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RISK, UNCERTAINTY AND THE CREDIT CRISIS – COULD WE HAVE KNOWN BETTER?

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Of all the offspring of Time, Error is the most ancient, and is so old and familiar an acquaintance, that Truth, when discovered, comes upon most of us like an intruder, and meets the intruder's welcome.
Charles Mackay (1841)

As an industry we cling desperately, like the marooned to rafts, to Markowitz mean-variance optimisation and to normal distribution of market returns but the reality has proved very different to our revered models. While theoretically sound, the idea that markets behave in such an orderly fashion ignores the history of financial markets which is littered with explosion and implosion with relative frequency; every decade or so. Normality in this case is not an ordered symmetrical progression, but rather normality derived from constancy, and that is the constancy of the unexpected.

Conventional models, particularly models of risk (which are arguably more important than their return based alternatives to a fixed income investor), consistently miss those three standard deviation events that, ironically, the market has a history of delivering with some consistency. As Mandelbrot and Hudson (2004) suggest, price behaviour of markets can vary enormously and that the frequently significant departures from 'expected' (here read normally distributed) market movements render conventional models practically useless.

Indeed the three standard deviation event is – in recent memory at least - as normal as, though perhaps not entirely mutually exclusive to, those cycles of fear and greed which popular financial theory at least heralds as the only fundamental truth on which to hang our collective hat.

The great market events of recent memory were almost uniformly preceded by periods of extraordinary expansion. What is interesting to note, also, is that the contributors to most financial bubbles are likewise similar and consist, to varying degrees of the following three key factors:

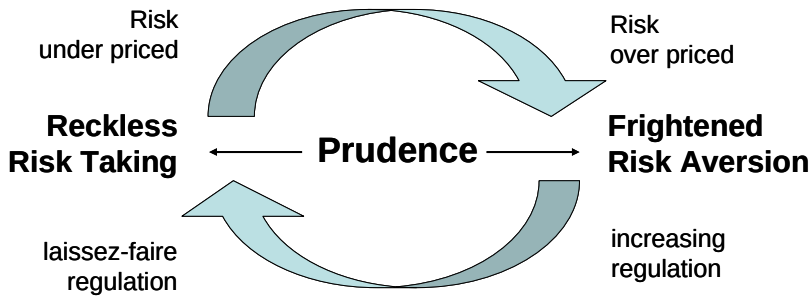
- loose monetary policy leading to easy credit and thereafter pervasive leverage
- erosion of due diligence within regulators, lenders and investors
- a "boom" mentality on the part of market participants

While this perspective is not new, despite widespread acceptance it appears the market has no memory for what went before and submits to the false confidence that "this time it's different". Perhaps, then, the flaw is not in the market and it's instruments of operation and regulation as such, but rather buried deep within the human psyche of the market participants themselves.

Not to underestimate our own ingenuity, our advances in technology and evolution of skill; for it is true we don't often make precisely the same mistakes but rather outdo ourselves by iteration with new and creative blunders. However, there is a perfect discernable order to this chaos should we choose to observe it.

Consider the below representation of market participant activity. The diagram maps the risk migration of what one might call, say, a prudent investor. An investor observes that risk is under priced (that is, historically cheap) which may lead to sustained reckless risk taking until that balance is called into question. At this stage a catalyst – perhaps a systemic shock on the downside, for example, or technological innovation on the upside – may act to speed up this reversion whereupon the market concedes risk a vastly overpriced asset and participants run screaming for the hills. Note also the catalytic interaction of regulators during this cycle of continual migration.

