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Simple But Not Easy

The Case For Quantitative Value Investment

- **Value stocks have beaten the market over the long term**
- **Yet most active managers have failed to do the same**
- **Even active value managers fail to outperform a passive value index**
- **The gap between the performance of the active value managers, and the underlying performance of a value benchmark is likely due to systematic behavioral errors**
- **To outperform, a fund must have sound strategy that protects against behavioral errors**

Value has consistently beaten the market

The literature on value investment, though a relatively new area of study, is rich and vast. While researchers continue to debate the reasons why, they almost universally agree that value stocks outperform the market. The chart below compares the excess returns of portfolios constructed by dividing stocks into quintiles from cheapest (“value”) to most expensive (“glamour”) according to several different price ratios¹: price-to-book value² (“P/B”), price-to-earnings³ (“P/E”), enterprise value⁴-to-free cash flow⁵ (“EV/FCF”), enterprise value-to-

¹ A “price ratio” is a measure of a stock’s cost relative to a “fundamental,” an item found through analysis of the stock’s financial statements (for example, book value or earnings). Price ratios make stocks comparable on a like-for-like basis.

² “Book value” is the residue of assets after deducting liabilities recorded on the Balance Sheet.

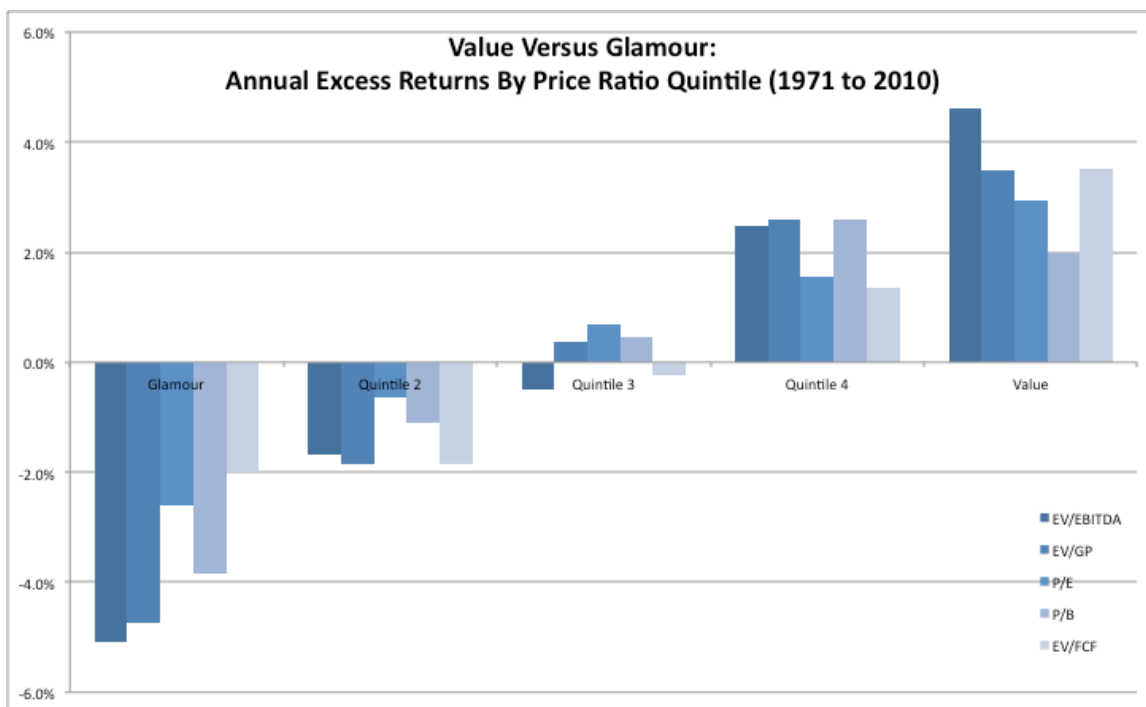
³ “Earnings” is a stock’s profit after tax recorded on the Profit and Loss Statement. It is the “bottom line.”

⁴ “Enterprise value” is market capitalization plus preferred stock plus minority interests (if any) plus debt plus unfunded pension liabilities less cash. It is the total cost paid to acquire a company in its entirety.

⁵ “Free cash flow” is the residue of cash flows from operations after deducting capital expenditure recorded on the Statement of Cash Flows. It is the cash flow available for distribution.

earnings before interest, taxes, depreciation, and amortization⁶ (“EV/EBITDA”), and enterprise value-to-gross profit⁷ (“EV/GP”). The excess returns are calculated by deducting from each quintile price ratio’s return the equal weighted performance of the entire market.⁸

Exhibit 1: Value Beats Glamour



Source: Gray and Carlisle, “Quantitative Value,” Due 2013.

