

September 2018



Asset Backed Loans



Tim Farrelly
Principal, farrelly's
+61 416 237 341
tim.farrelly@farrelly.com.au

Available exclusively through
PortfolioConstruction Forum
+61 2 9247 5536
mail@portfolioconstruction.com.au

farrelly's Investment Strategy was founded in 2003 by Tim Farrelly to provide investment strategy and asset allocation advice to investment professionals. Tim is the author of the farrelly's Dynamic Asset Allocation Handbook which has been published since 2004. He is on the faculty of the PortfolioConstruction Forum.

Prior to founding farrelly's, Tim was a visiting fellow in the School of Finance and Economics at the University of Technology of Sydney.

From 1988 to 2002 was with Macquarie Bank Ltd, where he was an Executive Director and a Director of Macquarie Investment Management Ltd. Between 1981 and 1986 Tim was head of research for the Monitor Money Corporation, 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.

Disclaimer, disclosure and copyright © 2018 Farrelly Research & Management Pty Ltd ('farrelly's') ABN 63 272 849 277. All rights reserved. Reproduction in whole or in part is not allowed in any form without the prior written permission from farrelly's. This document is for the exclusive use of the person to whom it is provided by farrelly's and must not be used or relied upon by any other person. This document is designed for and intended for use by Australian residents whose primary business is the authorised provision of securities advice as that term is defined in Corporations Regulations and, in particular, is not intended for use by retail investors. The material is not intended to be investment advice (either personal or general), a securities recommendation, legal advice, accounting advice or tax advice. The document has been prepared for general information only and without regard to any particular individual's investment objectives, financial situation, attitudes or needs. It is intended merely as an aid to financial advisers in the making of broad asset allocation decisions. Before making any investment decision, an investor or prospective investor needs to consider with or without the assistance of a securities adviser whether an investment is appropriate in light of the investor's particular investment objectives, financial circumstances, attitudes and needs. No representation, warranty or undertaking is given or made in relation to the accuracy or completeness of the information contained in this document, which is based solely on public information that has not been verified by farrelly's. The conclusions contained in this document are reasonably held at the time of completion but are subject to change without notice and farrelly's assumes no obligation to update this document. Except for any liability which cannot be excluded, farrelly's, its directors, employees and agents disclaim all liability (whether in negligence or otherwise) for any error or inaccuracy in, or omission from, the information contained in this document or any loss or damage suffered by the recipient or any other person directly or indirectly through relying upon the information.

Australian asset backed loans

Executive summary

- Asset backed loans are a relatively new asset class for Australian investors and include a range of different product types with very different risk and reward characteristics
- The risk - reward characteristics appear to compare favourably with conventional assets at this stage of the investment cycle
- Conventional risk measures do not allow comparison with traditional assets. Volatility is not comparable between listed and unlisted assets. Nor is Value at Risk because conventional assets may recover after a fall whereas loan losses are permanent. We use worst case real returns through a full investment cycle (10 years) as a comparable measure of risk
- Asset Backed Loans should diversify risk of equities during equity bear-markets that do not coincide with Australian recessions
- At this stage of the cycle, up to 15 - 20% of a portfolio could be invested in a well diversified portfolio of Asset Backed Loans
- Quality of underlying management is critical. An independent assessment of any underlying manager is strongly recommended

Australian Asset Backed Loans

After a long bull market, potential returns on traditional assets are falling. Forecast returns from traditional markets are still above those for cash and Term Deposits (TDs) - but that margin of safety is falling.

The search is on for different sources of attractive returns. Note that this is not a hunt for diversification per se, but a hunt for assets that offer superior risk/return characteristics to equities and secure bonds. Now, this search for attractive alternatives has been on in earnest for many years. Hedge funds have largely disappointed, private equity has had a strong run in recent years but is increasingly likely to experience diminishing returns as prices on all equity assets become more expensive and property assets of all stripes are trading at much lower yields than have historically been the case.

Against this backdrop, Asset Backed Loans are an emerging asset class that deserve a place in many portfolios. Whether this is an old or new asset class is up for debate. Lending

with real assets as security has been around since biblical times. On the other hand, access to these Australian Asset Backed Loans in recent years has only been widely available to institutional investors – but that is changing quickly, and in particular, access to loans backed by commercial real estate.