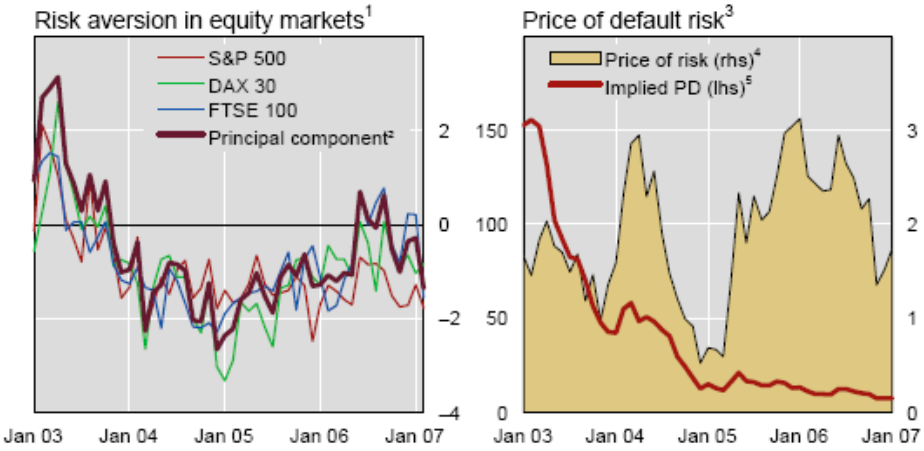
Market participant activity



Collectively, we both wrestle and perpetuate the struggle towards this perceived equilibrium of prudence of which we are both cursed and blessed; 'normality' under this paradigm makes new meaning of the term 'trading range'.

Taking the above theoretical understanding of market participant behaviour and applying it to the use and application of debt, the results are not unsurprisingly familiar to market participants' behaviour heading into 2007. The following highlights risk appetite in equity and credit markets: note that greater risk aversion in equity markets was mirrored in credit markets, leading to a strong equity bull market and credit rally.

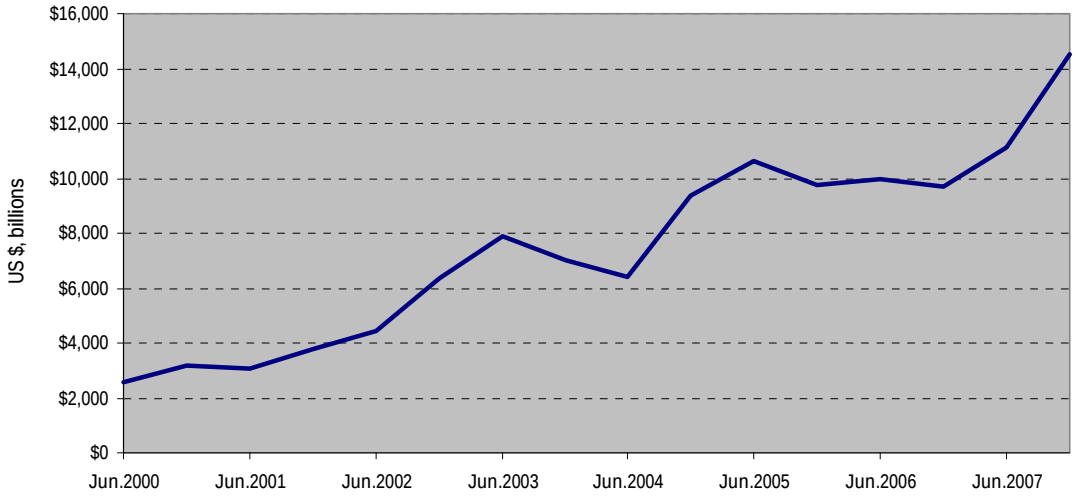
Risk appetite in equity and credit markets



Source: BIS

While the exponential credit expansion of the 5 years was fuelled by the seemingly insatiable risk appetite noted above, innovation in securitisation, structured products and the use of synthetic instruments provided risk seeking structures in increasing supply to feed the markets expanding risk appetite. To satisfy this demand, growth of the over the counter (OTC) derivatives market was astounding with an increase of around 130% over the period (refer chart below). The growth of the CDO market is of particular interest, during 2006 alone the notional value of funded global CDO issuance hit a staggering US $489 billion, while issuance of synthetic CDOs (that package and securitise pools of credit default swaps) was in the vicinity of US $450 billion over the same period, double the value reported in 2005.