The chart demonstrates that, whichever price ratio we choose to examine, over the 40-year period under consideration, the quintile containing the cheapest stocks (the “Value” quintile, on the far right of the chart) outperformed the market, generating substantial excess returns, and the quintile containing the most expensive stocks (the “Glamour” quintile, on the far left of the chart) underperformed the market, generating negative excess returns. The quintiles also perform in rank order: the Value quintile outperforms the next cheapest quintile (“Quintile 4”), and so on until we reach the Glamour quintile, which generates negative excess returns. The Value quintile of EV/EBITDA stocks beat the market by

⁶ “Earnings before interest, taxes, depreciation, and amortization” is calculated as it is described. It is a measure of earnings that seeks to adjust for the impact of tax and different mixes of debt and equity in a stock’s capital structure.

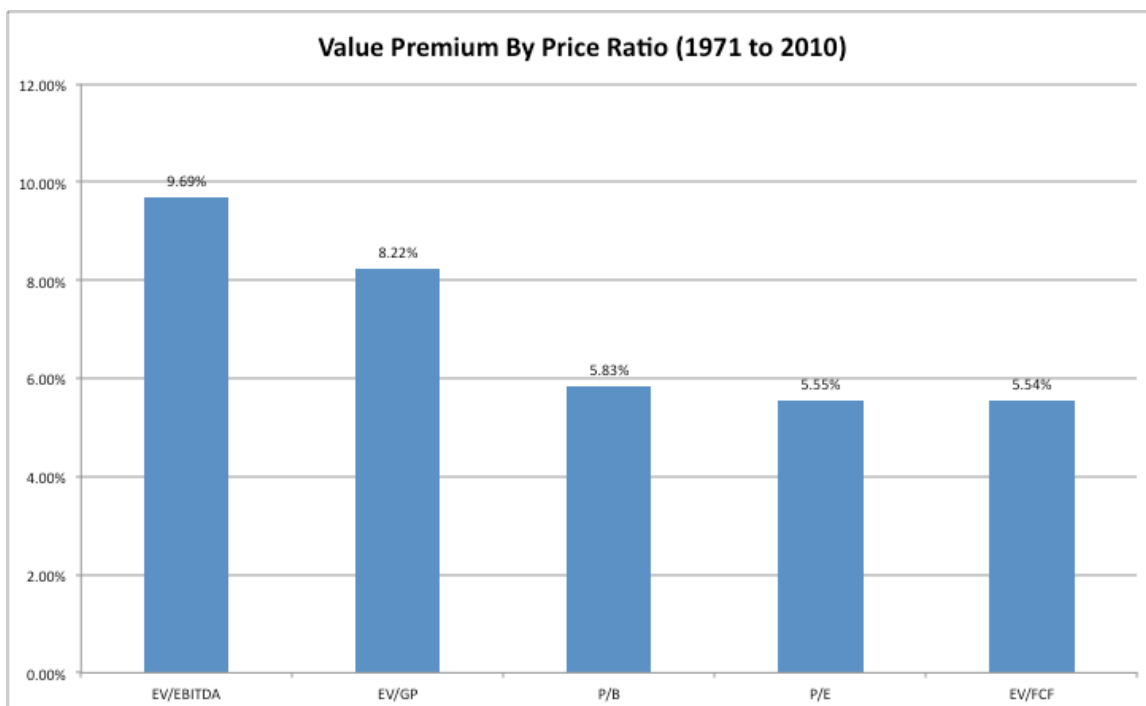
⁷ “Gross profit” is revenue minus cost of goods sold. It is an unadulterated measure of a stock’s income.

⁸ Note that “Market Index” is the equally weighted universe of stocks, making it directly comparable to the quintile portfolios, which are also equally weighted.

the biggest margin, outperforming by 4.62 percent per year. The Value quintile of P/B beat the market by the smallest margin, outperforming by just 1.99 percent per year, but, notably, still outperforming.

The extent to which the Value quintile outperformed the Glamour quintile is known as the “value premium,” and, all else being equal, the bigger the value premium, the better the price ratio differentiates between value and glamour. The chart in Exhibit 2 makes it clear that EV/EBITDA generated the biggest value premium, averaging 9.69 percent per year. The P/E and EV/FCF ratios generated the smallest value premia at 5.54 percent per year. However we define it, the cheaper the average stock’s price-to-a-fundamental (i.e. EBITDA, free cash flow, book, or earnings), the better the stock has performed. Exhibit 2 shows the value premium generated by each price ratio over the period 1971 to 2010.

Exhibit 2: EV/EBITDA Generates The Biggest Value Premium



Source: Gray and Carlisle, “Quantitative Value,” Due 2013.

