10% or so of the companies that pose the most serious risk for an investor in high-quality businesses. These businesses are enjoying an extended period of superior returns on capital driven by imbalances that take relatively longer to resolve. However, the business itself is characterized by relatively weak entry barriers.

We classify such businesses as “advantage” companies that are enjoying a transitory competitive edge. The problem when modeling high-quality businesses is that there is no way for a system to identify these businesses as they satisfy all quantitative criteria, including the stability of profits over an extended period.

However, as the transitory nature of the competitive advantage for such businesses reveals itself, investors end up with permanent losses. Indeed, the increasing flow of money to quantitative quality strategies will magnify this risk as market prices become further divorced

from a properly evaluated business value of the firm.

Only about 2.5% of all businesses pass the muster of high-quality businesses.

Conclusion

As Cameron said, not everything that counts can be counted. In a similar vein, even though sustainability of competitive advantage is the driving factor in identifying high-quality businesses, it does not mean that it can be modeled. Researchers who identify quality as a promising factor or find that quality does not result in superior returns are misguided.

A superior investor will recognize the importance of side stepping simplicity for the sake of it as understanding the sustainability of competitive advantage of a business is not easy work. As Buffett said when explaining his move away from traditional definitions of value investing, what he does makes sense, but *it's much harder for most people to do.*

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Notes:

Joe Carlen, The Einstein of Money: The Life and Timeless Financial Wisdom of Benjamin Graham, 244. ↩
The quote is frequently attributed to Albert Einstein. However, it is likely an incorrect attribution. Read more here. ↩
Research Affiliates, The Moneyball of Quality Investing, Vitali Kalsenik and Engin Kose. Read more here. ↩
Research Affiliates, How Not to Get fired with Smart Beta Investing, authors John West, Vitali Kalesnik, and Mark Clements. Read more here. ↩
Death, Taxes, and Reversion to the Mean, Maubossin on Strategy, Legg Mason Capital Management, December 14, 2007. ↩
Death, Taxes, and Reversion to the Mean, Maubossin on Strategy, Legg Mason Capital Management, December 14, 2007. ↩
Death, Taxes, and Reversion to the Mean, Maubossin on Strategy, Legg Mason Capital

Management, December 14, 2007. ↩