Gross market value of outstanding OTC derivatives (global)



Source: BIS

The increase in demand, of course, simultaneously sustains the apparent value of such securities while perpetuating the myth of their substance. Without the backing of a similar expansion in the level of real savings, however, this points to a fragile financial system in precarious equilibrium.

Not surprisingly, Hyman Minsky's (2002) financial instability hypothesis is applied to the current market with great effect and increasing frequency, in posthumous renaissance. Minsky held that the false security of stability has an inherent tendency to destabilise, which culminates in severe economic crises. Further, those periods of stability actually increase risk. Thus the more stable a market, the more unstable the foundations of that stability become. His hypothesis comprises both a theory of the impact of debt on system behaviour and also the manner in which debt is utilised on the balance sheet and is summarised in the map of market behaviour below.

Market Status	**Instability**		**Stability**
Investor Behaviour	Frenzy	Optimisation	Conservative
Marginal debt unit	'Ponzi'	'Speculation'	'Hedge'
Balance sheet effects	Income< interest coverage, borrow (or sell assets) to pay interest	Asset income = interest payments	Asset income = interest payments and loan principal amortization
Risk Spectrum	**Risk taking**		**Risk averse**

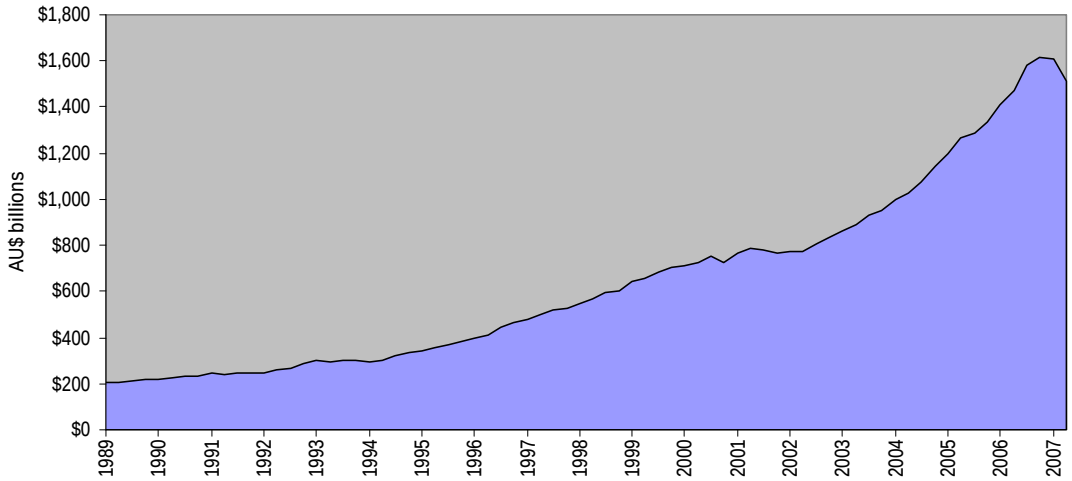
In an act of gross over-simplification, the above map shows Minsky's two extremes of financial operation; stability - marked by conservative risk taking and debt activities with ample interest and principal repayment coverage – and instability – characterised by frenzied investor behaviour and increasing use of debt to fund interest and principal liabilities.

Minsky's hypothesis makes for fascinating reading and is obviously intuitively appealing, particularly in light of recent events. Indeed recently published research (Adrian & Shin, 2008) into financial and liquidity cycles suggest the balance sheet behaviour of financial intermediaries - whose role it is in some part to create, own and distribute risk - is distinctly pro-cyclical. That is, when assets increase (balance sheet strength), economic leverage is generally too low leading to surplus capital which is then put to use with the result increased debt (such as increasing short term debt while lending over the longer term, for example). This research supports Minsky's hypothesis, but controversially suggests as incorrect to the Modigliani-Miller (1958) theorem under which a firm's capital structure is irrelevant.

