A guide to forecasting asset class returns & risk

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Introduction

This Guide should be read in conjunction with the farrelly’s Proactive Asset Allocation Handbook. It is intended to provide a more complete description of the rationale and the assumptions behind the farrelly’s approach to forecasting returns than is possible to include in the quarterly Handbook.

The Guide begins with a discussion of whether we should even be trying to forecast at all given the widespread belief in the efficient market hypothesis (in academic circles at least) and even more widespread skepticism amongst practitioners that anyone can forecast the future at all. As the great Yogi Berra once remarked; “It’s tough to make predictions, particularly about the future.”

We believe there is, in fact, a very strong rationale supporting the effectiveness of long-term market forecasting. We share the skepticism about the value of short-term forecasting. Forecasting long-term average returns is much easier than forecasting short-term returns in much the same way as we might find it difficult to forecast tomorrow’s temperature but can say with a very high level of confidence that temperatures in winter will be much lower than those in summer.

Accordingly this Guide describes the Occam’s Razor approach to forecasting which forms the basis for most of the farrelly’s forecasts and which has an excellent long-term track record. It explains how this approach uses forecasts of long-term growth rates and valuation ratios as the key building blocks for farrelly’s equities and property return forecasts. The Guide then describes the somewhat different methodologies used to forecast fixed interest, currency, hedge fund and private equity returns.

This Guide also contains references to pivotal academic papers that provide much of the theoretical foundation to the farrelly’s approach. These logical, evidence-based, academically sound underpinnings represent a key point of difference between farrelly’s and the vast majority of forecasting approaches. These papers are available at the farrelly’s subscriber resources section of PortfolioConstruction.com.au.
Efficient markets and the folly of forecasting

“No one can forecast the future.” We have all heard statements of this kind any number of times. And, strictly speaking, it is true that no one can precisely predict the future. However, the real question we should ask is, “Can we forecast the future with a useful degree of accuracy?” And to that question, we believe that the forecasting methodologies we use have a much more than just useful degree of accuracy.

INFORMAL FORECASTS

From time to time, we come across financial advisers who believe that forecasting is impossible, dangerous, and not the role of the adviser. They then go on to make statements like:

“Equities always outperform the long term.”
“Value stocks outperform growth stocks in the long term.”
“A 60-year old client in a balanced portfolio can spend x% pa indexed for the rest of his life expectancy.”
“We use active managers.”
“We use passive managers.”

Embedded within each of these comments is a forecast that, more often than not, is based on an assumption that history will repeat itself. And, if we have learned anything from history, it is that the opposite is true. The past performance of an asset class is a terrible guide to the future performance of that asset class.

It is farrelly’s contention that, like it or not, forecasting is an inescapable part of the financial planning process. There are two aspects to this contention:

• The forecasts have only to be better than not forecasting. For most advisers, not forecasting in fact usually means forecasting informally or unconsciously, and generally with poor results; and,

• There exists an excellent framework for making long-term forecasts that is a vast improvement on the ‘no forecast’ approach.

That being the case, farrelly’s believes that financial advisers are best served by approaching the task of forecasting with a logical, forward-looking, evidence-based approach.
WHY FORECAST IF MARKETS ARE EFFICIENT?

There are many definitions of market efficiency. Two of the most widely used are:

- **Strong efficiency – the price is always right**

  Amazing as it may seem, there is still a small, if rapidly shrinking, band who believe that markets are strongly efficient, in spite of a mountain of academic and practical evidence to the contrary – witness the insanity of the tech boom. These are the people who, on seeing a $50 dollar note lying on the path, wouldn’t bother to stop and pick it up on the grounds that, if it was real, it wouldn’t be there.

- **Weak efficiency – the price may not always be right, but that doesn’t matter. You can’t consistently make money trading on publicly available information.**

  The case for weak efficiency is far more difficult to reject, and in practice, is the only definition that really matters. The argument for weak efficiency is simple and persuasive – if all the securities in the market add up to the index, then for every winner there must be a loser, so investors can’t all beat the index, particularly after transaction costs. Furthermore, even if superior money managers do exist, they will stand out by their superior returns, which in turn will attract the majority of the inflows. In the end, only the very best money managers survive and then have to try to make money by trading with each other.

On the other hand, there are arguments that markets are only semi-efficient. That is, while they are difficult to beat most of the time, there are times when markets behave in a seemingly irrational manner. Farrelly’s believes it is possible to add value at those times by concentrating on areas that the majority of investors find difficult to act efficiently, and to then behave quite differently to those investors.

LIMITS TO ARBITRAGE AND AGENCY THEORY

Two areas of particular interest from the academic literature are limits to arbitrage and agency theory.

Limits to arbitrage describes circumstances where investors find it difficult to take advantage of mispricings in the market. Agency theory examines the problems that arise from managing other people’s money – issues such as short-termism, funds outflow in response to short-term underperformance, and the inability to take short positions are some that prevent money managers from acting as they would like.

In his excellent paper, “Behavioural Finance”, Jay Ritter1 describes limits to arbitrage and agency theory. He shows how they impact two types of situations where market inefficiencies may occur:

- high frequency, short-term events; and,

- low frequency, long-term events.

High frequency short-term events are those when mispricings occur that are short-term in nature (for example, a futures contract that is mispriced) and occur regularly, so that a strategy of continually and successfully trading these anomalies will yield a
small but reliable profit stream. These are the playgrounds of the big traders, and the actions of many of them act to keep these markets highly efficient.

However, there are limits to the impact of this sort of trading activity. These are the Limits of Arbitrage first described by Schleifer & Vishny2. Ritter gives some examples:

“The high frequency evidence supports market efficiency. It is hard to find a trading strategy that is reliably profitable. And mutual funds have difficulty beating their benchmarks. The low frequency evidence does not support market efficiency. Examples of enormous misvaluations include:

1. The undervaluation of worldwide stock markets from 1974-1982;
2. The Japanese stock price and land price bubble of the 1980s;
3. The Taiwanese stock price bubble that peaked in February 1990;
4. The October 1987 stockmarket crash; and,
5. The technology media and telecom bubble of 1999-2000.”

The point is that all of these were situations that the big, sophisticated money managers found very difficult to profit from:

• The markets took too long to come back to fair value.
• Clients lost patience and withdrew their funds.
• Many mandates don’t allow managers to sell short. Those that could short markets lost all of their capital before prices reverted to fair value (Long Term Capital Management, for example.)
• The markets were too big – a few money managers couldn’t quickly bring prices back to fair value.

For these reasons, professional money managers find it difficult to take advantage of such situations. Hence, massive market mispricings provide opportunities for long-term private investors. (For a further discussion on price bubbles see “Avoiding Avoidable mistakes”3).

THE BOTTOM LINE

farrelly’s believes that there are opportunities for advisers and their clients to take advantage of long-term mispricings of major asset markets. The keys to doing so are:

• Use sound, long-term forecasting methodologies;
• Invest for the long term and be prepared to hold through what may be lengthy periods of underperformance; and,
• Never buy an overpriced asset.
Occam’s Razor approach to forecasting

In 1991, John Bogle wrote his seminal paper “Investing in the 1990’s: Remembrance of Things Past and Things Yet to Come”. Bogle described what he called the Occam’s Razor approach to forecasting, named after Sir William of Occam who, in the fourteenth century, declared the simplest explanation is generally the best.

The Occam’s Razor approach to forecasting decomposes market returns into three elements:

- income;
- growth in income; and,
- the effect of changing valuation ratios.

This split can then be used to explain past returns and, more interestingly, forecast future returns with remarkable accuracy.

