

Due Diligence as a Source of Alpha

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Introduction

Manager due diligence at its core is the process of researching and evaluating the performance and abilities of an investment management firm. For institutional allocators that outsource asset management to external investment managers, which is a large percentage of corporate and public pensions as well as many endowments and foundations, it is arguably the most important investment process outside of the asset allocation decision. While manager due diligence is certainly employed across all asset classes, including traditional equity and fixed income portfolios, it bears more relevance to the selection of alternative investment managers, including currency managers, given the different types of risk and wider dispersion of manager returns inherent in these strategies.

For instance, an investment in a hedge fund often results in not only larger tail risks than would be otherwise expected given the closer to log-normal return distributions usually found in traditional investments, but also additional qualitative risks such as limited transparency, moderately to significantly reduced liquidity and ultimately delegation of custody of the assets. Further, the broad mandates and high fee structures in alternatives give rise to the potential for managers to take undue risks or even engage in fraud. These are actual risks which should be fully vetted and understood in order for an investor to consciously, and conscientiously, accept them. Finally, investors should look for certain qualitative characteristics of managers that may be correlated with superior subsequent returns, or conversely seek to avoid those which may be related to future underperformance.

Certain academic research has shown that robust operational due diligence processes do in fact lead to better investment results. Brown et al. (2008) investigated the impact of operational due diligence on the performance of hedge funds of funds. They posited that the level of operational due diligence performed is directly proportional to the assets under management, as robust due diligence is an expensive proposition and a larger revenue stream can better support higher quality due diligence. In short, they find that larger fund of funds have higher net returns while the smallest fund of funds have

the lowest returns, the exact opposite of the size effect for direct hedge funds¹. The authors attribute this effect to better due diligence.

If we accept the premise that effective due diligence may result in higher probability of investment success, this article will describe a holistic approach to due diligence that can offer insights for doing just that. Due diligence is fundamentally a systematic process centered around asking the right questions, approaching these questions from many angles, and searching for evidence that is contradictory rather than confirmatory.

Types of Risk

Before we discuss the nature of an effective due diligence process, it is first necessary to classify the types of risk this process is intended to uncover. Due diligence should address business risk, operational risk and investment risk in the investment management firm.

Business Risk: This is the risk that business functions or processes unrelated to investment activities are not sufficiently resourced to support a successful investment process. This could include changes in management or ownership, an unsustainable cost structure, insufficient assets, etc., which put the ongoing operations of the business entity in jeopardy. Clearly, these business items, while perhaps not immediately apparent to someone looking purely at the investment process, will spill over into investment operations as resources are pulled and/or investment professionals leave the firm.

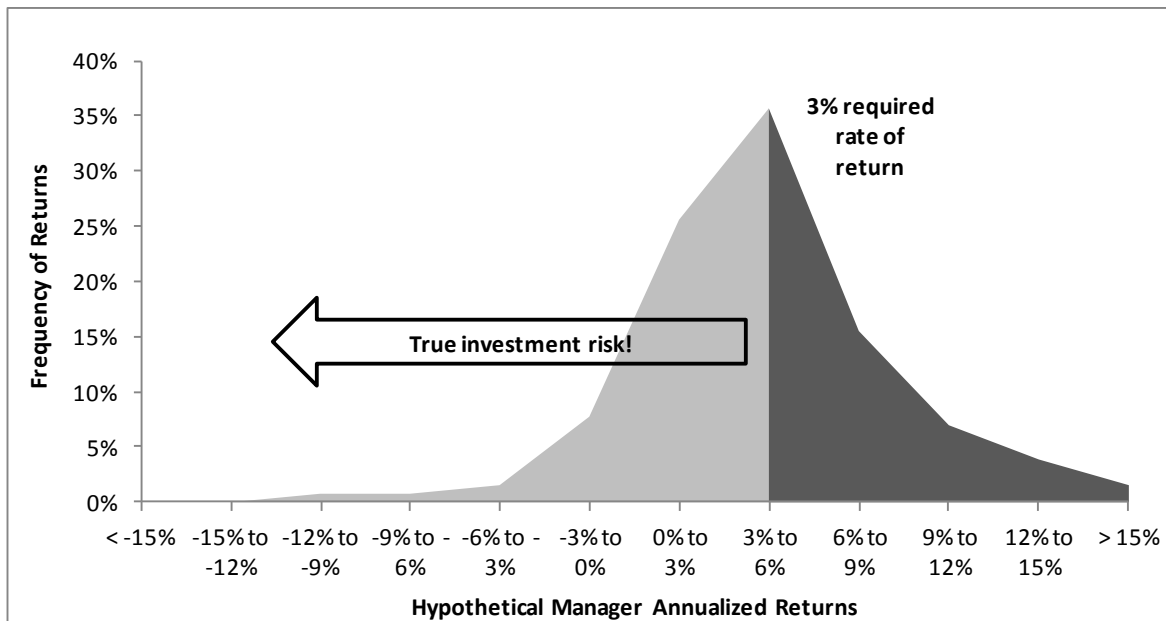
Operational Risk: Operational risk is the risk that processing of investment decisions and activities, including such functions as trade execution and processing, portfolio accounting and valuation, and fund administration are not sufficiently robust or adequately resourced. As many of these processes result in the actual implementation of the investment decisions, once again risks in this area can result in realised investment risk.

Investment Risk: These are risks associated with the investment decision making process, including security selection, portfolio construction, leverage and position sizing as well as direct security or position specific and market related risks or betas. These risks can also be extended to include various financial statistics such as volatility, VaR, downside deviation and maximum drawdown. It should be

noted however that many of these measures of historical investment risk or current factor exposures are in fact proxies for risk or estimates of future “investment risk.” In and of themselves they are not actual risks.

One way to think of investment risk is underperformance relative to the required rate of return; another is actual permanent loss of capital, but this latter instance of underperformance is merely a more specific case of the former. Hence, the author contends that “true” investment risk can be defined as failure to generate the required rate of return on the asset or pool of assets over the investment time horizon. Further, business and operational risks are inextricably related with investment risk, since business problems and operational breakdowns often result in investment underperformance, if not outright losses. In fact, all of the specific risks discussed above can thus be generalised into an estimate around the probability distribution of future returns (see Figure 1), from which both the probability and severity of underperformance necessarily falls out. At the end of the day, the only risk that truly matters is this risk of investment underperformance.

Figure 1 – Investment underperformance



In order to fully address these risks, the industry has created two largely distinct specialisations within manager research and due diligence. These functions are in practice often distinct processes with separate individuals conducting each review. Operational due diligence (ODD) is the process of researching the first two categories of risk discussed above while investment due diligence (IDD) principally refers to research regarding investment risk, unsurprisingly.

Admittedly, the costs associated with full blown operational due diligence tend to be significant as they go beyond simple on-site meetings with various investment professionals, rather including items such as background checks and forensic audits. However, since the decision to invest or not is the result of the researcher's expectation for performance in light of the comprehensive risk profile relative to the required return, it seems logical to suggest that the individual responsible for this underwriting decision would make a better decision having personally assessed and properly discounted for all of the risks. There may be certain moderate business or operational risks that a given manager displays which could be acceptable given a much lower investment risk profile or much higher expected returns. Further, one person weighing all of these factors can determine if those risks can be prudently accepted or not given other managers in the portfolio who may or may not have similar risks. Moreover, the evaluation of these various risks as spectrums can allow for the investor to incorporate gradations of concern into related manager position sizing decisions.

Also, the benefit from the specialisation of skills across ODD and IDD may be somewhat overstated. It is certainly plausible that an equity analyst is equally as capable of evaluating an equity security selection process as they are a third party valuation process, or a derivatives trader is equally as capable of evaluating currency carry trade portfolio construction as they are back office trade processing. Admittedly, certain types of investigative research do require specialised skills and are higher cost, and it is unlikely that one individual is capable of incorporating all of the elements of ODD from the most sophisticated and deeply resourced investors in the world. However, a due diligence professional with experience across multiple asset classes as well as front and back office roles on both the buy and sell side certainly has the tool set to perform an integrated manager analysis². Such an experienced analyst for example could well be familiar enough with business continuity concepts and internal controls to evaluate disaster recovery plans and administrator cash movement responsibilities.

Specialist financial services consultant the Capital Markets Company [Feffer and Kundro (2003)] utilised a proprietary database of hedge fund failures over a roughly twenty year period and not surprisingly concluded that over half of all hedge fund failures occurred at hedge funds with clear operational issues. These problems included inadequate resources, lack of third party valuation, unauthorised trading and even misappropriation of investor funds. Clearly, potential investors that were able to identify these as areas of concern during the due diligence process could have avoided investment losses by simply declining to invest in these managers.

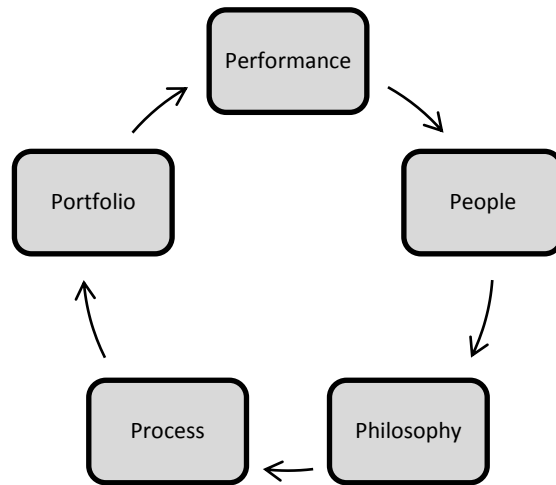
Ultimately, the intended outcome of due diligence is to determine a range of realistic return possibilities for a given manager, including both upside and downside scenarios, and whether those return expectations are sufficient given the totality of the risks to warrant an allocation with the manager given the needs of the portfolio.

The Five Ps of Due Diligence

It is with this in mind that rather than creating, or to be fair recreating, another checklist of specific questions or list of items that an effective due diligence process should incorporate³, it is perhaps more valuable to describe a simple, theoretical framework that a due diligence professional can use to approach this central inquiry.