Asset Backed Loans

Asset Backed Loans are just that - loans backed up by an asset, most often property. The most common example is the standard residential mortgage with which we are all familiar. These are very low risk loans and, as a result, interest rates are also low - the banks happily lend at rates as low as 3.6% on residential mortgages.

Where this sector gets more interesting is where the loans are riskier and the interest rates are much higher. This part of the market has traditionally been dominated by the banks - but they are now actively reducing exposure to the sector in response to increased capital requirements imposed by the regulator, APRA.

This has created an opportunity for non-bank lenders to step in - and this has resulted in many new products hitting the market. For a fledgling market, the range and variety of these new products is quite staggering.

Some of the different types of products include single asset mortgage debt, multi-asset mortgage debt, single asset mezzanine debt, mixed senior and mezzanine debt - and they often involve lending to developers. Some products are available to all investors, some only to wholesale investors, some are listed and some are unlisted. All have different strengths and weaknesses and present a broad range of returns and risks. It is worth outlining a sample of these products to illustrate the range available.

Single Asset Senior Loans

There are a number of products available here.

Some, described as peer-to-peer lenders, provide a menu of different loans where the investor has the choice as to which loan or loans in which they may choose to invest. The underlying assets are residential or smaller commercial properties. Typical rates of returns are 5 to 7% and terms are 1 to 3 years. Liquidity is low or non-existent until the loan is repaid.

Another variation on this theme is a recently launched fund which financed a completed residential development. The developer had completed the project but had unsold properties and its existing bank lender elected not to extend its loan. The fund has an expected life of just 12 months after which time the loan will be repaid and the fund closed. The forecast return is 10%. With a Loan to Valuation Ratio (LVR) of just 65%, the chance of full repayment is very strong. The downsides on this fund are that it was for wholesale investors only, had a limited life and was heavily oversubscribed.

Diversified multi – loan funds

These are also available and, again, come in different forms.

One is exclusively invested in senior debt, generally over projects with a development flavour. Maximum LVR on any project is 65%. However, with any development, there are additional risks as compared with lending on completed properties. Final asset values are only estimated, tenancy is not always assured, construction costs can blow out, and, in the case of a recession, buyers can disappear. On the other hand, the diversified nature

of the loans means that the impact of a major loss resulting from a single bad loan is likely to be limited. The fund in this example targets a return of around 7 to 8% per annum and is only open to wholesale investors. Liquidity is available - until it isn't. Funds such as these can, and should, freeze in the event that new inflows dry up. This is generally when investors would most like to exit.

Another fund is a soon to be listed investment trust that will have a diversified loan book which will include senior debt as well as some mezzanine debt. This should boost returns but will also increase the level of risk. It is expected to return closer 8 to 9% per annum. Pluses for listed funds are that they are open to all investors at all times and daily liquidity is available without the risk of the fund being frozen or forced to liquidate its loans.

Mezzanine Debt Funds

These tend to be opportunistic and focussed on either a single asset or a limited set of assets. We have reviewed one that was essentially mezzanine debt for a health care development. It offered very high returns in the order of 14% per annum for a period of three years. It appeared a high quality project but, in the event of trouble, the senior lenders get paid out first. Mezzanine investors potentially could lose the lot. This was only available to wholesale investors and had no liquidity.

Returns and Risks of Asset Backed Loans

Because these investments are loans, the expected returns come from known interest payments and, therefore, are easily quantified. On the other hand, the risks are much more difficult to assess. Here, risk assessment normally requires quite a bit of imagination, as the offers are generally presented along the lines of "what could possibly go wrong?" And, indeed, the better managers will structure the loan so that it is genuinely difficult for the lender to lose money.

Too good to be true?

It is always worth asking the question - if the loan is so safe, why are the borrowers willing to pay a much higher interest rate? In the current environment the answer is often because the banks have walked away from this market, or have substantially tightened lending standards in response to pressure from APRA. More importantly, from the borrower's perspective, even at a higher rate, the loan still makes commercial sense.

