February 2007

Shaping Equity Returns

Equities clearly have a place in a pension scheme's investment strategy from a return generation perspective. This paper discusses whether, in the current market environment, these returns can be shaped to make them more consistent with trustees' objectives.

Market Background

Currently, everyone loves equities. The black period of 2000 to 2002 is becoming more of a distant memory, and has fallen out of three year return numbers. Only returns for 2002 contribute to the five year returns. Returns on equity markets since 2003 have been very good – the UK equity market, for example, is now up over 100%, one of the biggest bull markets in history.

Learning the lessons of the past, we know that equity returns come in periods of positive returns and negative returns, but generally when markets are performing we find it difficult to envisage them not performing – after all, the bad periods feel like a thing of the past!

Nonetheless, at the risk of bringing down the party mood, there are probably reasons to start thinking about whether the outlook for equities is as rosy as we have recently experienced. On balance, we think there is a reasonably strong case that we might see lower to negative equity returns towards the end of this year or into next. Here is the short version:

- **Four years is an unusually long time for a bull market**. On the basis of time alone, we might start getting concerned.
- **Economics would tend to support the idea that UK equities may struggle to some extent**. Economic growth (expansion of the economy) has been strong in recent years, but inflation is now rising. When this happens, the higher inflation typically ends up "crowding out" the growth - this means that economic growth tends to reduce. If inflation keeps rising, this tends to result in equity markets falling.
- **A backdrop of interest rate rises alongside this is generally not positive**. There is typically a lag between the start of rate rises and its impact on the economy but at some point we would expect this to affect spending by the consumer. This is another reason why economic growth should reduce (as corporate revenue is impacted by the extent to which individuals buy things from companies).
- **Earnings growth in the UK is well ahead of trend and might therefore at some point be expected to revert**. UBS Asset Management put earnings at around 24% above long term trend. Whether this excess is sustainable is arguable, but it has never been sustained in the past and therefore we must accept there is at least a risk that earnings will revert.
- **There is a lot of cash around chasing investment opportunities and pushing up prices, a negative for future returns**. The general availability of cash is in part fuelling the Mergers & Acquisitions backdrop to the market at the moment. This is driving up the prices of assets (reducing the future expected returns) and is consistent with a late-stage bull market. The condition is reminiscent of 1999, albeit then the story was technology.

There are arguments against this – for example, if consumers keep on borrowing (against their houses and on credit cards) to spend, then this might continue to drive the economy.

It's also possible that our timing may be significantly off – for example, in the worst case the falls may come earlier. The reason we think this is less likely, is that the impact of economics ought to take a little longer than a few months and therefore probably won't hit the first quarter corporate earnings rounds. But anything's possible.

The point is simply that the risk to future equity returns is a lot greater than it was four years ago and as such it is probably worth thinking of ways to manage this.

Dealing With The Potential For Lower Equity Returns

Managing equity risk may seem straightforward – simply disinvest from some or all of your equity holdings and wait for the markets to fall. There are two general problems with this:

- We might be wrong – which would argue at least for maintaining some equity exposure
- Getting back into the equity market once it has fallen is not as easy as it may seem.

The last point is a particular issue. To illustrate the point, think about this question. Let's say that you took all the monthly returns on the UK equity market for the last 20 years – so back to the end of 1986. Over the full period, UK equities produced a return of around 12% per annum (actually 11.7%). Inflation for the period was around 3.6% per annum, so this is a reasonably high real return (in excess of inflation) of 8.1% a year.

Now let's say we take all of the monthly returns in the 20 year period, and rank them from highest to lowest. We then remove the top 5% - so we are taking away one return in twenty, but they are the highest returns. We then take the

remaining returns (95% of monthly returns) and combine them to see what the return over the full period was.

This is equivalent to being fully invested in the UK equity market for 20 years, except for the highest returning months when we disinvested for that month and put our cash under the mattress.

Clearly, the full period return will be lower, but by how much? Obviously more than 5% lower, but how much more? Perhaps 10% lower? Let's be really extreme and guess 20% – this would mean that, instead of returns at 11.7% per annum, they would be 20% less, so in this case our guess would be 9.4% per annum. Seems pretty conservative!

In fact, the answer is actually 5.8% per annum. This is more than a 50% reduction in the absolute return, and a considerably greater reduction when compared with other benchmarks, such as bonds (which drive UK pension liabilities). The real return drops from over 8% a year to less than 2%.