A comprehensive manager due diligence process can be summarised via a simple heuristic we will refer to as the Five Ps – Performance, People, Philosophy, Process and Portfolio. All of these individual components of the due diligence framework are important of their own accord, but they are also linked to each other in a feedback loop creating a virtuous, or vicious as the case may be, self-reinforcing cycle (see Figure 2). A talented investment team is more likely to implement a successful culture and investment strategy which is more likely to lead to an effective investment process which generates a solid portfolio more likely to yield strong performance. Such success leads to confidence, reaffirming the philosophy and reinforcing the focus on performance and the drive to succeed, and the cycle repeats itself. A crack anywhere in this chain can potentially cause the cycle to break down, and reduce the likelihood for persistence of desired returns.

Figure 2 – Five Ps



At each node in this framework, it is important to note that there is no need to arbitrarily distinguish between business questions or investment questions. Instead, the focus of the researcher should be on the substance of that node, attempting to arrive at a thorough understanding of all the elements that have led to and subsequently resulted from that particular P. “What has their performance been and how was it generated?” not only leads to questions about historical market conditions and past portfolio exposures, but also about the people and processes that were responsible for those prior results. It is only by fully understanding these Five Ps – both in the past and the present – that a researcher can set reasonable expectations for the future.

Performance (or Performance, Performance, Performance!)

The manager selection process quite literally begins and ends with performance. As with all of the Five Ps, on a stand-alone basis, the presence of attractive historical returns may be viewed as a necessary but not sufficient condition in order to consider an investment with a manager. While the mantra of “past performance is no guarantee of future results” is repeatedly (and rightfully!) ingrained in all investment professionals, it may be easier to set realistic expectations about the future performance of an investment manager in the less benchmark constrained realm of alternatives after reviewing some amount of historical data, be that the previous returns of the fund, a managed account composite or even just a track record at a prior firm. Some would argue that a researcher is more likely to make a knowledgeable decision when afforded the opportunity to analyse past performance of a manager than when such information is not available. At the very least, after initially reviewing the historical

performance it may become obvious in some instances that the strategy is incompatible with the desired return profile for that specific investment and due diligence can be discontinued.

While some investors such as hedge fund seeding strategies do make manager hiring decisions with little to no historical evidence of performance, the larger percentage of institutional allocators do indeed require at least some track record to evaluate. In fact, many institutions have a minimum requirement, such as a three year-track record, before they will even consider an allocation. Such a requirement is certainly arbitrary, and frankly is as much a heuristic intended to make the institution’s opportunity set more manageable as it is an intentional tilt in the due diligence process. However, research from investment consultant Fund Evaluation Group (2013) supports that there might be a valid reason for such a requirement when evaluating hedge fund strategies.

Table 1 - Sample size (in years) required at 95% confidence level that alpha is not zero

		Alpha				
		1%	2%	3%	4%	5%
Tracking Error	2%	15	4	2	1	1
	3%	35	9	4	2	1
	4%	61	15	7	4	2
	5%	96	24	11	6	4
	6%	138	35	15	9	6
	7%	188	47	21	12	8
	8%	246	61	27	15	10
	9%	311	78	35	19	12
	10%	384	96	43	24	15

Source: Fund Evaluation Group (2013)

It is possible to search for statistical evidence of investment skill, or alpha, in the historical performance of a manager. Doing so at a certain confidence level requires a minimum sample size of observations. The sample size required is related to three factors: the amount of alpha or outperformance relative to

the benchmark, the amount of tracking error or noise around that benchmark, and the confidence level. Fund Evaluation Group demonstrates that two to four years is an appropriate sample size if managers generate alpha of 3% to 5% with tracking error of 2% to 4% at the 95% confidence level. Certainly, a three year track is no guarantee of future results, but as table 1 suggests it may in fact provide some relevant information for performance analysis.

Readers might note that such short track records are only statistically relevant if there exists fairly high levels of alpha to begin with, to which the author would counter that perfectly rational investment decisions may not require a 95% level of certainty; would anyone pass up a 75% edge in a game of chance?

In any case, this is probably an appropriate place to pause and attempt to further define investment skill. Many financial academics and practitioners alike have defined investment skill as alpha, or excess returns above the market. In his seminal work on performance analysis, Jensen (1968) defined the alpha of an investment manager as the return of the manager less the risk free rate, less the beta of the manager to the market times the excess return of the market over the risk free rate, or:

$$\alpha_{\text{manager}} = R_{\text{manager}} - [R_{\text{risk free}} + \beta_{\text{to the market}} * (R_{\text{market}} - R_{\text{risk free}})]$$

Many authors have used a similar framework to analyse drivers of return, expanding the risk premium notion to incorporate additional factors and styles⁴. Research shows that hedge funds tend to access many different types of betas beyond equity risk, such as momentum, credit risk, and commodities, among others. More specific to currency managers, Pojarliev and Levich (2011b) extended the same framework, identifying four primary style factors that drive currency manager returns: carry, trend following or momentum, value (such as purchasing power parity) and volatility.

True alpha then requires not only outperformance relative to the “market” benchmark but also a comprehensive equation that includes other style factors as well which in the aggregate accurately represent the true investment profile of the manager. However, as may be apparent, failure to specify all the appropriate factors or market exposures in the performance analysis results in an axiomatically overstated alpha estimate.

Most of the research on alpha in actively managed mutual fund products is somewhat discouraging, suggesting only a small percentage of mutual funds actually generate alpha, and on average, it is negative⁵. For hedge funds, the results are more heartening. Several studies do indicate that hedge funds generate superior risk-adjusted returns and/or positive alpha on average relative to traditional asset classes⁶. On the other hand, within absolute return focused currency managers, Pojarliev and Levich (2011b) demonstrated that after accounting for the four primary currency betas, average alpha is slightly negative, at -1.3% per annum. However, the same authors documented in later research (2012) that a subset of the managers in their sample did generate significant alpha over time. More interestingly, when dividing the return series into two halves, the authors find that no manager managed to produce significant alpha in the second time series that had not previously generated alpha in the first half.

Since it is not practical to restate all the research that has been conducted on absolute return product performance, summarising the evidence suggests that hedge funds are more likely to provide better risk adjusted returns and higher levels of alpha than traditional mutual funds. However, given the heterogeneous nature of hedge funds, they remain much harder to benchmark and as such demonstrate wider dispersion of returns and tracking error (see table 2). As mentioned previously, this necessarily reduces the certainty around alpha estimates.

Table 2 – Outperformance Summary⁷

Metric	Mutual Funds	Hedge Funds
Average Alpha	-0.5%	3.5%
1st-4th Quartile Spread	5.0%	25.0%

While the evidential support for absolute return performance is strong if not unilaterally favorable, disagreement exists regarding whether or not alpha persists across time. Absent empirical data that it can rationally be expected to continue in succeeding periods, its presence in the past may be almost

entirely irrelevant. Fortunately, the balance of the evidence that suggests outperformance does persist across several periods for hedge funds, if not for mutual funds⁸.

In summation, the totality of the research seems to suggest that absolute return managers do display higher alphas and greater persistence of returns than traditional managers, although the research is necessarily confounded by the challenges in both defining and measuring alpha given the flexible investment mandates utilised within absolute return strategies. However, it is plausible that true alpha does not exist at all, or is so rare as to suggest it is a fool's errand to try to identify it *ex ante*. It is worth noting here that alpha is generated in real time. Often, research identifies betas *ex post* that were responsible for the return stream, but if those betas were not previously available in any low-cost, easily accessible solution, then they may not have truly been betas at that time. Perhaps then, true alpha rests in a manager's ability to identify the next as-of-yet undiscovered beta.

All of these arguments have their proponents both in academia and the practitioner community, and a great deal of intellectual capital has been spent in this semantic debate. However, at the end of the analysis, it may not matter.

Rather than approaching manager selection purely as the search for alpha generators, it might be more effective to display a bit of humility in acquiescing that alpha is hard to find and if you do find it, you might have very well simply misidentified some beta(s). Such an approach accedes to the commonly employed methods of evaluating individual manager performance, but also concedes that these methods are imperfect and their results should be taken with a grain of salt. Any individual financial model is only as good as its inputs, and relying solely on any one introduces model risk, and hence frailty, to the equation.

Additionally, the ability to hold contradictory hypothesis simultaneously may be an advantage in conducting performance analysis. Alpha does exist, but it is extremely rare. It is difficult to find, but investors still try. When someone does find it, it is most likely luck or a mis-specified beta. Acknowledging that the "alpha" game may well be an exercise in futility allows manager researchers to simultaneously search for managers that also access betas and replicable investment processes which generate attractive risk-adjusted and stand alone returns in addition to the potentially futile search for

alpha. Managers that can generate desirable performance on all measures may be less likely to disappoint in future periods.

This more robust approach to performance analysis includes multiple albeit sometimes contradictory methods of looking at the same problem. Such an approach is even more relevant in the difficult to benchmark world of hedge funds or absolute return investing. A multi-layered, multi-period performance analysis to evaluating historical returns may provide a better foundation on which to base expected future returns. The author recommends a three pronged approach to evaluating historical returns: attempting to find managers that have demonstrated evidence of generating acceptable returns across multiple measures of alpha, as well as traditional risk-adjusted return such as the Sharpe ratio and also simple total return. After all, you don't eat Sharpe ratio, you also don't eat alpha. You eat total return.

Here the author furthermore proposes a more generalised form of alpha, or investment skill. The search for alpha is really the search for managers with a steeper learning curve than other managers, that is the ability to find attractive betas or market exposures that are not yet widely accessed by other market participants or appreciated by the broader financial academic community.

This then focuses the discussion around the second P, People. In analysing the people responsible for creating the performance, the due diligence professional should search for the presence of characteristics shown to be associated with cognitive skills and learning ability. The presence of these traits may increase (decrease) the probability that the attractive performance results were likely attributable to skill (luck) and thus may increase the probability of the continuation of desirable performance in future periods.

Readers should note a final word of caution on performance analysis. Humans, despite our best efforts at rationality, suffer from several well documented biases in decision making. During the discussion on the Five Ps we will endeavor to address some of the most significant biases as they relate to each section. The obvious goal of this is the hope that awareness of these mental heuristics can support a conscious effort to counteract their effects.

Any attempt to find investment managers who have generated superior returns in the past is very likely subject to the recency effect, or as it is more commonly known in investing, performance chasing. Simply put, the recency effect is the tendency for people to place undue weight on recent events or data points. The result of this bias in an investment context is that investors, both individual and institutional, tend to believe that the future will look to a great extent like the immediate past. So, they have a tendency to buy stocks that have recently gone up and naïvely hire managers that have dramatically outperformed.

