Challenger
Retirement Income Research

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Spinning the wheel in retirement

Equity investing is like a chocolate wheel: there are plenty of winners, but also some losers. In retirement, even 20 years is not long enough to ensure that taking equity risk will be adequately rewarded by the end of the journey.

The starting point

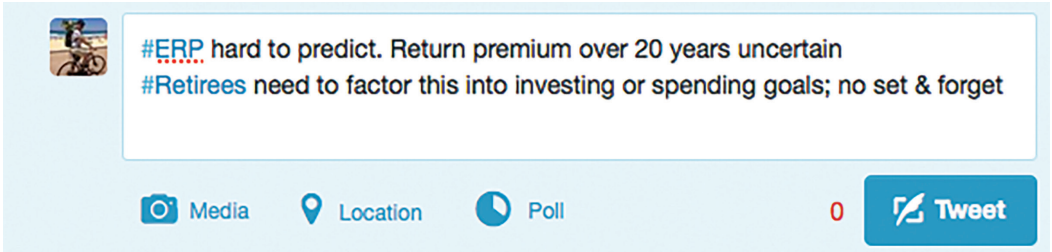
How long term averages obscure our thinking about retirement income – since 1995, equity return outperformance over the risk-free return in Australia has only been 1% per annum

Challenger's retirement income philosophy starts with the idea that partial annuitisation suits most retirees because it provides a secure layer of income to meet their essential spending needs, while covering their longevity risk. Under this goals-based approach, retirees use a safety-first philosophy to meet specific income and spending goals. They use their remaining capital to pursue wants, often by taking more risk, typically equity risk. Some equity exposure will be appropriate for most retirees and necessary for many. New research shows, however, that retirees should not assume that the volatility of equity returns will be smoothed out over time; not even if they stayed invested for 20 years.

A common perception in finance is that the risk in growth assets, like equities, declines over a longer investment horizon. Research done by consulting financial economists, Drew, Walk & Co into the equity risk premium (ERP) shows that this is not true and retirees should beware of falling into this trap.[1]

This paper explores this perception and some related issues that retirees face in managing equity risk in retirement.

The message in a tweet



1 Bodie, Zvi, On The Risk of Stocks in the Long Run (1994). Harvard Business School Working Paper No 95-013 http://ssrn.com/abstract=5771 or http://dx.doi.org/10.2139/ssrn.5771; contra Blanchett, Finke and Pfau (2013) based on empirical observations. See also Bianchi, Drew and Walk (2013) The time diversification puzzle: why trustees should care JASSA Issue 1 2013 p51.

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Why ERP and not simply investment returns?

The ERP is an expectation of the future

There are many studies on investment returns. We wanted to explore the difference between a risk-free retirement[2] and equity returns – that is, through the lens of the ERP. The ERP is an expectation of the future, rather than the (out)performance that actually occurs. That said, we also wanted to see whether investing in equities in previous 20-year periods had been adequately rewarded for the risk taken.

As part of our research for this project, we asked Drew, Walk & Co to express a view on what the ERP might be in the future.[3] As part of their work, they looked at historical equity return (out)performance over various periods in a range of jurisdictions.

The conclusions in their report have informed our commentary in this paper on the implications for Australian retirees and their advisers. The full ERP report is available at:

www.challenger.com.au/equityriskinretirement

The ERP report concludes that the:

- ERP is not directly observable, and that any estimate will be just that – an estimate of a return premium from holding equities as an asset class above a risk-free return.
- equity return (out)performance is uncertain. Its timing and magnitude are unpredictable.
- average Australian equity return outperformance has shrunk in recent history. It has been below its long term average since around 1990.
- average Australian equity return outperformance for the last 20 years was only 1 per cent per annum.[4]
- forward-looking ERP in Australia for the next 20 years is lower than the historical average equity return (out)performance and is estimated to be around 3.0-4.5 per cent per annum, but this is far from certain.

A quick refresher on the equity risk premium

The ERP is the extra return that investors require for the risk of investing in equities

The ERP is the additional return over the risk-free return that investors demand, ex ante, for taking the extra risk of investing in equities. It is a forward-looking estimate of the higher return that they require over and above the risk-free return (the government bond return). If investors did not expect to receive this additional return, they would not invest in the risky asset. Risk apprehension and aversion are central to the ERP concept.

The ERP has been labelled the most important variable in finance and is used in a number of applications from asset allocation and project finance to price regulation of energy providers.[5] Just about every decision in finance has a link to the ERP.