The persistence of the value premium seems to defy common sense. Why should a free lunch exist? Behavioral finance researchers Joseph Lakonishok, Andrei Shleifer and Robert Vishny in their 1994 paper, “Contrarian Investment, Extrapolation, and Risk”ⁱ argue that value stocks generate better returns because they are contrarian to the behaviorally suboptimal strategies followed by “naïve” investors. “Naïve” investors form expectations about the future performance of

stocks without a full appreciation of the phenomenon of mean reversion. They tend to form these expectations on prospects for each individual stock without properly weighting the “base rate,” or historical average for that class of stocks. This manifests in investors extrapolating past earnings performance too far into the future; assuming a trend in stock prices will persist; simply overreacting to good or bad news; or conflating a well-run company with a good investment, irrespective of price. Whatever the reason, investors tend to get overly excited about stocks that have done well in the past and bid them up so that these glamour stocks become overpriced. They also overreact to stocks that have done badly, oversell them, and these out-of-favor value stocks become undervalued. Value investors exploit these behavioral errors, investing in undervalued stocks on the expectation that they will revert to the mean and, consequently, beat the market.

Most active managers have failed to beat the market

Given that institutional investors invest professionally, we would expect that they are not naïve, but are aware of the value premium, and invest to capture it. If that is in fact the case, it is not reflected in the data. John C. Bogle, founder of The Vanguard Group, has long promoted passive index funds over traditional, actively managed mutual funds for the reason that active managers, on average, fail to outperform the market. Bogle appeared before the *Senate Subcommittee on Financial Management, the Budget, and International Security* on November 3, 2003 to demonstrate that the competitive nature of the investment management industry meant that the return of the average mutual fund should equal the return of the market less the fees charged by the mutual fund industry. Bogle testifiedⁱⁱ:

“During the period 1984-2002, the U.S. stock market, as measured by the S&P 500 Index, provided an annual rate of return of 12.2%. The return on average mutual fund was 9.3%. The reason for that lag is not very complicated: As the trained, experienced investment professionals employed by the industry’s managers compete with one another to pick the best stocks, their results average out. Thus, the average mutual fund should earn the market’s return—before costs. Since all-in fund costs can be estimated at something like 3% per year, the annual lag of 2.9% in after-cost return seems simply to confirm that eminently reasonable hypothesis.”

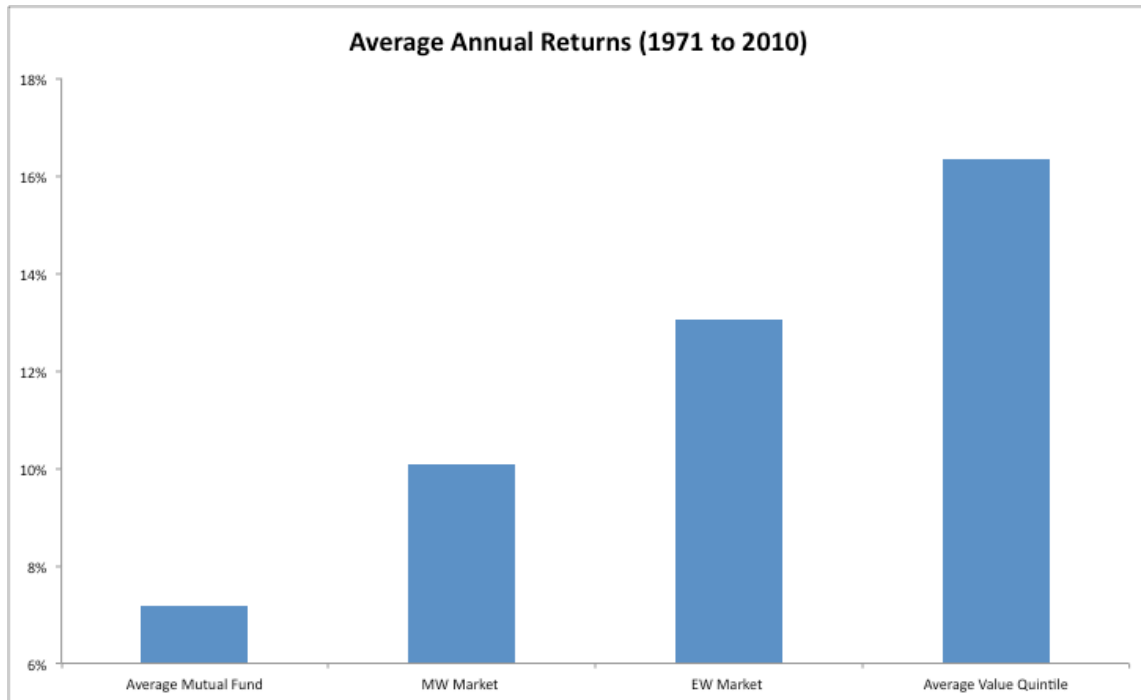
While Bogle’s thesis is “eminently reasonable,” the inability of most institutional investors to beat the market is still remarkable. Why? Let’s consider what we mean by “the market.” The S&P 500 is a widely followed index of the largest 500 stocks listed on the New York Stock Exchange or the NASDAQ, and

represents approximately 70 percent of the value of the U.S. market. The Russell 1000 is an index of the largest 1000 stocks, and represents approximately 92 percent of the U.S. market. Both the S&P 500 and the Russell 1000 are market capitalization-weighted indices, which means both weight constituent stocks according to the stocks' market capitalizations. Stocks with larger market capitalizations have a greater influence on the indices' performance than stocks with smaller market capitalizations.

