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"When Common Sense Failed" – How "Risk" and Reality Parted Company

Investment Letter IX

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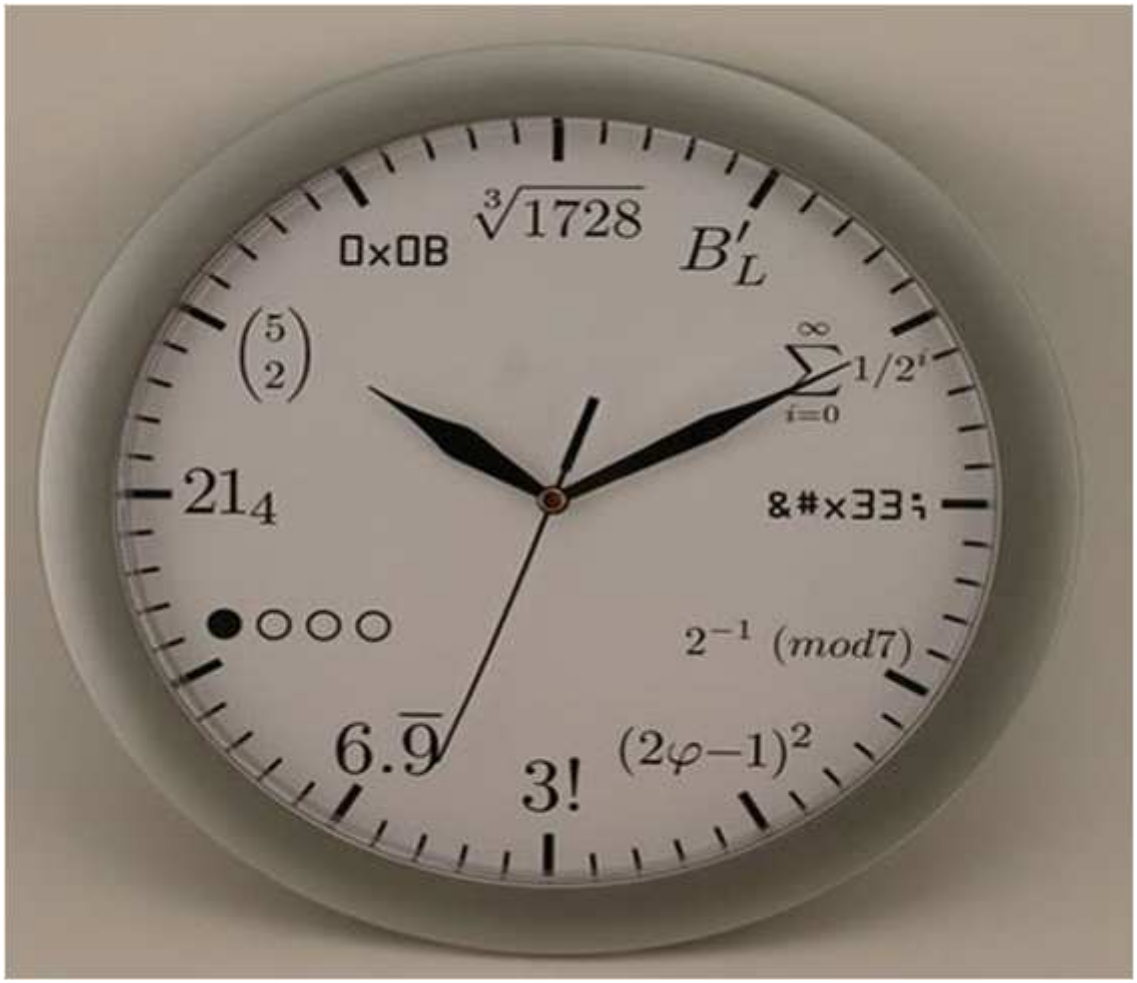
The title is a reference to the seminal (and gripping) work on the failure of Long Term Capital Management (LTCM), entitled “When Genius Failed”. Exactly one decade later, markets were rocked by an eerily familiar accident, once again totally unforeseen by the mathematical assumptions that underpinned the West’s myopic investment models, and further hampered by the hubristic complacency that they bred.

The recent financial crisis at first appeared to promise an immediate return of common sense to the investment industry, as the comforting false certainties of Efficient Market Hypothesis (EMH) and the attendant plethora of mathematical formulae were shown to be spectacularly irrelevant in real life. Like banking reform, a return to common sense has been slow in its return to primacy, but a return is surely in the offing.