This simple approach to forecasting uses the following formula:

\[ \text{Returns} = \text{income} + \text{growth in income} + \text{effect of changing valuation ratios}; \text{ or} \]

\[ R = Y + G + V \]

where:

- \( Y \) is the current investment yield, a known quantity, hence no forecasting is required for this input.
- \( G \) is the annualised growth in income or earnings for the asset. For:
  - property, it is growth in rents;
  - equities, it is growth in Earnings Per Share; and,
  - fixed interest, growth is zero unless we have credit failure in which case it will be negative.
- \( V \) is the Valuation Effect. It is the compound effect of an increase or decline in PE ratios or yields on the value of the asset. For example:

  For equities, over a one-year period:

  \[ V = \left( \frac{\text{PE at end of period}}{\text{PE now}} \right) - 1 \]

  If PEs rose from 10 to 12, \( V = \frac{12}{10} - 1 = 0.2 \) or 20%

  For 10-year time periods, we use the compounded growth rate:

  \[ V = \left( \frac{\text{PE at end of period}}{\text{PE now}} \right)^{\frac{1}{10}} - 1 \]

  Using the previous example, over 10 years, \( V = \left( \frac{12}{10} \right)^{\frac{1}{10}} - 1 = 0.10183 - 1 = 1.83\% \) per annum
This model forms the foundation of the farrelly’s forecasting approach. The next sections describe the assumptions that underlie each of the forecast variables.

**RELIABILITY OF OCCAM’s RAZOR FORECASTS**

Figures 1, 2, 3 and 4 show the forecast and actual returns for four markets – Australian equities, US equities, NZ equities and Australian REITs – using the above methodology.

Why use 10-year forecasts? Quite simply, because they are more accurate than short-term forecasts:

- Earnings per share growth is steadier over 10-year periods than it is for one-year periods; and,
- The effect of a change in PEs is much smaller over ten years than one year, as we have just seen.

In each of the four examples below, the forecasts, while clearly imperfect, have proven to be far more than just useful. Even in the case of New Zealand equities, where the methodology has consistently overestimated returns, the direction of returns has been predicted usefully.

As a result, farrelly’s believes the methodology is an excellent basis for making long-term asset allocation decisions.

**Figure 1: Australian equity returns vs. forecast (rolling 10-year periods)**

![Graph showing Australian equity returns vs. forecast (rolling 10-year periods)]

[Source: farrelly’s using ASX data]
Figure 2: US equity returns vs forecast (rolling 10-year periods)

[source: Farrelly’s using S&P data]

Figure 3: NZ equity returns vs forecast (rolling 10-year periods)

Figure 4: Listed Property Trusts returns vs forecast (rolling 10-year periods)
Forecasting earnings growth

Forecasting earnings per share growth
How fast can companies grow their earnings or dividends? In other words, what is the value of “G" in the Occam's Razor formula? Farrell’s builds EPS growth forecasts from three elements:

- The very long-term trend of EPS growth versus GDP;
- Adjustments for different dividend payout policies; and,
- Adjustments to reflect faster-than-average and slower-than-average medium-term earnings growth.

The result is then checked against the earnings growth that may be generated from retained earnings which act as a cap on possible growth in earnings.

THE VERY, VERY LONG TERM

The seminal work on this subject was carried out by Dimson, Marsh and Staunton from the London Business School, and is described in their book, The Triumph of the Optimists. The authors looked at dividend growth (for which there is better data than EPS growth) for 16 different countries throughout the twentieth century. They examined the performance of these 16 countries, both individually and grouped into those that had experienced relatively uninterrupted economic growth throughout the century, and those whose economies had been destroyed during the two world wars.

Figure 5 is reproduced from that work. The clear observations from this data are:

- Even in the most favorable circumstances, companies do not grow EPS as fast as GDP in the long haul; and,
- When things do not go well (for example, economies which are devastated by war), even quite healthy overall GDP growth rates do not get translated into good EPS growth rates.

In the case of the US, dividends have grown more slowly than EPS because dividend payout ratios halved over the course of the 20th century from about 60% of earnings to close to 30% now – adjusting for this means adding 0.7% per annum to the dividend growth rate to derive the EPS growth rate. Even after that adjustment, over the course of the last century, EPS growth in the US still trailed GDP growth by 2% per annum.

The inability of companies to grow EPS growth as fast as GDP was studied in a paper from Bernstein and Arnott, “Earnings Growth; The Two Percent Dilution.” They postulate that, if the share of GDP represented by corporate earnings remains broadly constant over time, the growth of earnings will be the same as the growth in GDP. However, it is actually Earnings Per Share growth that we are interested in and that will
trail GDP growth by the level of net new issuance of shares in a market – that is, EPS growth will be diluted to reflect the amount of new securities on issue. This not only has intuitive appeal, it also matches the historical record. Net new stock issuance in the US has been around 2% per annum, which matches the actual long-term dilution in dividend growth found by Dimson et al. Thus, long-term EPS growth can be expected to match GDP growth, less an allowance for new stock issuance.

**Figure 5: Dilution of GDP growth as it flows through to dividend growth 1900-2000**

<table>
<thead>
<tr>
<th>Country</th>
<th>Real Div Growth (%pa)</th>
<th>Real GDP Growth (%pa)</th>
<th>Dilution (%pa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>0.9</td>
<td>3.3</td>
<td>-2.4</td>
</tr>
<tr>
<td>Canada</td>
<td>0.3</td>
<td>4.0</td>
<td>-3.7</td>
</tr>
<tr>
<td>Ireland</td>
<td>-0.8</td>
<td>2.3</td>
<td>-3.1</td>
</tr>
<tr>
<td>South Africa</td>
<td>1.5</td>
<td>3.4</td>
<td>-1.9</td>
</tr>
<tr>
<td>Sweden</td>
<td>2.3</td>
<td>2.5</td>
<td>-0.2</td>
</tr>
<tr>
<td>Switzerland</td>
<td>0.1</td>
<td>2.5</td>
<td>-2.4</td>
</tr>
<tr>
<td>UK</td>
<td>0.4</td>
<td>1.9</td>
<td>-1.5</td>
</tr>
<tr>
<td>US</td>
<td>0.6</td>
<td>3.3</td>
<td>-2.7</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>0.7</strong></td>
<td><strong>3.0</strong></td>
<td><strong>-2.3</strong></td>
</tr>
</tbody>
</table>

(Source: Dimson, Marsh & Staunton, The Triumph of the Optimists, 2002)

**THE IMPACT OF DIVIDEND POLICIES**

Bernstein & Arnott’s analysis partly ignores the effect of dividend policy. To the extent that a company does not pay dividends, it either reinvests in new initiatives or buys back its own stock. While the impact of stock buybacks is captured in the Bernstein and Arnott analysis, it does not capture the impact of differing reinvestment rates. When companies use retained earnings to grow their business, it results in a lower requirement for capital raising and therefore less dilution of EPS growth. Regardless of whether companies reinvest or buy back shares, if they have lower payout ratios, they should be able to grow EPS more rapidly.

Figure 6 compares the impact of payout ratios on the relative abilities to grow EPS of companies in Australia, New Zealand, the US and the world. The conclusion is that, due to their different dividend policies, on average, international companies should able to grow their earnings by around 1.4% per annum faster than Australian companies, (3.9% per annum less 2.5% per annum) and 3.4% faster than NZ companies - if they deploy their capital wisely.

Regrettably, more often than not, companies do not use their capital efficiently. As a result, when adjusting for payout ratios, farrelly’s uses half of the difference in the rates of retained earnings and applies that to the very long-term assumptions.
Figure 6: Effect of different dividend policies on EPS growth

<table>
<thead>
<tr>
<th></th>
<th>Australian equities</th>
<th>US equities</th>
<th>NZ equities</th>
<th>International equities^</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated fair value PE ratio</td>
<td>16.0</td>
<td>17.5</td>
<td>14.3</td>
<td>17.5</td>
</tr>
<tr>
<td>Earnings yield % (1/PE ratio)</td>
<td>6.3</td>
<td>5.7</td>
<td>7.0</td>
<td>5.7</td>
</tr>
<tr>
<td>- average dividend yield (%pa)</td>
<td>-3.8</td>
<td>-1.8</td>
<td>6.5</td>
<td>-1.8</td>
</tr>
<tr>
<td>= Retained earnings (%pa)</td>
<td>2.5</td>
<td>3.9</td>
<td>0.5</td>
<td>3.9</td>
</tr>
</tbody>
</table>

Source: farrelly’s using ASX and S&P data. Analysis as at December 2010. ^ FTSE All World Index.