While the S&P 500 and the Russell 1000 indices do a fine job of tracking the weighted average performance of the "market," we would not regard them as optimal investment strategies. Behavioral finance theory suggests that the S&P 500 and Russell 1000 suffer from a systematic flaw. The problem is that each increases the amount it owns of a particular stock as the price rises, and reduces the amount it owns as the price drops. This leads the S&P 500 and Russell 1000 indices to behave like the naïve investor above, systematically investing too much in stocks that are overpriced and too little in stocks that are undervalued. If that is in fact the case, then we would expect that an equally weighted version of the S&P500 or the Russell 1000 would randomize this error, and outperform the market capitalization-weighted S&P 500 and Russell 1000. This is exactly what we find.

The chart below compares the performance of the two versions of the universe of stocks examined in Exhibit 1. "EW Market" is the equally weighted average annual return of the universe of stocks that comprise the market. "Equal weighting" means that each stock in the index has the same influence on the index's return. Like the S&P 500 and the Russell 1000, "MW Market" is the market capitalization-weighted average annual return of the same universe. We also include for comparison the return to the average large capitalization mutual fund and the average return of the Value quintile of price ratios in Exhibits 1.

Exhibit 3: Equal Weight- Outperforms Market Cap-Weight Indices



Source: Gray and Carlisle, "Quantitative Value," Due 2013.

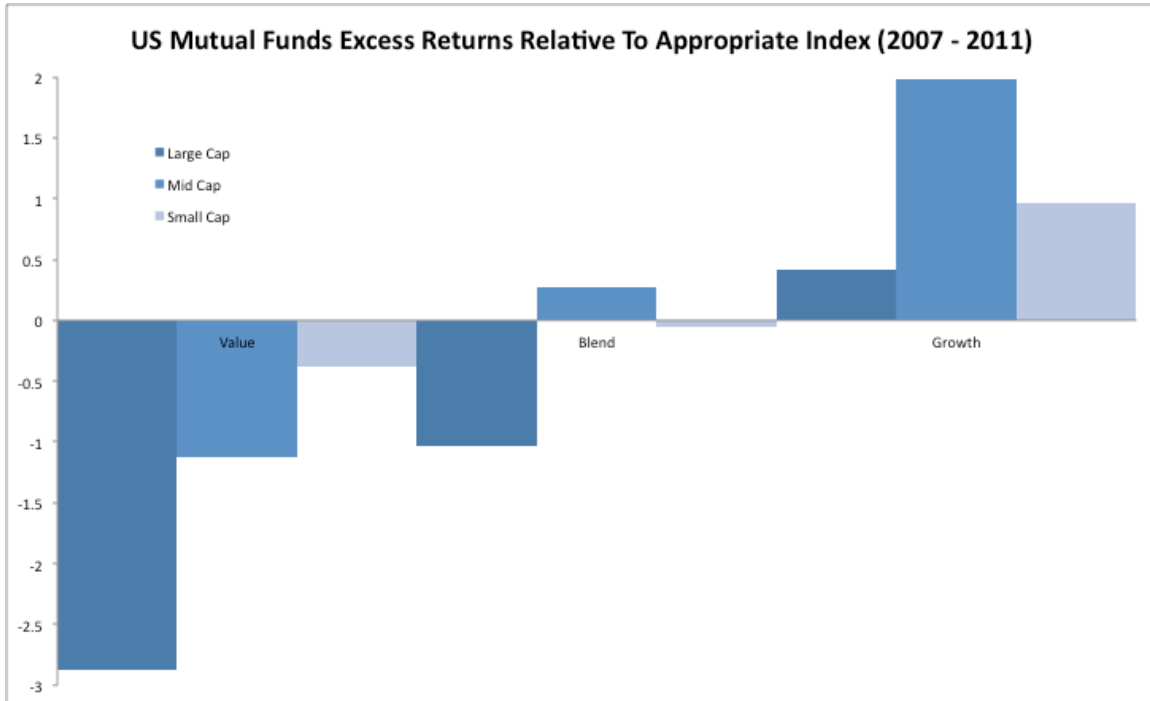
EW Market significantly outperforms MW Market. Over the period examined, 1971 to 2010, the equally weighted market index, EW Market, averaged 13.04 percent annually, while the same stocks weighted according to market capitalization, MW Market, averaged 10.09 percent annually. Equal weighting is a contrarian strategy that exploits the naïve extrapolation errors of other investors and partially eliminates the systematic error in market capitalization-weighted indices.ⁱⁱⁱ

It is telling that, despite the systematic flaws in traditional market-capitalization weighted indices, the S&P 500 and the Russell 1000 have been shown to relentlessly outpace most active managers. It is this underperformance that led Bogle to recommend market capitalization-weighted index funds. As we can see in Exhibit 3, however, a market capitalization-weighted index suffers from a systematic flaw that leads it to underperform a comparable equally weighted index. An equally weighted index fund is logically and empirically a better bet, but why stop there? As we demonstrated in Exhibit 1, the average of the value quintile of stocks has outperformed the equally weighted market index, offering the opportunity for better returns again. Value seems like the best bet, but how can we be sure our manager captures the value premium?