In practical application of this hypothesis to observed market events, however, we have a dilemma. While markets are clearly not endogenous systems insulated from contaminant interactions, as Minsky would have them, we can no more easily agree that that recent market activity and its precedents are exclusively the result of external shock to the market (or market economy) as traditional economists would suggest. Indeed, both exogenous and endogenous forces provided a potent mix of catalysts and amplifiers; catalysts being financial market liberalisation and technological innovation while the amplifiers include improved flow of information and diminishing barriers to capital movement.

In fixed income markets the catalysts for and accelerants towards either extreme can be clearly mapped. Not only do we battle the headwinds of human nature and the eternal struggle between risk aversion and risk erosion but also of exogenous inputs, in particular the introduction of exotic risks in the form of new inclusions to the asset class. The graph below charts growth in total Australian managed funds. Consider the evolution of fixed interest markets over this time, particularly in the last ten years which has seen the introduction, thereafter widespread adoption of credit default swaps and the numerous forms of CDO securities. Note the inclusion of new debt structures and strategies for their implementation is generally a swift migration from the exotic to the mainstream.

Assets of Australian Managed Funds



Source: ABS

Credit

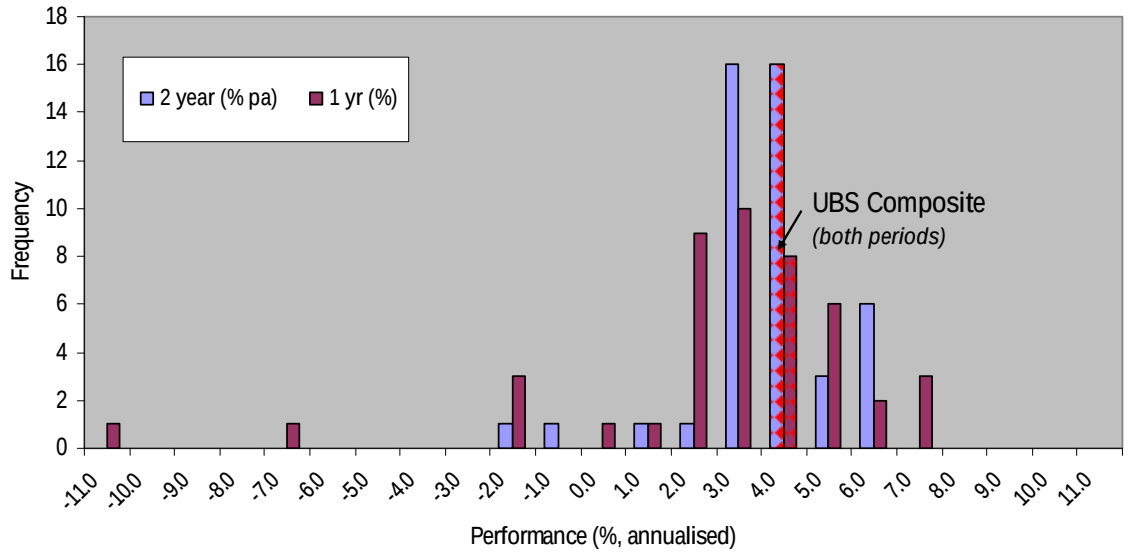
"Could we have known better", "could we have avoided the fall?" Market commentators and navel gazers persistently opine and continue to dissect history to minute degrees; however noble their efforts hindsight will always be 20/20 while investors at the moment of investing extrapolate current market conditions into the future and actively (if subconsciously) seek self evidence to support same. Accordingly, if one looked for evidence supporting good times ahead in early 2007, the hallmarks of prosperity were there in abundance with news sources declaring "Australia Rides Commodity Boom Wave", "Shares set to rise as falling oil prices reduce fears of higher interest rates" and "Wall St back on high". As such, we could be forgiven for missing the signals.