Using a dataset of over 3 million retail transactions provided by a discount broker/dealer, Barber and Odean (2008) discovered that most purchases of stocks by individuals, approximately 75% of the transactions, occur on days immediately after the stock was amongst the top performers in the market. Subsequently, those purchases underperform the market by 1.6% over the next month. Similarly, Goyal and Wahal (2008) conducted a study of 3,400 pension plans and other institutional investors over a ten year period. The authors determined that institutional investors were also much more likely to hire investment management firms after recent periods of outperformance. Once again, those hires consequently went on to underperform their peers, although it should be noted this study addressed traditional asset managers rather than hedge funds.

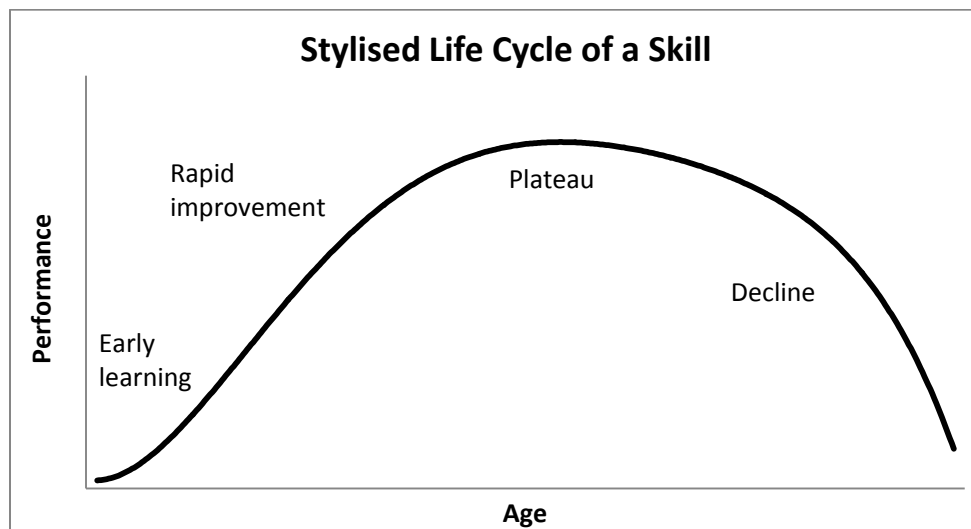
So although due diligence begins and ends with performance, it is important to ensure the due diligence professional is vigilant against biases, and approaches the analysis with a healthy dose of humility to avoid to the greatest extent possible naïve performance chasing.

People

Once it has been determined that the historical returns of an investment manager are at least consistent with, if not proof of, the presence of alpha and investment skill, the next step is to perform an assessment on the management team. First, if we theoretically accept the premise that investing is a task, than logically some investors must demonstrate more skill at that task than others. While the percentage may be low and identifying the skilled individuals may be challenging, it would be a unique task indeed at which every member of the human race was equally talented. Next, we can turn our efforts towards other research at measuring the acquisition of skills related to job performance.

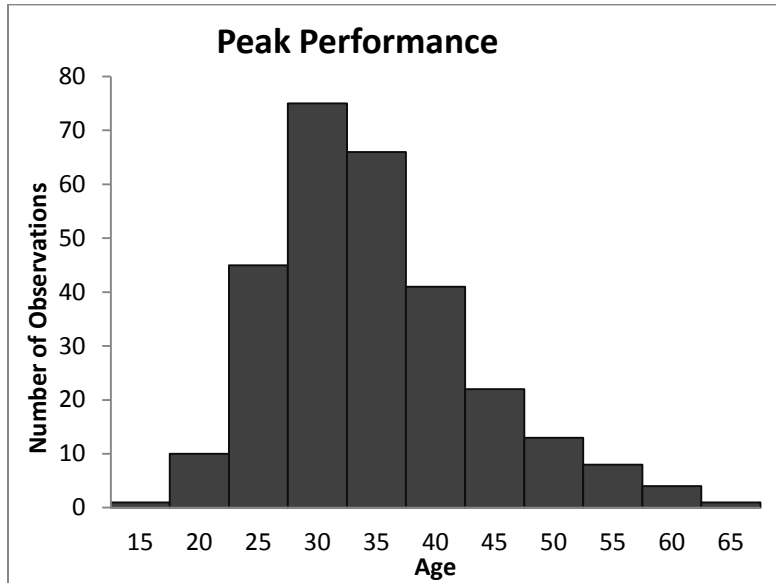
Broadly speaking, skill can be defined as a learned ability to carry out the performance of a given task. It represents the intersection between innate ability and practice. As a performer practices a skill, they tend to improve until reaching the natural limits of their ability wherever those limits may be. And unfortunately for all of us, there exists a decline function for all skills as well (see Figure 3). Father Time, as the saying goes, is undefeated.

Figure 3 – The Life Cycle of a Skill



Kanazawa (2003) researched the performance of 280 notable scientists over several hundred years across disciplines such as mathematics, physics, chemistry and biology, documenting the date of their peak scientific discovery. At first glance, peak performance may seem somewhat difficult to define, but Kanazawa used the research that is first noted in the scientists' biographies and for which they were eventually most widely known as the point of the peak. In many instances, the scientists went on to subsequently receive Nobel prizes in their respective fields for the research that was performed at this peak, validating this methodology. Kanazawa's work indicated a peak performance age of roughly 35 years, with the contributions to their field declining monotonically thereafter (Figure 4). Utilising a similar methodology, the author documented similar curves for the performance of musicians, artists, authors and even criminals.

Figure 4 – Peak Performance



Source: Kanazawa (2003)

On a happier note, cognitive abilities should be markedly different than physical abilities at least in terms of the steepness of their decline function. While Michael Jordan may no longer be the greatest current basketball player on the planet (or realistically even capable of playing professionally), many investors such as Warren Buffet, Jim Simons and George Soros have continued to generate impressive returns later in their careers.

Schmidt et al. (1986) argued that cognitive ability is the primary determinant of job performance and the influence of cognitive ability on job performance remains relatively stable or increases over time. Their research also established that experience does certainly affect job performance, but unlike cognitive ability the impact of experience decreases over time. Murphy (1989) added to the discourse by reasoning that cognitive ability was critically important to performance during learning stages. However, the author argued that ability becomes less important once the skill has been learned and performance of the task has largely stabilised during the plateau phase. Importantly, Murphy proposed that cognitive ability is more important in general for tasks which are highly complex and adaptive and which operate in dynamic, changing environments.

Korniotis and Kumar (2007) looked at investment skill directly by exploring the investment choices of older retail investors. The authors controlled for numerous variables in an attempt to isolate the effects of age and investment experience independently. All else being equal, investors were able to increase the Sharpe ratio of their portfolio with experience, demonstrating learning and skill improvement. However, consistent with theories of cognitive aging, skill deteriorated sharply around age 70 on average, and older investors begin to use mental heuristics more which resulted in inferior performance by approximately 3% to 5% per annum in risk-adjusted terms.

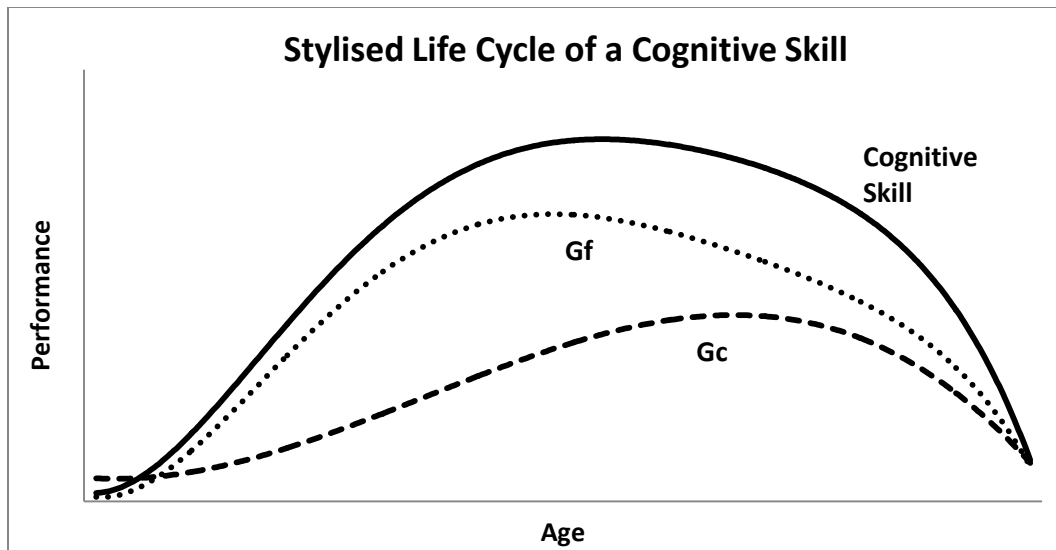
How can such varied and inconsistent findings on skills and job performance assist in the evaluation of investment managers in the alternatives arena? Perhaps a deeper look at a foundational theory of intelligence will help to coalesce these findings.

In 1963, Raymond Cattell⁹ proposed a theory of intelligence (Cattell [1963]) that described two distinct processes or types of intelligence: fluid and crystallised intelligence. Fluid intelligence, denoted as Gf, refers to an individual's capacity to think logically and solve problems. Largely independent of acquired knowledge, it is what most intelligence quotient exams purport to measure. While not entirely static over any individual's life, it is often thought of as raw brain power. In short, fluid intelligence is an ability. On the other hand, crystallised intelligence, or Gc, represents the aggregate sum of knowledge acquired over the course of an individual's lifetime. Clearly, this expands greatly with age. Gc can be then be accurately thought of as experience.

Later research provided additional support for these two types of intelligence as fundamentally separate processes¹⁰. While it is inherently attractive to view these factors as entirely independent, the preponderance of the evidence suggests this is a bit simplistic. First, and most obviously, individuals with high levels of Gf tend to acquire more Gc in total and do so at faster rates. Additionally, higher levels of Gc allow individuals to process information more efficiently, which mimics Gf. For example, a chess master can look at a chess board mid-game and instantly recall the positioning of all chess pieces, whereas I could only recall a handful of pieces. This does not mean the chess master necessarily has a higher Gf; rather, their larger knowledge base allows them to process groups of pieces into known formations, and then they simply recall those formations. So, similar to alpha and beta, it is almost impossible to completely disentangle fluid intelligence from crystallised intelligence.