THE REINVESTED EARNINGS APPROACH TO FORECASTING EPS GROWTH

Another approach to forecasting growth is to simply say that, in the very long term (20 years plus), EPS should grow at the same rate as equity – otherwise, Return On Equity eventually goes to infinity. So, growth in earnings should equal growth in capital – and capital grows with reinvestment of retained earnings and some portion of inflation. Only some assets will grow with inflation – typically property, brands, patents – while others such as financial assets tend not to. farrelly’s assumes about 50% of assets grow with inflation so in this approach, it is assumed that earnings grow at the rate of reinvestment of earnings plus half of inflation. In practice, we think this represents a cap on earnings growth rather than a forecast and accordingly, we use it as a check to make sure that our forecasts are not excessive.

In Figure 7, EPS growth rates are calculated using a Reinvested Earnings Approach, and compared to the result of the GDP-minus approach (that is, EPS growth should equal GDP less 1.5% to 2.0% per annum in the very long term).

Figure 7: Growth cap using the Reinvested Earnings Approach to EPS growth estimates

<table>
<thead>
<tr>
<th></th>
<th>Australian equities</th>
<th>US Equities</th>
<th>NZ Equities</th>
<th>International Equities^</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retained earnings (%pa)</td>
<td>2.5</td>
<td>3.9</td>
<td>0.5</td>
<td>3.9</td>
</tr>
<tr>
<td>Inflation estimate/2 (%pa)</td>
<td>1.3</td>
<td>0.8</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>Forecast Max EPS growth (%pa)</td>
<td><strong>3.8</strong></td>
<td><strong>4.7</strong></td>
<td><strong>1.7</strong></td>
<td><strong>5.1</strong></td>
</tr>
<tr>
<td>Estimated EPS Growth (GDP less dilution method) (%pa)</td>
<td>3.5</td>
<td>1.5</td>
<td>1.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

[Source: farrelly’s using ASX and S&P data]. Analysis as at December 2010. ^ FTSE All World Index.

As an aside, this has major implications for investors in emerging markets (e.g. China.) If fair value for Chinese equities is a PE of 15 or an earnings yield of 6.7% and dividends are at 2.7% at that price, it implies a maximum growth rate for Chinese companies of 6% per annum, assuming Chinese inflation averages 4% per annum. This is well below expected GDP growth rates of 7% to 10% per annum real (11% to 15%pa nominal).
Put another way, Chinese companies may grow earnings by 10% to 15% per annum, but much of that will need to be supported by substantial capital raisings and, therefore, substantial dilution of Earnings Per Share growth.

**MEAN REVERSION OF EARNINGS**

There is strong evidence that earnings mean-revert – that is, particularly strong periods of above-average earnings growth are normally followed by periods of below-average earnings growth, and vice versa.

Figures 8 and 9 show long-term EPS growth over time for the Australian and US markets comparing smoothed or trend earnings with actual earnings.

**Figure 8: Australian share market – Actual vs. trend earnings**

![Figure 8](source: farrelly’s using ASX data)

**Figure 9: US share market – Actual vs. smoothed earnings**

![Figure 9](source: farrelly’s using S&P data)

It is clear that when earnings grow very rapidly and move ahead of long-term trend, they subsequently grow slower falling back to trend earnings and vice versa. Thus,
when earnings move ahead of trend, farrelly’s reduces its future earnings growth forecast. When they are behind trend, we increase the future earnings growth forecast.

As an example, in December 2004, US EPS was 12% ahead of long-term trend growth. To adjust for this, we reduced our earnings growth forecast for the next decade by 1.1% per annum. In December 2008, US EPS were about 50% below trend earnings and so we increased our ten-year EPS growth forecast for the next decade by 4.1% per annum.

DO HIGH PE RATIOS RELIABLY FORECAST HIGH FUTURE EXPECTED EPS GROWTH RATES?

Academic research suggests that high PE ratios appear to have very limited predictive powers with respect to long-term EPS growth for broad markets (Fama And French7).

This is an important result – if high PE ratios did predict high EPS growth, growth (G in the EPS growth forecasting model) would not be independent of the current PE level, a key component of the value effect (V in the EPS growth forecasting model). Because G and V are largely independent, it’s possible to think about them in isolation, which makes forecasting easier.

THE BOTTOM LINE

farrelly’s forecasts take into account GDP growth, less an allowance for dilution which will vary based on retained earnings, and an allowance for mean reversion if earnings are ahead or behind trend earnings.
FORECASTING PROPERTY EARNINGS GROWTH

Traditionally, REIT earnings have come from property rents, which are fairly stable and easy to forecast. In the past few years, this idea has been turned on its head as income streams have been dominated by the (generally appalling) capital management practices of REIT managers.

The period between 2005 and 2010 was characterised by many of the REITs becoming too highly geared and then, during the Global Financial Crisis, reducing gearing at prices that were often disastrous to investors. This period was also characterised by REITs reducing payout ratios from 100% (or more) to around 65% to 85%. The net effect has been a collapse in REIT distributions, as shown in Figure 10 below.

But all that is ancient history. What will these vehicles produce going ahead? In estimating likely growth rates, farrelly’s takes into account expected inflation, adjusts for depreciation, income retention, and gearing – and, of course, capital management.

Figure 10: A-REIT Distributions

Rental Growth

In the long term, rents should increase at around the rate of inflation. As a result, you could expect REIT distributions would also grow at this rate. However, we also have to take into account depreciation, gearing and retention of earnings. Up until 2005, this model describes quite well how distributions grew, as shown in Figure 11 overpage. The last column also shows the impact of the capital management through the Global Financial Crisis.

Depreciation

Depreciation is not just an accounting concept. Shopping centres are subject to continual capital redevelopment and refurbishment. Office and industrial buildings are eventually pulled down and rebuilt. All this requires additional capital which
dilutes EPS growth. If 50% of property assets are tied up in the buildings (versus the land value) and if those buildings have an average life of 50 years, it equates to a 1% per annum drag on earnings growth.

Figure 11: Forecast and historical A-REIT income growth (Dec 2010)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflation</td>
<td>2.5%</td>
<td>4.6</td>
<td>2.8</td>
</tr>
<tr>
<td>Estimated impact of depreciation</td>
<td>-1.0</td>
<td>-1.0</td>
<td>-1.0</td>
</tr>
<tr>
<td>Impact of gearing</td>
<td>0.5</td>
<td>0.9</td>
<td>0.7</td>
</tr>
<tr>
<td>Retained earnings</td>
<td>0.9</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Impact of capital management</td>
<td>-0.6</td>
<td>-0.3</td>
<td>-17.8</td>
</tr>
<tr>
<td>Forecast growth in distributions</td>
<td>2.3</td>
<td>4.2</td>
<td>-15.3</td>
</tr>
</tbody>
</table>

[source: Farrellly’s using ASX and RBA data]

**Gearing**

Gearing multiplies growth. If growth in the underlying rental yield matches inflation less depreciation, (2.5% less 1.0%) then 30% gearing will increase overall growth by about 0.5% per annum – hardly worth it given the increased level of risk it introduces. Nonetheless, this seems consistent with the long-run data pre-2007, as is again shown in the table above.