The ERP's importance is easy to understand in a world where everyone is saving and investing while working to enjoy a comfortable retirement. A consistently higher ERP means higher returns, and higher returns build wealth for more spending later in life.

2 Using government bond returns as a proxy.

3 ERP is calculated as the expected return differential between equities and a risk-free asset, which is usually government bonds, but sometimes just bank/treasury bills.

4 ERP report Figure 12 – panel C.

5 See Grinold, R., F. Kroner and L. Siegel (2011), A Supply Model of the Equity Premium, in Hammond, P., M, Leibowitz and L. Siegel (eds), Rethinking the equity risk premium, The Research Foundation of the CFA Institute.

The challenge for investors and superannuation fund members is the range of actual equity return outperformance, compared to what might have been estimated at the outset. The ERP report highlights the wide historical range of equity return (out)performance.

Unlike a long-term bond, where an investor can hold to maturity and receive a known term premium, the equity premium is unknown in advance and does not come without risk. The ERP is a risk premium after all, not a riskless premium. Investing in equities, particularly in retirement, will produce at different times both winners and losers.

Long-term equity returns – the flaw of averages

Long run averages are flawed predictors of the future for individual retirees

The historical analysis highlights, among other things, the flaw of averages. Because the historical data are generally looked at as an average over the whole period since 1900, people miss the fact that retirement is a much smaller number of years.[6] An Australian retiree household should be planning for roughly 30 years.[7] This is obviously well short of the 115 years of available historical data.

Long run average returns are perhaps one of the biggest problems confronting retirees and their advisers when it comes to thinking about equities in retirement. They look attractive, but are flawed because:

- Long run historical averages are not necessarily an indicator of future outcomes. Future market conditions are likely to be different from the historical data and there are also potential survivorship bias issues, where losses incurred in failed companies and markets are not properly measured or included.
- In 1900, Australia was an emerging market. It is axiomatic that an economy can only emerge once. Since WWII, Australian equities have performed in line with other markets.
- Retirement is different. Most retirees will need to spend some of their capital and so they are impacted by sequencing risk[8] and the need to segment their retirement capital over shorter time horizons to achieve their investing and spending goals.
- Most people do not get the average outcome. Around 50 per cent will do better and a similar proportion will do worse.
- Very few retirees will have an unbroken exposure to equities for decades.
- The mathematics behind the computation of long term averages masks the year-to-year volatility involved. The law of large numbers tends to normalise the annual investment return over time.

6 The Dimson-Marsh Staunton Global Investment Returns Database, Morningstar Inc. has been used in the ERP report and in this paper.

7 In a 30-year retirement, we envisage the initial equity component as lasting for approximately 20 years on average as it is reduced or depleted due to later in life consumption, for example, for health and aged care. The variability is not resolved by using a 30-year horizon.

8 See Challenger Retirement Income Research: The ABC of Sequencing Risk (2012).

Even 20-year average equity returns can be variable

Life is like a box of chocolates: time does not diversify equity risk

Most people assume that 20 years would be long enough to get the 'long-run average'. The problem for many retirees is that, as Forrest Gump's mama reminds us: **'life is like a box of chocolates, you never know what you're gonna get'**. Retirees face a surprisingly wide range of potential outcomes from their equity exposure, even when they can stay invested for 20 years.

The range of potential outcomes for final wealth with a risky (volatile) investment gets wider over time. The risk of a bad outcome keeps expanding. There is a wide range of outcomes that has provided the average Australian historical equity return outperformance of 5.6 per cent per annum, as can be seen in Figure 1. Only with hindsight, at the end of the 20 years, will a retiree find out their premium (if any) for taking equity risk over that period.

Figure 1 also shows the historical skew. The outcomes for the periods starting after WWII are shown in dark green and average 4.8 per cent per annum. The light green sections are from the earlier periods and show a higher average equity outperformance of 7.0 per cent per annum, albeit subject to more data integrity issues that make them less reliable. There have been 14 periods of 20 years in Australia where the equity return outperformance exceeded 10 per cent per annum. But, the last of these began in 1950!