In fact, most IQ exams are unable to completely strip out the affects of Gc and are not themselves pure measures of Gf. So while the evidence is somewhat mixed¹¹, it appears that fluid intelligence tends to peak earlier in life, decreasing moderately while crystallised intelligence steadily increases until both Gf and Gc are ultimately severely impacted later in life as generalised cognitive decline sets in.

Figure 5 – Life Cycle of a Cognitive Skill



Performance of a cognitive skill (see figure 5) is thus a function of these two intelligence factors. Evidence suggests that the fluid intelligence factor, or ability, has a higher loading on the final skill function than does crystallised intelligence, but experience can mitigate the effects of modestly decreasing fluidity for quite some time. In fact, Chaudhuri et al. (2013) demonstrated that equity mutual fund managers with Ph.D.s have outperformed those without such degrees across all measures of performance – gross returns, net returns, four-factor alpha, Sharpe ratio and information ratio (although it should be noted that this paradigm suffers from a familiar difficulty in attributing a PhD solely to increased Gc when it could also be evidence of self selection bias of individuals with higher innate Gf levels as well). So, if ability is a multiplier on experience, then both factors are still important.

In the context of investing, peak performance then likely occurs nearer to peak fluidity than peak experience, however these relationships are different not only across individuals, as people have different learning curves, but also across the type of task being performed. For instance, a strategy with

a wider range of potential outcomes and more unknown risks may be better managed by an individual with a higher Gc score but farther from peak Gf, whereas a younger manager close to peak Gf may be better suited for managing active trading strategies that require dynamic discretion and have more normalised return distributions. Further, this could partially explain the inconsistency in different research findings on persistence of performance, as theoretically there would not be a stable relationship across time for all strategies and managers.

There are of course other qualitative characteristics that are critical within the context of evaluating people. Along with intelligence, these are integrity, intensity, and intellectual honesty. It is critical to find managers that bring a high degree of integrity to their work. This obviously encompasses individuals committed to employing business practices consistent not only with all applicable laws (at the very least) but also ideally industry best standards, such as compliance with the CFA Code of Ethics. A due diligence professional should review the firm's code of ethics, personal trading policies, valuation practices, etc. as well as conducting industry references and background checks on key individuals. Importantly, there is often a distinction between managers that treat all limited partners as true partners as opposed to mere clients. Investment managers who do the former tend to have much stronger alignment of interests such as receiving a larger percentage of their net income either from performance fees or from their own investment in the fund than they do from management fees.

A not unrelated concept is intensity. It is important to find managers that are highly engaged and passionate about investing. Their focus should be on generating the desired returns to all partners in the fund above all else. This trait should have an element of competitive drive about it stopping just short of obsession. Managers should love what they do and want to be the best at it. Some academics in cognitive psychology have argued that low scores on measures of fluid intelligence are not ipso facto proof of low problem solving ability. Rather, the cognitive effort required to successfully perform a task may not be worth the exertion by the performer unless they are fully engaged in the task. Hence, an engaged and passionate investment manager is a necessary but not sufficient condition for persistence of performance.

Finally, an investment manager must display intellectual honesty. That is, they must be willing to search for evidence that contradicts their initial investment hypothesis rather than merely looking for confirmatory data. Essentially, they must be willing to admit when they are wrong. This is actually

harder than it sounds, as indicated by a great deal of research on the confirmation bias. Humans enjoy listening to their internal yes-man! Furthermore, it may be even more challenging to find someone who readily admits to errors given the competitive nature of many in the investment industry where preventable mistakes are highly undesirable. This requires the due diligence professional to attempt to distinguish between people who don't like to *be* wrong, who often proactively address and correct their own mistakes, and those who don't want to *look* wrong, who cover up mistakes rather than address them, often by doubling down, moving trading errors into other accounts, failing to address process errors by projecting blame externally, etc. Interestingly, recent research by Cimpian and Salomon (2013) proposed that individuals with high cognitive abilities as well as those who prefer careful deliberation during decision making are less prone to the effects of certain cognitive heuristics and biases than others. Highly intelligent people may make fewer mistakes and may be more prone to correcting them when they do occur.

In summation, when selecting investment managers, due diligence professionals should seek firms that have people who demonstrate high levels of creative problem solving and flexible thinking in positions of investment decision-making. It is important to complement these attributes with sufficient investment experience, integrity and a passion for the job, all of which should serve to make performance of the task of investing a more stable and predictable outcome.

Philosophy

Not surprisingly, the philosophy of the firm usually occurs as a natural extension of the personalities of the individuals who manage the business and investment processes. That is, the philosophy of the people manifests itself as the culture of the firm. Moreover, this philosophy drives the theoretical framework of the strategy as well as the processes responsible for the implementation of the strategy. Interviews with multiple members of the firm across functions such as investments, operations, legal and accounting can assist the due diligence professional in obtaining an accurate picture of this philosophy. It is sometimes even possible to spot a potential issue when several different individuals describe the investment philosophy or corporate culture in markedly different manners.

It may also be feasible to identify certain characteristics related to the philosophy of an investment manager that make superior returns more or less likely in the future. The most simplistic distinction often discussed regarding investment firm philosophies relates to the core philosophy of how the firm

generates the revenue in order to compensate shareholders or partners and employees. Investment managers can be broadly thought of as performance shops or asset gatherers. This commonly held belief suggests that firms which fall closer to the asset gatherer end of the spectrum tend to be focused on accessing new distribution channels, launching new products and raising capital, and also tend to receive more revenue in the form of asset-based management fees. Such firms may be less engaged in the effort of generating returns, which research on cognitive skills suggests may result in lower performance on that specific task. On the other hand, investment firms which are closer to being true performance shops tend to generate more revenue from performance fees or investment gains on proprietary capital and tend to display more fund-size discipline. Such firms should theoretically be more likely to generate superior subsequent investment results.

Once again, we turn to empirical evidence that addresses these suppositions. Liang (1998) documented that hedge funds with high water marks outperform those without them. Agarwal et al. (2009) showed that funds with greater alignment of interests, proxied for by higher levels of managerial ownership and management investment in the fund, delivered superior performance. Joenvaara et al. (2012) confirmed these findings. Research from Prequin (2013) on the impact of fees suggested that the hedge fund managers who charged the highest performance fees did in fact generate the highest returns over multiple time periods. Hedge funds that charged incentive fees of more than 20% generated annualized net returns of 10.55% and 10.73% at the 5- and 3-year periods compared to 7.31% and 6.89% respectively for funds with incentive fees less than 20%. The effect held on a risk adjusted basis as well.

Conversely, there are numerous studies on fund size and asset growth that suggest these characteristics are inversely correlated with future returns. Chen et al. (2004) investigated the effects of fund size on mutual fund performance and documented that fund returns, both gross and net, decline as size increases. They found the effect was strongest for funds with less liquid small cap exposure, suggesting capacity constraints may cause the diseconomy of scale.

Turning to absolute return managers, Fung et al. (2008) researched an extensive data set of funds of hedge funds, investigating directly the impact of asset flows on performance. The authors found that amongst funds of funds that did generate alpha historically, those that experienced significant ensuing capital inflows suffered reduced future alpha levels compared to those that did not. Teo (2009) documented a strong negative convex relationship between hedge fund size and future risk

adjusted returns and estimated the effect to be 3.65% per annum in favor of smaller funds. Like the earlier Chen et al. (2004) mutual fund study, the effect was stronger for more illiquid strategies, suggesting capacity constraints as a causal factor. Ding et al. (2008) concluded that smaller hedge funds outperformed on a total return basis but not once adjusted for risk, while Joenvaara et al. (2012) confirmed that smaller and younger hedge funds outperformed larger and older ones, although their effect remained significant even when properly adjusted for risk.

Table 3 – Pertrac 2011 Size Effect

Metric	Small Funds	Mid-Size Funds	Large Funds
Annualized Returns	13.60%	10.87%	10.00%
Standard Deviation	6.95%	5.94%	5.96%
Sharpe Ratio	1.17	0.95	0.82

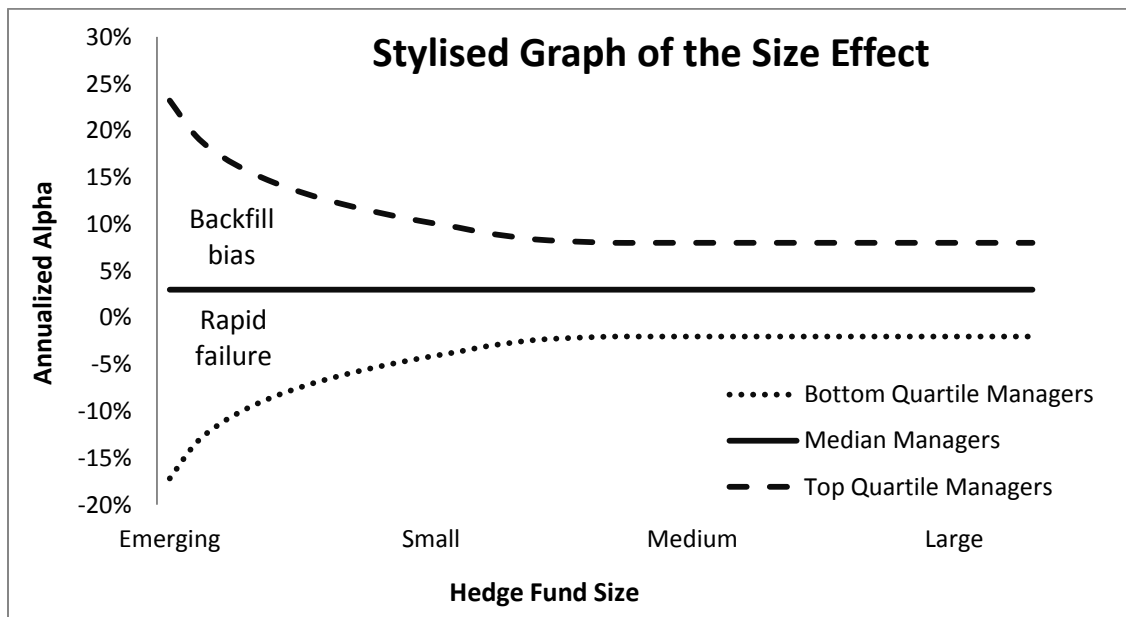
Pertrac (2011) presented an analysis (see table 3) whereby roughly 4,500 hedge funds were bucketed into three size groupings: small (less than \$100 million), mid-size (between \$100 million and \$500 million) and large (over \$500 million). This research demonstrated a clear monotonic inverse relationship between size and performance. Further, small funds outperformed large funds in every single calendar year between 1996 and 2010 with the exception of 2008. However, Ibbotson et al. (2011) presented research with the exact opposite findings. Using a similar sized sample from 1995 to 2009, the authors found that after properly controlling for the higher backfill and survivorship biases found in small funds, larger hedge funds actually displayed higher net and risk-adjusted returns (table 4).