In this short note, some of the more glaring examples of how the investment industry has strayed from the oath of common sense and reasonableness in terms of measuring and controlling “risk” are highlighted; and some of the investment lessons bequeathed to the world by investment gurus both past and present, are examined. It is hopefully shown how some of the tools purported to serve the interest of investors, all too often simply end up protecting the interests of fund managers and their shareholders.

It’s Time to Invest



"Beware of geeks bearing formulas", Warren Buffett

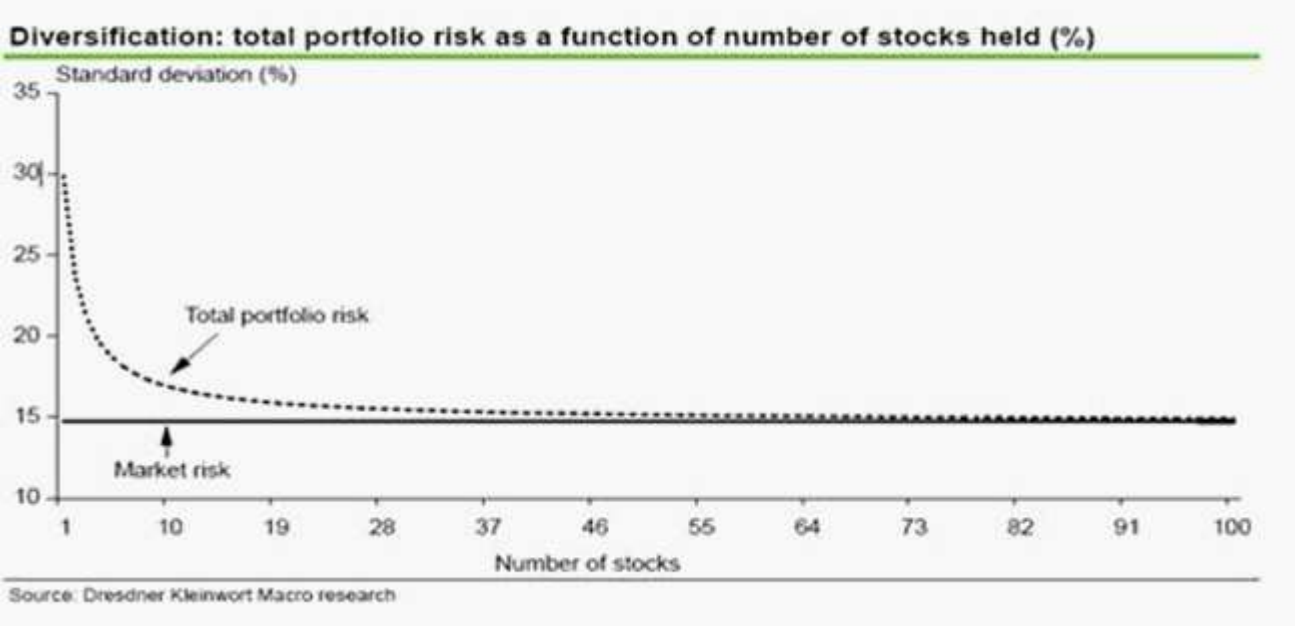
Diversification has increasingly been seen as a fashionable and easy way to reduce risk in any given portfolio. In the wake of the recent crisis, some have suggested that diversification is of even greater importance, premised on the belief that the world has become a more uncertain place. Ignoring for the time being the error in this last statement (the world is not more uncertain, people just overestimated the certainty in previous years), it is instructive to take a minute to examine the costs and benefits of different degrees of diversification, in order to determine the validity of some of the more commonly held beliefs on this topic.

When discussing an equity portfolio, most people would reasonably agree that only owning one stock would be an unwise and highly risky strategy (as Enron employees found out, inter alia). But what then, is the optimal number of stocks to have in a portfolio?

Without jumping straight into all the problems of modern portfolio theory and CAPM (or as James Montier poetically refers to it, Completely Redundant Asset Pricing or CRAP), let us for a second assume that the best measure of risk is the standard deviation of return. From here we can arrive at an intuitive little formula that tells us the benefits of having n stocks in a portfolio rather than m, where EP is the equity risk premium and ρ is the correlation:

$$\left(\sqrt{\frac{\frac{1}{n}+\frac{n-1}{n}\rho}{\frac{1}{m}+\frac{m-1}{m}\rho}}-1\right)EP$$

Leaving aside the fact that both of these two parameters are unknown, and also change over time, the formula (or a similar one) would produce a result which could be graphed, as shown below:



As one can see, the marginal benefit of adding more and more stocks to a portfolio quickly diminishes to the point where the standard deviation of a 20 stock portfolio is similar to that of the market. It is also worth pointing out that correlations typically increase in down markets, reducing the benefits of diversification (another lesson re-learnt the hard way in recent years), and as a result the number of stocks needed to lower one's standard deviation closer to that of the market is also reduced.

