

Killing the Sacred Cows of Portfolio Construction

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In the aftermath of the Global Financial Crisis many investors have begun to question their basic assumptions about investing and are looking for new ways to think about portfolio construction. This research paper seeks to add to this debate by critically analysing some of the investing tenets held dear by market participants and stripping away much of the dogma and rhetoric that have served investors poorly in the difficult times we find ourselves in.

The Global Financial Crisis has not only been very difficult for those trying to build their wealth but has also seriously challenged many of the beliefs religiously held within the investing community.

The purpose of this paper is to try and address some of these issues, demonstrate where conventional thinking and assumptions may be wrong and to suggest a new way to build more stable, shock proof portfolios. To this end we look at three different myths:

1. Stocks Always Go Up – Don't They?

Most market participants continue to chant the mantra that stocks always go up *in the long run*. We ask exactly how long the long run is and why does this even matter for investors who typically have a very limited investing horizon.

2. Bonds are a Safe Bet – We can never lose money investing in bonds. Ever!

Bonds are classically considered to be a **safe bet** that will underperform equities but won't generate large losses. Is this correct and if so what do we do with fixed income in inflationary environments?

3. Absolute Return Funds Are The Devils Work!

Most absolute funds are vilified as too greedy, too complicated, too expensive and a **very risky** investment. Is this true? If it isn't (and it isn't!) how can we use alternative in our portfolios? Are all alternatives the same?

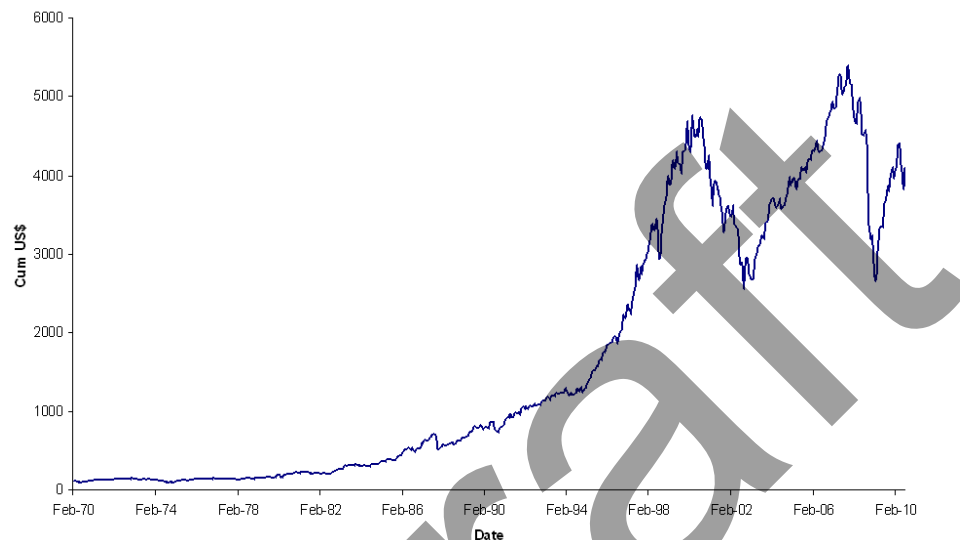
Finally we suggest an alternative or augmentation to classic mean-variance optimisation that seeks to better balance risk within the portfolio and produce for investors a more stable wealth building solution.

Myth #1 - Stocks for the Long Run

One of the longest and most persistent doctrines within the investment community is the idea that investing in stocks outperforms other asset classes over the long run. This creed has been popularised in work by Dr. Jeremy Siegel (Siegel, 2007) amongst others and has led to a number of popular books on the subject.

The graph below also helps the case. A superficial inspection of the graph shows that the MSCI US – a popular US index – while experiencing some severe recent setbacks has indeed trended upwards since the '70s.

Figure 1: The US Equity Market Since 1970



Source: MSCI, Factset

However as we take a closer look at the data it becomes clear that investing in stocks – while clearly a worthwhile investment – is not without its drawbacks.

Before we rush off to put all of our money into the equity markets we need to ask ourselves two simple (and linked) questions:

- On a risk-adjusted basis does buying equities make sense?
- How does my starting point affect my eventual wealth?

Examining the Equity Risk Premium (ERP)

To answer the first question we need to figure out the equity risk premium (ERP). This can be considered to be the expected compensation investors receive for investing in a risky asset (like equities) over a less risky asset (like bonds).

The concept of the ERP is a simple one but is much debated within the academic community since nobody can actually agree on what the ERP should be! For a flavour of the differing opinions please see Graham and Harvey (2007), Doole, Renelleau and Sevilla (2007) and Arnott (2001).

In our simple example we define the ERP as the total return of US equities over US 10 year bonds.

A simple view of history illustrates the problem.