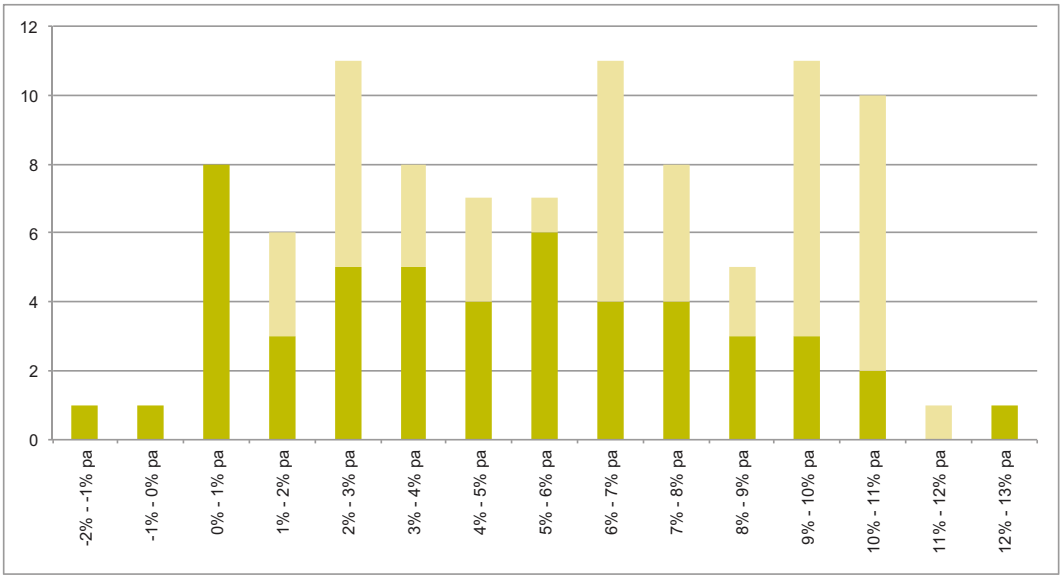
Indeed, Australia in the first half of the 20th century was more like an emerging market today than a fully developed market economy. This has an impact on any analysis of equity outperformance.

There is the usual reminder here that past performance is not a reliable indicator of future performance. As Drew, Walk & Co note in their ERP report, there are good reasons to expect the ERP in the future to be lower than historical equity return outperformance. Variability is likely to remain, so the example that follows uses the observed numbers from the past.

Terminology:
Throughout this paper, we refer to the historical (out)performance of equity returns. These are expressed as average annual compound returns over rolling 20-year periods above the risk-free return.

Reflecting the ERP concept, the (out)performance is the return differential between the equity market and government bond returns. We have used brackets around the word (out) because, despite expectations, equities do not always outperform, even over long time horizons. This is the core point of the paper.

Figure 1: Frequency of 20-year historical average annual equity return (out)performance



Source: Morningstar DMS database

Most of the 20-year periods with high outperformance by Australian equities were before 1950

The typical retiree needs some equity exposure

Given the risks involved, the need for a reliable income stream and the fact that retirees tend to be more risk averse,[9] there is another question: Why invest in equities in retirement? For some retirees, the answer might be that it is not appropriate. Some retirees will not have any equities exposure, due to their low level of savings; short-term spending needs or a very high level of risk aversion.

Most retirees need exposure to high return, risky assets…

Most retirees, though, have the time horizons to invest in equities and are likely to benefit from the premium. This is why the great majority of account-based pensions already have quite a generous exposure to equities. This is not to say that it is all plain sailing, but that it is a good starting point.

A retirement risk management strategy

But what do retirees do about the equity risk? What happens when something goes wrong? How an investor responds often determines the impact on the portfolio, on the wealth available at retirement and on the amount of retirement income available. 'Pension finance' differs from conventional schools of thought built around modern portfolio theory (MPT). Pension finance looks at a portfolio at an individual retiree level from which there are active drawdowns to fund retirement. The need for those cash flows means that the 'set and forget' approach, which is often associated with MPT, is much less applicable in retirement; particularly where equities are involved.

…so they also need a risk management strategy

9 See for example, National Seniors Australia (2013), 'Retirees' Needs and Their (In)Tolerance for Risk' available at http://www.nationalseniors.com.au/be-informed/research/publications/retirees-needs-and-their-intolerance-risk

Even a long term bucket does not fully insulate a retiree from market risk when they are drawing an income stream

Instead of adopting a 'set and forget' approach, well-advised retirees work with a risk management strategy for their equity exposure in retirement. The idea of having a safety strategy is common in everyday life, and when it comes to investing in risky assets, retirees should be no different.