**Capital management**

We would hope this would be a positive or, if negative, at least a very small number. Table 11 shows that in normal times when REITs have had low gearing, a small negative has been the outcome. Unfortunately, the impact of capital management also has the potential to be an enormous negative as was the case from 2005 to 2010 as mentioned earlier. Farrellly’s base case is that the REIT managers have learned their lessons and will keep gearing at sustainable levels going ahead. There remains the possibility that all the REIT managers have learned over the past few years is how to save their own skins, in which case they may well fall for the cycle all over again.

**Retained earnings**

One aspect of capital management that should be a positive is that the A-REITs are now paying out less than 100% of free cash flow. This should lift future growth rates – retained earnings of around 15% on average equates to about 1% per annum added to the balance sheet, generating 1% per annum extra distribution growth.

**THE BOTTOM LINE**

Growth should be close to inflation – if management doesn’t get in the way.
Forecasting PE ratios

A range of factors can cause PE ratios to vary over time, or from one country to another:

- different equity risk premium requirements due to perceived differences in risk between markets;
- higher or lower perceived growth potential;
- different accounting standards; and,
- different interest rates and inflation.

As shown in Figures 12 and 13, inflation has been a driver of PEs in both the US and Australian markets over the past 50 years.

Figure 12: Australian equities – PE ratios vs inflation (1961-2010)

When inflation is low, Australian PEs normally sit between 14 and 18. We do get the odd sentiment inspired burst of PEs outside that range but it is usually short lived – so long as inflation stays low. The inflation assumption becomes critical for PE ratios.

Both Australia and New Zealand have smallish budget deficits, weak unions and central banks anxious to ensure that inflation stays in the 2% to 3% per annum band. The major inflation threats would appear to be the potential rise in the cost of imported goods and, in Australia, some pressure from full capacity, particularly in the resources industries. Most importantly, an outbreak of high inflation in the US, long term or short term, should have little effect on Australian or NZ inflation because of the impact of floating currencies. In a world of floating currencies, high inflation or even...
the fear of high inflation translates over time into currency depreciation relieving the pressure on costs for importers. This has been richly illustrated by the fall in the US dollar in recent years.

For Australia and NZ, farrelly's expects inflation will be just as it has been for many years – some potential inflationary pressures carefully managed by vigilant and highly effective Reserve Banks keeping it safely in the 2% to 3% per annum range.

Figure 13: US Equities – PE ratios vs. inflation (1961-2010)

[source: farrelly’s using S&P data]

The conclusion to be drawn is that we can narrow down our range of expectations about PE ratios by making an assumption about future inflation.
Forecasting property yields

Over the past 30 years, REIT yields have proved to be reasonably stable, particularly when compared to yields on 10-year government bonds, as shown in Figure 14. While over some periods, there appears to be a strong correlation between interest rates and REIT yields, this relationship does seem to break down in the long term.

Figure 14: Australian REIT yields vs bond yields

As there seems to be a weak long-term relationship, farrelly’s characterises yields as occurring in high or moderate interest rate regimes, and applies an average historical yield from those periods (Figure 15).

Figure 15: A-REIT yields at different bond yield levels (1972-2010)

<table>
<thead>
<tr>
<th></th>
<th>High bond rates</th>
<th>Moderate bond rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-year bond rate (%pa)</td>
<td>6 – 15</td>
<td>4 - 6</td>
</tr>
<tr>
<td>Average Yield (%pa)</td>
<td>8.8</td>
<td>7.3</td>
</tr>
</tbody>
</table>

The reason there is not a bigger difference between the two is that in high inflation periods, we expect rapid rental growth to largely offset the impact of inflation. Of course, we don’t get the same protection from bonds which are by their nature a fixed rate.
There is one more twist to this tale, and that is the proportion of free cash flow paid out varies from time to time. Until around 2004, REITs paid out 100% of free cash flow – that is, 100% of rents received less expenses and management costs. Between 2004 and 2008, many REITs increased debt in order to pay out in excess of 100% of free cash flow. Since the Global Financial Crisis, many now pay out less than 100% of free cash flow. farrelly’s has adjusted the fair value yield in order to reflect the amount retained.

Incidentally, the total returns to REITs shouldn’t be changed by retaining income because doing so decreases yield but increases growth by the same amount. Thus, a REIT yielding 7.3% per annum, paying out 100% income and growing at 2% per annum should give a total return of 9.3% per annum. If that REIT retained 10% of its income, that yield should fall to 6.6% per annum, and growth should pick up to 2.7% per annum – give the same total return of 9.3% per annum. Hence, with about 10% of free cash flow retained, a 7.3% fair value yield becomes a 6.6% fair value yield.

**THE BOTTOM LINE**

farrelly’s forecast for REIT yields is 6.6% being the average 7.3% per annum REIT yield in a low interest rate regime reduced to 6.6% per annum after adjusting for income retention of 0.7% per annum.
Forecasting currencies

In forecasting currency movements, the basic principle used by farrelly’s is to first calculate the expected impact of fully hedging currency exposure, then assume that the expected currency returns are the same for hedged or unhedged exposures, and hence use the hedged outcome as a forecast of the unhedged outcome.

THE COST OF HEDGING

When hedging currencies, the hedger receives the difference in interest rates between the home currency and the currency being hedged (less any transaction costs.) If this was not the case, there would be an arbitrage opportunity between two currencies whereby it was possible to borrow in one currency and invest in the other on a fully-hedged basis, and still make a profit.

As an example, if a Japanese investor was to pass up the 1% interest rate paid on Yen-based cash accounts in favour of an Australian cash investment at 5%, the Japanese investor would be 4% per annum better off, plus or minus any exchange gain or loss. If the investor decided to hedge the A$ exposure, it would cost (surprise, surprise!) 4% per annum, the difference between the two interest rates – effectively canceling out any interest rate gain.

Hence, any time a currency risk is hedged, there is a cost or benefit paid to or by the hedger equivalent to the interest rate difference between the two countries.

To estimate the difference between the world and the Australian dollar, farrelly’s uses an approximate break down of the FTSE World Index to calculate the average 10-year Government bond rate. The difference between it and the Australian 10-year bond rate is used to estimate the expected long-term hedge premium.

Figure 16: Calculating the long-term hedge premium (as at July 2011)

<table>
<thead>
<tr>
<th>Index Weight (%)</th>
<th>10-year bond yield (%pa)</th>
<th>Differential at 4.9%pa for Au bonds (%pa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Dollar</td>
<td>50</td>
<td>2.9</td>
</tr>
<tr>
<td>Euro region</td>
<td>20</td>
<td>2.7</td>
</tr>
<tr>
<td>Yen</td>
<td>9</td>
<td>1.1</td>
</tr>
<tr>
<td>Pound sterling</td>
<td>8</td>
<td>3.1</td>
</tr>
<tr>
<td>Other</td>
<td>13</td>
<td>-</td>
</tr>
<tr>
<td><strong>Average differential</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Source: farrelly’s using FTSE World Index and RBA data]
farrelly’s splits debt into two classes - Tier 1 and Tier 2 Debt. The best way to think about the distinction between Tier 1 and Tier 2 Debt is this – any security in which you would comfortably allow a client to invest 80% of their capital is Tier 1 Debt. Everything else is Tier 2 Debt. This is a somewhat broader and more flexible definition than the one farrelly’s uses for forecasting returns as described below, but it gets closer to the heart of the matter. Hence, Tier 1 Debt comprises those securities that have a very high chance of being fully repaid – that is, government bonds, major bank backed securities and the like.

In this regard, we ignore the traditional notion of investment grade and non-investment grade debt. BBB securities make the traditional investment grade cutoff but don’t qualify as T1 Debt as they have a significant chance of failure – and that just doesn’t cut it for the secure part of a portfolio.