Just to re-cap the point – **more than 50% of the return from equity markets comes in 5% (1 in 20) of the months**. The point here is simple – miss the best months and the return expectation from equities is destroyed. The implication is that, while avoiding falling equity markets is an advantage – and avoiding the bottom 5% is even more valuable, pushing the 20 year return up to approaching 21% – not being invested when the strong returns come is also a big risk. Even for the most talented asset allocators, the likelihood of predicting successfully when the best and worst months will happen is very small. **The only alternative, if we want long term equity returns, is to stay exposed.**

So for these reasons, we would like to do the following:

- Stay exposed to equities in order to achieve the long term return on the asset class
- Find a way to protect us against the downside should it happen.

Additional Issues - The Role of Equities in the Investment Strategy

The role that equities play in an investment strategy is relatively straightforward – to earn excess returns such that a pension scheme's investment objectives can be met. For example this may be a target return for equities of 3-4% over Government Bond returns (or Cash returns in the case of a liability-hedged pension scheme).

Although equities have provided this level of required return historically, market movements over the last 7 years have highlighted that this return can be delivered in bursts of positive and bursts of negative returns – not in a particularly smooth way.

This lack of smoothness translates into potentially significant variation in a pension scheme's funding level. The smoothness of the funding level over time is a reflection of the risk in the investment strategy – the lower the 'bumpiness' in the funding level, the lower the risk.

Equity returns are generally one of the biggest contributors to this bumpiness. If we found a way to invest to protect us against the downside resulting from this bumpiness, then it would have the added benefit of reducing the risk in the overall investment strategy. In this way, there would be a longer term benefit of this downside protection through reducing variation in the funding level and therefore in contributions required. For many schemes, this translates into a smoother process for removing deficits, which is good news for trustees and sponsors alike.

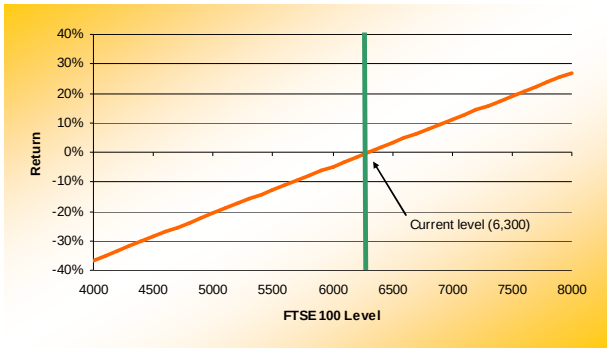
Shaping Equity Returns

So let's pull this all together into a wish list:

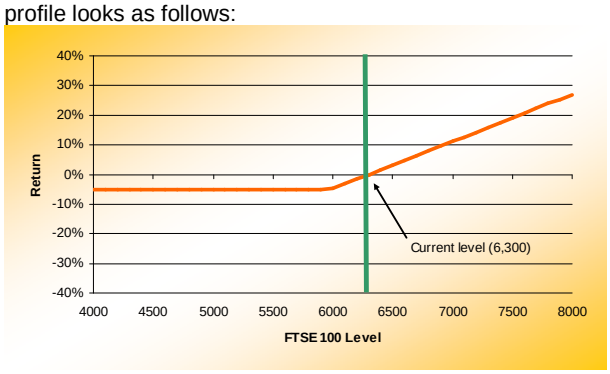
- We want the long term return from equities
- We don't want the downside risk in the short term, for two reasons. The first relates to a view of current market conditions and the second relates to the attraction of reducing the variation of funding levels.

Put simply, we want to buy the long term return from equities, but in a different shape.

To illustrate the concept of shaping equity returns, let's look at the return an investment in equities provides. The chart below shows the return on an equity portfolio for different levels of the FTSE 100 Index. We've assumed the current level of the FTSE 100 at investment is 6,300[1].



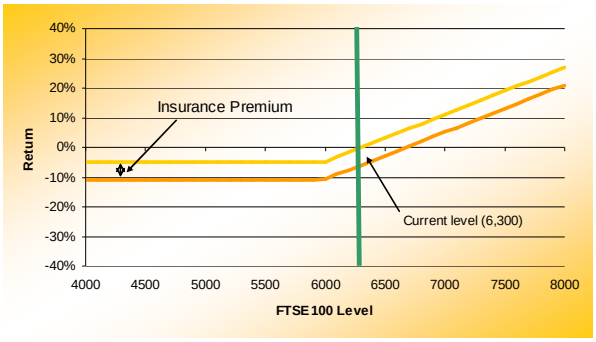
The suitability of this return profile depends upon trustees' objectives and risk tolerances. Let's look specifically at an example where the trustees' risk tolerance means that they may not be able to afford to lose more than 5% from the equity assets. For these requirements the desired return profile looks as follows:



This profile provides the perfect return for this set of trustees – i.e. it provides all of the upside of equities whilst removing the chance of losing more than 5%. In reality, this return profile is only achievable by purchasing insurance which costs money. Therefore, when taking into account the cost

1 Throughout this paper we ignore dividend income from equities. Therefore, the actual return would be higher than that quoted.

of this insurance, the overall return from equities is reduced by the insurance premium as shown below.