A safety strategy is something that needs to be prepared in advance, even if it is never fully implemented. Pfau and Cooper (2014) discuss several safety-first approaches to generating retirement income.[10] Having to reduce spending if savings fall is not the most viable option for many retirees.

Using a long term bucket for equities in retirement is one strategy that is sometimes used. However, as equity outperformance is uncertain over 20 years, a retiree will not have certainty about how much will be in the bucket after even as long as 20 years.

Defining the role for equities in retirement: goals-based investing

A retiree should consider their objectives to determine their equity allocation

Starting with Chhabra, there has been a distinctly different approach for making asset allocation decisions in retirement.[11] This approach is to consider the full range of the retiree's objectives. The retiree might have different income goals for different ages, and they might have some specific expenses, or a requirement to meet health expenses later in life. Instead of trying to meet all targets with one investment decision, a goals-based approach will segment the main objectives. This process typically uses a hierarchy of needs first and wants afterwards and applies different asset allocations to meet the different objectives. The approach is similar to the asset-liability matching practised by many insurance companies and defined benefit funds around the world.

Matching objectives enables a retiree (or their adviser) to consider the risk/reward trade-off that is represented by the ERP and select a suitable allocation of risk for each objective. Generating income for life to meet essential spending needs will generally have a limited exposure to risky assets, as the objective is to maintain a minimum standard of living for life. Investing for spending on holidays and luxuries later in retirement can have a higher allocation to growth assets. Under this approach, retirees with differing objectives, but the same wealth, age and risk tolerance will actually have different asset allocations.

10 http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2548114

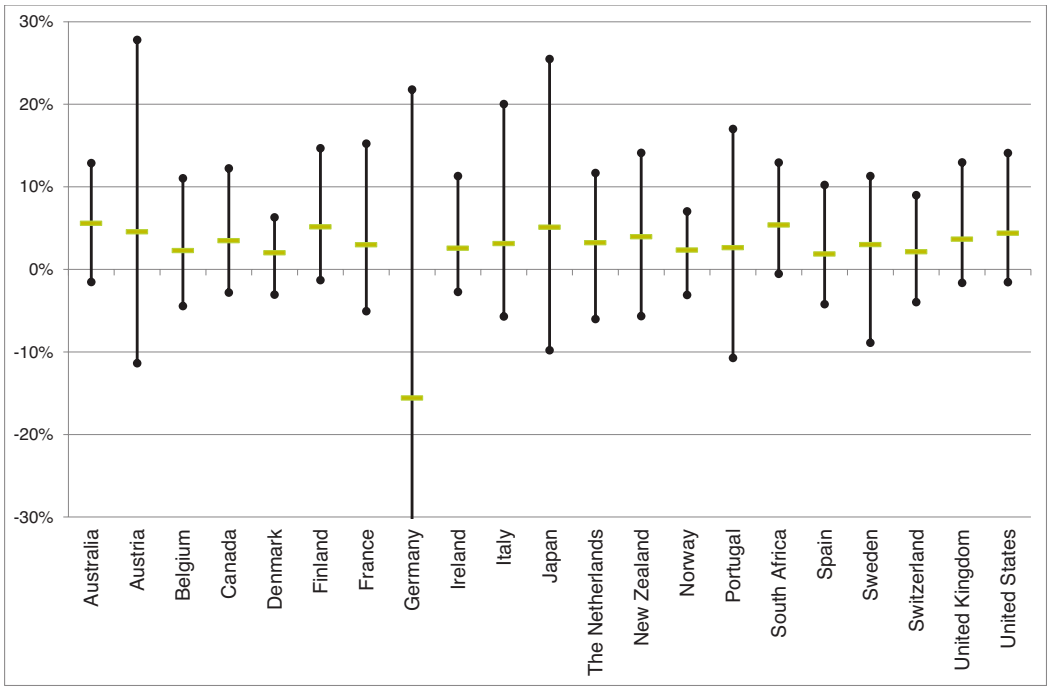
11 See Chhabra (2005) 'Beyond Markowitz: A Comprehensive Wealth Allocation Framework for Individual Investors.' The Journal of Wealth Management, Vol 7, No 4. pp8-34, Spring 2005.

Australia's history was not average

Australia was one of the best performing markets historically, as were other emerging markets. For investors and retirees today, care needs to be taken when drawing conclusions from these data about the future.