**FORECASTING LONG-TERM RETURNS FOR TIER 1 DEBT**

Forecasting long-term returns from domestic government bonds is easy. For ten-year bonds, we take the current ten-year bond yield and assume the security is held to maturity. If the bonds were bought at 5.0%, then the ten-year return will be 5.0% per annum. farrelly’s ignores the possibility of reinvesting at higher or lower bond yields as that presupposes the investor is reinvesting, when in many cases the income will be spent. When government bonds paid yields above term deposits (TDs), that was all there was to forecasting T1 Debt.

Since 2008 it is has not been quite so easy. Where long-term TDs from major banks yield more than government bonds, it is a little more difficult, but not much. Take the five-year TD yield – say it is 6.8% per annum, and assume a rollover yield in five years’ time and average the two. The second five-year yield is best estimated by taking the 10-year bond yield and making assumption about what spread may be in place for TDs against government bonds in five years. If we expected TDs to pay 1% above government bonds which were at 5%, we’d assume the TDs would roll over at 6% and the average for the decade would be 6.4% per annum.

**FORECASTING LONG-TERM RETURNS FOR TIER 2 DEBT**

Unlike T1 debt, T2 debt takes on a huge variety of forms including corporate bonds, high yield debt funds, hybrid securities, non-bank issued debentures, CDOs and mortgage trusts all where the repayment of capital is no sure thing. These securities have fundamentally different risk characteristics to government bonds and TDs, and therefore should be considered separately.

To simplify forecasting aggregate returns for this diverse set of securities, farrelly’s:
• Uses returns on global traded debt securities as a proxy for all Tier 2 Debt, be it
domestic or international, listed or unlisted, fixed or floating rate; and,

• Assumes a portfolio of 50% BBB debt and 50% High Yield Debt, with the High Yield
Debt made up of 30% BB and 20% B securities.

The forecast 10-year return from Tier 2 Debt is simply:

• the yield from 10-year government bonds (being the farrelly’s 10-year estimate of
bond returns);

• plus the expected yield premium earned above government bonds; and,

• less the impact of losses from defaults.

This is done for a portfolio assumed to be made up of well-diversified, currency-
hedged, global listed debt. While investors may not actually hold this structure, it
seems reasonably representative of the type of assets recommended by financial
advisers – in the same way that an equities index is representative of the returns that
can be achieved from equity portfolios, even though many of those portfolios are
quite different from the index.

**Premiers above government bonds**

The forecast premium is a combination of the premiums on BBB rated securities and
High Yield Debt. As can be seen in Figures 17 and 18, the premiums on both US BBB-
rated securities and High Yield Debt can vary dramatically from time to time.

**Figure 17: Yield spread: BBB-rated and Hi yield securities vs. government bonds**

![Graph showing yield spread](Source: farrelly's, US Federal Reserve)
Figure 18 also illustrates how high yield debt premiums closely track, and often anticipate, the annual default rate of these securities. This represents an interesting opportunity. If from time to time we can buy securities with maturities of around five years with premiums that reflect very high one- to two-year failure rates, there would appear to be ample scope to achieve very high returns at those times. Of course, those very high returns will only accrue to those with very big hearts, as these opportunities occur in the most distressed of markets.

Are low default rates and low premiums on high yield debt reliable predictors of lower than usual long-term default rates? Unfortunately not. As shown in Figure 18, the market only seems to look one year ahead.

Farrelly’s 10-year forecast for premiums (Figure 19) assumes average maturities of five years with the current premiums applying over that time, and reinvestment for the following five years to run at long-term normal premiums.
Default rates

Figure 20 shows the average ten-year default rates for securities of different ratings – that is, the percentage of securities that were initially issued at a given rating that subsequently defaulted over the following ten years. It is a sobering picture. Over ten years, the average default rate of BBB rated debt is around 1-in-24 securities, while for BB or lower rated securities, it is 1-in-3.

Figure 20: Average and worst-case 10-year default rates¹ (1920-2009)

<table>
<thead>
<tr>
<th>Period</th>
<th>Investment grade default rates</th>
<th>Hi yield default rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1931 – 1941 (%)</td>
<td>14 - 20(e)</td>
<td>39</td>
</tr>
<tr>
<td>1989 -1999 (%)</td>
<td>1.2</td>
<td>41</td>
</tr>
<tr>
<td>1999-2009 (%)</td>
<td>3.1</td>
<td>39</td>
</tr>
<tr>
<td>Average (1920-2009)</td>
<td>4.2</td>
<td>29</td>
</tr>
</tbody>
</table>

Source Moody’s.  (e) farrelly’s estimate

1. This is the percentage of all securities that are first issued with a particular rating that default in the ten years following issue date.

The impact of default on returns

So what happens when one of these securities defaults? Sometimes, default is as benign as missing a single interest payment. At other times, it means no return of capital at all. However, more often than not, investors get some but not all of their money back – how much tends to depend on the overall level of defaults. During good times when defaults are low, recovery rates tend to be high. Similarly, when default rates are high, unsurprisingly, recovery rates are much lower. Not only will the amount of capital recovered affect the final return, so too will the timing of the default. A year 10 default means the investor has at least received nine years of interest payments. A year one failure is obviously more catastrophic.

These three factors – the default rate, average recovery rate, and timing of defaults – are combined to estimate the overall impact of failure over a 10-year period on securities of different quality.

Figure 21: Estimated impact of default on securities of different quality (Dec 2010)

<table>
<thead>
<tr>
<th></th>
<th>Base case</th>
<th>Pessimistic case</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BBB</td>
<td>Hi Yield</td>
</tr>
<tr>
<td>Assumed 10-yr cumulative failure rate (% pa)</td>
<td>8</td>
<td>40</td>
</tr>
<tr>
<td>Assumed recovery given failure (%pa)</td>
<td>50</td>
<td>30</td>
</tr>
<tr>
<td>Estimated impact of defaults (%pa)</td>
<td>-0.4</td>
<td>-3.5</td>
</tr>
</tbody>
</table>

Source: farrelly’s estimates. Timing assumed to be evenly spread over the decade.
Finally, the total return forecast combines the yield pick-ups and forecast impact of defaults for securities of each class and for a portfolio weighted 50% BBB, 50% high yield debt (30% BB, 20% B) as illustrated in Figure 22.

Figure 21: Estimated impact of default on securities of different quality (Dec 2010)

<table>
<thead>
<tr>
<th></th>
<th>Base case</th>
<th>Pessimistic case</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BBB</td>
<td>Hi Yield</td>
</tr>
<tr>
<td>10 year risk free rate (%pa)</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>Average credit spread (%pa)</td>
<td>3.1</td>
<td>6.5</td>
</tr>
<tr>
<td>Impact of defaults (%pa)</td>
<td>-0.4</td>
<td>-3.5</td>
</tr>
<tr>
<td>Forecast 10-year return (%pa)</td>
<td>8.2</td>
<td>8.5</td>
</tr>
</tbody>
</table>

Source: farrelly’s estimates

**RISK**

Figure 22 also shows how farrelly’s estimates the long-term risk to these forecasts by varying the level of defaults and the recovery rates to get pessimistic assessments of returns as well as base case returns.

From an optimistic perspective, if defaults turned out much lower than forecast, we can estimate the positive impact on returns. It’s clear from Figure 22 that there is an asymmetric pattern of returns – in the event of no defaults (unlikely) we could get another 0.4% out of BBB securities and another 3.5% from Hi Yield securities, however the pessimistic forecasts call for losses that are double the potential upside. This needs to be considered when building portfolios – and, as an aside, is just another reason why using standard deviation as a measure of risk is problematic.
Possibly the most contentious of all the asset types are hedge funds. Are they an asset class? An investment strategy? Or a compensation scheme masquerading as an asset class? Are the problems they experienced in 2008 and 2009 a mere glimpse into a high fee, unregulated disaster in waiting? Or, in a single digit return environment, are they the way of the future? All of these views are commonly expressed, and all appear to have some validity.

farrelly’s believes that hedge funds are an asset class and, as a group, are quite predictable. All the different hedge fund strategies, including equities trading, commodity trading, fixed interest trading, and various forms of arbitrage, are like the hundreds of stocks that make up an equities index. All those stocks are fundamentally different from one another but when they are brought together they, as a group, become more predictable.