Figure 2: The US Equity Risk Premium through Time



Source: Federal Reserve

The US ERP for the last 100 years has swung from a positive 19% premium post WWII to a negative -22% discount in the 1999-2008 period!

Most other developed countries have experienced similar shifts in the ERP as equities and bonds have outperformed or under-performed each other during different market cycles.

To answer the question of whether buying equities makes sense or not we will assume an ERP of 3% since this is approx. the average ERP in the US over the last 100 years.

Since 1985 the US equity market has outperformed the long bond market by slightly over 1.7% - nowhere near the expected ERP of 3%.

Figure 3: The US Equity Risk Premium Since 1985

	1985-1989	1990-1994	1995-1999	2000-2004	2005-2010	Average
10 Year Bonds	11.98%	7.43%	7.55%	7.92%	6.22%	8.22%
MSCI US	17.91%	8.65%	25.89%	-3.19%	0.53%	9.96%
ERP	5.93%	1.22%	18.34%	-11.11%	-5.69%	1.74%

Source: MSCI, Citigroup, Factset

The table also demonstrates that during that 25 year period the ERP has swung between positive and strong (the bull market of the late '90s) to negative and weak (most of this century!).

While equities have outperformed the bond market they do this by taking on over twice as much risk as investing in bonds as the table below illustrates.

Figure 4: Risk and Return On US Equities and Bonds

1985-2010	10 Year Bonds	MSCI US
Ann Return	8.38%	9.89%
Ann Risk	6.74%	15.69%
Return/Risk	1.24	0.63

Source: MSCI, Citigroup, Factset

So the simple statement that 'stocks outperform bonds over the long run' may be true (sort of) but hides the fact that

1. Equities can underperform bonds for considerable periods of time.
2. As an asset class equities are twice as risky as bonds.

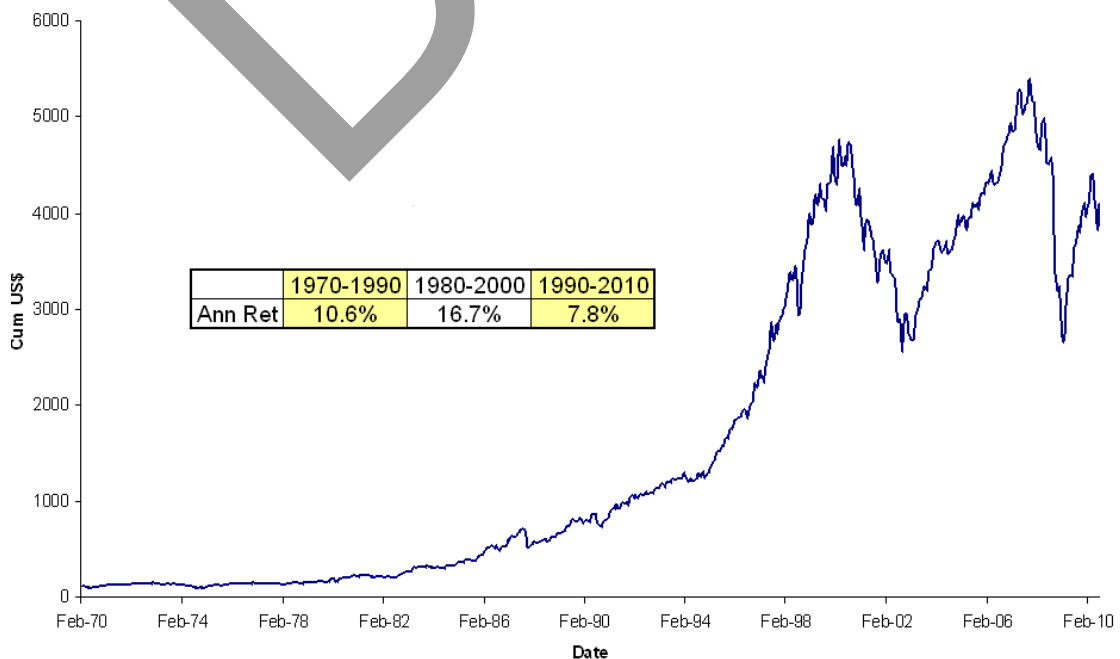
The Problem of the Starting Point

The second issue with the emphatic 'stocks for the long run' idea is linked to the volatile nature of the equity markets. What this means is that the return an individual investor experience really depends on when that investor decides to invest.

If we assume that a typical investor has a investing horizon of 20 years then the return they can generate over that investing period depends on when they make their investment.

In the graphs below you can see that an investor starting in the 1970s or 1980s makes dramatically different returns depending on when the investment was made.

Figure 5: The Starting Point Is Important! Returns From Investing In The US Equity Market At Different Times.



Source: MSCI, Factset

If the investor was lucky enough to invest at the start of 1970 or, even better, at the start of 1980 then he would have achieved double-digit returns over that 20 year period.