However, despite lower marginal benefits for the investor it still makes sense for the fund manager to add more stocks, unless of course there are clearly negative performance attributes associated with this. It is our assertion that such attributes do indeed exist, or

to put it another way, there are benefits to having fewer stocks in a portfolio than the formulas behind modern portfolio theory would suggest. The main benefit of portfolio focus is the ability to pick stocks that careful analysis suggests are undervalued. It is reasonable to assume that it is going to be easier to find twenty undervalued stocks than it is to find eighty, and the evidence also supports this view.

By looking at the biggest overweight positions in various fund's portfolios (as a measure of best ideas) Cohen, Polk, & Silli (i) "...find that best ideas not only generate statistically and economically significant risk adjusted returns over time but they also systematically outperform the rest of the positions in a manager's portfolio". In other words, fund managers are generally able to identify a few good investments, but when asked to pick dozens of them, end up with mediocre returns. (One tempting way around this is to hire banks of analysts, but one is still left with the problem that the fund manager then becomes several layers – and meetings - removed from companies held in the portfolio).

A number of highly successful investors would also seem to argue along similar lines (and without a standard deviation in sight). Keynes believed that "To suppose that safety-first consists in having a small gamble in a large number of different companies where I have no information to reach a good judgement, as compared to a substantial stake in a company where one's information is adequate, strikes me as a travesty of investment policy".

In a similar vein, Warren Buffett argues that "Diversification is a protection against ignorance. It makes very little sense for those who know what they are doing" and with regard the risks of concentration he believes that "... a policy of portfolio concentration may well decrease risk if it raises, as it should, both intensity with which the investor thinks about a business and the comfort-level he must feel with its economic characteristics before buying into it".

In most fields of human endeavour people seem to think that it is a good idea to look at the methods and techniques of those practitioners who have been successful and emulate them, or at least try and learn from them. Such an approach appears all too often to be absent when it comes to investing.

Fund managers love to talk about their best ideas. Asked about their recent purchases they can normally ramble on at some length as to why x stock is a good buy or y stock is going to go up and so on. Now imagine asking a fund manager to explain in detail what he thought every stock in his portfolio was worth and why he thought that. Unless one has acute insomnia this is unlikely to grab many as a particularly compelling activity, but it is hard to see how a fund manager could have an in depth knowledge of every company if there are 100 stocks in a portfolio. Given that an average fund turns over its portfolio more than once a year (with all the added costs this entails) this would suggest the manager has an in depth and up to date knowledge of hundreds of companies (assuming of course companies are studied in some way before being bought). Add in all the time spent in meetings about the fund's tracking error and last week's under/outperformance and most mortals would find it difficult to get past the EPS number on any particular company.

But why, it would seem sensible to ask, does the majority of the fund management industry insist on running funds with such a high number of stocks in their portfolios? There are a number of possible answers to this, but perhaps the two main reasons are:

1) Bigger is better if you're a fund manager (though not if you're their client): There is much to be said for looking at incentives when considering a particular type of behaviour and fund management is no different. The fee structure that the majority of funds have is based on assets under management (AUM) rather than performance, meaning fund managers have an incentive to make their funds as big as possible. This in turn makes a 100 stock portfolio much more attractive than a 25 stock one. Say, for example, a particular fund's remit was to invest in companies with a market cap larger than €300mn. Given the practical limitations of owning a

large part of a company (the more you own the more your buying and selling affects the price – frictional costs), you may not want to own more than say, 4% of the outstanding stock. With a 25 stock portfolio this would limit the size of your fund to €300mn. However, throw a few clever looking equations into the mix and tell people EMH says their portfolio is now optimised and *voila*, all of a sudden you have yourself a 100 stock, €1.2bn fund that produces four times the income of the smaller portfolio. As Jack Bogle, the former CEO of Vanguard put it, "Amassing assets under management become the [asset management] industry's primary goal, and our focus shifted from stewardship to salesmanship".