Value investors make behavioral errors

Let's focus on the rational investors, those who profess to be value investors, and assume for the moment that they do as they say, and actually buy value stocks. How do these active value investors perform relative to the performance of a comparable passive value benchmark, for example, an index comprising just value stocks? In a 2012 paper, "Value Investing: Investing for Grown Ups?"^{iv} Aswath Damodaran conducts a simple test of the returns to active value investing by comparing the returns earned by active value investors to a passive value-only index. Damodaran computes the excess returns generated for all US mutual funds, classified into value, blend, and growth (a.k.a "glamour") categories, relative to index funds for each category. Thus, the value mutual funds are compared to index fund of just value stocks (low P/B and low P/E stocks) and the growth mutual funds to a growth index fund (high P/B and high P/E stocks). The results are not good for the active value funds. Exhibit 4 is a chart showing the excess returns generated for all US mutual funds, classified into value, blend and growth categories, relative to index funds for each category.

Exhibit 4: Value Mutual Funds Underperform Value Indices



Source: Damodaran (2012)

The value funds underperform the value index in all three market-capitalization categories, the blended funds are a mixed bag and growth funds tend to outperform growth indices. Damodaran makes the following comment:

“The only funds that beat their index counterparts are growth funds, and they do so in all three market cap classes. Active value investing funds generally do the worst of any group of funds and particularly so with large market cap companies.”

This is not evidence that value funds perform poorly. Far from it. They tend to outperform the market, but they also tend to underperform their benchmark, the passive value stock indices, which perform very well. The outperformance of the growth investors over a passive growth-stock index speaks more to the poor performance of the growth-stock index, rather than the positive performance of the growth investors.

Tim Loughran and Jay W. Wellman examined the same problem over a longer time period in a 2010 paper, “New Evidence on the Relation Between the Enterprise Multiple and Average Stock Returns.”^v Loughran and Wellman ask why, if a value premium (measured by P/B) of 4.8 percent per year persisted over the period from 1926 to 2004, fund managers couldn’t capture it. They find as follows:

“Fund managers perennially underperform growth indices like the Standard and Poor’s 500 Index and value fund managers do not outperform growth fund managers. Either the value premium does not actually exist, or it does not exist in a way that can be exploited by fund managers and other investors.”

Damodaran says that his findings “[point] to the need for discipline and consistency in value investing and to the very real fact that beating the market is always difficult to do, even for a good value investor.”

Experts versus simple statistical models

What causes value funds to underperform a comparable passive value-stock index? In many disciplines simple statistical models outperform the intuition of the best experts. The simple statistical models continue to outperform the judgments of the best experts, *even when those experts are given the benefit of the outputs from the simple statistical model*. James Montier, an expert in behavioral investing, discusses this phenomenon in his book *Behavioral Investing: A Practitioners Guide to Applying Behavioral Finance*. The first example he cites, which he describes as a classic in the

field, and which succinctly demonstrates the two important elements of his thesis, is the diagnosis of patients as either “neurotic” or “psychotic.” The distinction is as follows: a psychotic patient “has lost touch with the external world” while a neurotic patient “is in touch with the external world but suffering from internal emotional distress, which may be immobilizing.” Montier says that the standard test to distinguish between neurosis and psychosis is the “Minnesota Multiphasic Personality Inventory” or “MMPI”.

In 1968 Lewis Goldberg, now a professor of psychology at the University of Oregon, analyzed more than 1,000 patients’ initial MMPI test responses and then their final diagnoses as “neurotic” or “psychotic.” He used the data to develop a simple model to predict the final diagnosis based on the initial MMPI test response. Goldberg found that his model, applied out-of-sample, accurately predicted the final diagnosis approximately 70 percent of the time. He then gave MMPI scores to experienced and inexperienced clinical psychologists and asked them to diagnose the patient. Goldberg found that his simple model outperformed even the most experienced psychologists. He ran the study again, this time providing the clinical psychologists with the simple model’s prediction. Goldberg was shocked. Even when the psychologists were provided with the results of the model, they continued to underperform the simple model. While the performance of the psychologists improved from their first attempt without the benefit of the model, they still didn’t perform as well the model did by itself.