Table 4 – Ibbotson 2011 Size Effect

Metric	Smallest 50%	Largest 50%
Annualized Returns	6.85%	8.50%
Standard Deviation	7.20%	6.75%
Sharpe Ratio	0.13	0.20

Clearly, research on the size effect has been conflicted, and practitioners are equally divided on this issue. Some of the research has probably suffered from higher levels of sampling bias within the small funds, which resulted in returns being overstated, while the design of other studies confounded the effects of size and age. Still others may not have accurately discounted for beta or risk since betas often are highly dynamic and volatility does not fully capture risk in the non-normal world of hedge funds, resulting in potentially overstated alpha or risk-adjusted returns. In light of all the analysis, it is difficult to say whether or not small funds outperform, although they probably do display wider dispersion of returns between managers and a higher failure rate.

Figure 6 – Unifying Size Effect Theory



The stylized view of the size effect above (figure 6) can accommodate most of the research described earlier, even findings that directly contradict each other. For instance, smaller funds may generate higher average returns, but may do so with commensurately higher risk. In this case, alpha would be no greater than larger funds. Some research also indicates the relationship between size and performance is negative and convex, as is captured in the top quartile line. Research that eliminated those small funds in the rapid failure section, where most hedge fund failures occur, would have a substantial survivorship bias, and show precisely such a relationship. Finally, perhaps

smaller funds do in fact demonstrate a slightly higher median alpha, and the line may have a slight negative slope to it. Even in this case, the effect of a slightly higher alpha for the median small manager could still easily be dominated in scale by a much larger effect due to dispersion of returns.

Regardless of one's interpretation of these conflicting studies, if there is a size effect, there are two plausible explanations for it. First, a direct causal explanation suggests that it may simply be harder to generate the same returns on a larger pool of capital given a constrained investment opportunity set, as the increased assets will result in higher bids and/or lower spreads, essentially arbitraging away the potential returns. Alternatively, a change in primary focus of the firm from return generation to capital-raising could suggest that lowered cognitive exertion on performance and higher efforts exerted towards sales would result in both weaker returns and increasing assets under management. If there is a size effect, it is highly likely that both explanations do in fact occur to some degree, but is it possible to isolate the impact of a reduction in cognitive effort towards performance?

The answer is perhaps. Some research on performance has successfully isolated the effects of firm size and firm age. Unlike the age of an individual, which is demonstrably related to levels of intellectual ability and experience, the age of a firm is more related to career development. A well tenured firm is far more likely to be run by a more seasoned management team, whereas a start-up is more likely to be managed by earlier to mid-career professionals. Career stage is admittedly also related to age and experience making this a confounding variable, but earlier and mid-career professionals are also highly motivated to grow their income and achieve financial success. Later stage investment professionals are far more likely to have already acquired significant wealth and on average have less utility in acquiring more. If so, we should expect evidence that younger hedge funds generate high total returns.

Aggarwal and Jorion (2008) investigated the performance of hedge funds by age to determine if after properly controlling for biases and other variables there remained a measurable age effect. The authors found that even when controlling for size, each additional year of fund life resulted in an average decline of performance by 48 basis points per annum. This effect was found to persist for up to five years, and was more pronounced if the fund grew larger as well. Their study also demonstrated that persistence of

performance, both good and bad, was even stronger for young funds. Interestingly, previously discussed research by Boyson (2008) also observed that persistence of performance is strongest for young managers with a positive alpha in the past. Using a large consolidated database of hedge funds, Joenvaara et al. (2012) also confirmed that younger firms outperformed older ones on a cross-sectional basis. Finally, Pertrac (2011) grouped hedge funds in their database into three buckets by age: young (less than two years), mid-age (between two and four years) and tenured (older than four years). Similar to their findings on size, they documented an inverse relationship as performance monotonically decreased as fund age increased. Additionally, the age effect which Pertrac demonstrated was far more economically significant than the size effect.

Table 5 – Pertrac 2011 Age Effect

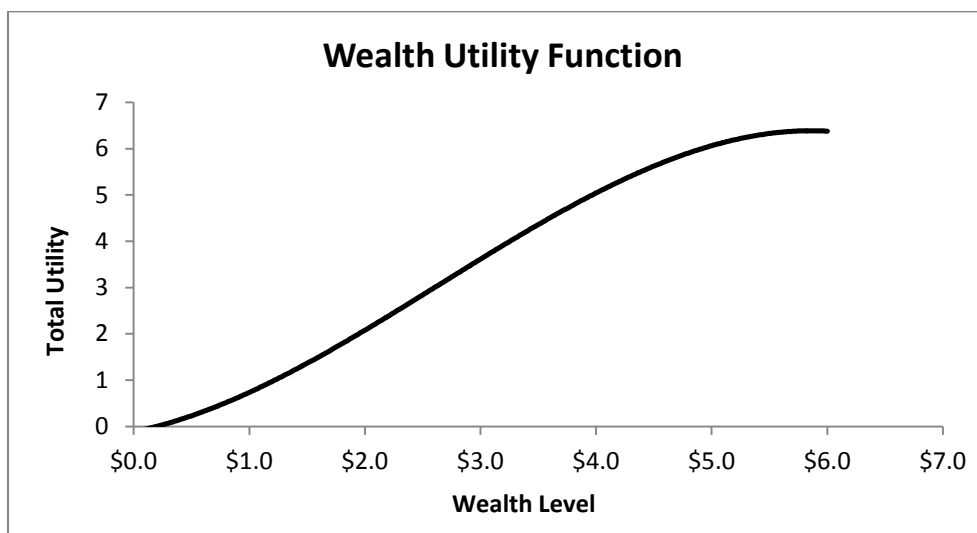
Metric	Young Funds	Mid-Age Funds	Tenured Funds
Annualized Returns	16.18%	12.20%	10.92%
Standard Deviation	6.37%	7.04%	6.77%
Sharpe Ratio	1.63	0.98	0.85

If in fact this firm age effect is related to a reduction in effort towards return generation rather than merely fund size or cognitive age, then other research should provide evidence of increasing risk aversion at higher levels of wealth, or put another way, diminishing marginal utility for additional units of wealth at successively higher levels of net worth within the behavior of other investors or financial decision makers. Consistent with this hypothesis, a good deal of research on wealth levels and income does reveal increasing levels of risk aversion at higher levels of total wealth across multiple financial contexts¹².

Friedman and Savage (1948) created a theoretical framework to describe the behavior of risk takers based upon classical economic theory of utility functions. The authors effectively showed that non-linear utility functions could correctly describe the behavior of individuals who both purchased lottery tickets and insurance, as risk appetite/aversion could be variable across different levels of possible gains/losses. Markowitz (1952) incorporated some empirical evidence on actual chooser behavior, such as a greater willingness to pass on a certain \$10 for a 10% chance at \$100 (90% chance of \$0) versus a much lower

appetite for the same level of risk when given a choice between a guaranteed \$1,000,000 or one-in-ten odds of \$10,000,000. However, he noted most people were more willing to accept with certainty owing \$10 in order to avoid a one-in-ten chance of owing \$100, but everyone chose to accept the 1/10 odds of owing \$10,000,000 in order to avoid the certainty of incurring debt of \$1,000,000. This thus described a utility function that was initially concave, becoming convex as the levels of possible gains increased (see figure 7).

Figure 7 – Wealth Utility Function

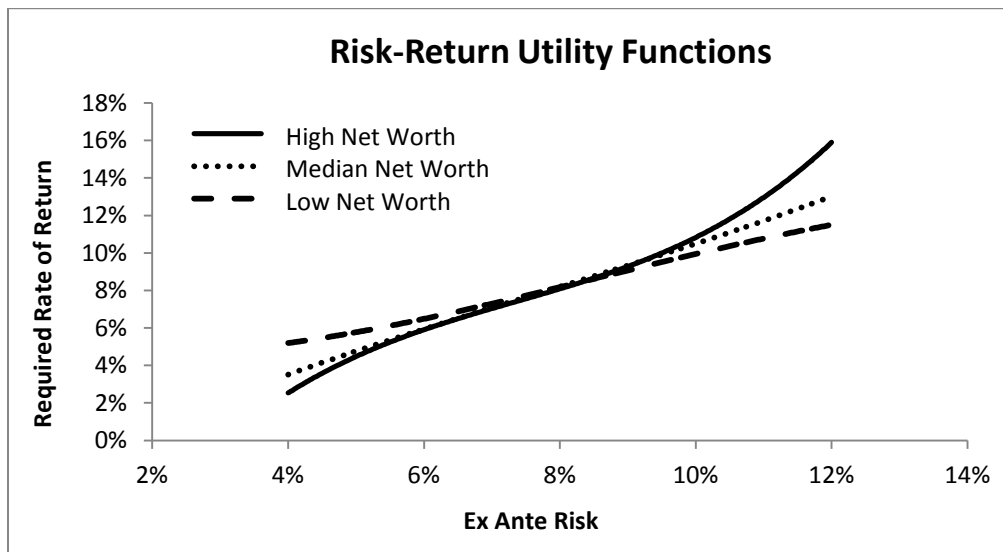


More recently, Halek and Eisenhauer (2001) investigated the demographic characteristics of 2,400 households with life insurance policies in order to estimate a coefficient of relative financial risk aversion across families. While a bit complicated, their findings in short seem to suggest that risk aversion begins to increase steadily at high levels of household wealth (i.e. net worth above \$1,000,000). In another study, Holt and Laury (2002) conducted an experimental design using 175 MBA students as participants who were presented with a series of lottery options ranging from low risk/low weighted-average expected payout to high risk/high weighted-average expected payout. Subjects progressively selected the lower risk option as the absolute level of possible payoffs rose, demonstrating increasing risk aversion with increasingly larger potential gains.