2) Career risk: The ability of a particular fund manager cannot be directly observed and as such many choose to measure their ability against a proxy, normally a certain benchmark such as the S&P500 or the FTSE ex-UK. Whilst such a system has the ability to weed out the bad from the good over an extended time period, over short periods, such as a year (or even longer), measurements against a benchmark can be a woefully inadequate measure of an investor's ability. Taking the tech boom as an example, a number of investors realised in the mid-late 90s that the valuation of tech related stocks made no sense and were grossly overvalued. Even though this view turned out to be correct, a number of these investors lost their jobs before the bubble finally burst in March 2000. At the same time, those who happily followed the index up and down undeservedly stayed in a job. As Keynes wrote, "...it is better for reputation to fail conventionally than to succeed unconventionally". The tech bubble is just one example of where focusing too much on short term performance versus an index can often be of little value, and at worst highly counterproductive. As Nicholas Taleb pointed out, it is not the frequency of the profit, but the magnitude. But for fund managers, picking up nickels in front of a steamroller (i.e. continuing to invest in assets where risk factors seem poised to materialise) remains rational as in the game of index-relative investing, ultimately being right can still end careers if one makes the correct call early. At the time of writing it would seem that such a crowd-following trend is very much alive and well. Despite many stocks looking expensive on long term measures and most economies being dragged along by massive government stimulus, many fund managers are afraid to reduce overall equity exposure, or even exposure to sectors that are more vulnerable in any sentiment or economic setback. The fear is that the market continues to rally and they lose out versus the benchmark (as can be seen in the very low cash levels currently held by fund managers). The perverse effect of all this is that most managers prefer to lose 30% of your money if the index was also down 30%, rather than to make 10% when the index climbs by 20%. Such incentives make a mockery of the idea that our industry should be stewards of their clients' capital.

One of the manifestations of this desire to reduce career risk is portfolios with too many stocks. This over diversification helps reduce tracking error but in effect turns many funds into index trackers.

That is not to say there is anything wrong with index funds. The problem here is that investors are paying high TERs for something that can be achieved through much cheaper index trackers. (Ironically, it could be argued that active managers who believe it makes sense to own hundreds of stocks are in many ways saying the benefits of diversification outweigh the benefits of active management – though it doesn't say that in the brochure).

Risk

So far we have gone along with the assumption that standard deviation should be used as the measure of risk, but this would seem to be far from clear. According to this measure a stock that has dropped more than the market over a particular time period is de facto more risky than one that has not. Without wanting to go through an increasingly long list of arguments against EMH, it might be worthwhile laying down the assumptions on which this theory depends to see if they hold in the real world:

1. No transaction cost (no commission, no bid-ask spread).
2. Investors can take any position (long or short) in any stock in any size without affecting the market price.
3. No taxes.
4. Investors are risk adverse.
5. Investors share a common time horizon.
6. Investors view stocks only in mean-variance space.
7. Investors control risk through diversification.
8. All assets, including human capital, can be

bought and sold freely in the market.
9. Investors can lend and borrow at the risk-free rate.

Few could argue that EMH could in reality possibly form the framework for analysis, given the above assumptions, which remain in, and belong to, economic textbooks.

Even Eugene Fama and Kenneth French, two of EMH's most long standing advocates wrote in 2004 that:
"The attraction of CAPM is that it offers powerful and intuitively pleasing predictions about how to measure risk and the relation between expected return and risk. Unfortunately, the empirical record of the model is poor – poor enough to invalidate the way it is used in applications"

Despite this EMH and all its implications are still widely used throughout the industry. It would be of great benefit to be able to present risk as a definite number that can be compared across assets, but unfortunately in attempts to do this we all too often end up being precisely wrong, rather than roughly right.

"Your arrival on the planet has caused considerable excitement. It has already been hailed, so I gather, as the third most improbable event in the history of the planet"

"What were the first two?"

"Oh, probably just coincidences"

Douglas Adams, The Hitchhikers Guide to the Galaxy

One of the most entertaining quotes of the credit crunch came from David Viniar, CFO of Goldman Sachs who announced in the summer of 2007 that "We were seeing things that were 25-standard-deviation events, several days in a row." Now, a 25ρ event is not incredibly likely. If trading had been around since the beginning of the universe, such an event would still carry a miniscule probability of having occurred. It carries around the same probability of winning the lottery 21 times in a row and this is if the event only occurred on one day. As Oscar Wilde might have put it: to experience a 25ρ event might be regarded as a misfortune, but to experience more than one does look like carelessness(ii).

Rather than being a bit unlucky, perhaps the more likely explanation is that the models were just wrong. This is not to say that the people making these models are idiots. In fact the majority of them are most likely highly intelligent. It is just that the assumptions necessary to make the models rigorous simply don't hold in real life.