The wide range in long term equity return (out)performance is not peculiar to Australia. Indeed for most countries, the range was even wider. The wide range of outcomes for all countries in the database is shown in Figure 2.[12]

Figure 2: 20-year historical equity return (out)performance from 1900 to 2014, selected countries



Source: Morningstar DMS database with Challenger calculations

Globally, equity (out)performance has been even more volatile

Every country in the sample has at least one period of 20 years when the overall return differential was negative (Germany's worst case was -72 per cent per annum). Across the 21 countries, there was roughly a one in five chance that a 20-year historical equity return outperformance would be negative.

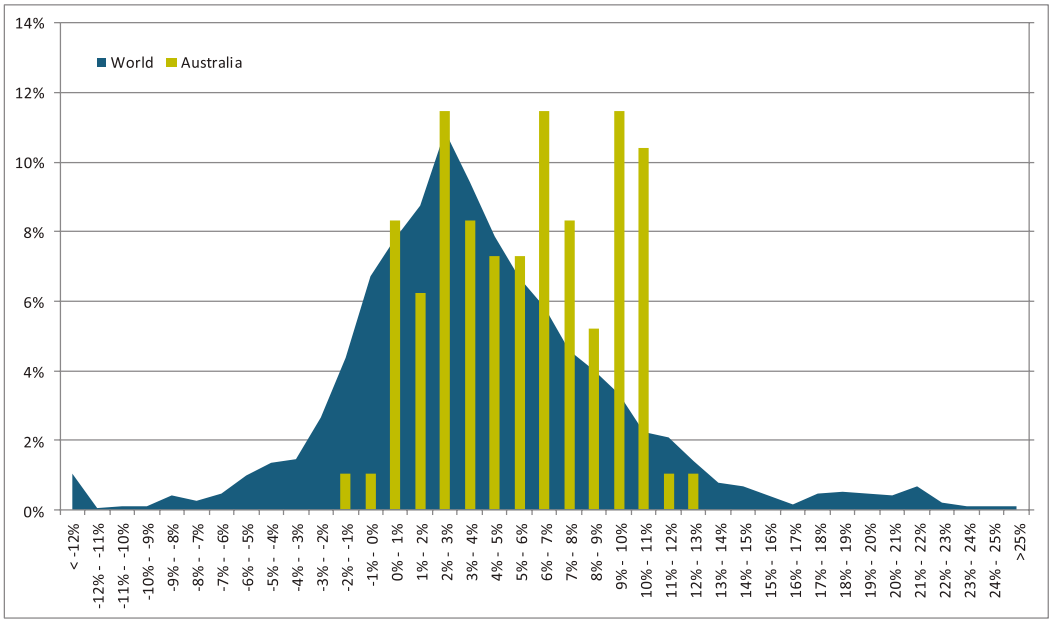
Historically, in one in five 20-year periods equities have underperformed the risk-free return

Australia's good relative historical performance is highlighted in Figure 3, which is an update of Figure 1. Here, the world outcomes provide the backdrop to the Australian experience, using all 21 countries in the Morningstar DMS database. The flaw of averages is even more stark here as the range of outcomes was a lot wider. Equity returns were strong while Australia developed as a nation, but since WWII the Australian market has behaved more like other markets.

12 The scale has been truncated to omit the collapse of the German market in 1923.

Australian outcomes have been narrow compared to other markets

Figure 3: global 20-year historical equity return (out)performance



Source: Morningstar DMS database with Challenger calculations

Taking the forward-looking approach

Drew, Walk and Co consider a range of possible determinants of prospective ERP including economic stability, market liquidity, reduced market imperfections, levels of risk aversion, improvements in corporate earnings information, globalisation and integration of capital markets. They conclude that the prospective ERP for Australia is likely to be lower than the average historical outperformance. Interestingly, their proposed range of 3.0-4.5 per cent per annum is closer to the historical average 20-year equity outperformance of all countries of 3.4 per cent per annum.

Spinning the chocolate wheel in retirement

Retirees should think about investing in the ERP as being like spinning the chocolate wheel shown in Figure 4.[13] This has been assembled using the global historical numbers, the average of which roughly matches the forward projections for the ERP made by Drew, Walk & Co.

