A 21st Century Perspective on Asset Management[1]

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Abstract

In this essay we discuss two important trends that are shaping the evolution of the asset management industry. These are: (1) the changing mix between active and passive management predicated on a growing realization that alpha both decays rapidly and is as much about the choice of the benchmark used as it is determined by managerial skill, and (2) the emergence of goal oriented investing resulting from simultaneous changes in the demand and the supply side of wealth management.

Introduction

The asset management industry is undergoing a seismic shift.[2] Two key trends are shaping its evolution: (1) the changing mix between active and passive management and, (2) goal oriented investing.[3]

The first is largely due both to the growing realization that alpha decays rapidly[4] and to an increasing awareness that the magnitude of alpha is as much about the choice of benchmark used as it is about managerial skill.

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1 We thank Sunil Wahal for his insightful comments and Neeru Mehra for editorial assistance.

2 See for example client reports by Deloitte (2014), Goldman Sachs (2005) JP Morgan (2010), KPMG (2014), PWC (2014) and Vanguard (2015).

3 See the papers by Merton (2003, 2013 and 2016)

4 See figure 1 below from the paper 'Alpha Decay' by Di Mascio, Lines and Naik (2014).

The second is a response to ongoing changes in the funding of retirement plans. In the current environment, the majority of corporate and institutional retirement plans are defined contribution rather than defined benefit plans. This adds an additional dimension of risk: households now need to hedge and insure their uncertain life spans, in addition to their uncertain post-retirement investment opportunity sets. Maximizing wealth at a specific retirement date may not necessarily be optimal, as it may not lead to maximal income and consumption during retirement.[5] Instead of costly insurance against aggregate macroeconomic risk, the trend will be towards market completion with individual specific 'Arrow–Debreu' securities, or individually tailored combinations thereof that insure against the risks relevant to a specific household and at the same time mitigate the problem of adverse selection. This is the essence of goal oriented investing.

In this essay we elaborate on these trends. We start by revisiting the concept of **alpha** whose interpretation is key to an understanding of the first of these two trends.

What is alpha?

The *excess* return on a strategy $R^e_{s,t}$ (return in excess of the risk free rate) can be decomposed as follows:

$$R^e_{s,t} = \alpha_s + \beta_s R^e_{m,t} + \varepsilon_{s,t}$$

where $R^e_{m,t}$ is the excess return on the market index, α_s is the alpha of the strategy, β_s its beta and $\varepsilon_{s,t}$ a residual term uncorrelated with the return on the market.

In words, the excess return of a strategy is the sum of its alpha, its beta exposure to the market and a residual representative of pure randomness or 'luck':

Excess return = alpha + beta exposure to market + 'luck'

The beta of a strategy is the sensitivity of that strategy to the return on the benchmark index. It can be used to construct a "zero beta" portfolio -- a portfolio that is market neutral:

$$R^e_{z,t} = R^e_{s,t} - \beta_s R^e_{m,t} = \alpha_s + \varepsilon_{s,t}\,,$$

5 See an early paper by Yaari (1965).

where $R^e_{z,t}$ is the return on a zero beta portfolio derived from the strategy. Since the expected return due to 'luck' is zero[6], it follows that the expected return on the zero beta portfolio, $E(R^e_{z,t})$, is α_s. One can thus interpret alpha as the expected excess return on a market neutral strategy. It is the 'risk free' component of the return on a strategy in excess of the risk free rate -- the 'Holy Grail' of active asset management.