It is also the case that the very reliance on such models can in itself affect the probabilities they are designed to model. Looking at the debacle in the US housing market provides a good illustration of this point. Before 2007 US house prices had never before seen an across the board decline in values. The assumption that this would also be the case in the future (itself a baseless extrapolation of past trends) meant that mortgage backed securities (backed by houses from all across the country) should, according to the models, be very safe. This very belief helped increase the availability of credit to the housing sector, pushing up prices, thereby ironically increasing the likelihood that an across the board housing bust would happen.

Before looking at how exactly risk might be measured, it is worth asking the question, what exactly are the risks of investing in equities? There is no one correct definition of this but Warren Buffett sums it up well when he argues that:

"...the real risk that an investor must assess is whether his aggregate after-tax receipts from an investment (including those he receives on sale) will, over his prospective holding period, give him at least as much purchasing power as he had to begin with, plus a

modest rate of interest on that initial stake. Though this risk cannot be calculated with engineering precision, it can in some cases be judged with a degree of accuracy that is useful."

From a logical standpoint this would seem a reasonable definition of what a (sensible) investor is concerned with when investing in equities. Viewed through this lens, using the standard deviation of a stock as the sole measure of risk looks rather odd. Instead, it might be of more practical use to look at risk using a number of different criteria as suggested by James Montier:

1) Valuation Risk – This is the risk of overpaying for a stock and is arguably the factor most often overlooked by investors. Regardless of how exciting the growth of a company or market may seem, if an investor overpays for that investment, future returns are likely to prove disappointing. In this respect, it is unsurprising that equity returns over the last ten years have been so poor given that in 2000 markets were, on most long term valuation measures, the most expensive they have ever been. By most measures, Western stock markets remain above long term average valuations.

2) Business/Earnings Risk – Although some stocks may look cheap on current earnings there is a danger that this cheapness may disappear through falling earnings rather than rising prices. As such it is important to focus on earnings power rather than current earnings. This risk also reflects the danger that earnings power over time may deteriorate through factors such as competition or product obsolescence, or what Schumpeter termed 'creative destruction'. This risk can be reduced by looking at companies that have some form of competitive advantage that helps them maintain their earnings power over time.

3) Balance Sheet/Financial Risk – Focuses on the likelihood of financial distress as well as the relationship between earnings and financial structure. It is important to remember that leverage amplifies the affects of decreasing, as well as increasing profitability, something which is all too often forgotten when earnings are on an upward trajectory.

Whilst such a framework might seem like a sensible way of looking at the risks present in equities, it is impossible to quantify all of these factors in a single number. Although this might not seem like a bad idea to some, it does make PowerPoint presentations look much less scientific and authoritative, causing a headache for many a sales department.

This is not to say that financial theory has not delivered any useful frameworks or benchmarks. There have been far too many commentators wanting to dismiss any equation or mathematical theory in finance as evil and dangerous (perhaps many people just don't like maths). A better approach to the limitations of such theories is to allow them to, as Howard Marks argues "...inform our decisions but not dominate them", rather than using them as a drunken man uses a lamppost – for support rather than illumination.

When CAPM meets reality

Your fund manager had a meeting a decade ago with, to coin a dreadful phrase, a "self-made billionaire" in South East Asia. JP asked him why the balance sheet was so inefficient; his fund manager clients wanted the entrepreneur to pay a special dividend from the listed vehicle, and take on debt, thus boosting the ROE (return on equity) and raising valuations by reducing the Weighted Average Cost of Capital (WACC), via the tax shield on interest payments.

The entrepreneur had the time and patience to explain that his business had grown precisely by avoiding such strategies; although debt had its place, he was allergic to it because through periodic financial crises, his company had thrived as competitors had gone bankrupt through excessive leverage. This allowed him to cherry pick their assets or just enjoy a natural boost to market share as the competition was forced to shut down their rival operations. Thus he had amassed a veritable business empire across several sectors, by growing organically, focusing on quality and eschewing debt unless where necessary. (Interestingly, his listed vehicles are also among the lowest beta on the bourses upon which they trade. This also chimes with James Montier's findings that beta and returns are not necessarily positively correlated, but tend to be inversely correlated over the medium term.)

This conflict between financial theory and the realities of building a sustainable business, was a valuable precursor to the Western financial crisis (the mindless pursuit of leverage in order to enhance ROEs).

Best Wishes,

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i) Cohen, Polk, & Silli – “Best Ideas”
ii) The probabilities and Oscar Wilde reference were taken from a paper written by Dowd, Cotter, Humphrey & Wood, entitled “How unlucky is 25-Sigma?”