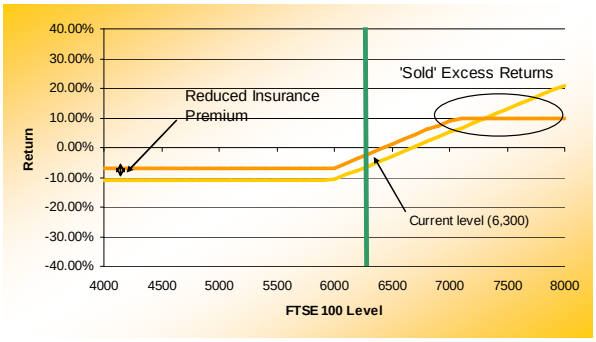


Therefore when the cost of insurance is taken into account, the return profile is no longer in line with the objectives of the trustees.

Reducing the Cost of Insurance

The cost of the insurance that is purchased could be reduced by altering the terms of the insurance – for example reducing the protection offered by the insurance will reduce the cost. This solution, in the example used above is not suitable given the desire not to lose more than 5%. An alternative way of reducing the cost of insurance is to pay for it by selling something that you don't want or need.

The trustees may only want a maximum return of 10% from the equity assets. They can therefore sell any returns above 10% and use this income to pay for some of the insurance. For example if equities returned 15% the Trustees would pay 5% of this away. However, if equities returned -15% then the insurance would pay the Trustees 10%.

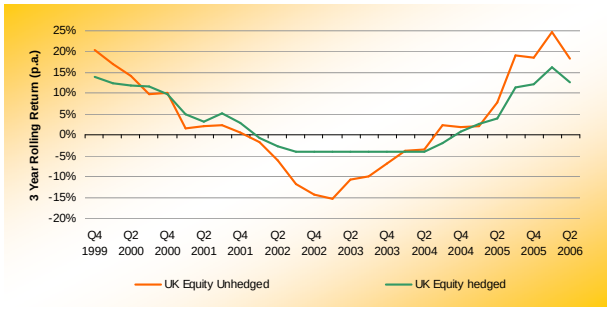


The idea of buying insurance to protect against poor returns, and paying for this by selling returns that are not absolutely required, is the essence of shaping equity returns. There are many ways of achieving this, allowing the returns to be shaped to the specific risk/return requirements of your pension scheme.

Introducing Shaped Equity Returns into an Investment Strategy

For pension schemes where the primary asset class used is equities, the general benefits of adopting this type of strategy are illustrated in the chart below (we are assuming that the pension scheme also operates liability hedging).

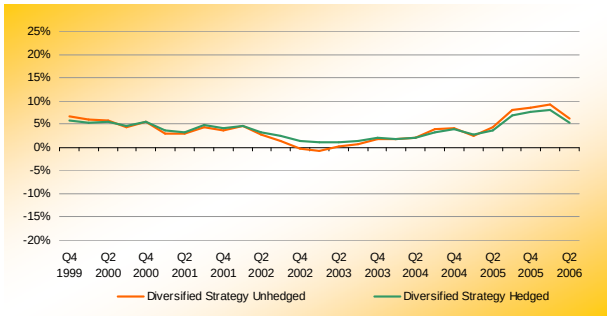
Unhedged v Hedged UK Equity Returns - Rolling Three Year Returns Relative To Liabilities



The chart shows a dramatic reduction in the variability of the returns achieved over rolling three year periods (relative to the liabilities) when equity hedging is employed. The hedging strategy significantly outperforms during the periods ending 2002 and 2003. The price for this is the unhedged equity strategy outperforming in the periods ending 2005 and 2006, but even in these circumstances the hedged strategy is still outperforming the liabilities by 5% per annum and more.