Sources of Alpha

In a perfect market one expects alpha to be zero: on average there should be no return in excess of the risk free rate without assuming additional risk. However, alpha may exist due to:

- Market Inefficiencies
- Informational Asymmetries
- Market Frictions
- Institutional Rigidities

The existence of alpha is typically attributed to 'managerial skill'. It is, however, inherently unstable: it decays over time as 'imitators', technological enhancements or regulatory changes enter into play.[7]

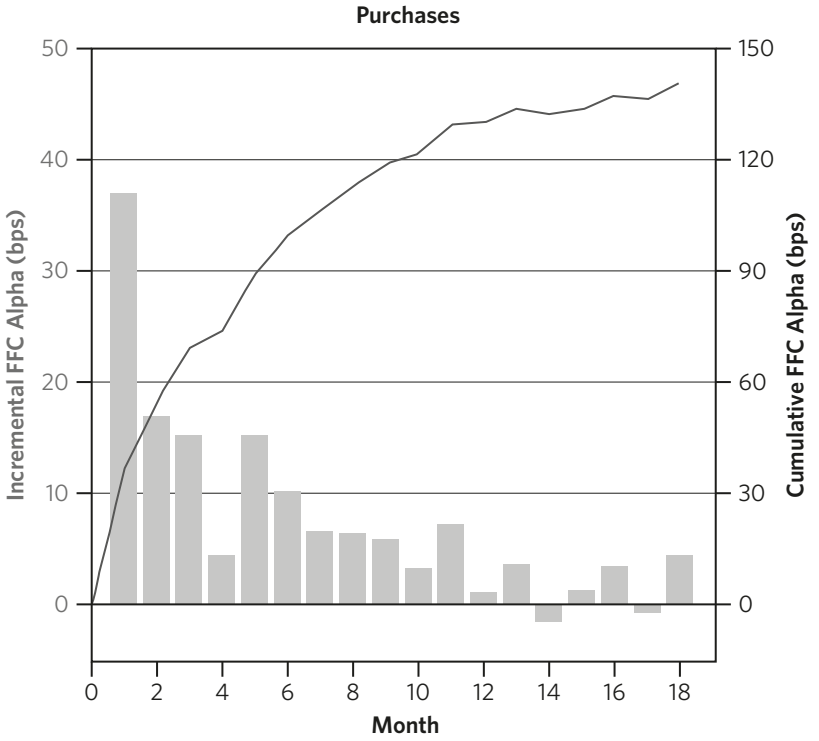
A key question is 'How rapidly does alpha decay?' Its counterpart is: 'how rapidly is new information incorporated in stock prices?' The profession has grappled with these questions, over time, at various levels.

Early event studies in the 60s and 70s were concerned with the speed of adjustment of prices to **public announcements** of corporate events. They addressed market efficiency in the semi-strong form and unanimously concluded that publicly available information was rapidly incorporated into stock prices. Evidence on the **speed** of incorporation of **private information** in security prices is, however, relatively scarce.

After early work by Jaffe (1974) on insider trading, theoretical progress on this front had its genesis in the work of Danthine (1977, 1978) and Grossman and Stiglitz (1980), who identify the conditions under which private information

6 Otherwise it would be attributable to 'skill' or lack thereof and be a part of alpha.

7 Mclean and Pontiff (2016) suggest that investors learn about mispricing from academic publications. They estimate a 32% lower return from publication-informed trading.



Source: Di Mascio, Lines and Naik (2014)

Figure 1: Alpha Decay.

is fully and instantaneously incorporated into equilibrium prices. Kyle (1985), on the other hand, argued that informed agents act strategically by internalizing the price impact of their trades. Since profits fall as prices become more informative, trades in Kyle's framework are spread out over time, prolonging the price discovery process.

Despite a vibrant theoretical literature, progress on empirically documenting the strong form of market efficiency has been limited. Private information is, by definition, **unobserved** and informed agents are unlikely to identify themselves voluntarily. As a result, the implications of the Kyle model or its variants have been difficult to test. A recent paper, 'Alpha Decay' by Di Mascio, Lines and Naik (2014) is an important empirical contribution to the literature on how private information is incorporated into prices. The authors have access to a unique dataset that allows them to observe daily trades, asset

holdings and assets under management of 692 institutional portfolios over a period of ten years. They use this data to test the implications of the Kyle model and some of its extensions. Figure 1 below documents the decay in alpha relative to the Fama-French-Carhart 4 factor model (FFC). While their findings support the Kyle model, alpha decays fairly rapidly and by six months, it is negligible - compelling evidence that even if investors do trade strategically with respect to private information, it is largely reflected in asset prices within a couple of months.