If, however, he decided to invest only in 1990 then he would have benefitted from the tech bubble but would have experienced the 'lost decade' of equity investing from 2000 to 2010 dramatically reducing his annualised return.

In summary the equity markets can be an attractive place to invest for the long run but it is important to be mindful of the starting point and the fact that equity returns can be very volatile.

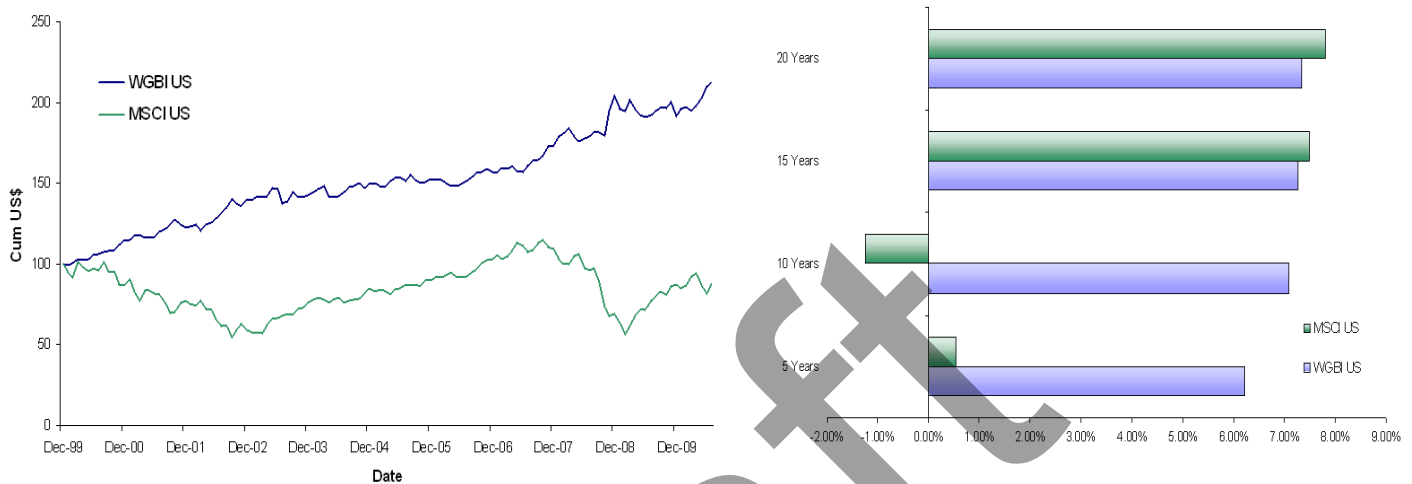
Of late many investors have shied away from equities and have begun to make fixed income a core holding in their funds. This brings us to Myth Number 2.

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Myth #2 - Bonds Are A Safe Bet

Over the past 10 years bonds have enjoyed an excellent run. As the graph below illustrates US Treasuries have handily beaten the US equity index with remarkably smooth performance.

Figure 6: US Bonds Outperform Equities Since 2000

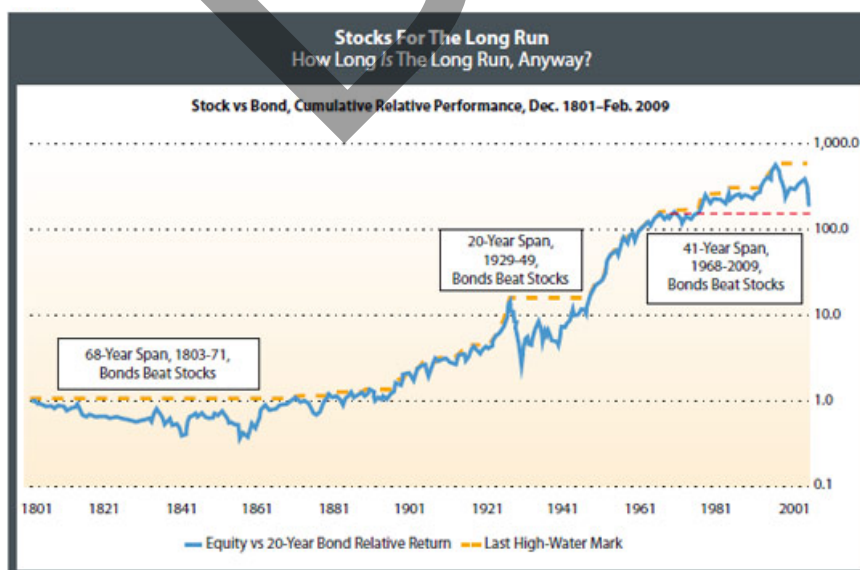


Source: MSCI, Citigroup, Factset

In a low inflation environment US bonds – and bonds in most developed markets – have beaten the more volatile equities over multiple time periods.

