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How we determine the risk bands for the investment options

The investment options available to investors are classified into bands according to the relative level of risk of investing in each option. These risk bands are numbered 1 to 7 as per the table below. They provide a standard way of estimating the number of negative annual returns an investment option is expected to have over any 20 year period. This is called the standard risk measure, which is an industry based classification.

You'll see these risk bands listed in the relevant product disclosure statement or investment guide for each product. Each investment category listed now has a risk band number attached to it so that you can easily compare the relative risk of different options within those categories.

This document explains how we determined which risk band each investment option falls into and the assumptions we used in arriving at those classifications.

The standard risk measure is not a complete assessment of all forms of investment risk. For example, it does not detail the size of each negative return nor does it allow for the fact that the positive returns may be less than you may require to meet your objectives. Further, it does not take into account the impact of administration fees and tax when calculating the likelihood of a negative return.

You should still ensure you are comfortable with all of the risks and potential losses associated with your chosen investment options and shouldn't rely solely on the standard risk measure.

Details of our standard risk measure methodology are outlined below:

- The standard risk measure is calculated based on forward looking assumptions to determine expected long term returns as well as historical data to determine expected volatility and correlations for the asset classes that make up the superannuation funds' investment options.
- Monte Carlo simulations[1] are used to generate multiple sets of annualised asset class returns based on a multivariate normal distribution[2] using correlations between asset classes.

1 **Monte Carlo simulation:** A problem solving technique used to approximate the probability of certain outcomes by running multiple trial runs, called simulations, using random variables.
2 **Multivariate normal distribution:** A generalisation of the one-dimensional (univariate) normal distribution to higher dimensions.

- The probability of negative returns over any year is calculated based on the event of negative returns in the Monte Carlo simulated results. These probabilities are multiplied by 20 to achieve the number of negative years in 20.
- The risk band and risk label is based on guidelines set out by the Australian Prudential Regulation Authority (APRA) as shown right:

Risk Band	Risk Label	Estimated number of negative annual returns over any 20 year peiod
1	Very low	Less than 0.5
2	Low	0.5 to less than 1
3	Low to medium	1 to less than 2
4	Medium	2 to less than 3
5	Medium to high	3 to less than 4
6	High	4 to less than 6
7	Very high	6 or greater

Long term return/volatility assumptions

Long term return, volatility and correlation assumptions listed below are used in calculating the standard risk measure.

Definition and methodology of how the assumptions are calculated are outlined below:

Asset Class	Return (pa)	Volatility (pa)	Proxy Benchmark
Growth Funds	7.59	11.30	Morningstar Aust MultiSector Aggressive Index
Balanced Funds	6.98	9.18	Morningstar Aust MultiSector Balanced Index
Conservative Funds	5.66	5.03	Morningstar Aust MultiSector Conservative Index
Australian Equities	8.87	17.76	S&P/ASX 300 Accumulation Index
International Equities	8.49	15.98	MSCI World ex Australia Index
Australian Property	8.42	17.89	S&P/ASX 300 A-REIT Index
International Property	8.30	17.16	UBS Global Investors ex Australia Hedged AUD Index[3]
International Infrastructure	7.12	14.11	S&P Global Infrastructure TR Hdg AUD Index
Alternatives	7.54	7.28	Morningstar Aus Multisector Balanced Index
Cash	3.81	1.14	Bloomberg AusBond Bank 0+Y TR AUD Index
Commodities	5.71	23.27	TReuters/Core Commodity CRB TR USD[4]
Australian Fixed Interest	4.60	4.26	Bloomberg AusBond Composite 0+Y TR AUD Index
International Fixed Interest	4.72	4.75	Bloomberg Barclays Capital Global Aggregate (A$ Hedged) Index
High Yield	6.32	6.37	Bloomberg Barclays Capital Global High Yield TR Hdg AUD

[3] This benchmark was retired in 2015 however given its long-term history, this benchmark has been used as a proxy for the Morningstar Monte Carlo simulation.
[4] Hedged back to AUD.

Forward-looking returns

Long term asset class return assumptions are founded on economic fundamentals that incorporate views on real economic growth and inflation assumptions. The expected returns for each asset class can be broken down into components.
For example components of expected equity returns are formed from views of dividend yield and earnings per share growth expectations, and also inflation. For overseas equities, there is also a hedge pick up (or interest rate differential) as well as expected foreign currency returns for unhedged equities. The fixed interest expected returns starts with the risk free cash rate and adjusts for term and credit risk premia respectively and for overseas fixed interest, the expected overseas cash rate is used, along with the expected hedge pick-up. These are examples of components used to add to the total expected return of an asset class.

Volatility (measured by standard deviation)

Volatility is based on the past 20 years with assumptions beginning with long-term historical levels and trends. Adjustments are made to assumptions from historical data when there is limited data available for the benchmark, when markets have gone through a structural change and through abnormal market periods that are not expected to recur. The aim of these adjustments is to create steady state volatility assumptions.

Correlations

Correlations between asset classes are an important factor in minimising risk. Two assets may have a similar expected return and level of volatility, however by combining them, the risk of the overall portfolio may be decreased through the correlation effect.

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