The Role of Benchmarks

Alpha that persists over time indicates a mispricing of risk relative to the benchmark model that generated it. The observation of persistent alpha, however, leads to the identification of new factors and the development of new pricing models. In this process, alpha is transformed into beta. Starting in the early 70s, persistent deviations from the Sharp - Lintner- Mossin Capital Asset Pricing Model (CAPM), the basis of the one factor 'market model', started to emerge. The two persistent anomalies were observations of (1) small stocks outperforming large stocks, and (2) value stocks outperforming growth stocks.

These anomalies motivated Fama and French (1993) to propose a new 3-factor model:

$$R^e_{s,t} = \alpha_s + \beta_m R^e_{m,t} + \beta_{hml} R_{hml,t} + \beta_{smb} R_{smb,t} + \varepsilon_{s,t} ,$$

where, as before, $R^e_{s,t}$ is the excess return on a strategy and $R^e_{m,t}$ is the excess return on a market index. $R_{hml,t}$ is the return on a portfolio that is long an index of high book value to market value stocks (value stocks) and short an index of low book to market value stocks (growth stocks). Similarly, $R_{smb,t}$ is the return on a portfolio that is long an index of small stocks and short an index of large stocks while β_{hml} and β_{smb} are, respectively, the betas of the latter two portfolios.

The 3-factor model changed the benchmark and effectively reset to zero alphas that were positive with respect to the one factor model - with respect to the new set of factors, previously positive alphas become zero by construction. The **'alpha cycle'** is illustrated in Figure 2.

The implication is that **alpha is as much about the choice of the benchmark as it is about managerial skill**. Table 1, below, is a concrete example. Consider

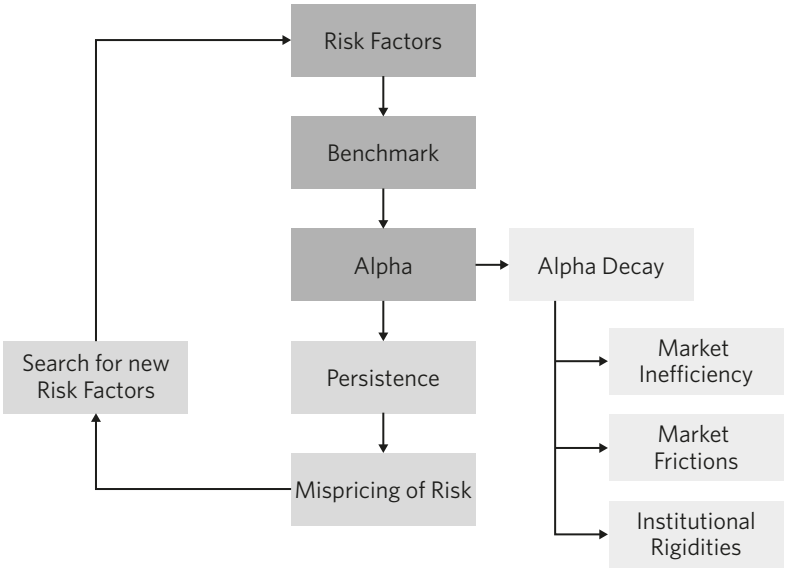


Figure 2: The Alpha cycle.

the performance of the portfolio of the legendary sage of Omaha, benchmarked, first, against the one factor market model and, second, against the three factor Fama–French model.

Table 1: Alpha for Berkshire Hathaway. 1990–May 2012.

	One factor 'market model'	3-factor model
Alpha	0.72	0.65
Market beta	0.51	0.67
SMB beta		-0.50
HML beta		0.38

Source: Ang (2014)

While the portfolio strategy is identical, the alphas are different. More importantly, the alpha derived from the 3-factor model is no longer significant at the 95% level.

The realization that alpha is a relative concept, predicated on the chosen benchmark, is critical. Beta market exposure can be achieved at very low fees. Exposure to the US market costs between 4 to 8 basis points, while exposure to

an ex-US equity index costs 14 bps. Typically, funds with a positive alpha have a high fee structure. Yet, by selectively picking their benchmark, fund managers can easily disguise what is effectively a beta as a "skill-generated" alpha and determine their fees accordingly!