One example is where an overseas buyer had placed a deposit on a residential unit in the expectation that they would be able to obtain bank financing at around 5.5%pa. With the banks tightening their lending to overseas property investors, our buyer needs an alternative source of finance; enter the non-bank lender at a rate of say 7.0%pa. The borrower is better off paying a higher rate of interest rather than losing their deposit.

Another example where paying a high rate of interest may make perfect economic sense is when a developer is exploring different financing strategies. Figure 1 shows three stylised financing strategies viewed from a developer's perspective. In these cases, if maximizing return on equity is the goal, it make more sense to borrow more at a higher interest rate. It not only maximises return on equity, it also allows the developer to reduce its risk by spreading its capital over more projects.

Figure 1 : Development funding strategies

Item	100% bank funding	Bank Plus Mezzanine Funding	Non bank funding
Expected sale value of completed development	\$100	\$100	\$100
Less Expected cost of construction	-75	-75	-75
Less Financing cost ¹	-4.1	-5.4	-7.3
Expected profit	\$20.9	\$19.6	\$17.7
Return on developers capital²	42.0%pa	45.5%pa	53.3%pa
Developers capital	\$24	\$20	\$16
Mezzanine debt from non-bank lender	0	\$10 @ 16%	0
Funding by bank (amount & rate)	\$55 @ 7.5%	\$50 @ 7.0%	0
Funding by non-bank lender	0	0	\$66 @ 10%
Total funding requirement	79	80	82

1. Assumes the average loan period is one year. 2. Assumes the project takes two years to complete

What can go wrong?

In the example of a simple mortgage on a single residential property, the potential for loss lies in how far the property may sell below its appraised value in the event of a default. Location will clearly play a part. Residential property in Perth has been reported to have fallen by 11% on average in recent years. But that's an average, so some properties will have fallen by more and others by less. In the event that the property in question had already fallen by 20%, the market fell another 10%, and the appraised value was on the high side, one could envisage a sale at 60% of the original appraised value. Here, on a property with an LVR of 80%, a loss to the lender of 20% of the property value translates into a loss 25% of the value of the loan. Across a diversified portfolio of loans, the average loss - even in a major property downturn - will clearly be much lower.

A mortgage over a small commercial property will be riskier. The property may be more difficult to value, the prime use for such a property may fall out of favour and, in a downturn, investors may disappear. Here a loan loss of 30% is not hard to envision even with a lower LVR of 70%. Again, diversification amongst a number of loans substantially reduces that risk.

Lending on developments adds another set of risks again. In addition to the risk of falling prices, we also have to worry about optimistic valuations and cost overruns. Skilled lenders can defray some of those risks with careful structuring of contracts, but a loss on a single loan of 20% can be envisioned - but it does require some imagination. Surprisingly, falling residential prices aren't our biggest concern - a fall in prices of 25%, with an 65% default rate on settlement, offset by deposits on pre-committed sales, results in a loss of expected developer revenues of just 10%. This comes out of the developer's

capital - normally around 20% to 25% of the value of the project. To get to our single project loan loss of 20% requires a 25% fall in property prices and a cost blow out of 50%.

Here, diversification helps a lot because the biggest risks are cost overruns, which should be project specific. The spectre of an economy-wide recession and collapsing property prices is, perhaps surprisingly, a much lower risk for development lenders than for first mortgage lenders. Pre-sales and deposits provide a big buffer.

Finally, in the case of mezzanine debt, a bad result could easily see a 100% loss of capital. In the example outlined in Figure 1, a 30% cost overrun, a one year time overrun and a 20% fall in house values with 60% of buyers defaulting on their deposits would see the value of the mezzanine debt being wiped out. Cost and time overruns are critical, and so, again, diversifying between projects reduces risk substantially.

For both senior and mezzanine lending, having skilled, experienced lenders who engage with good builders on low risk projects also makes a huge difference to lenders' risk. The quality of the lenders' management is critical.

Figure 2 below summarises farrelly's risk assessment of possible losses on a loan on single assets, a portfolio of assets and worst case 10 year results for a diversified portfolio.