How can it be that simple models perform better than experienced clinical psychologists? Is this result a fluke? No. In fact Goldberg’s MMPI example is the first of an overwhelming number of studies and meta-analyses—studies of studies—that corroborate this phenomenon. In his 2007 book *Supercrunchers*, Ian Ayres discusses a myriad of other fields in which simple models prevail over experts, often in areas that would not appear to be friendly to a quantitative analysis. Ayres provides a diverse range of studies comparing statistical models and experts, ranging from the detection of brain damage, the interview process to admit students to university, the likelihood of a criminal to re-offend, the selection of “good” and “bad” vintages of Bordeaux wine, and the buying decisions of purchasing managers. Montier makes an interesting observation about the studies:

“[As] much as we all like to think we can add something to the quant model output, the truth is that very often quant models represent a ceiling in performance (from which we detract) rather than a floor (to which we can add).”

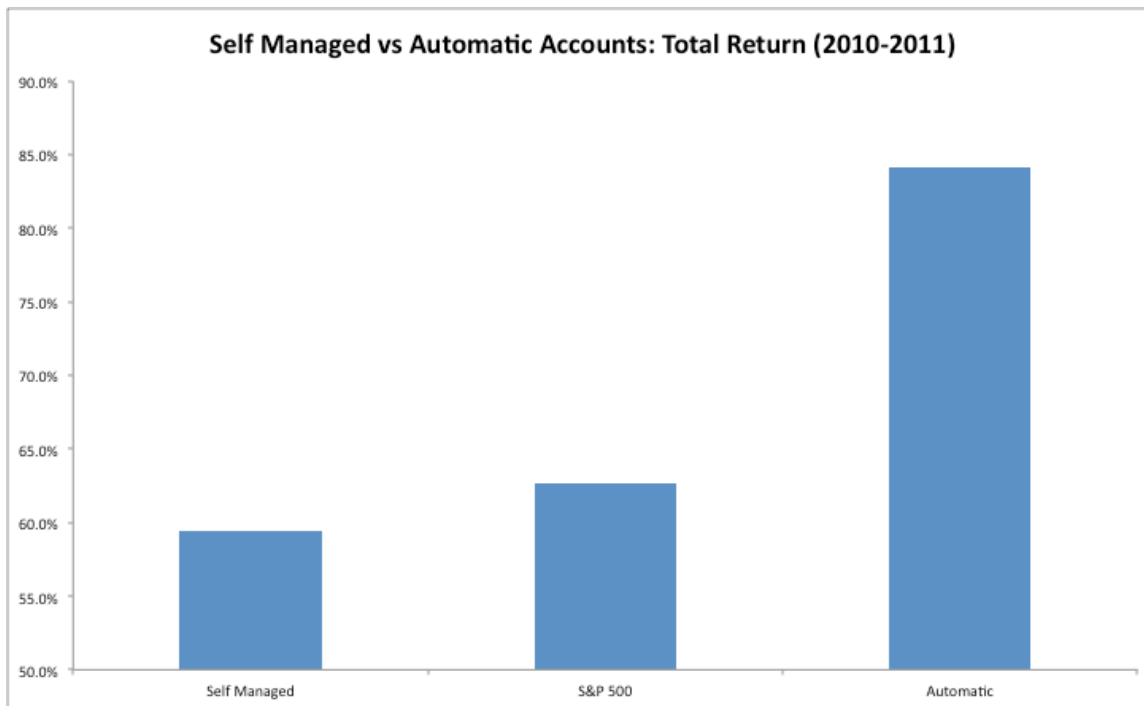
Value investors versus simple statistical models

Joel Greenblatt, investor and adjunct professor at the Columbia University Graduate School of Business, has recently tested in a real-time, value investment context Montier's theory that quantitative models will act as a performance ceiling, rather than a performance floor. In 2006 Greenblatt, published a book called "The Little Book That Beats The Market" describing a quantitative version of Warren Buffett's investment strategy. Greenblatt translated Buffett's dictum, "It's far better to buy a wonderful company at a fair price than a fair company at a wonderful price," into a quantitative strategy he calls the *Magic Formula*. In backtest, the Magic Formula did as the title promised—it beat the market. Like the MMPI, the Magic Formula is a simple statistical model.

In 2012 Joel Greenblatt conducted a study into the performance of investors using the Magic Formula over the period May 1, 2009 to April 30, 2011. Greenblatt's firm offers two choices for investors wishing to use the Magic Formula, a "self-managed" account, and a "professionally-managed" account. The self-managed account allows clients to choose which stocks to buy and sell from a list of approved Magic Formula stocks. Investors are given guidelines for when to trade the stocks, but are ultimately able to decide when or if to make those trades. Investors selecting the professionally managed accounts had their trades automated. The automatic accounts bought and sold Magic Formula stocks at fixed, pre-set intervals. During the two-year period in Greenblatt's study, both types of account were able to select only from the approved list of Magic Formula stocks.