Throughout the 90s, ad hoc new factors proliferated as new anomalies were documented – a trend that persists to the present. These include the following:

- Momentum (Carhart 1977)
- Low Volatility (Ang et al 2005)
- Liquidity (Acharya and Pedersen 2005)
- Profitability (Novy-Marx 2013)
- Idiosyncratic Volatility (Mehra, Wahal and Xie 2016)

These factors are based on historical anomalies and there is no assurance that they are legitimate "risk factors". If indeed they are not, once information about their existence is in the public domain, one expects the premia associated with them to disappear -- making the asset pricing models associated with these factors an unreliable benchmark for performance evaluation. One example of this is the size premium. As shown in Table 2, the size premium has virtually vanished over the approximately three and a half decades years since Rolf Banz (1981) documented it. Notably, the premium was negative for the two decades following the year when it was first documented.

Table 2: The Size Premium before and after it was documented (1979) (percent per annum).

Time Period	Small Firms	Large Firms	Size Premium
1927–2013	18.28	11.34	6.94
1927–1979	20.60	10.19	10.41
1980–1989	14.97	17.79	-2.82
1990–1999	15.93	19.31	-3.38
2000–2009	15.00	6.00	9.0
1980–2013	14.63	13.14	1.22

The situation is very different if the factor premia are indeed remunerations for additional risk. This is illustrated by the equity premium, documented by Mehra and Prescott in 1979[8]. The equity premium is the premium associated

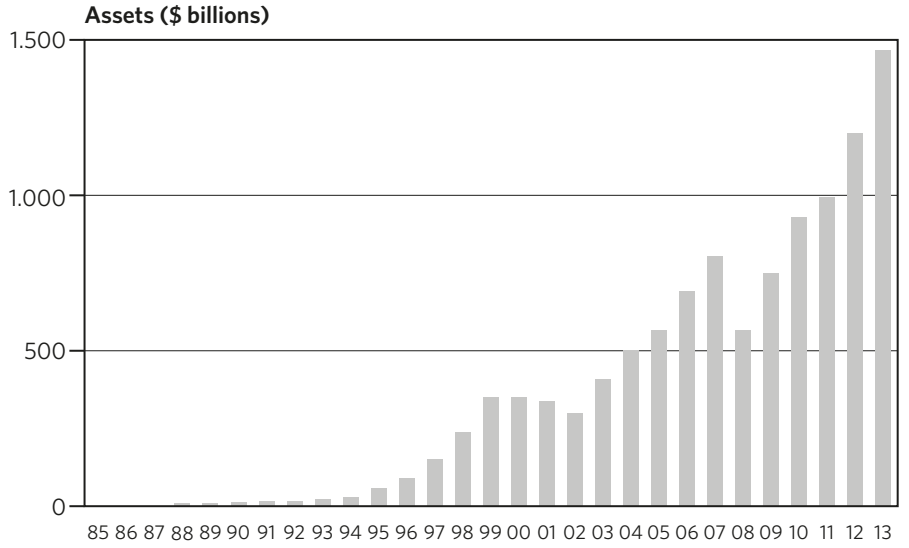
8 Mehra and Prescott (1985). The first draft was circulated in December 1978.

with the 'market factor' and as shown in Table 3, it has remained a robust 6.9% in the decades after it was first documented.

Table 3: The Equity Premium before and after it was documented (1979) (percent per annum).