Nonetheless, there is evidence to suggest some managers did heed the warning signs (Goldman Sachs and Paulson & Co. who famously made US$3.7 billion by shorting sub-prime mortgages during the last year, both cases in point), while the vast majority, like their forebears before them simply did not. They appear to have read the market environment, the noise, with a different frame of reference from the pack.

There were clear signals through 2005 and 2006 of the danger ahead; consider the downgrades of Ford Motor Company and General Motors in early 2005 with Fannie Mae, AIG & MBIA restatements at a similar time to be the smoke of a burgeoning economic fire. Of course, these first signs were largely unheeded until early 2007 and the indication that Bear Stearns and their suite of massively successful (to then) hedge funds were unable to meet additional calls on collateral backing substantial reverse repurchase ('repo') trades. The revelation triggered collapse in this under collateralised house of cards, in turn prompting widespread withdrawal of liquidity.

The evidence in Australia is not dissimilar to the US experience, although clearly the effects are of a different order of magnitude; to date. The following shows the distribution of Australian Fixed Interest Managers versus the domestic index (UBS Composite 0+ years given by the patterned data) over the year and 2 years to June 2008.

Performance Distribution of Australian Fixed Interest Managers (diversified)

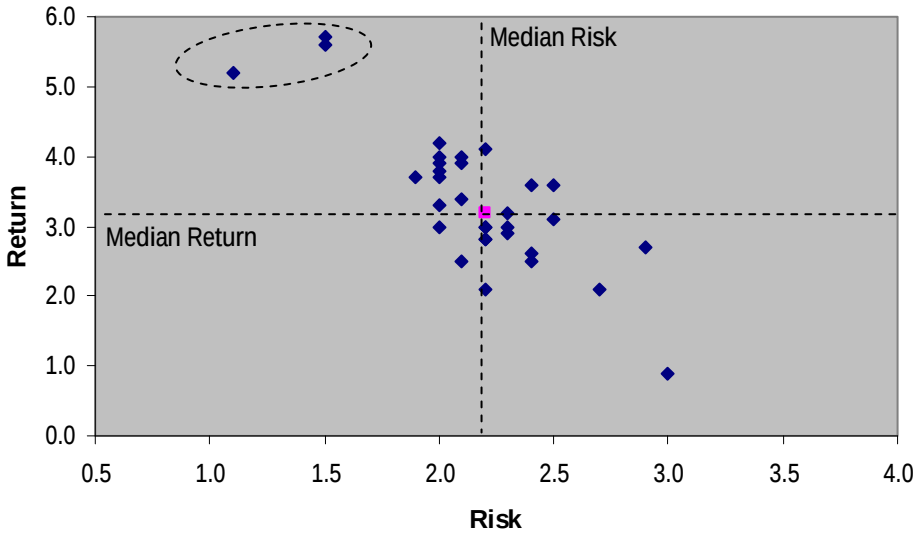


Source: Mercer MPA

The histogram above presents (for a sample of 45 Australian fixed interest managers) the distribution of returns over the one and two years to June 2008. Note this is in no way a 'normal' distribution as Markowitz would have it. While there are a number of managers clustered around the mean for both periods, the distribution has long tails (including a negative outlier of over three standard deviations), a strongly negative skew and significant (thought not unexpected) kurtosis. The considerable difference in distribution spread between the one and two year periods raise the importance of both time period relevance and survivorship bias.

If we take into account the risk associated with each of the above investment results an intriguing picture emerges. The graph below shows two years risk (given by annualised standard deviation, %) and return (%, annualised) for the above referenced sample of managers.