Figure 2 : Assessment of risk of Asset Backed Loans

Lending type	Single asset loss	Diversified portfolio loss	Pessimistic value of \$1000 after 10 years ¹
Vanilla senior residential lending : 80% LVR	-30%	-10%	\$1050 ²
Vanilla senior commercial lending : 70% LVR	-30%	-15%	\$1000 ³
Senior residential development loans: 65% LVR	-20%	-10%	\$1100 ⁴
Mezzanine loans	-100%	-60%	\$550 ⁵

1. 1 in 20 worst case real scenario assuming 2%pa inflation and a diversified portfolio. 2. Assumes loss & 7 years returns at 5.5%pa 3. Assumes loss and 6 years of returns at 6.5%pa 4. Assumes loss and 5 years returns at 8.5%pa 5. Assumes loss and 5 years returns at 14%pa.

The first two risk measures are an assessment of the possible losses involved with a single loan and a diversified portfolio of loans for different loan types.

The pessimistic 10 year risk assessment in the right hand column is made to put the one-off losses in perspective and, more importantly, to enable comparison of risks of Asset Backed Loans with more traditional assets.

It is an estimate of the value of \$1000 invested for a decade which includes a major loss over 3 to 5 years and normal returns for the balance of the decade. This risk measure is not particularly intuitive, but it is very useful if we are to compare the attractiveness of Asset Backed Loans against more traditional assets.

This measure is necessary because more traditional risk measures are not very useful when comparing these assets with traditional assets. In the case of securities such as shares, the market normally thinks of risk as volatility, but this is not at all helpful if

comparing equity market risks with those of unlisted assets which tend to have little or no volatility - until they have a problem.

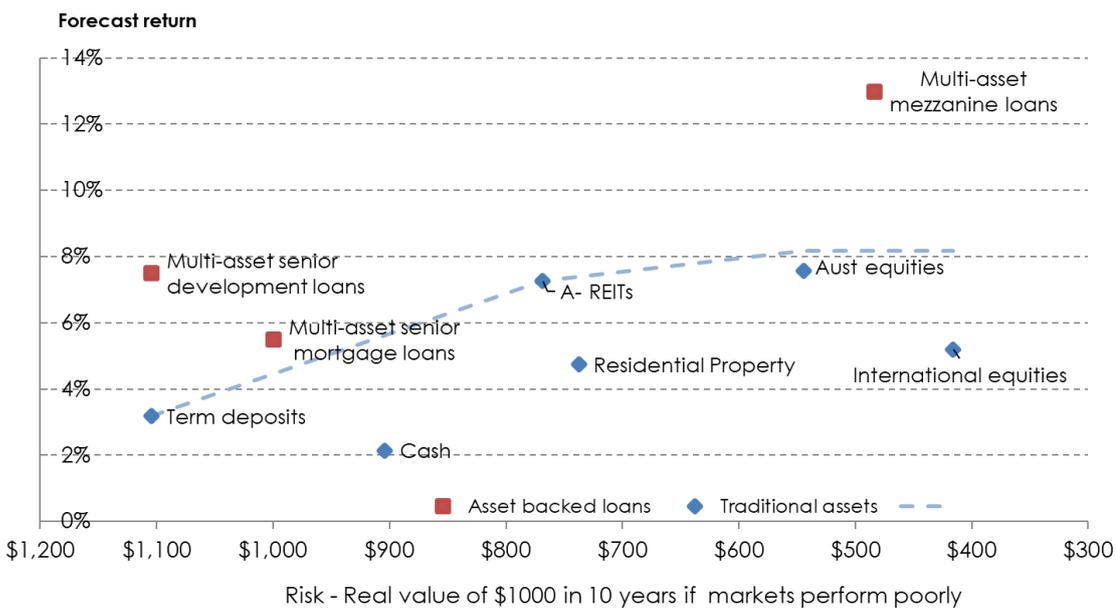
Estimating short-term downside risk is not particularly helpful either, as equity market downturns are normally associated with a recovery whereas losses on loans - such as those shown in Figure 2 - tend never to be recovered. Hence to try and put these loans onto a like-with-like risk comparison with other assets, we assume worst case long-term scenarios to test how bad returns could be for a long-term investor.