These studies suggest a reduction in cognitive effort towards performance may not solely be related to a desire to increase capital raising efforts, but may simply result from a decrease in the risk tolerance of the investment professionals due to increasing personal net worth. Anecdotally many firms have personally indicated that they have intentionally reduced risk levels as the firm has aged, consistent with this theory. It also brings to mind a conversation with a younger hedge fund manager who once bluntly stated, “My goal is to become a billionaire. What’s the goal of the other guys who have already gotten to a billion? To stay a billionaire.”

Reframing this wealth utility function in risk-return space might yield risk-return trade-offs that shift over time as an individual’s status changes (see figure 8). It is possible that an individual in the wealth accumulation phase of their career has a different utility for investment risk¹³ than the same individual does after accumulating the desired wealth. Put another way, the required rate of return per unit of risk could be much higher at higher risk levels once sufficient wealth has been amassed because generating an additional unit of wealth has less utility given the increasing risk to capital to do so. At the extreme, the required rate of return for a level of risk an investor simply refuses to accept would be infinity, whereas the required rate of return at lower risk levels would be far lower, since preservation of wealth itself has high utility.

Figure 8 – Risk-Return Utility Functions



One might thus conclude that invariably waiting until a fund has generated a full three-year track record could be counterproductive. However, it should be clear at this point that firm size and age, like most other characteristics of investment management firms, represent spectrums across which a due diligence professional must generate an evaluation, not simple “good” or “bad” traits. Instead, younger funds may be more appropriate for investments intended to meet a portfolio objective for return enhancement whereas older funds may be more suited for capital preservation or diversification needs.

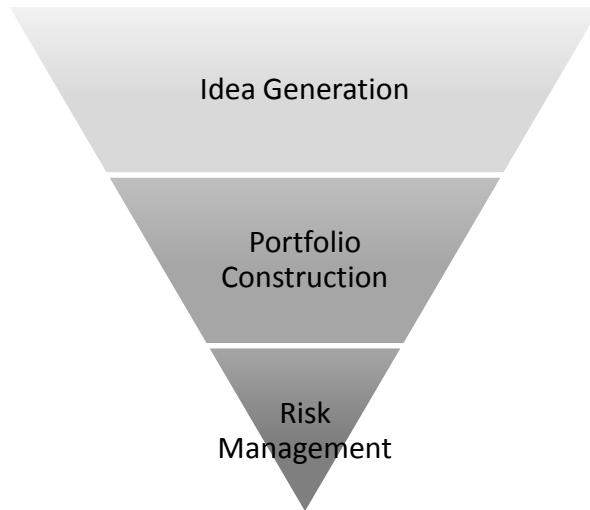
It is important for the due diligence professional to fully understand the investment objectives of the firm as well as the people managing the firm. When you are hiring a firm, you are really hiring people. Individuals at different stages of their careers or from different backgrounds and lifestyles are unlikely to have the same personal risk-return utility functions. And it is only when those individuals are fully engaged in the task of investing in such a way that their personal risk-return function, and by extension the firm’s, is truly aligned with those of investors that a successful outcome is most likely.

Process

Process represents the implementation of the investment philosophy. The investment process is where many due diligence professionals spend a large percentage of their time, and perhaps rightfully so, as it may be the most important of the Five Ps. A great process sustaining an average philosophy is more likely to result in an acceptable investment outcome than the best investment strategy in the industry supported by a terrible process. There are characteristics which a due diligence professional can investigate in order to understand an investment process and hopefully if it is appropriate and repeatable. Ultimately, however, the author acknowledges that the final output of any process is the most objective arbiter of its success.

While the specific questions to address during the analysis of this particular P can easily be tailored to the individual investment strategy, there is a conceptual framework that can be employed to successfully manage the approach to understanding the investment process. A formal investment process typically has three distinct functions that should be diligenced separately. These are idea generation, portfolio construction and risk management (see figure 9).

Figure 9 – The Investment Process



First, idea generation is the process whereby investment professionals scour the investable universe in search of potential opportunities. This process can be thought of as the top of a funnel, with numerous sources and inputs flowing into a pipeline. The researcher sifts through various pieces of information in order to identify the opportunities that are most attractive. Idea generation here shifts from an identification focus to an analysis focus, as the most attractive opportunities are then more thoroughly analysed and vetted, although in practice both processes occur simultaneously and dynamically in a real-time setting. Idea generation usually involves some combination of the following internal and external inputs: quantitative screening, reading sell side research, building valuation models, parsing economic data, speaking to professional contacts, and internal discussion and prioritization. Only once the most attractive opportunities are fully understood can the proceeding step begin.

Next, portfolio construction occurs. This is the process by which the individual trades or securities that are deemed to be the most appropriate for the investment objective are added to the portfolio. During this stage, rather than merely researching the stand-alone characteristics of the potential investments, the portfolio manager analyses the impact of adding the position to the portfolio whole. It is the portfolio construction process that codifies idiosyncratic procedures for how a trade may be structured, when it will be entered or exited, or how it will be sized, as well as allocation targets or limits for the entire portfolio in aggregate. These guidelines should also include how much leverage will be utilized,

how much exposure the portfolio will have to specific asset classes or geographic regions, or even how many line items the portfolio will contain. Portfolio construction may include the use of quantitative tools such as mean-variance optimizations as well as more qualitative inputs and should ultimately represent the sum of the institutional knowledge and best ideas of the entire investment organisation.

Logistically, the process should occur at regular time-frames or intervals to ensure dedicated attention and should require oversight and input from multiple senior people on the investment side. Some portfolio construction processes are more reliant upon the judgment of a certain individual, resulting in higher “key man risk.” And some, such as purely quantitative or so-call “black box” approaches, provide significantly less transparency into the actual decision making process. These may be risks the due diligence professional simply does not wish to accept, or they may require greater scrutiny of the individual portfolio manager or a more detailed submersion into the parameters of the model or the model-building process.

Further, the discussion around portfolio construction should address any changes that may have been made to the process and why. Understanding how this process has evolved over time not only permits a better understanding of how historical returns were generated but also how robust and replicable the process should be going forward, the latter point a prerequisite for setting accurate future return expectations.

The final step in the investment process is risk management. This is an ongoing, iterative process to ensure the portfolio is continually invested in accordance with the guidelines set forth in the portfolio construction process. The individuals responsible for risk management, ideally separate from those overseeing portfolio construction, at a minimum should conduct position and exposure level analysis to ensure limits such as asset class exposure, leverage and individual position size maximums are adhered to. Often, they will include scenario analyses or Monte Carlo simulations to provide approximations of what may happen in adverse market conditions to ensure that such an outcome is within tolerable ranges. Increasingly, risk management also employs statistical tools to investigate the presence of any unintended or undesired factor exposures as a result of accumulated individual positions. To be truly effective, risk management must include a formal process rectify unwanted exposures or correct risk limit violations, otherwise it is merely risk measurement. Risk management becomes increasingly

important for portfolios with large numbers of trades or line items, as well as those that employ significant amounts of leverage or have significant embedded basis risk.

It should be noted that it is critical to ensure the entire investment process is robust, repeatable and thoroughly understood, which necessarily requires meeting multiple investment professionals from research, portfolio management, trading and risk. Obviously, the description of the process should be consistent across all individuals interviewed. Additionally, it is likewise critical to engage more comprehensive operational due diligence in this section in order to be certain that the investment process has an appropriate level of operational infrastructure and support. If the portfolio construction process represents the implementation of the investment philosophy, then trading and back office represent the execution of that process.

As has been mentioned, different strategies will have very different processes, and justifiably so. And as a result of this, they will likewise require very different types of operational support. For instance, a discretionary absolute return currency manager that uses interest rate differentials and other macroeconomic signals to build a very concentrated portfolio of 6 to 12 month trades has much less need of a significant trade execution and processing infrastructure than does a systematic shop that utilises intraday price and volume data to make hundreds of trend and mean reversion trades daily. While this example seems obvious, many characteristics of the investment process are less so. It is only through the evaluation of a large sample of comparable managers that the characteristics more often associated with the successful implementation of a particular investment strategy or style become apparent.

Finally, there is a tendency for manager research professionals that have fairly deep asset class experience, for example former bank currency traders researching macro funds, to rely extensively on their past experience in assessing the processes and practices of a given manager. While such a tendency is understandable, and certainly not entirely undesirable, it becomes a problem if the due diligence professional applies an overly rigid and proscriptive lens to assessing processes, essentially discounting practices that are not consistent with their prior investing experience. Often, there is no singular “right” way to implement a process. Rather than searching for optimal, due diligence professionals should keep an open mind and assess the effectiveness of the process relative to the manager’s particular strengths and weaknesses as well as the requirements of the given strategy. Often

times, successful managers will build processes that systematise areas of weakness and provide more flexibility and discretion around their particular strengths. Understanding what is and isn't most likely to be effective given the strategy and the manager's particular skill sets is a key to success.

Portfolio

The final P involves analysing and understanding the current exposures in the portfolio. Just as the philosophy of the firm develops from the people, the portfolio manifests itself as the natural result of the investment process. Analysing the current portfolio is important not only to ensure that the manager is being consistent with their stated philosophy and in compliance with their processes and risk guidelines, but also to ensure that the fund itself is appropriate given your specific portfolio context and required rate of return. Also, accurately establishing parameters for expected return distributions necessitates this final step.

Assessing the portfolio may begin with a discussion around current top positions or best ideas in the book. Not only do top positions generally contribute the bulk of the attribution, they should also represent the crystallisation of investment theses that are consistent with the investment philosophy. This exercise could be conducted for both longs and shorts, and it is also helpful to address the largest contributors, positive as well as negative, to recent performance. Sometimes it is also valuable to discuss smaller line items, as the familiarity of senior investment professionals or portfolio managers with marginal positions can indicate the amount of engagement across the firm or help demarcate lines of responsibility.

The analysis of the portfolio should also include a complete and thorough examination of both gross and net asset class exposures, countries or geographic region allocations, industry sectors and issuer concentration, among other similar exposure statistics. The due diligence professional should explore the liquidity of the portfolio, investigating what percentage of the assets could be liquidated daily, weekly, monthly, etc. as well as what percentage is in exchange traded or listed products versus over-the-counter and similarly Level 1, Level 2 and Level 3 assets.