So when a diversified Fund of Hedge Fund (FOHF) manager brings together a number of managers in an essentially market neutral fund, the FOHF manager is trying to diversify away all those different factors until all that remains is alpha.

From this perspective, the forecasting task is to estimate an achievable level of alpha – no mean task, but fundamentally easier than thinking about all the different hedge fund subtypes. This alpha forecast is then added to the expected cash rate to arrive at a total return forecast.

Note, this is quite different to the forecasting approach used for the other asset classes, in that it does not rely on the Occam’s Razor approach.

**HOW MUCH ALPHA CAN WE EXPECT FROM HEDGE FUNDS?**

Let’s begin by looking at the historical record. There is much academic research looking at whether this data is meaningful, and in particular, whether the Hedge Fund Composite Indices that are often published appear to grossly overstate returns achieved.

By way of example, Ross Barry, in his excellent paper, “Hedge Funds; A Walk Through the Graveyard,” reports that stand alone hedge funds, on average, reported returns of 16.8% per annum between January 1994 and December 2001, compared to the average FOHF which reported only 9.8% per annum over that time. This staggering 7% per annum shortfall can be accounted for by:

- FOHF fees of around 1.5% per annum;
- an overstatement of hedge fund performance of around 4% per annum due to survivor bias; and,
- different exposure to equities between the two data sets.
Clearly, care must be taken when looking at hedge fund data. Both the ‘for’ and ‘against’ teams tend to present the figures that are most supportive of their case (how can they live with themselves?).

Since 2001, the gap has narrowed as survivorship bias issues have been partly addressed. Nonetheless farrelly’s believes that the FOHF data still has much less survivorship bias compared to the data for individual hedge funds. FOHF managers can’t stop reporting just because a few of their underlying funds have closed. The FOHF data is therefore representative of returns that have been achieved by hedge fund investors as a whole.

Figure 23 shows the average amount by which FOHFs have outperformed cash over rolling ten-year periods. It is clear that the heady days of returns of cash plus 8% are long gone. After appearing to stabilise around 3% to 5% per annum between 2003 and 2007, the long term alpha is now around 2% per annum. Hardly compelling. The question is can we expect an improvement from here, or is this simply a dead asset class?

To answer this question, we assume that the key drivers of hedge fund performance are:

- Actual exposure to equity and bond markets;
- Likely performance of those markets;
- Total potential value add that may be tapped; and,
- Total fees taken out by the managers.

**Figure 23: Rolling ten-year excess returns of FOHF over cash**

[Graph showing FOHF returns over ten years]

**How much of hedge fund alpha is simply comes from market exposure?**

This has been a somewhat contentious issue for some time. An essentially market neutral fund should be, well, market neutral. If so, then fund performance versus cash should be unrelated to the overall performance of the market.
A quick glance at the historical record shows that this is not the case. Figure 24 shows rolling one-year performance of the average FOHF against cash. Negative returns occurred in 1994, 1998, 2001, and 2008, and it is no coincidence that they happened to be the years when credit markets and equity markets also turned in negative performances.

![Figure 24 Rolling one-year performance of FOHF vs Cash](source)

A simple regression analysis suggests that, on average, these market neutral funds have a net long exposure to equities of 20% and an exposure to Hi Yield debt of around 15%. (Pretty much like a capital stable fund actually.)

The years 2008 and 2009 provided a good test to for the hedge fund return forecasting assumptions farrell’s has run since 2006. In 2008, FOHF performance was somewhat worse than that predicted by this model – however, the much better returns achieved in 2009 are entirely consistent with the assumption that these funds carry around 20% equity exposure and 15% exposure to Hi Yield debt.

We have assumed that this level of market exposure will continue and that FOHFs achieve the market returns derived from these exposures. The net result is a long-term contribution to alpha of 1% per annum. (Strictly speaking, we should not describe this as alpha, but we will do so for the sake of simplicity. For their part, the fund managers certainly consider this to be alpha – and happily take 20% of it in fees!)

How much potential value add is there?

Aside from simply getting market exposure, hedge fund managers do exploit market inefficiencies to create some real value. farrell’ys assumes that at any given time, there is a finite amount market inefficiencies in the world and, therefore, a finite amount of money that potentially could be made from exploiting these inefficiencies, some of which is being tapped by hedge funds, speculators or investors. This potential alpha grows from year to year as the economy grows, but if the amounts invested in hedge funds grow even faster, we should expect to see the returns on hedge funds decline over time. This is precisely what has happened, as was shown in Figure 23.
In order to estimate how much real value add has been generated by hedge funds, Farrelly’s adjusts the published data on total hedge fund performance to take into account the impact of any market exposures and the effect of fees on returns as shown Figure 25.

Figure 25: Estimated past and forecast future Hedge Fund Returns

<table>
<thead>
<tr>
<th>Period</th>
<th>FUM at end (US$bn)</th>
<th>Estimated Value add pre fees (%pa)</th>
<th>Estimated returns from market exposure (%pa)</th>
<th>Estimated fees (%pa)</th>
<th>Investors’ returns vs cash (%pa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990-1994 (actual)</td>
<td>210</td>
<td>13.5</td>
<td>2.7</td>
<td>-7.8</td>
<td>8.4</td>
</tr>
<tr>
<td>1995-1999 (actual)</td>
<td>480</td>
<td>8.6</td>
<td>5.5</td>
<td>-7.0</td>
<td>7.1</td>
</tr>
<tr>
<td>2000-2004 (actual)</td>
<td>1050</td>
<td>6.6</td>
<td>0.2</td>
<td>-4.6</td>
<td>2.3</td>
</tr>
<tr>
<td>2005-2009 (actual)</td>
<td>1464</td>
<td>4.5</td>
<td>0.6</td>
<td>-4.6</td>
<td>0.5</td>
</tr>
<tr>
<td>2010-2014 (f)</td>
<td>2100</td>
<td>7.6</td>
<td>1.1</td>
<td>-6.1</td>
<td>2.6</td>
</tr>
<tr>
<td>2014-2019 (f)</td>
<td>3400</td>
<td>6.2</td>
<td>1.1</td>
<td>-5.8</td>
<td>1.5</td>
</tr>
<tr>
<td>2010-2019 (f)</td>
<td>3400</td>
<td>6.9</td>
<td>1.1</td>
<td>-6.0</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Source: Farrelly’s estimates

A number of aspects of Figure 25 are worth noting:

- The rapid growth in funds under management has made achieving alpha harder and harder in over time;
- Hedge fund managers have been able to achieve very high levels of pre-fee alpha. These managers really do know how to exploit market inefficiencies; and,
- They also manage to charge very, very high fees, which in practice tend to eat up a very large portion of the alpha. This is further discussed below.

Fees and growth

The problem with the fees on hedge funds is that not only are they high, they are asymmetric – or, in other words, you pay away a share of profits but don’t get any refund on losses. As an example, if you had two managers and one made a pre-performance fee profit of 30% and the other made a loss of 10%, you have an average pre-fee return of 10%. Your good manager takes a performance fee of 6% (20% of 30%), but, regrettably, the other one doesn’t give anything back. The net result is you pay an average performance fee of 3% or 30% of your gains. And it gets worse. What if in the next year the two managers make a profit of 20% and a loss of 10% respectively, an average of 5%? Now the performance fee will be 2%, (20% of the profit), which will reduce your net return to just 3%. Performance fees are now taking up 40% of all returns.
The net result is that as the alpha gets smaller, the impact of the performance fee structure gets worse and worse for hedge fund investors. And, the potential for alpha gets smaller as FUM grows. Hence the combination of FUM growth and the fee structure will ultimately strangle hedge fund returns.