This has caused many academics and some practitioners to question whether equities have had their day and that perhaps bonds should form the core of any portfolio replacing the traditional role of equities. Robert Arnott in a recent paper (Arnott, 2009) produced an interesting graph (illustrated below) that suggested that for very long periods of time bonds could be relied upon to easily beat the stock market.

Figure 7: US Bonds Appear to Outperform Equities For Long Periods Of Time



Source: Standard & Poor's, Ibbotson Associates, Cowles Commission and Schwert

One of his conclusions bears reproducing:

'For the long-term investor, stock markets are supposed to give us steady gains, interrupted by periodic bear markets and occasional jolts like 1987 or 2008.

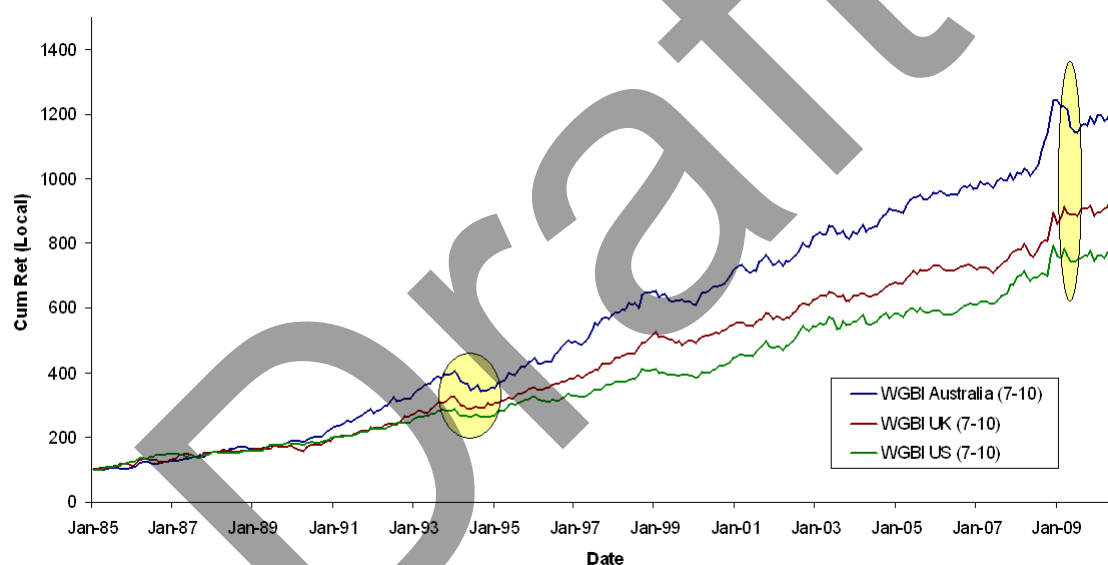
The opposite—long periods of disappointment, interrupted by some wonderful gains—appears to be more accurate.'

So the question we need to ask is a simple one: *are bonds really the panacea of investing that we have been looking for?*

Unfortunately the answer – unsurprisingly – is a resounding 'No'. While bonds do a very good job of generating good returns during certain periods the main failing of fixed income – the fact that it is 'fixed income' - can lead to large losses during inflationary and/or growth environments.

If we look at the last 25 years then we can see clear instances across all bond markets where the bonds have suffered drawdowns. During the 1994 bear market in bonds Australian bonds suffered a 16% drawdown.

Figure 8: Most Bond Markets Have Drawdowns Too!