What happened? Exhibit 5 has the results:

Exhibit 5: Automatic Outperforms Self Managed Accounts



Source: Greenblatt (2012)

The self-managed accounts, where clients could choose their own stocks from the pre-approved list and then exercise discretion about the timing of the trades, slightly underperformed the market. An aggregation of all self-managed accounts for the two-year period showed a cumulative return of 59.4 percent after all expenses, against the 62.7 percent performance of the S&P 500 over the same period. The aggregated professionally managed accounts returned 84.1 percent after all expenses over the same two years, beating the self-managed accounts by almost 25 percent (and the S&P 500 by well over 20 percent). For a two-year period, that’s a huge difference. It’s especially so since both the self-managed accounts and the professionally managed accounts chose investments from the same list of stocks and followed the same basic guidelines. People who self-managed their accounts took a winning system and used their judgment to eliminate all the outperformance and then some. Greenblatt has several observations about the causes of the underperformance of the self-managed accounts.

First, self-managed investors didn’t buy many of the biggest winners. Instead, they exercised their discretion to avoid them, probably because they looked like losers at the time of purchase. This is not a case of randomized errors in the selection of stocks. The investors reliably and systematically avoided the best performers. Greenblatt says that stocks are often depressed for reasons that are

well known. If you watch CNBC, you know why they're cheap. Part of the reason they're cheap in the first place is that they look like losers for one reason or another. This is a great example of a behavioral error at work. We know the base case—buying value stocks generally leads to outperformance—but we neglect the base case because we're focused on the apparent risk surrounding this particular stock. We can't help it. Stocks only get cheap because they are out of favor. We focus on the hairy, near-term issues and ignore the base case. Many self-managed investors eliminated stocks from the pre-approved Magic Formula list that turned out to be the biggest future winners.

Second, the self-managed investors tended to sell after periods of bad performance—either the strategy underperformed for a period of time, or the portfolio simply declined (regardless of whether the self-managed strategy was outperforming or underperforming the declining market)—and then tended to buy after periods of good performance. Greenblatt found that many self-managed investors got discouraged after the Magic Formula strategy underperformed the market or the portfolio declined and simply sold stocks without replacing them, held more cash, or stopped updating the strategy on a periodic basis. To compound the error, they then bought stocks after good periods of performance. Investors tend to sell right after bad performance and buy right after good performance, which, says Greenblatt, is a reliable way to lower long-term investment returns.

This is of course the result that we would expect. We think we know better than simple models, which have a known error rate, but prefer our own judgment, which has an unknown error rate. Says Montier:

“The most common response to these findings is to argue that surely a fund manager should be able to use quant as an input, with the flexibility to override the model when required. However, as mentioned above, the evidence suggests that quant models tend to act as a ceiling rather than a floor for our behaviour. Additionally there is plenty of evidence to suggest that we tend to overweight our own opinions and experiences against statistical evidence.”

We already know that even experts will underperform simple models. We also know that we will continue to underperform when provided with the model's output because we prefer our own judgment—even when we're wrong. These are errors not made out of ignorance (the model presents us with the correct choice), but rather out of incompetence (we simply fail to follow the model). As Warren Buffett says, investing is simple, but it's not easy.

Anatomy of a quantitative value strategy

While its persistence seems to defy common sense, the weight of evidence points to value stocks beating the market. The problem is that value funds don't perform as well as a passive value benchmark. The solution is to apply a quantitative process to a strict value investment philosophy. Such an approach enables an investor to maximise the chances of capturing the value premium. Value does not guarantee any level of return, or even outperformance over shorter periods of time. The value premium winks in-and-out of existence, and it's not always a positive number. All we can say is that, over the long haul, value has beaten the market. Why is the long run so important to quantitative value investing?

The "law of large numbers" holds that, as we increase the number of observations, the probability that an event will occur and the actual occurrences of the event converge. As the number of trials increases, the probability of an event occurring will trend closer to the predicted probability. In the short run, lucky and unlucky events may clump together to push the observed occurrences from the expected rate of occurrences. Poker players call this "variance." Variance in poker terms is the difference between how much money you expect to win on average over the long run and the results you obtain in the short term. Good poker players know that exploiting their edge leads over time to a reliable return, which can be expressed as an hourly rate: "big blinds per hour" (the "big blind" is the minimum bet in a hand of poker. By calculating their edge in terms of big blinds, good poker players can calculate the likely hourly rate available to them in a game by multiplying their edge by the minimum bet). For poor poker players, the hourly rate is negative. It is amazing that, in a game where luck plays such a huge role, the relative skill of a player can be quantified into an hourly rate. Good poker players don't expect to win every hand, every hour, or even every time they sit down to play. They know that over short periods of time luck is more important than skill. This is variance.