Comparing Asset Backed Loans with traditional assets

Figure 3 below shows farrelly's current long-term estimates of returns and risks for both a range of traditional assets and for Asset Backed Loans. (Note that in this chart the risk axis runs from high to low, the higher the risk, the lower the value in ten years time.)

Based on this assessment, the case for Asset Backed Loans is clear.

Figure 3 : Forecast returns and risks for traditional assets and Asset Backed Loans



The return assumptions on Asset Backed Loans are essentially market interest rates with a small allowance for losses - what return we should receive if all goes well. The basis for the return assumptions on traditional assets is shown in the Appendix. Essentially, they are calculated using the yield today, expected growth in earnings or rents plus an allowance for changes in valuation ratios.

Three years ago the expected returns on most traditional assets were 1 to 3% higher than today. As markets have risen and expected returns have fallen, Asset Backed Loans have come into their own.

The risk assessment shows what we expect to get if all does not go to plan. How bad could this investment turn out to be for long term investors?

How the risk of these investments correlates with other investments

The correlation of unlisted assets with mainstream assets again needs to be considered over a different time frame than the normal day to day, week to week volatility that we use to measure equity market correlations. Typically, these assets show very little volatility - unless a default occurs. As with risk, a better way to think about correlations is over longer time frames - how bad might be the returns from Asset Backed Loans and, over that longer time frame, how might equities and listed property fare? Do they zig when other investments zag?

To do this, we need to have some scenarios in mind. The scenarios discussed here are all negative, after all, we are really only interested in correlations from the point of view of what happens during a downturn.

What we will see is that under some scenarios Asset Backed Loans don't help much, but under others they can provide substantial diversification benefits.

Scenario 1 : Australian recession causes equity bear-market

Equity bear-markets and recessions will continue to be a feature of the investment landscape. In this scenario, expect poor performance from both equities and these types of securities. Not much diversification benefit in this scenario. However, since 1970 we have had six major equity bear-markets and just three of them, 1974 and 1983 and 1990, were associated with Australian recessions.

Scenario 2 : Global equity bear-market with mild or no recession in Australia

Here Asset Backed Loans provide some real diversification gains. Without an Australian recession, these securities will probably perform quite strongly and, as such, provide a very useful offset to a typical, equities heavy portfolio.

Better still, this type of scenario is not unusual. We have had three equity bear markets, in 1987, 2001 and 2008, which were not associated with Australian recessions. Some may quibble about 2008 where - technically - Australia did not suffer a recession, but it certainly felt like a recession. Nonetheless, farrelly's suspects that well managed funds of this type would have performed satisfactorily during that time. So, based on that somewhat limited dataset, we can say that we could get some real protection around 50% of the time. Crudely, that probably is equivalent to an asset with a correlation around 0.2 to equities, which is generally considered a more than useful diversifier.

Scenario 3 : A collapse in residential property prices

This is an interesting scenario that could result in some losses - if not as large as one may imagine for reasons outlined earlier. Furthermore, for the near future at least, farrelly's rates the possibility of a collapse in residential property prices as low.

For a residential property price collapse to occur we would need one of three things;

- A further significant tightening of bank lending standards; or
- A substantial oversupply of property as a result of excessive development; or
- Australian cash rates lifted above 4% for an extended period

A further tightening of bank lending standards is unlikely from here. We have seen a number of measures imposed on the banks by APRA in the past few years that farrelly's

sees as directly contributing to the softness in residential prices over recent times. APRA has indicated that it is now comfortable with banks' lending standards. The changes that have already been put in place will probably keep the residential market quiet for another year or so, but seem very unlikely to cause a collapse.

Oversupply is also unlikely. After the frenzied development activity in the past few years, we still see no evidence of oversupply of residential property other than in isolated pockets. Our main gauge is rental vacancy rates which have been drifting slowly up in Sydney but continue to fall in Melbourne. Ongoing high migration rates and more subdued development activity mean that oversupply is quite unlikely any time soon.

Finally, the chances of the RBA raising cash rates by more than 2% anytime in the next five years are remote. The huge build-up in household debt means that a 2% increase in interest rates would almost certainly plunge Australia into a deep recession. This is something about which the RBA is acutely aware and anxious not to do. Even then, a 2% increase would only get cash to 3.5%. The chance of rates rising above 4% are negligible.