Risk versus Return of Australian Fixed Interest Managers (diversified)



Source: Mercer MPA

Not only is there significant breadth in observation, which we'd expect from the distribution data presented above, however, it appears a number of managers actually achieved strong relative performance with lower risk; an observation counterintuitive to those reared on modern portfolio theory who would dismiss this as an anomaly or in the language of the genre a statistically insignificant outlier of infinitesimal probability.

Is there any commonality between those managers that both outperformed index and their peers (and in some cases with considerably lower risk), was it just luck? On further investigation, there appears to be two key differentiators:

1. a focus on risk – either absolute and downside risk (in the form of VaR, etc.) or measures of return per unit of risk; and
2. a high level of active management – both allowed (as determined by mandate discretion to express an investment strategy away from the benchmark) and taken (manager willingness to take such positions).

Risk

The analysis of risk has become increasingly complex in line with a movement away from absolute towards relative risk and as a reflection of the changing dynamics within the fixed interest sector. From a theoretical perspective we have moved beyond straightforward loss of capital calculations, through absolute and relative volatility and the Greeks (delta, gamma, et. al.) to optimised risk budgeting. In this evolution, however, (and as Bernstein has suggested), we have shifted our focus to the tools/ or mathematics – the process of risk measurement – with little thought for risk management or the practical consequences of the data measured.

For managers, it is easy to settle back into the risks are known, the risks that are quantifiable and therefore from which we can derive comfort, albeit false. Tracking error is a mathematically appealing measurement, but what of the consequences, what thought to the outcomes when such measures imply symmetry while the utility associated with such risks is distinctly asymmetrical?

While the managers that faired best over the last year could not have predicted the scale of the US sub-prime crisis or the domestic liquidity crisis, the contagion that ground Australian bond markets to a halt, there was a sense of foreboding and a recognition that the market may have been fuelled by a false sense of liquidity, buoyed by fragile multi-leveraged debt structures and distorted by so-called maturity transformation (the use of short-term liabilities to fund long-term assets). Such recognition (now hailed as prediction) led to risk aversion, limited investment in credit and an increasing conservatism in investment strategy. Precisely the manager behaviour and portfolio characteristics an investor desires and moreover expects from their fixed income allocation.

Uncertainty

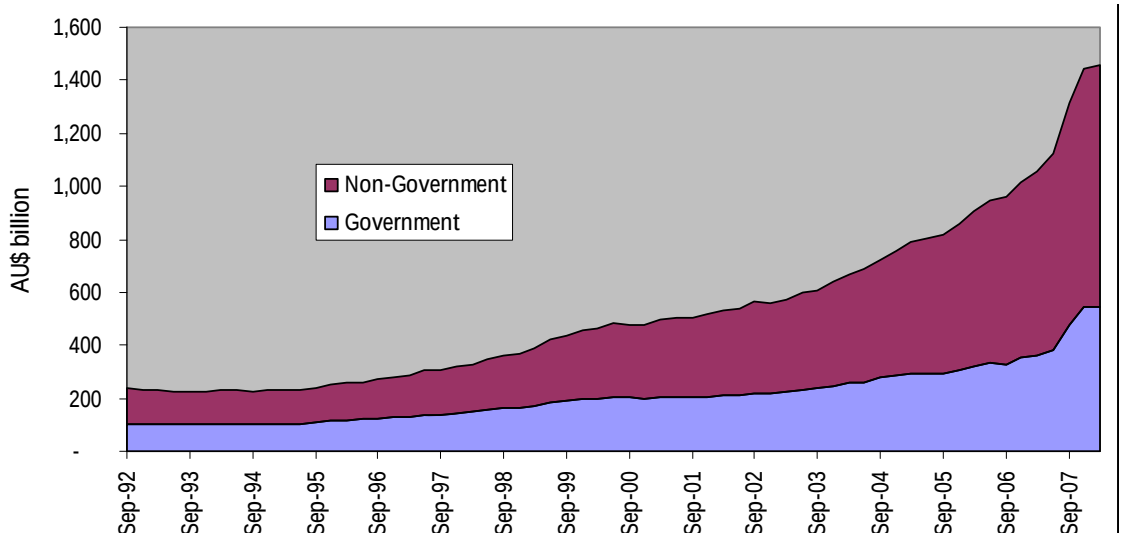
Manager constraints have at times been misused as a ploy to divert attention away from poor performance and support the case for increased discretion or increased fees. Mandate constraints can also be an easy ruse for managers with a low appetite for conviction; not an insignificant commercial risk in an industry under the persistent threat of peer risk and of itinerant fund flows that can follow monthly league tables. While satisfying the commercial imperatives of market participants, it is not clear that this 'quasi-active' management in the form of narrow benchmark hugging is in the best interests of its sponsors – investors – nor deserving of it's more than quasi-active fees.