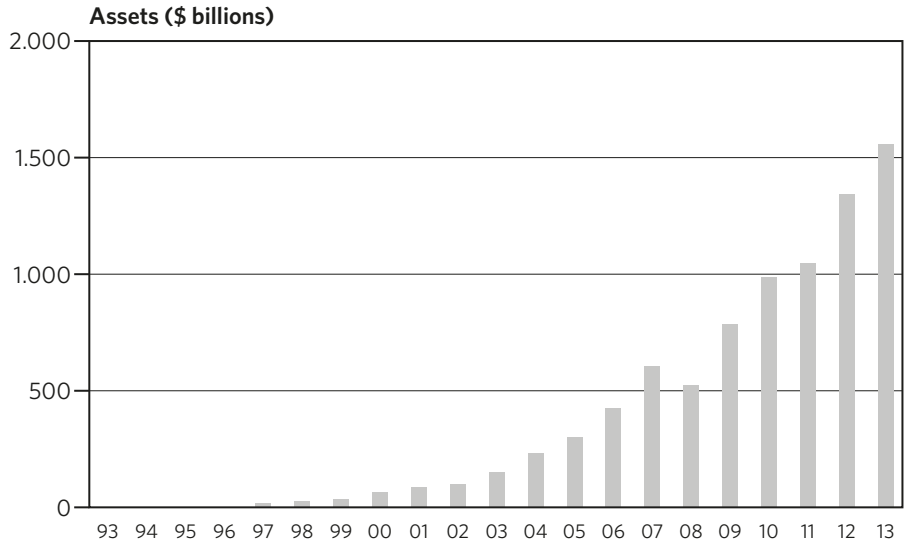
	% Real Return on Market Index	% Real Return on Riskless Security	% Risk Premium
Time Period	Mean	Mean	Mean
1889-2013	7.7	1.1	6.6
1889-1978	7	0.8	6.2
1980-2013	9.2	2.3	6.9

The difficulty in delivering persistent alphas and the importance of measuring them against appropriate benchmarks have not gone unnoticed by investors. As shown in Figures 3 and 4 (from "The Rise and Fall of Performance Investing" by Ellis (2014)) the consequence has been a relative decline in the demand for active asset management and a dramatic increase in assets under management by index funds and ETFs.



Note: Data for 2013 go through September.
Source: Ellis (2014)

Figure 3: Total US Index Mutual Fund Assets, January 1985-September 2013.



Note: Data for 2013 go through September.
Source: Ellis (2014)

Figure 4: Total US Industry ETF Assets, January 1993-September 2013.

The future

Alpha decay will accelerate due to rapid information dissemination. Isolating new risk factors will be increasingly difficult. There is increasing investor awareness that benchmarks and alpha are closely intertwined. One consequence has been investor demand for greater transparency regarding strategies and risk metrics in use.

The ratio of actively to passively managed assets will continue to decrease. **Active asset management**, however, will always be with us. This is essential to keep markets efficient. The rewards to the acquisition and processing of private information will be lower, as the attendant benefits will have a shorter half-life. However, as a counter balance, these benefits would rapidly increase if a shortage of information acquisition were to lead to significant market inefficiencies. Furthermore, fewer individuals or institutions will share in these benefits. As active asset management decreases in volume, we expect increasing rewards to active management at the margin.

Customization of Portfolios

Historically the static one period mean-variance model has been the basis of portfolio advice. In this setting, the appropriate objective is end of period wealth maximization and the only risk management tool that needs to be employed is diversification.

This abstraction may have been adequate when defined benefit plans were the norm and provided a floor on income during retirement. In the current environment, where an increasing proportion of corporate and institutional retirement plans are defined contribution plans, households have to hedge and insure against both an uncertain life span and risky post retirement investment opportunity sets. This has created a demand for investment products that address these needs.

In the absence of a bequest motive, the optimal strategy for a household is to buy a life annuity rather than maximize wealth at retirement. In a recent paper, Mehra, Piguillem and Prescott (2011) show that, even with a 2% lower rate of return, it is welfare enhancing for households that derive little or no utility from bequests (type A) to invest in annuities, to insure against outliving their savings.

Source: Mehra, Piguillem and Prescott (2011)

Figure 5: Consumption Profiles with an Annuity and a no Annuity Strategy.

As Figure 5 shows, wealth-maximizing households (type B), if they live long enough, will have a lower consumption level than households who buy annuities. In this model, households are precluded from buying annuities at retirement, a feature intended to capture the empirical observation that commercially available annuities are prohibitively expensive to purchase at or near retirement and therefore account for a very small fraction of savings for retirement. This is clearly due to well-known **adverse selection** issues.