If fees were reduced, it would make a major impact on the attractiveness of the sector because these managers really can add value. It’s just that fees end up taking away most of it. Fees of 1% per annum and 10% of gains would mean these managers can still make about 3% per annum – not bad on wholesale funds – and investors would add about 3% per annum to their returns. At cash plus 5% per annum, FOHF would be seriously attractive. But don’t hold your breath. We do not hold any great hope for a rapid change.

On the other hand, farrelly’s forecast for slower growth in funds under management is a positive. We expect to see growth of about 8% per annum from here. This is well below the 20% per annum growth of the last decade. While that is higher than we think deserves to be the case, we should never underestimate the willingness of investors to chase a good story and high, short-term returns. And some parts of hedge fund industry will always have both in spades.

RISKS

The idea that these vehicles can produce low volatility outcomes was firmly put to rest in 2008 when the average FOHF fell in value by around 20%. This was in line with farrelly’s estimates which suggested that every 20 years or so, we should witness a 16% fall and every 50 years, could see a fall of around 26%.

While this was clearly a poor outcome for the industry, it could have been worse as a systemic failure of the derivatives market was avoided. It does however remain a possibility. The total of outstanding derivatives in the world is estimated at around 8 times world GDP – this compares to equity market capitalisation of 1.1 times world GDP. In other words, the derivatives market is huge and, frighteningly, largely unregulated.

A meltdown of the derivatives would be a real disaster for the hedge fund industry as it could well force the freezing of the majority of funds for a year or two while the mess gets sorted out. However, in the long term, the industry would get over it. Why? Because these contracts are a zero sum gain – for every winner, there will be a loser. So long as most of the losers can ultimately pay their side of the contract, the losses will probably not be overwhelming. Probably.

In the longer term, the major risk, as pointed out earlier, is too many dollars chasing too few opportunities while paying too high fees. FOHF returns may be very low, particularly given cash returns are likely to be low as well.
Forecasting private equity returns

The academic literature on the returns achieved by private equity funds is inconclusive. Some of this can be attributed to the difficulty of getting data, and then converting it into a meaningful framework. Because private equity investments involve lumpy cash flows throughout the life of a fund, the simple return measures that can be used to measure total return for most asset classes just don’t work for private equity. For example, how do you assess the performance of an asset where you begin by investing $100, receive $70 six month later, invest a further $100 in each of the next few years, prior to receiving $500 spread over the following three years? While you can calculate an internal rate of return (IRR) on that, what do you compare it to in order to decide whether it has outperformed or underperformed other asset classes?

US STUDIES

The literature reveals a wide range of different measures used to tackle this issue, with varying degrees of intuitive appeal. The best paper we have seen on the subject is “Private Equity Performance: Returns, Persistence and Capital Flows” by Kaplan and Schoar. The key points were:

• The average returns for all private equity funds for the period 1980 to 2001 was 18% per annum, and this was a premium to the S&P500 of around 90bps;

• The median fund return was 14% per annum, some 3% per annum behind the S&P500; and,

• Successful managers continued to be successful. First-time offerings and second offerings of lower performing managers tended to underperform.

The large difference between the average and the median manager arises because above-median managers outperform by more than below-median managers underperform, and successful managers continue to be successful, both in generating returns and in attracting funds, so that the larger funds had better returns on average. This is not to suggest any cause and effect between size and returns – the causality is most likely to be a reflection of manager skill being sustainable over time, and funds flow chasing good performance. farrelly’s believes the average result is more meaningful than the median, simply because if one invests in a diversified portfolio of private equity funds, the return is more likely to reflect the average than the median.

Kaplan and Lerner reviewed this data in 2008 and reported that the core conclusions remained intact.

UK STUDIES

Data published by PriceWaterhouseCoopers shows that private equity managers in the UK outperformed the FTSE by 9.9% per annum in the 10 years ending December 2010. An earlier study had them outperforming equities by 9% per annum over the 10
years to December 2003. However, as this data was comparing IRR data with traditional compound return statistics for the equity market, it is difficult to say with confidence how meaningful the result is. Nonetheless, the margin is sufficient to suggest confidence in a target private equity return of 3.5% per annum over equity returns, on an IRR basis.

PATTERN OF EXPOSURE

One of the features of investing in private equity is the lumpy nature of cash flows. If $100 is committed to a private equity fund, typically only $10 is invested on Day 1 and the remaining capital is drawn down over a number of years, with the maximum amount invested rarely exceeding $80. This is because by the time all the capital has been called, some early investments tend to have been sold and capital returned. The net effect is that the average amount invested over a six- or seven-year period is around 45% of the total commitment. As a consequence, farrelly’s suggests that investors commit to investing 1.8 times the amount allocated to the asset class, and spread that commitment over three years. While less than the full allocation is invested, the remainder is assumed to be invested in cash. Of course, in practice, we expect that a better result would be achieved by having the remainder invested more productively.

If the average amount invested per dollar committed is 45% and we commit 180% of our target exposure and spread the commitment over three years, the net impact is to have an average investment of 70% private equity and 30% cash over the full investment period.

THE BOTTOM LINE

Figure 26: Forecast for private equity (Dec 2010)

<table>
<thead>
<tr>
<th></th>
<th>Central assumption (%pa)</th>
<th>Pessimistic assumption (%pa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian equities return forecast</td>
<td>9.6</td>
<td>-1.0</td>
</tr>
<tr>
<td>Assumed premium on private equity</td>
<td>3.5</td>
<td>-11.5</td>
</tr>
<tr>
<td><strong>Forecast 10 year Private Equity IRR</strong></td>
<td><strong>13.1</strong></td>
<td><strong>-12.5</strong></td>
</tr>
<tr>
<td>Forecast 10-year cash rate</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Forecast return with average exposure of 70% PE and 30% cash</td>
<td>10.7</td>
<td>-7.2</td>
</tr>
</tbody>
</table>

Source: farrelly’s
Forecasting risk

In Farrelly’s view, the biggest risk facing long-term investors is poor long-term returns. Volatility is an issue for many investors, as is illiquidity and, without wanting to dismiss these as genuine concerns, we stress that you can’t eat low volatility or high liquidity. While the industry often assumes that short-term volatility is a good measure of long-term risk, we all know that is not the case. Long-dated inflation-linked government bonds have high short-term volatility but in reality are the asset carrying the least amount of long-term risk. Unlisted property and unlisted high yielding debt instruments have no apparent volatility but can carry very high levels of long-term risk.

The approaches used here lend themselves to assessment of long term risks by simply varying the key assumptions that go to make up the forecasts.

**Figure 27: Key variables that drive forecast returns**

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Key variables impacting real returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian equities</td>
<td>EPS growth, PE ratios, Inflation</td>
</tr>
<tr>
<td>NZ equities</td>
<td>EPS growth, PE ratios, Inflation</td>
</tr>
<tr>
<td>International equities</td>
<td>EPS growth, PE ratios, Inflation, currencies</td>
</tr>
<tr>
<td>REITs</td>
<td>Distribution growth, yield, inflation</td>
</tr>
<tr>
<td>Tier 1 Debt</td>
<td>Reinvestment rates, inflation</td>
</tr>
<tr>
<td>Tier 2 Debt</td>
<td>Spreads, failure rates, recovery rates, inflation</td>
</tr>
<tr>
<td>Hedge funds</td>
<td>Cash rates, net alpha, inflation</td>
</tr>
<tr>
<td>Private equity</td>
<td>Equity returns, net alpha, inflation</td>
</tr>
<tr>
<td>Cash</td>
<td>Real short term interest rates, inflation</td>
</tr>
</tbody>
</table>

Farrelly’s looks at how these variables have behaved in a range of different economic conditions and then looks forward to assess how things may be different next time around. We arrive at a range of possible values for each of a number of different scenarios and, in so doing, arrive at a range of possible outcomes for each of those scenarios. We then attach probabilities to each scenario to get an indication of the likely range of returns possible over the next decade. As can be seen in Figure 27, inflation is a key variable in every situation not only because we are interested in real returns but because inflation itself drives some other variables most notably PE ratios and cash rates.