Grinold and Kahn's (1999) fundamental law of active management posits that potential performance (investment return) is directly proportionate to the number of (unrelated) decisions that a manager has the freedom to make for a given level of skill. While it is important for investors to impose guidelines on managers to ensure alignment of interests between the portfolio and expectation, if we are to believe Grinold and Kahn, this may limit the ability of managers to generate returns (at best) and act in the interests of capital preservation (at worst).

While it's important to establish policy benchmarks built around a long run strategic asset allocation from a governance perspective, allowing a manager to stray from it where prudent and profitable is of equal importance. Further, under all active management mandates, one must ask "does the client fully comprehend the implications of what they are asking for with reference to low probability, high consequence risk?"

Fixed income benchmarks in particular are burdened by an overrepresentation of large debtors (Siegel's 'bums' problem, 2003) and an increasing allocation to credit at the same time that corporate bonds have become riskier. Consider the below composition of outstanding debt in Australia where the allocation towards credit has increased considerably over time. This changing composition has been mirrored in the UBS Composite - the most widely used Australian fixed income benchmark - introducing a largely unintended tilt towards credit and its associated risk and return characteristics.

Australian Debt Securities Outstanding



Source: ABS

This doesn't of course mean one can't measure a manager against sensible benchmarks, nor establish tracking error guidelines, but rather recognise that constraining a manager to such targets in the short-run can undermine and call into question the achievement of long run targets.

Of course, the case for active management relies on the investor's ability to choose a manger with the skill to identify return generating (and by inference capital loss limiting) strategies and thereafter the courage to implement them.

A better way to manage fixed income

If the definition of insanity is to do the same thing time and time again and expect a different outcome then are we not all insane by degrees? We remain in a constant battle for equilibrium between risk and the chase for return and yet cry foul of and have been blindsided by recent events?

If the lessons of history and the more recent past can be distilled, those managers that will outperform in the future carry with them an understanding that markets and their instruments will be in an evolutionary state of constant instability, but that by its very nature will follow the broad patterns that have gone before - boom followed by bust, exuberance by pessimism. Contrary to being tethered to the past, such an understanding affords a foundation on which to assist understanding and frame contemporary events; in short, to dampen the 'noise'.

The continuous evolution of the markets in which we invest determine that managers must question their own internal structures in addition to the benchmarks and mandates against which they manage. Typically set around asset class constituents, managers themselves can develop structural biases towards components of the sector, a structural flaw not unlike the 'bums' in the benchmark. It is, for example, hard to argue for a zero weight to structured credit over any period of time, if one has a team of six analysts dedicated to their research.

Finally, skilled managers should be equipped with the freedom to deviate from the benchmark or strategic or policy allocation as the markets evolve and as their understanding of the future evolves. In part, this represents a return to the evaluation of an investment on its own independent merits rather purely as a mathematical optimisation exercise. This is not to say we'll throw out the modern portfolio theory baby with the bathwater, but that we apply with it an understanding of the potentially distorting effects of collective psychology (herd mentality and market myopia) and the shortcomings of benchmarks on both prices and the behaviour of market participants.

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