Consider an individual on the threshold of retirement. His life horizon - how long he will live and need to consume - is uncertain, and this is a source of risk that he would like to insure against. A natural avenue to accomplish this sort of risk reduction is for the investor to use his accumulated wealth[9] to purchase a life annuity. Enter adverse selection. Individuals with private knowledge of low life expectancy are unlikely to be attracted to such a financial arrangement, since they benefit from it over a relatively short horizon. It is the individual who anticipates substantial longevity who is most likely to annuitize. From the perspective of the underwriter of the annuity, efforts to eliminate this informational asymmetry through medical exams, family history, life style evaluation etc. are unlikely to completely mitigate the distortion. There is, effectively, a market failure for post-retirement annuities. This explains the difficulty in purchasing annuities post-retirement; the cost is prohibitive, with an extremely low implicit rate of return. In practice, this adverse selection problem is partially alleviated by purchasing annuities several years before actual retirement.

What we have described above is a significant change in the demand for wealth management as a consequence of the evolution in the design of typical retirement plans. Another observable response to this new dimension of risk, on the supply-side this time, is the growth of goal-oriented portfolios. Instead of costly insurance against aggregate macroeconomic risk, the trend is towards market completion with individual specific 'Arrow–Debreu' securities, or individually tailored combinations thereof, that insure against the risks relevant to a specific household in ways that mitigate the problem of adverse selection. Goal oriented portfolios, with household specific risk and return characteristics, are portfolios customized to fund specific consumption needs at different horizons. Portfolio objectives may range from providing a minimum floor on consumption during retirement, to the more narrowly focused goal of funding college

9 Net of any amount set aside for bequests.

expenses, buying a vacation home, financing possible future medical conditions, perhaps revealed through genetic testing, or funding long-term old age care.

These multiple goals necessitate an unprecedented and extensive personalization of portfolios that incorporate the unique characteristics of an investor's human capital. For example, the human capital of a professor is bond-like while that of an investment banker is equity-like, a distinction that influences the optimal accumulation of financial capital. (Davis and Mehra (2001)).

Meeting the needs underlying these various objectives requires the creation and issuance of securities that pay off in the event of certain idiosyncratic risks being realized; e.g., funding old age care if (and only if) dementia is involved. By the very nature of these risks, the seller of such securities must be able to take advantage of diversification (across the demand side) and perhaps increasing returns to scale. The underwriter must, therefore, be a long-lived entity and in addition, a credible survivor over the long horizon. This implies that the seller must be a firm with permanent market power (to ensure its survival) or that some form of governmental guarantees would need to be instituted.

A related supply-side development with the potential to impact the asset management industry is the increasing ability of producers to side - step the financial markets and directly provide goods and services to households that fulfills their demand for important risk mitigation. As an alternative to asset managers tailoring a portfolio with the objective of funding future college expenses, a consortium of colleges might issue education bonds entitling the owner to four years of college education. In the same vein, Google and other organizations having access to large data sets might be in position to compete with health insurers and provide better rates on integrated insurance products to specific consumers. Still another example is given by the possibility of offering a combination of a life annuity and long term health care insurance. Because a healthy individual is less likely to need the latter, such a product combination would mitigate the adverse selection problem that has plagued life annuities (as discussed above).[10]

'Big data' might exacerbate the adverse selection problems present once the veil of ignorance has been lifted. It might also open up new possibilities that will help resolve some dimensions of asymmetric information and mitigate the adverse selection problem that results in the market failure of certain insurance-like products. The trend will be towards market completion with

10 See Merton (2016).

'Arrow–Debreu'- type contracts conditioned on events that are individual specific instead of coarser securities based on aggregate macroeconomic conditions. Rapidly improving access to end-user information will open up the way for non-investment based one-to-one contracts, notably, by healthcare providers. This would correspond to a radical change in the current asset management paradigm and pose a formidable challenge to the asset management industry.

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