The economic scenarios include:

- low growth deleveraging;
• stagflation;
• depression;
• back to normal;
• boom;
• muddle through;
• a lost decade; and,
• the domestic economy stalls while the rest of the world grows.

Obviously our assessment of the probabilities attaching to those various scenarios varies over time as the world’s economies change. In particular, the Global Financial Crisis increased the probabilities of a lost decade or the emergence of stagflation as the world comes to grips with the burden of government debt.

It is the combination of the assumptions in each of the scenarios and the likelihood of those scenarios that drive the estimation of the real 10 year 1-in-20 worst-case outcomes that are the primary measure of risk in the Handbook.

For a further discussion of risk, refer to the ‘farrelly’s Guide to risk and risk profiling’.
Defining asset classes

When defining an asset class, the key criteria farrelly’s uses are predictability and investability – that is, we try to draw the boundaries around asset classes in such a way that allows us to most accurately forecast the returns likely to emerge from that asset class over time and, secondly, we try to define an asset class in a way that is investable to retail investors. The following examples illustrate the point.

AUSTRALIAN AND NZ EQUITIES

The preferred asset class definition for Australian equities is the All Ordinaries Index. farrelly’s does not use sub-sets of the All Ords Index as asset classes (with exception of REITs) on the grounds the sub-sets are not as predictable as the broader index.

Why? It essentially comes down to the predictability of EPS growth. Overall, we are confident that, over the long term, EPS growth for the broad Australian equities market will be GDP minus some dilution, because the market as a whole reflects what is happening in the underlying economy, and the underlying economy should grow steadily in the 3% to 3.5% per annum range over rolling 10-year periods.

In contrast, some sub-sectors of the economy will grow faster than GDP, and for every fast-growing sector, there must be an offsetting slow-growing sector. It is a fundamentally more difficult task to forecast which sub-sectors will fall into which category over the next ten years, and then what PE ratios will apply to each sector.

In addition, farrelly’s forecasts the All Ordinaries Index, rather than any particular managed fund or security. The Index is an easily investable asset class due to the presence of a number of index funds. Alternatively, if investing in actively managed funds, the index return represents a base forecast to which the subscriber can add his/her own expectations for additional returns and uncertainty that are introduced as a result of the active management process.

Similarly, if investing in a well-diversified portfolio of direct shares then, unless the financial adviser believes he or she has a particular skill set in active equities management, the index return is a good estimate of expected returns.

Similarly, NZ equity returns are estimated using the NZX40 Index.
INTERNATIONAL EQUITIES

The precise index farrelly’s forecasts is the FTSE All World Index. As of April 2011, its exposure was as outlined in Table 27 – including a weighting of almost 15% to emerging markets, so not just a forecast of the US market, although farrelly’s does often use US data to illustrate different points.

Table 27: FTSE All world Index weights (April 2011)

<table>
<thead>
<tr>
<th>Index Weight</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>US Equities</td>
<td>41.4%</td>
</tr>
<tr>
<td>Europe</td>
<td>19.1%</td>
</tr>
<tr>
<td>Emerging markets</td>
<td>14.5%</td>
</tr>
<tr>
<td>UK</td>
<td>8.2%</td>
</tr>
<tr>
<td>Japan</td>
<td>7.2%</td>
</tr>
<tr>
<td>Canada</td>
<td>4.1%</td>
</tr>
<tr>
<td>Australia</td>
<td>3.4%</td>
</tr>
<tr>
<td>Other</td>
<td>2.0%</td>
</tr>
</tbody>
</table>

Source: FTSE

The key point is that notwithstanding high short-term correlations, international equities do march to a different drum to Australian Equities and NZ Equities. International equities are fundamentally different in many ways:

- International equities have currency risk attached to them. While this can be hedged, most often it tends not to be;
- International equities do not pay imputation credits;
- The industry exposures are very different. International equities have higher exposures to areas such as technology, health care and manufacturing and lower exposures to financial services and natural resources. These different sectors often get driven to extremes of valuations at different times; and;
- More recently, the developing world is seemingly about to go into a long period of low growth as it deleverages at both the government and household levels. farrelly’s doesn’t believe Australia will be dragged down by this trend given our proximity to Asia and low levels of government debt.

REITs AND PROPERTY IN GENERAL

Prior to the Global Financial Crisis, REITs were attractive for their short-term stability and their predictability of long-term returns. Simply adding starting yield to inflation used to give a very close estimate of returns. The reason was straightforward – REIT assets are property; property returns come from income and capital growth; property income
comes from rents; property capital growth is largely related to rental growth; and, rents tend to grow at the rate of inflation. Today, we have to factor in the additional risks introduced by capital management. Nonetheless, this does seem to be sufficiently different from the equities market to consider as a separate asset class.

HEDGE FUNDS

As discussed earlier, there is considerable debate about whether hedge funds are an asset class or an asset strategy. And, because each strategy is so different, does it make sense to try and treat hedge funds as one asset class?

Treating diversified Hedge Fund of Funds (FOHF) as a single asset class does make sense from the point of view of farrelly’s two asset class criteria—predictability and investability. All the different hedge fund strategies, including equities trading, commodity trading, fixed interest trading, and various forms of arbitrage, are like the hundreds of stocks that make up an equities index. All those stocks are fundamentally different from one another but when they are brought together as a group, the group becomes more predictable. Similarly, when a FOHF manager brings together a number of managers in an essentially market neutral fund, the FOHF manager is trying to diversify away all those different factors until all that remains is alpha (manager value add).

The forecasting task is to estimate an achievable level of alpha – no mean task, but fundamentally easier than thinking about all the different hedge fund subtypes.

The FOHF definition passes the investability test as well. Investors will seek to either gain a FOHF exposure, or to replicate a FOHF approach, by investing in a diversified spread of hedge funds.

So, the forecasting approach becomes cash, plus or minus expected alpha as explained above.
Bibliography

Each of the following papers is available in farrelly’s Proactive Asset Allocation Handbook subscriber only resources area on portfolioconstruction.com.au


5. Dimson, Marsh & Staunton, The Triumph of the Optimists, 2002


About farrelly's

Established in 2004, farrelly’s is the first independent, specialist asset allocation research service for investment advisory firms in Australia and New Zealand.

Founder Tim Farrelly brings a unique combination of analytics, understanding of financial markets, knowledge of capital market history and insight into the practical requirements of financial advisers.

Prior to founding farrelly’s, Tim was an Executive Director of Macquarie Bank Ltd, and Director of Macquarie Investment Management Ltd (MIML). At various times during his 14 years at Macquarie he sat on the MIML Asset Allocation and Risk Committees, and was responsible for distribution of the Bank’s products through third party financial planners and stockbrokers. While there, Tim was also responsible for the publication of ‘Understanding Risk to Meet Your Financial Goals’, jointly published by Macquarie and the FPA, and now an industry standard. He also drove Macquarie’s Long-Term Forecasting program in 2000 which foreshadowed the bear market in US equities.

Between 1981 and 1986, Tim was head of research for financial advisory firm, Monitor Money, where he was responsible for asset allocation and manager selection. He has an MBA (Distinction) from the Harvard Business School and a Bachelor of Engineering (Met) from the University of Melbourne, where he was awarded the J.Neill Greenwood Medal.

Tim is the lead Inquisitor at PortfolioConstruction Forum programs, and a sought after and frequent speaker on a range of topics including capital market history, risk management, and portfolio construction.

Tim can be contacted at tim.farrelly@farrelly.com.au