Scenario 4: Isolated product failure/underperformance

This will occur. The projects that many of these funds invest in are risky, which is why they earn good returns. Before long, one or more products will experience difficulties. Clearly, if invested in a product with a single asset, the loss will be much greater in the event of project failure than will be the case with a diversified fund. This simply means that individual exposures to single asset products must be considerably lower than diversified products as is discussed below.

Where do they fit in a portfolio?

This will depend on the nature of the product. Because the different products on offer cover such a broad spectrum, it is difficult to say exactly where one fits without a thorough examination of the product in question. Nonetheless, the lower risk products sit comfortably with non-investment grade fixed interest while the higher risk products sit in alternatives. In either event, the classification does not matter so much so long as the risks are clearly understood and that the addition to a portfolio does not take the overall portfolio risk beyond a level with which the investor is comfortable.

As a rule of thumb, at the high risk end of the spectrum one dollar is equivalent to two dollars in equities, while at the low end of the spectrum one dollar is equivalent to around 25 cents invested in equities. And all parts in between.

The most important consideration is that any product needs to offer a better risk/return trade-off than the asset or combination of assets they displace. Right now, as is shown in Figure 3, that appears to be the case.

How much should be allocated to these Asset Backed Loans?

In the current environment, where attractive returns are on offer, a diversified exposure of up to 15% to 20% of a portfolio would be reasonable, as always subject to the individual investors' risk tolerance. However, it is critical that any such exposure is diversified across offerors and, preferably, offer types.

How much diversification do I need?

A second useful rule of thumb is to work out what is the maximum allowable loss to the overall portfolio in the event that any investment fails. If an investor chose 1.5% as their maximum loss limit and the maximum loss of a product was deemed to be 30%, then it implies that up to 5% of the portfolio could be invested in that product. A high risk fund with an exposure to loss of 100% would suggest that no more than 1.5% be invested in that fund.

Because all of these investments are so different, how much to invest in any one will also depend very much on individuals' own circumstances, their understanding of the security, whether they can be classified as a wholesale investor, whether they have a platform that can access the opportunity and, in particular, on their needs and desire for liquidity.

And, while the more diversification the better, we recognise that assets are not freely available, particularly on platforms and for non-wholesale clients.

Independent research is essential

This is quite a new area of the market for most investors. Many product providers will not be familiar. Nonetheless, there are firms that have been investing in this space for many years. Most will cite a great track record and strong credentials.

However, we need to keep in mind that we have been 27 years without a recession. The residential property market has been strong throughout. As a result, track records are merely a helpful guide. Past performance remains no guarantee of strong future returns.

As suggested earlier, the quality of the manager is an important driver of the true risk of these products. Better managers will lend to better quality builders with a track record of finishing projects on time and on budget. Better managers will be able to accurately assess the end value of projects; is there demand for the asset, are the valuations conservative? They will structure the loan agreements to protect their interests in the event that things start to go awry.

All this is difficult to assess without institutional grade research. In this environment only invest with managers who have very strong endorsements from independent research houses which are well placed to review the capabilities of these firms.

Occam's Razor Approach to market forecasting

John Bogle's paper "Investing in the 1990s: Remembrance of Things Past and Things Yet to Come." (*Journal of Portfolio Management*, Spring 1991, pp. 5-14.) 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 decomposes market returns into three elements: income; growth in income; and, the effect of changing valuation ratios. This can then be used to explain past returns and, more interestingly, forecast future returns with remarkable accuracy. The three elements combine to produce the following formula:

Returns = Income + Growth in income + Effect of changing valuation ratios

$$R = Y + G + V$$

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

Fixed interest, growth is zero, by definition!

V is the Valuation Effect. It is the compound effect of an increase or decline in PE ratios or yields on the returns produced by an asset.