Finally, it is critical to generate an accurate understanding of the total amount and types of leverage embedded in the portfolio, as leverage itself is a significant risk factor. In fact, Bertelli (2007) looked at

leverage as an operational risk factor, providing empirical evidence that excessive leverage in and of itself, defined specific to each individual hedge fund strategy, results in increased default risk and higher probability of loss. However, it is important to have a fairly granular understanding of leverage and where it is used, as opposed to merely broad portfolio-wide averages that can obscure as much as enlighten.

First, there three main types of leverage in financial markets: financial leverage, margin leverage and synthetic leverage.

Financial leverage represents borrowing capital in order to purchase positive expected return generating assets. Financial leverage is easy to understand and operates identically to a home mortgage. Certain situations are more conducive to applying modest financial leverage such as on short term high probability investments with longer dated fixed rate borrowing, whereas the same amount of leverage creates far greater risks in other scenarios, for instance a longer dated asset with greater uncertainty of returns financed via short term, floating rate debt which needs to be continually rolled. Financial leverage can come from numerous sources, including broker/dealers, banks and other third party lenders. This leverage will usually have assets pledged as collateral against it, but in certain circumstances may not.

Margin broadly refers to the amount of collateral, either cash or assets such as treasuries, required by a broker for the purchase of a derivatives contract. In the case of exchange traded futures, it is generally referred to as futures margin of one type or another. Margin leverage functions similarly to financial leverage in that it allows an investor to control a larger amount of notional assets than their equity could otherwise purchase. One way in which it differs is that margin on derivatives contracts is usually fairly low, allowing for a much larger amount of notional assets controlled than financial leverage typically does. It also differs in that a borrower does not pay an explicit interest rate or borrowing cost in order to access margin leverage. The amount of margin required to support the position is driven heavily by the volatility of the notional amount of assets. Accordingly, ten to one leverage on a short term interest rate swap for example may present significantly lower risk to the portfolio than a similar amount of margin used on an individual commodity futures contract.

Synthetic leverage represents an amount of increased market exposure resulting from the purchase of options or other financial instruments with asymmetric payout profiles. Significantly different from the other types of leverage, synthetic leverage is independent of external lenders providing financing or requiring collateral, and the leverage is intrinsic to the instrument itself. Synthetic leverage provides its users with the opportunity to make much higher returns relative to maximum possible losses, so it does have the similar effect of amplifying portfolio returns. There is usually little to no ongoing financing charge for this type leverage; most of the cost is contained in an up-front premium.

Understanding what types of leverage are used in the portfolio, and where, is far more important than a simple aggregate gross or net figure. Finally, and similarly to process, it is helpful to examine how the portfolio has moved across time. Asset class and other exposures, as well as the use of leverage, should be analysed on a time series basis. The results of this analysis should be consistent with the parameters established in the investment process, and moreover should be congruous with the betas evident in performance analysis.

During the analysis of the portfolio, due diligence researchers hence attempt to accumulate as much information as they can about the portfolio in order to build the most informed assessment possible. Today, there are dozens of firms building data aggregation and analytics products and tools to assist in these efforts which make it possible to access more and more data than ever before, often more data than many investors have the ability to analyze in any truly additive fashion. It is imperative for a due diligence professional to know the limits of their ability as well, and avoid data overload. What good is it to compile spreadsheets full of granular, position-level data across dozens of managers if your organization does not have the tools to do anything with it? Further, while some individuals in the due diligence industry may be more capable of evaluating the attractiveness of specific positions or betas than the manager is itself, the vast majority of us are not. An effective analysis of the portfolio should thus be detailed enough to provide the due diligence professional with an accurate picture of the dominant factor, style and market exposures which will drive the preponderance of the returns going forward.

Eventually, the portfolio itself leads us back to the first P, performance, as the investment positions currently in the book will be far more predictive of future returns than past performance. Of course, the author acknowledges that predicting performance is ultimately an impossible task. However, a due

diligence analyst should at the very least be informed enough to set baseline return projections, essentially setting realistic expectations for the manager in normalized conditions. Given the challenges inherent in benchmarking alternative managers, it is crucial to set such expectations ahead of time as a yardstick by which to judge subsequent performance. Further, the analyst should be able to establish what types of market conditions should theoretically lead to strong returns in an upside scenario as well as laying out the conditions that would potentially lead to the strategy posting negative returns in a downside scenario. As many investors have come to discover, true “absolute return” is the financial equivalent of a perpetual motion machine. There is no strategy that takes money in the input side, turns a crank, and invariably generates guaranteed returns above the risk-free rate on the output side. Absolute return currency managers, even the best of them, will lose money at times. If the researcher cannot describe the theoretical conditions in which the strategy would lose money, due diligence is not complete.

And so the end result of due diligence should be a collection of realistic expectations about future performance. Clearly it is not practical to expect these projections to be perfect, and they will almost always be wrong to some degree. However, it is impossible to accurately measure and assess performance ex post facto if expectations were not properly codified in advance, a task made all the more difficult by the variable exposures and divergent strategies employed in the alternatives space. Finally, such an ongoing assessment of performance leads us to the importance of manager monitoring.

Importance of Monitoring

If it has been determined that the manager does not warrant an investment, due diligence is usually discontinued entirely or at least paused temporarily. On the other hand, if the investor does allocate to the manager, due diligence must continue after the investment is made. The process of monitoring should not be thought of as a separate step but rather a continual ongoing reassessment of the Five Ps that lead to the investment decision in the first place. Most obviously, changes in the ownership structure of the firm or turnover amongst the senior investment professionals and portfolio management require thorough re-underwriting. Sometimes changes to the investment philosophy or process are apparent and easy to evaluate. Other times, so called style drift only becomes evident upon close inspection of the current positions in comparison to previous portfolio statistics and stated guidelines. Evolution of the strategy is not automatically a reason to redeem, as such flexibility and

adaptability are key advantages of the sector. In fact, as discussed, many of the most successful managers in alternatives have adapted over time. The due diligence professional should thus evaluate whether the changes are reasonable given the manager's abilities, appropriate considering the resources and still consistent with the allocator's investment objectives.

Changes to the investment strategy sometimes reveal themselves through performance as well. Once again, acknowledging that return projections will always be wrong to a degree, it is crucially important to monitor performance and ensure it is consistent with prior expectations. In the end, it is all about performance. Investment returns that fall well outside of the range of expectations given the market conditions, both in terms of significant underperformance but also outperformance as well, are signals that should trigger additional work. Such discrepancies may be signs that either the manager is doing something that they should not be doing, or the due diligence efforts failed to generate an accurate representation of the strategy. In this case, a reassessment of the Five Ps is in order. More difficult to analyse is when ensuing performance is slightly, and persistently, below expectations with no noticeable reason. Perhaps the manager has grown slightly too large or internal priorities have changed. Or perhaps the prior returns were luck rather than skill. Or as is often the case, perhaps it is merely a transitory period of modest underperformance. Building in a margin of safety for return degradation when setting performance expectations can mitigate this challenge somewhat.

Determining whether or not the manager remains the best opportunity for that investment given the relevant opportunity cost of capital requires an intellectually honest evaluation of these manager characteristics, resisting the well-documented tendency to only seek evidence that confirms the previously established positive opinion. The due diligence analyst must be open to being wrong and should aggressively search for data that contradicts the null hypothesis, which is that the manager has skill. In the experimental design that is investing, skill can never really be proven, but it can be disproven.

There is an exercise that can be used to allow a manager researcher to disengage their emotional commitment to their current recommendations, reassess best ideas, and rationally redeploy investment capital. A blank slate analysis assumes the portfolio has no positions or the manager roster has no recommendations. This assumption allows the due diligence professional to rank managers based solely upon current expectations and recent evaluations. The objective of such an attempt is to identify both

what managers are the most attractive current investment opportunities for the next dollar out the door, as well as which managers perhaps simply no longer warrant inclusion in the portfolio and should thus be submitted for redemption.

Sobering Data

To this point, the author has invested considerable efforts in describing a conceptual framework in the hopes of allowing investors to generate incremental returns through the successful identification of investment managers. Unfortunately, we now throw a little bit of cold water on the discussion.

Table 6 – Manager Performance

Category	Average Return
Recommended	7.13%
Not Recommended	8.13%
Spread	-1.00%
Top Recommended	6.82%
Bottom Recommended	8.58%
Spread	-1.76%

Source: Jenkinson et al. (2013)

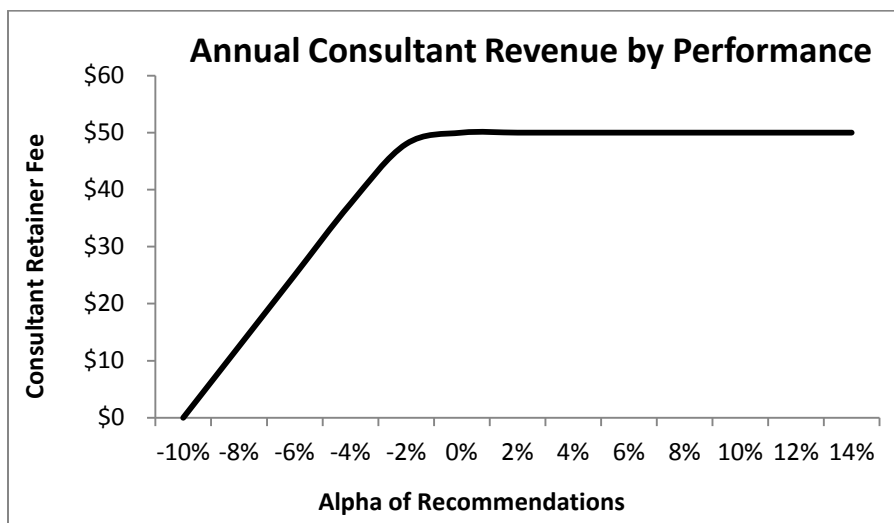
Similar to some research which shows that few if any managers generate actual alpha, there is evidence that institutional investors on average do not add excess returns through the process of hiring and firing managers. Rather, research suggests they may do the exact opposite. Jenkinson et al. (2013) investigated 13 years worth of recommendations from investment consultants totaling 90% of the market. Interestingly, this research demonstrated that managers with consultant recommendations significantly underperformed those that were not recommended. Worse, the top recommendations trailed the bottom recommendations by an even wider margin (see table 6).