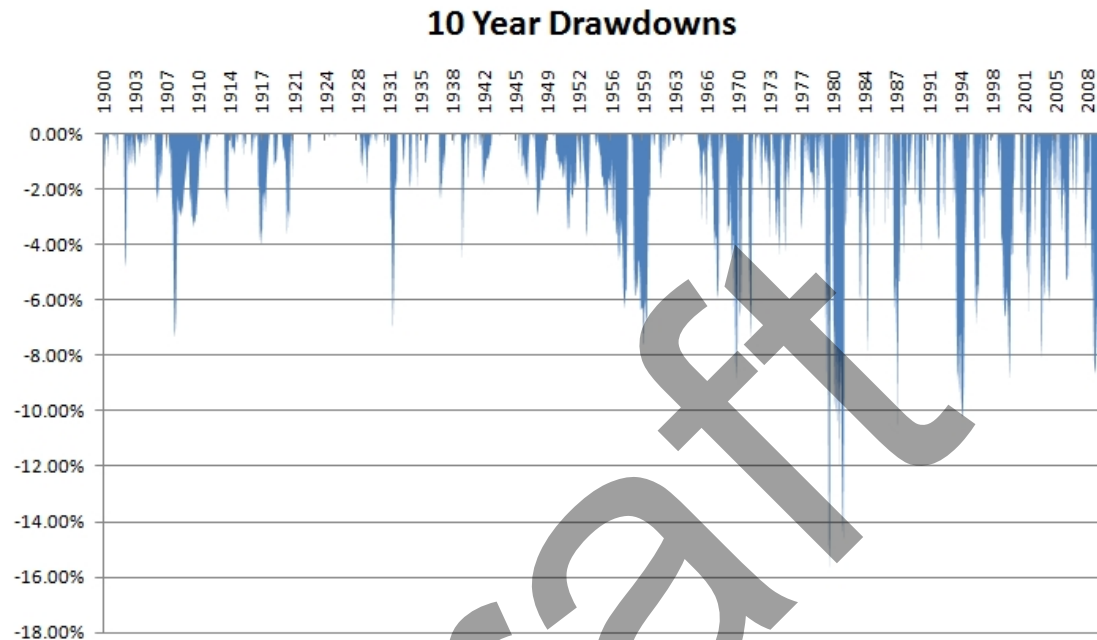
Source: Citigroup, Factset

Once we move beyond the last 25 years or so the case for moving most of your money into the bond market gets even harder to justify.

Mebane Faber (Faber, 2010) has produced a very good illustration of 10 year bond drawdowns since 1900. This clearly highlights the fact that holding **safe** 10 year bonds can still be risky in periods of high inflation ('80s) or when world growth is soaring ('50s).

While the drawdowns are modest compared with the worst excesses of the equity markets they certainly put to rest the ideas that bond markets are somehow a safe bet.

Figure 9: Historically Bonds Have Not Been Particularly Safe From Drawdowns.



Source: Mebane Faber

Myth #3 – Abs. Return Funds Are Risky

This is a third popular myth that somehow investing in absolute return funds is ‘inherently’ risky. This is further bolstered by the fact that most publicity around absolute return funds is bad publicity highlighting fund failures or disastrous performance.

The reality is somewhat different. If we look at broad indices of hedge fund performance then we see that the majority of hedge funds appear to manage their risk very well and appear to generate returns through different market cycles.

An Aside: The Problem with HF Data

Both investors and academics have pointed out a problem with HF databases in that they suffer from ‘*survivorship bias*’. This means that funds that have poor performance and ultimately go out of business tend to stop reporting their returns to these databases. This tends to bias upwards the returns since only the successful funds continue to report their results. For a more in-depth discussion of survivorship bias please see Kat and Amin (2002) or Liang (2009).

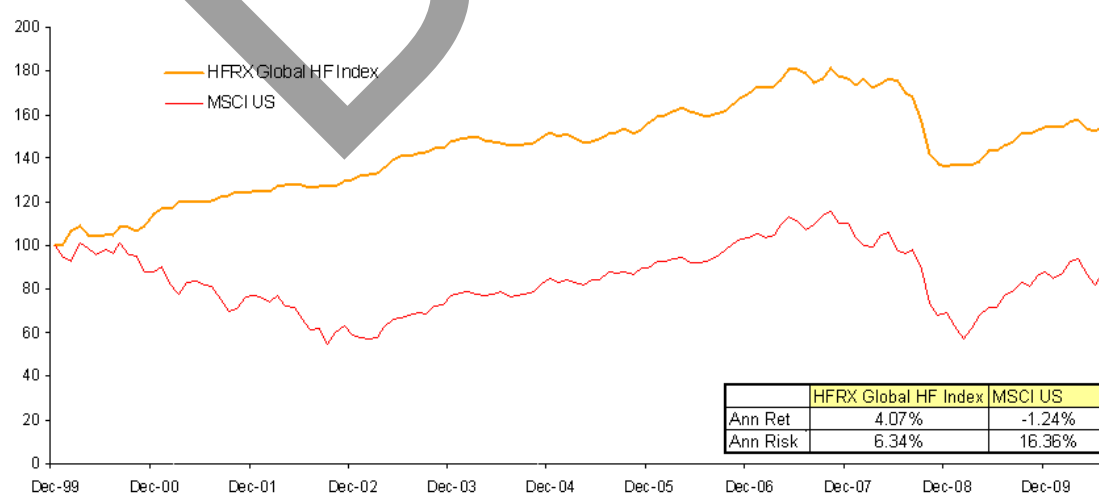
In our analysis we use the HFRX database that has stricter criteria for hedge fund inclusion than the HFRI index and is investible.

Absolute Return Does Not Mean ‘Always Positive Return’!

The graph below illustrates three points about hedge fund returns:

- Collectively hedge funds tend to run at much lower risk than equities.
- Generally absolute return funds have low correlation with traditional betas.
- While these funds are ‘absolute return’ this does not mean that they will always make money. During the GFC some of the best funds still made losses.

Figure 10: Hedge Funds Handle Risk Very Well



Source: MSCI, Factset, Hedge Fund Research, Inc., © 2010, www.hedgefundresearch.com

Not All Hedge Funds Are Created Equal

One of the key uses of hedge funds within a portfolio is to exploit their relative beta neutrality to add an extra layer of diversification and stability to portfolio returns.