For example

For equities over a one year period:

$$V = (PE \text{ at end of period} / PE \text{ now}) - 1$$

If PEs rose from 10 to 12 then:

$$V = 12/10 - 1 = 0.2 \text{ or } +20\%$$

For longer time periods, say 10 years, we use the compound growth rate:

$$V (\%pa) = (PE \text{ at end of period} / PE \text{ now})^{1/10} - 1$$

Using the previous example, over 10 years:

$$V = (12/10)^{1/10} - 1 = 1.0183 - 1 = +1.83\% \text{ pa}$$

Why use 10-year forecasts? They are more accurate than short-term forecasts. EPS growth is steadier over 10-year periods than one-year periods. The effect of a change in PEs is much smaller over 10 years than one year, as we have just seen.

The long-term outlook for markets

The forecasts below are based upon the Occam's Razor approach outlined on the previous page. This approach to forecasting has many attractions – including accuracy, simplicity and transparency. The assumptions are provided on the following page.

Figure 1: Expected Returns and Risks for Asset Classes - September 2018

	Australian Equities	International Equities	Residential Property	A-REITs	Term Deposits	Cash
Yield (pre tax)	5.5%	2.3%	2.9%	5.1%	3.2%	2.3%
+Currency Impact	-	0.5%	-	-	-	-
+ Earnings growth (f)	2.2%	2.2%	3.3%	2.3%	0.0%	-
+ Valuation effect	-0.5%	0.1%	-1.4%	-0.1%	0.0%	-
Index return	7.1%	5.2%	4.8%	7.3%	3.2%	2.3%
+ Manager value add	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Return (pre tax)	7.1%	5.2%	4.8%	7.3%	3.2%	2.3%
Total Return (15% tax)	6.2%	4.6%	4.2%	6.4%	2.7%	1.9%
Total Return (46.5% tax)	4.2%	3.4%	3.0%	4.7%	1.7%	1.2%
PE Now	17.6	18.2				
PE 2028 (f)	16.7	18.5				
Yield 2028 (f)			3.3%	5.1%		
Indicative Index	All Ords	FTSE- DM		ASX REITs		
Index Level	6,452.7	318.4		1,457.8		
Worst case scenarios :10 year REAL total return is less than...						
1 in 20 chance	-5.9%	-8.4%	-4.9%	-2.6%	-0.9%	-0.7%
1 in 6 chance	-1.6%	-5.7%	-1.0%	1.6%	0.6%	-0.5%
Worst case short term scenarios: 1-year NOMINAL return is less than						
1 in 20 chance	-38%	-40%	-10%	-35%	-11%	0%
1 in 6 chance	-15%	-16%	-5%	-13%	-4%	1%

Key assumptions (as at September 2018)**The Australian Equities forecasts assume:**

1. Current dividends on ASX All Ordinaries, grossed up for franking credits.
2. EPS growth of 2.2%pa vs forecast inflation of 2.2%pa and real GDP growth of 2.7%pa.
3. PEs moving to 16.7, the long-run PE ratio forecast in a low real interest rate environment.

The International Equities forecasts assume:

4. Current FTSE All World Index yield.
5. Currency impact will equal the difference between the Australian 10-year bond rate and a FTSE World Index weighted basket of bonds. This is the return pickup that could be achieved by fully hedging currency.
6. EPS growth for Developed Markets of 2.2%pa, assuming global inflation of 1.8%pa, and real GDP growth of 2.5%pa
7. PE ratios at 18.5, reflecting very low real interest rates.

The Residential Property forecasts assume:

8. Average net yield on residential property of 2.9%pa (after estimated costs of 1.5%pa)
9. Costs include rates, insurance, agent fees and depreciation
10. Rental growth equal to inflation plus 1.2% reflecting shortage of rental property
11. A net yield in 2028 of 3.3% reflecting the impact of tighter bank lending standards

The Australian REITs forecasts assume:

12. Current yield of ASX A-REIT index.
13. Distribution growth of 2.3%pa which includes the impact of rental growth, development activities and gearing.
14. Yield in 2028 of 5.1%pa, which is farrelly's estimate of the fair value yield for A-REITs.

The TD forecasts assume:

15. Yield is the 10 year expected return on TDs, with five-year TDs rolling over at 3.6%pa.

The Cash forecasts assume:

16. Government bond yields less 0.4%pa.

For Returns we have assumed:

17. Returns for Australian Equities, DM Equities, EM Equities, A-REITS, Debt and Cash reflect index returns. No allowance has been made for the impact of active management.