Unlike institutional investors who can potentially point to timing issues and transaction costs as plausible explanations between the underperformance of hired managers, the research on consultant

recommendations isolates purely the effect of manager selection. Again, it is worth noting, that the vast majority of the activity in this study involved traditional long-only managers, particularly equity mutual funds, so the findings are not necessarily perfectly generalisable to alternatives. Also, there is one possible reason why consultant recommendations might not be expected to outperform, and it relates to a potential misalignment of incentives with their clients. Interestingly, in their study Jenkinson et al. (2013) found that performance or alpha generation was third amongst reasons given for a specific manager selection, behind both qualitative factors and service capabilities.

A proposed misalignment may become clearer when looking at the compensation structure for investment consultants. Most investment consultants simply receive an annual retainer fee for providing advice. If they perform acceptably, they receive their fee. If they perform exceptionally, they receive their fee. If they perform poorly, they are terminated and the speed of termination is directly related to the scale of underperformance. This pay-off profile resembles a short put option (see figure 10). With such a model, there is quite literally no incentive to recommend managers likely to outperform if they also come with an increased risk of significant underperformance. There is a strong incentive for consultants to avoid managers that may have a high tracking error. There may even be an incentive to allocate to managers with a high probability of very slight underperformance, if such underperformance is accompanied by other safe qualitative characteristics and a low probability of disastrous performance. Consultants recommend safety first because like the saying goes, nobody ever got fired for buying IBM.

Figure 10 – The Consultant Fee Model



Similar to high net worth investors, consultants may be engaging in active volatility avoidance, requiring higher and higher returns at respectively higher risk levels in order to feel comfortable recommending managers. One could argue this risk-return utility function thus becomes asymptotic to the maximum acceptable level of volatility, and the consultant will not recommend managers above that level, regardless of potential return in an effort to avoid an undesirable level of risk. This might suggest a benefit to an investor to performing their own due diligence. Perhaps more importantly, it highlights a need to ensure focus on performance and a rational assessment of risk-return free from non-economic constraints. However, it is admittedly helpful to acknowledge that the game of picking managers who will outperform is as difficult for investors as the game of picking stocks that will outperform is for managers. For this reason, the focus of due diligence should be on finding managers highly likely to generate acceptable returns, rather than trying to find the “best.” The temptation to want to rotate managers frequently should be resisted and a manager that is performing consistent with expectations, if not top-quartile, is doing their job.

Conclusion

In the end, success in manager selection is determined by actual performance meeting the required rate return or the expectations for that specific investment. This task becomes increasingly more challenging the harder it is to benchmark a given manager. Furthermore, any future expectations the researcher sets are also likely going to be wrong because they include expectations around both persistence of alpha levels and beta projections as well as known cognitive errors and biases. However, finding managers that have demonstrated alpha over currently known betas and have generated acceptable total returns, have characteristics consistent with steep learning curves and sufficient experience, a philosophical focus on performance and improvement, have implemented a replicable yet flexible process and have a current portfolio that is consistent with the philosophy and process is more likely to result in acceptable performance. Whether this is an overlay manager losing money on a hedging program but within the expected range or an absolute return fund generating modest returns in an equity bull market, if we define success in such a way, it becomes clear that a holistic approach to manager due diligence will lead to a much happier intersection between expectations and outcomes.

FOOTNOTES

1. Many studies have documented a relationship between size and performance for hedge funds whereby smaller managers generate higher total and/or risk-adjusted returns than larger funds. We discuss this later in greater detail.
2. Brown et al. (2009) provided due diligence researchers with a simple yet effective quantitative model that scored hedge funds across various operational and business factors. In accordance with some of the effects shown in previous research, these factors included items that proxied for presumed conflicts of interest such as utilizing related broker/dealer entities, allowing personal trading in fund holdings and significant external ownership of the management firm, as well as returns, fund age and assets under management. The authors arrived at a scoring mechanism, the ω -score, which is relatively easy to calculate and has proven to be fairly highly correlated with fund life.
3. Readers interested in more detail on the subject should consult the Greenwich Roundtable 2010 white paper "Best Practices in Alternative Investments: Due Diligence."
4. Fama and French (1996) demonstrated that three primary factors can be shown to predict individual stock returns: the equity market return, the excess return earned by small capitalisation stocks versus large capitalisation stocks and the excess returns earned by high book-to-market stocks over low book-to-market stocks. This influential paper not only ushered in an era of capitalisation and value/growth as investing styles, but ongoing research into persistent anomalies or factors related to future returns. For example, Carhart (1997) found that equity momentum was another factor predictive of stock returns, and hence the four factor model was born. Fung and Hsieh (2004) created a seven factor model to explain hedge fund returns that incorporated previous equity factors but also added factors around interest rates, credit spreads, currencies and commodities.
5. Fama and French (2009) estimated that the average US equity mutual fund generates negative alpha in net of fee returns to its investors, although the top 2% to 3% of managers may generate positive alpha. Their paper also found that the mutual fund managers in this right tail of the distribution (i.e. positive alpha) tend to have a positive beta to small capitalisation stocks and left tail funds (i.e. negative alpha) had a negative exposure to small capitalisation equities, suggesting further that this relative performance differential may have other style factors embedded in it.
6. Ling (1998) concluded that hedge funds generated higher Sharpe ratios and higher abnormal returns than mutual funds over the first half of the nineties. Similarly, Brown et al (1999) looked at hedge funds over the time period 1989 – 1995. Their research indicated hedge funds produced Sharpe ratios around 1.00 and positive alphas between roughly 4.0% and 8.0%. Ibbotson et al (2011) examined hedge fund returns from 1995 to 2009 and determined that even when controlling for database biases, hedge funds generated alpha of 3.00% on average. Furthermore, as hedge funds often have widely disparate and time

varying market exposures, models have been developed that incorporate dynamic or option-like, non-linear betas which may do a more accurate job determining if alpha is present or not. Agarwal and Naik (2000) and later Géhin (2006) among others show that these dynamic or option-like betas do a better job capturing the performance of hedge funds, as evidenced by the higher R^2 such models exhibit. Accordingly, the estimates for alpha using these models tend to be lower than the estimates found using linear betas. However, these alpha levels may still well be higher than what is present in the mutual fund industry. For example, Agarwal and Naik (2000) estimate that roughly one-third of hedge fund managers generate positive alpha, as opposed to the 2% to 3% shown by most research on mutual funds.

7. The author calculated approximate averages of alpha incorporating many different sources to demonstrate the significant difference in estimates between mutual funds, which are largely flat to negative, and hedge funds which have mostly been positive. Dispersion of returns were included as a sort of proxy for industry tracking error in aggregate, and several sources were used as well including consultants R.V. Kuhns & Associates for mutual funds and Albourne Partners for hedge funds, in addition to proprietary performance databases. The intention was not to provide perfectly accurate point estimates but again to simply highlight the wide disparity between the two categories using reasonable inputs and assumptions.
8. Within the mutual fund industry, Carhart (1997) demonstrated that equity mutual funds on the whole display virtually no persistence of performance, with the exception of the worst performing managers, who actually do display strong persistence of underperformance. Similarly, Brown et al. (1999) likewise found little evidence of alpha persistence for hedge funds. Conversely, Agarwal and Naik (2000) did find some evidence for persistence in alpha only at quarterly horizons within a sample of hedge funds based on a one-factor model including strategy indices, but the authors noted that the relationship was especially prominent among underperformers. Other researchers including Capocci and Hubner (2004), Kosowski et al. (2007), and Fung et al. (2008) showed that even though there appears to be some short-run persistence, only a small group of hedge funds are able to generate alpha over longer periods such as one to three years. On the other hand, Boyson (2008), Ammann et al. (2010) and Jagannathan et al. (2010) reported statistically and economically significant persistence of top performing hedge funds over longer time horizons.
9. Certainly, Cattell was not the first to suggest that intellectual ability and knowledge may be driven by largely separate processes. Jean Piaget, a giant in the field of cognitive development and education, described two-ongoing processes in intellectual development, assimilation and accommodation, which both balance and interact with each other. Piaget was also amongst the first to describe multiple stages of cognitive development, likely influencing later works of authors such as Fischer (1980).
10. John Horn, Cattell's student, focused his career on refining and enhancing the theoretical foundations of these two distinct intelligence functions as separate factors contributing to generalised intelligence. Kline

(1998) further advanced the intelligence factor research by documenting various tasks that were more correlated with one or the other measure of intelligence, in the process creating new psychometrics. Geary (2004) argued that these factors were distinct in part because they represented very separate neural processes localised in different regions of the brain. Geary claimed that Gf can be traced to regions of the cerebral cortex, including the cerebellum and prefrontal lobe, whereas Gc is more localised to the hippocampus. Additional research has supported this contention. Lee et al. (2005) presented evidence that fluid intelligence tends to peak in young adulthood and then steadily declines thereafter, suggesting that the decline may be related to local atrophy of the right cerebellum. The importance of the hippocampus on crystallised intelligence became known during the case of Henry Molaison, an epileptic patient who suffered severe anterograde amnesia after the removal of parts of his hippocampus in an attempt (successful despite the unanticipated side-effects) to control his epilepsy. Tasks that required short term working memory and critical reasoning skills were not impaired, but Molaison was unable to form new semantic knowledge, the main aspect of crystallised intelligence.

11. Some evidence suggests IQ scores or other measures of Gf can increase over time [Flynn (1984), Jaeggi et al. (2008)]. However, other research conjectures that these effects may be due to increases in task-specific knowledge rather than true improvements in fluid intelligence [Chooi & Thompson (2012) and Redick et al. (2013)].
12. Anecdotally, while working at a retail financial advisory firm, the higher net worth clients often had less risky portfolio allocations than the lower net worth individuals, such as holding larger percentages of their portfolios in CDs or municipal bonds and less in equities. Some research also does confirm that higher net worth families tend to hold a smaller percentage of retirement savings in equities than do median wealth investors [Thiel and Lassignardle (2011)].
13. Chhabra (2005) presented a wealth allocation framework for retail investors that separated long-term investment objectives into three distinct buckets: capital preservation, lifestyle maintenance and aspirational risk. Within this framework, the aspiration risk scales inversely with current wealth, a perfectly rational outcome.

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