However when we compare the returns of many absolute return strategies against bond and equity index returns we find relatively high correlations among certain hedge fund strategies.

Figure 11: Many Hedge Funds Strategies Are Highly Correlated With Beta

	HFRX Global HF Index	HFRX Macro Index	HFRX Conv Arb Index	HFRX Mkt Dir. Index	MSCI US	WGBI US (7-10)
HFRX Global HF Index	100%	59%	71%	87%	50%	-11%
HFRX Macro Index	59%	100%	11%	40%	2%	11%
HFRX Conv Arb Index	71%	11%	100%	71%	42%	-11%
HFRX Mkt Dir. Index	87%	40%	71%	100%	65%	-23%
MSCI US	50%	2%	42%	65%	100%	-26%
WGBI US (7-10)	-11%	11%	-11%	-23%	-26%	100%

Source: MSCI, CitiGroup, Factset, Hedge Fund Research, Inc., © 2010, www.hedgefundresearch.com

Absolute return strategies that take directional bets tend to be highly correlated with equity market performance while other strategies like convertible arbitrage also appear to be linked to equity beta. Similarly the overall HF Index – since it is made up of these strategies – also has a high correlation with equity beta.

The Global Macro strategy bucket is one that we believe is a true diversifier and displays historical low correlation with both bond and equity markets. This is a strategy that, we believe, should be an addition to any bond/equity mix to add stability to the return stream and this is the strategy that forms a key part of our portfolio construction discussion in the next section.

A Different Way of Building Portfolios

As we have seen, the dogma surrounding *equities for the long run* and the *safety of bonds* is largely unfounded and any conclusions subject to the starting point of your analysis.

However some broad conclusions can be reached:

1. Equities provide good long term returns but at the cost of high volatility.
2. Bonds provide slightly inferior long-term returns but benefit from lower volatility.

To this we can add the observation from our absolute return analysis:

3. Some absolute return funds manage their risk very well and are lowly correlated with both bonds and equities.

How does this help us to construct shock proof portfolios? We still need one more piece of the puzzle and that is some framework – beyond mean-variance optimisation – that allows us to take into account the volatilities of the different asset classes.

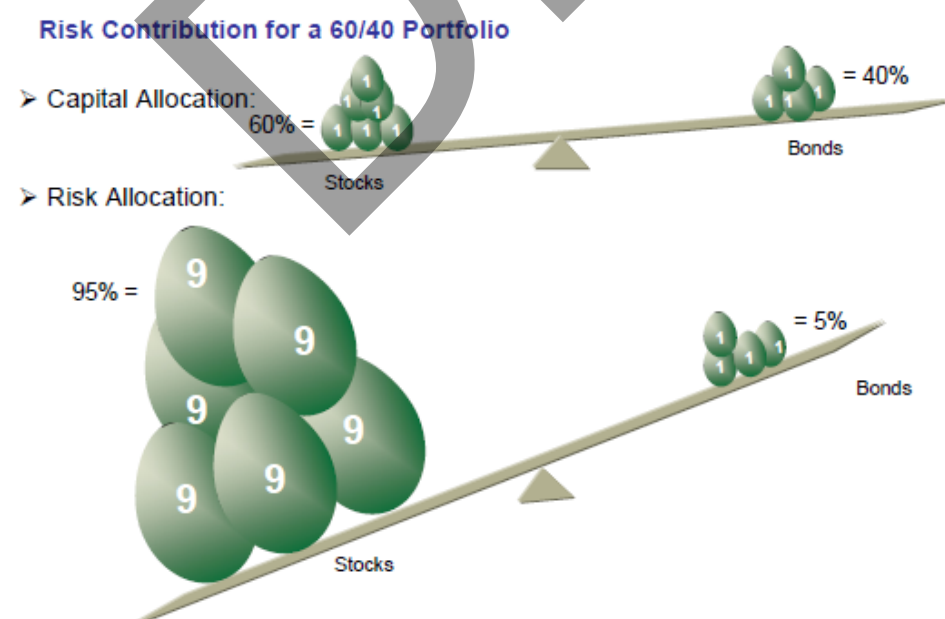
The Risk Parity Approach

This is an approach that has come to prominence in recent years and has been touted by a number of investment managers.

In brief the core idea behind the risk parity approach is that the portfolios allocate market risk equally across asset classes. This is in contrast to traditional stock/bond allocations where a 60% weight in equities normally means that the risk profile of the fund is completely dominated by equity risk.