Charlie Munger, Vice-Chairman of Berkshire Hathaway, Inc., says that playing poker in the Army and as a young lawyer made him a better investor. "What you have to learn is to fold early when the odds are against you," says Munger, "or if you have a big edge, back it heavily because you don't get a big edge often."^{vi} As David Einhorn, founder of Greenlight Capital, and outstanding value investor says:

"People ask me "Is poker luck?" and "Is investing luck?" The answer is, not at all. But sample sizes matter. On any given day a good investor or a good poker player can lose money. Any stock investment can turn out to be a loser

no matter how large the edge appears. Same for a poker hand. One poker tournament isn't very different from a coin-flipping contest and neither is six months of investment results. On that basis luck plays a role. But over time—over thousands of hands against a variety of players and over hundreds of investments in a variety of market environments—skill wins out.”^{vii}

Given a large enough sample size, a player's skill determines the player's return. Investing is no different. Investors who want to outperform the market need an edge, and a value investing philosophy provides that edge. The difficulty for many investors will be in exploiting it. Montier says that “[e]ven once we are aware of our biases, we must recognize that knowledge does not equal behavior. The solution lies in designing and adopting an investment process that is at least partially robust to behavioral decision-making errors.”

Nassim Taleb, author of *Fooled By Randomness*, argues that we should not even attempt to correct our behavioral flaws, but should instead seek to “go around” our emotions:

We are faulty and there is no need to bother trying to correct our flaws. We are so defective and so mismatched to our environment that we can just work around these flaws. I am convinced of that after spending almost all my adult and professional years in a fierce fight between my brain (not *Fooled by Randomness*) and my emotions (completely *Fooled by Randomness*) in which the only success I've had is in going around my emotions rather than rationalizing them. Perhaps ridding ourselves of our humanity is not in the works; we need wily tricks, not some grandiose moralizing help. As an empiricist (actually a skeptical empiricist) I despise the moralizers beyond anything on this planet: I wonder why they blindly believe in ineffectual methods. Delivering advice assumes that our cognitive apparatus rather than our emotional machinery exerts some meaningful control over our actions. We will see how modern behavioral science shows this to be completely untrue.

Research seems to support Taleb's method—tricking ourselves into doing the right thing—works better than simply trying to do the right thing (or flagellating ourselves if we don't).^{viii} The advantage of the quantitative method is that it starts with the idea that most of us are temperamentally unsuited to investment, and then seeks to protect against those potential errors. If we acknowledge this flaw from the outset, we can build a process to minimize behavioral errors. In this way, the

quantitative process acts as a shield, serving to protect us from our own behavioral errors. We can also use it as a sword to exploit behavioral errors made by others.

The quantitative method outpaces most active value managers, and with more consistency. It does so because our behavioral errors are most pronounced when we reason intuitively. We can reduce our errors by relying on statistical evidence, and limiting our discretion. This does not necessarily argue against active management; it only suggests that active managers should be measured against the correct benchmark, which, in the case of a value investor, is a passive index of value stocks. If an active process adds value, then it should outperform that passive benchmark. If it does not, then it's reasonable to ask whether the costs of active management are worth bearing. The evidence seems to suggest that, in the aggregate, active value management does not beat the passive value benchmark. This is the rationale for a quantitative approach to value investment.

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ⁱ Lakonishok, J., A. Shleifer and R.W. Vishny, "Contrarian investments, extrapolation, and risk," *Journal of Finance*, Vol. XLIX, No. 5, pp. 1541-1578, 1994.

ⁱⁱ Bogle, John C., "Statement of John C. Bogle to the United States Senate Governmental Affairs Subcommittee," November 3, 2003 (Available at http://www.vanguard.com/bogle_site/sp20031103.html)

ⁱⁱⁱ Plyakha, Yuliya, Uppal, Raman and Vilkov, Grigory, "Why Does an Equal-Weighted Portfolio Outperform Value- and Price-Weighted Portfolios?" (January 31, 2012). Available at SSRN: <http://ssrn.com/abstract=1787045> or <http://dx.doi.org/10.2139/ssrn.1787045>

^{iv} Damodaran, Aswath, "Value Investing: Investing for Grown Ups?" (April 14, 2012). Available at SSRN: <http://ssrn.com/abstract=2042657> or <http://dx.doi.org/10.2139/ssrn.2042657>

^v Loughran, Tim and Wellman, Jay W., "New Evidence on the Relation Between the Enterprise Multiple and Average Stock Returns." (September 5, 2010). Available at SSRN: <http://ssrn.com/abstract=1481279> or <http://dx.doi.org/10.2139/ssrn.1481279>

^{vi} Lowe, Janet. *Damn Right! Behind the Scenes with Berkshire Hathaway Billionaire Charlie Munger*, Wiley, 2000.

^{vii} Einhorn, David. "Winning Poker Strategies from an Investor, or Financial Learnings for Make Benefit Glorious Wiseguys." *Value Investing Congress*, November 10, 2006.

^{viii} See, for example, "Considering the Opposite: A Corrective Strategy for Social Judgement" by Lord, Preston and Lepper. *Journal of Personality and Social Psychology* (1980) or "Reasons for Confidence" by Koriat, Lichtenstein and Fischhoff. *Journal of Experimental Psychology: Human Learning and Memory* (1980).