However, many clients have already addressed their equity risk through diversification into other asset classes and strategies. To the trustees of these schemes, it may seem that there is less relevance for this type of approach. While the impact is less than for the schemes that use mainly equities, it is still worthwhile. This is shown in the chart below, which compares a typical diversified strategy, to the same strategy but with a proportion of the equity investment replaced by a shaped equity return strategy.

Diversified v Diversified Strategy with Equity Hedging – Rolling Three Year Periods Relative to Liabilities



The diversified strategy already demonstrates improvements over the pure equity strategy, in terms of reducing the downside risks compared with the liabilities.

However, in the above chart, it can be seen that the use of hedging within the equity component makes a difference to the returns, particularly in the period during 2002, where the diversified strategy suffers it's only underperformance of the liabilities.

At this point, hedging delivers an additional 1%-1.5% of return, bringing the returns ahead of the liabilities again. Arguably, this is the point where returns are needed the most. Again, the price of this is that in high returning periods (when equities are performing best) the strategy employing the hedge underperforms. Nonetheless, the strategy with the hedge still produces strong returns,

comfortably sufficient to deliver on the return requirements of the vast majority of pension schemes.

Summary Of Characteristics Of The Different Strategies

We summarise in the table below the financial characteristics of the different investment strategies used to model the impact of introducing the shaped returns.

Strategy	Average (%pa)	Worst period of Perrformance (%pa)	No. of Periods	No of Periods of Out-performance	% of time Out-performed
UK Equity Unhedged	3.28%	-15.35%	27	17	63.0%
UK Equity hedged	3.58%	-4.17%	27	16	59.3%
Diversiified strategy - Unhedged	3.83%	-0.63%	27	25	92.6%
Diversified strategy - hedged	**3.88%**	**1.04%**	**27**	**27**	**100.0%**

The key points to note are:

- Hedging a pure equity portfolio doesn't necessarily reduce the chance of underperformance (in this case it increases it slightly). However, it does significantly reduces how bad the impact will be.
- Diversifying alone (ie not using hedging) improves the situation compared with either equity strategy. In particular, the percentage of three year periods where the strategy outperforms rises significantly, and the expected return remains of the same order of magnitude. Also, the worst period of performance (an underperformance of 0.6% versus the liabilities) is a much better result than either equity strategy. This illustrates the strength of the case for diversifying.
- Hedging a proportion of the equity risk within a diversified strategy adds further value. In this period of analysis, there was no three year period where the strategy underperformed the liabilities. The worst return was a 1% per annum outperformance.
- While there are no guarantees that the same would happen in the future, the analysis does illustrate the improved risk management effects of equity hedging, whether on a focused investment in equities, or within a diversified strategy.

Summary

Current market conditions lead us to look for ways to address the potential risks in equity markets, while maintaining long term exposure to equities in the process. The ability to shape equity returns to individual schemes' needs, makes this a possibility. It also has the benefit of stabilising the returns from equities, which is attractive in the context of a wider investment strategy.

Our analysis suggests that, whether or not trustees have decided to diversify their equity risk into other asset classes, there is likely to be benefit in considering this approach for inclusion in a pension scheme's investment arrangements. It is important to recognise that the way in which it is incorporated into a client's specific investment strategy would ideally be tailored to those individual circumstances.

As such, we are proposing that all our clients put this on their agendas as a priority for further more detailed consideration.

Case Study

One of our existing clients wanted to limit their exposure to falls in the equity markets across the UK and Europe yet still share the benefits of a rise in the equity markets.

The Trustees were looking to achieve an outperformance target of 4% over cash (LIBOR), as they had already implemented liability hedging and were now using LIBOR as the Benchmark. This outperformance would assist in steadily closing the funding deficit within the Scheme.

On the downside, the Trustees were not prepared to lose anymore than LIBOR minus 4%. With these parameters in mind we designed possible solutions for them covering a three year time horizon. We presented the Trustees with a range of options that fulfilled their targets and were within the permitted guidelines.

The solution that was settled upon and subsequently executed had the following characteristics:

- To achieve the outperformance target we calculated that the equity markets would need to rise by a total of 27% over the three years. If this occurs, the Scheme will benefit 100% in this rise.
- If the markets rose more than this amount then the Scheme would still benefit but only to the tune of 50% of any extra rises. This feature was added in order to lower the "Regret Risk" factor, ie the Scheme would still participate in any large market upturns.
- The maximum that the Scheme could lose was still capped at LIBOR minus 4% per annum no matter where the equity markets ended up.
- The structure did not involve paying out any cash returns – this is embedded in the design of the strategy.

An illustration of this design is shown in the chart below.