We have represented this disparity graphically below:

Figure 12: 60/40 Balanced Funds Are Not Balanced From A Risk Perspective



Source: AIC Conference 2006, "Multiple Alpha Sources and Active Management", Edward Qian, Panagora Asset Management

Edward Qian (Qian, 2005) believes that the biggest problem of the traditional approach to asset allocation is that losses on the equity component may swamp any possible gains on the other parts of the portfolio. He adds:

'It can now be understood why a 60/40 portfolio is not a well-diversified portfolio. When a loss of decent size occurs, over 90% is attributable to the stocks.'

To put it differently, the diversification effect of bonds is insignificant in a 60/40 portfolio. Conversely, this would imply that any large loss in stocks will result in a loss of similar size for the whole portfolio. This is hardly diversification.'

The Risk Parity Controversy

The risk parity approach is far from universally accepted and aspects of a full implementation of risk parity – use of leverage and inclusion of a wide array of asset classes – have been rightly criticised.

Please see Ben Inker (Inker, 2010) and The Meketa Investment Group (Meketa) for a more detailed explanation of the issues with the implementation of a full risk parity approach.

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Constructing a Shock Proof Portfolio

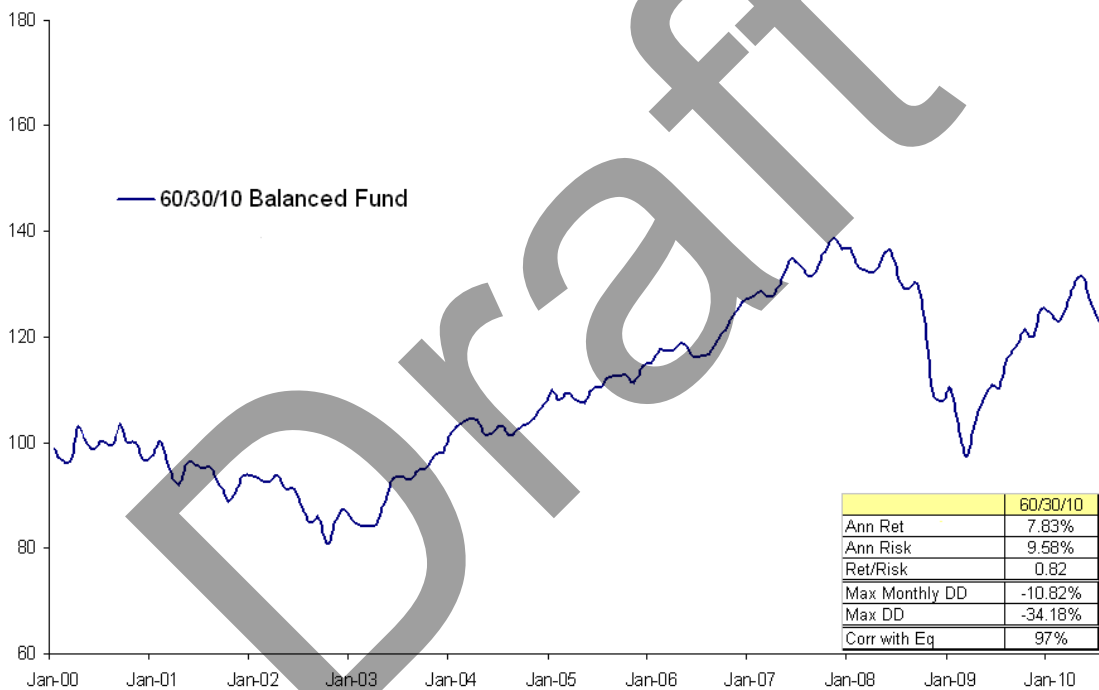
By taking account of the volatilities of the different strategies and blending them appropriately using the risk-parity approach we can even out the P+L of investors over time. This won't necessarily remove risk from the portfolio – investors need to take on risk to generate excess returns – but should produce a better trade-off between risks taken and returns generated.

A simple example serves to illustrate this.

If we construct a traditional portfolio in the standard way – 60% equities, 30% bonds and 10% alternatives – then we note that:

- a) The portfolio suffers from some severe drawdowns during the last 10 years.
- b) The portfolio is highly correlated with the equity markets.

Figure 13: A No-So-Balanced Balanced Fund



Source: MSCI, CitiGroup, Factset, Hedge Fund Research, Inc., © 2010, www.hedgefundresearch.com

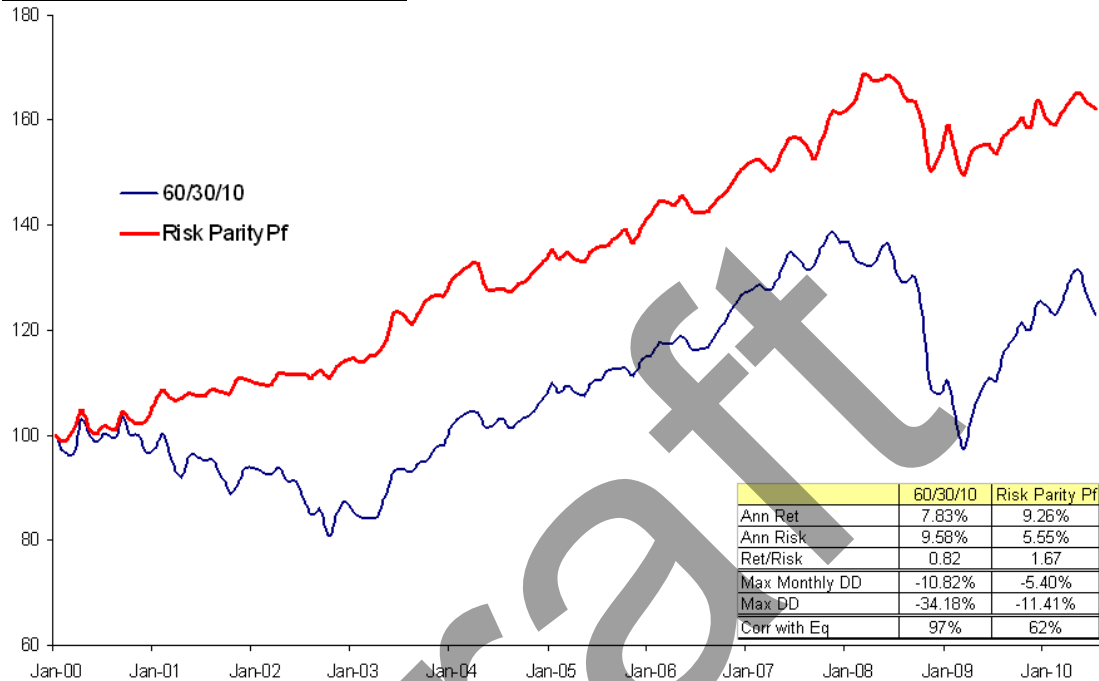
This is simply because, as we detailed in the risk parity section earlier, all of our good allocation work is essentially undone by the high volatility of equities swamping the returns of the other asset classes.

The other big problem that we encounter is that – as with equities previously – the investing experience of investors depends on their starting point. If they entered the fund during the lows of 2003 then that experience is very different to someone entering the fund in January 2000 or in June 2008.

Taking the lessons that we have learned about asset classes in this research paper regarding their historical return and volatility we can create a risk-parity portfolio.

The risk-parity portfolio takes into account the differences in volatilities between the different asset classes to produce a portfolio that has risk much more evenly spread across equities, bonds and alternatives.

Figure 14: Building A Shock Proof Portfolio



Source: MSCI, CitiGroup, Factset, Hedge Fund Research, Inc., © 2010, www.hedgefundresearch.com

The net effect of this construction methodology is to produce a portfolio that has:

- Higher returns than the traditional portfolio.
- Lower risk than the traditional portfolio with significantly reduced drawdowns.
- A balanced fund that is much more balanced - much lower correlation with the equity markets.

Better still the investing experience of investors – regardless of their entry point – looks to be approximately the same.

While the portfolio isn't wholly 'shock proof' – it still experiences drawdowns – it appears to be far more resilient than a portfolio constructed within a traditional framework.

In summary disposing of the myths around the different asset classes and creating portfolios that more accurately reflect the different asset class volatilities brings investors a long way towards creating shock proof portfolio.

References

Arnott, Robert

"The Death of the Risk Premium: Consequences of the 1990's"
Journal of Portfolio Management, Spring 2001.

Arnott, Robert

"Bonds, Why Bother?"
Journal of Indexes, May/June 2009

Doole, Stuart, Renelleau, Lise and Sevilla, Augustin

"The Equity Risk Premium and the Risks of Equity Investing"
AXA Rosenberg Investment Management

Faber, Mebane

"World Beta – Engineering Targeted Return and Risk"
www.mebanefaber.com

Graham, John and Harvey, Campbell

"The Equity Risk Premium in January 2007: Evidence from the Global CFO Outlook Survey"
Duke University - Fuqua School of Business and Duke University - Fuqua School of Business

Inker, Ben

"The Hidden Risks of Risk Parity Portfolios"
GMO White Papers, March 2010

Kat, Harry M. and Amin, Guaray

"Welcome to the Dark Side: Hedge Fund Attrition and Survivorship Bias over the Period 1994-2001"
Cass Business School Research Paper
University of Reading - ICMA Centre

Liang, Bing

"Hedge Funds: The Living and the Dead"
University of Massachusetts at Amherst - Department of Finance & Operations Management
September 11, 2009

Meketa Investment Group

"Risk Parity"
White Paper Series

Qian, Edward

"Efficient Portfolios through True Diversification"
Panagora White Papers, September 2005

Siegel, Jeremy

"Stocks for the Long Run, 4th Edition (2007):
The Definitive Guide to Financial Market Returns & Long Term Investment Strategies"
www.amazon.com

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