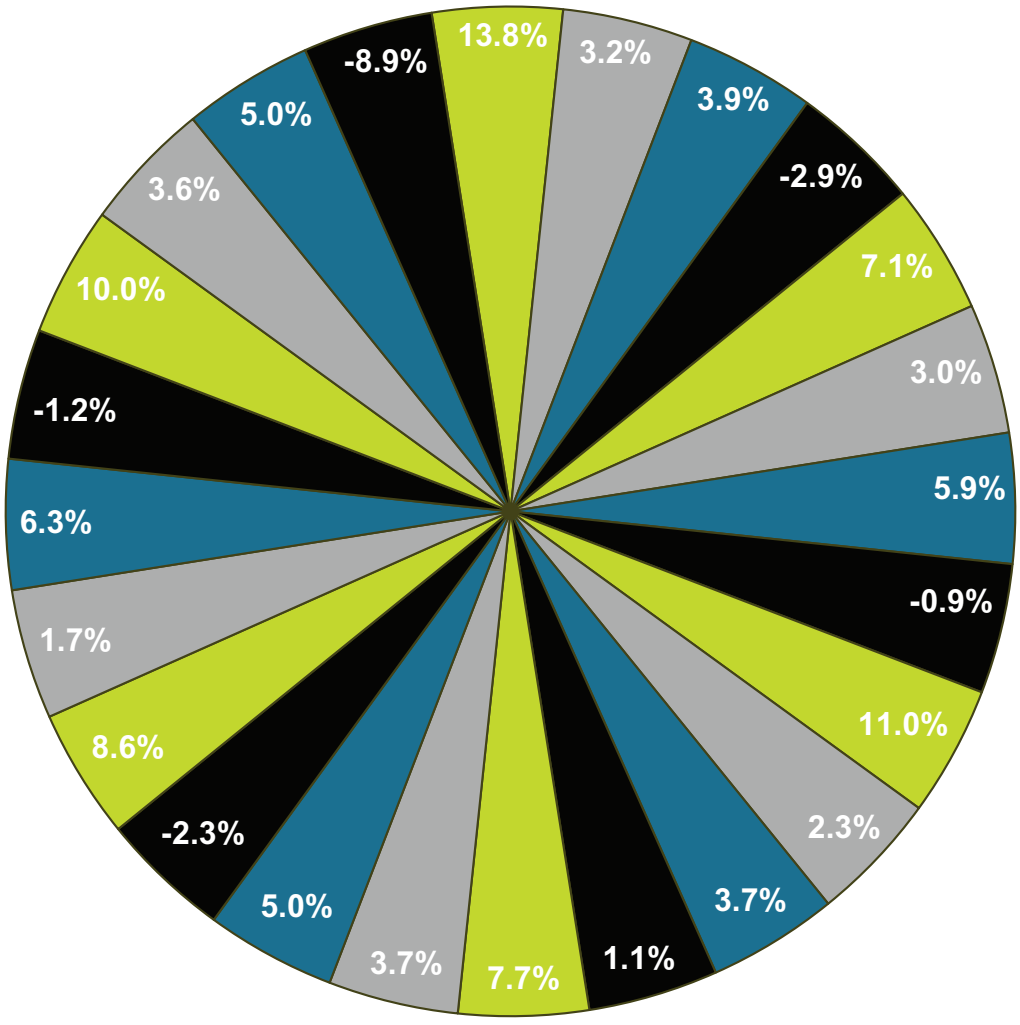
Twenty-four periods that ended in the leap years were chosen from around the world, taking one sample from each of the 21 countries in the database, along with a European and a world result and an extra one from Australia. The average historical outperformance of 3.8 per cent is in the middle of the forward projections in the ERP paper.[14] Retirees and investors need to be aware that the 'chocolate wheel' only hints at the average annual outperformance that might be expected over a 20-year investment period. It will not be a guaranteed 3.8 per cent per annum.

13 This is called a 'lottery wheel' elsewhere, but 'chocolate wheel' is an Australian term reflecting the use of chocolates as prizes on various sections of the wheel at fetes and agricultural shows.

14 Avoiding any period with a complete collapse of the equity market, such as Germany, raises the historical average equity outperformance.

For retirees, the chocolate wheel in Figure 4 is probably a better representation of what might be achieved. The outcomes remain attractive, but the risks are broader than what Australian history alone suggests.

Figure 4: Chocolate wheel of global historical average annual equity return (out) performance over 20-year periods



The range of global historical outcomes is probably a better guide to potential future outcomes for Australia

Source: Morningstar DMS database

The countries and years for each return outcome are provided in Table 1.

Table 1: Selection of historical average equity return (out)performance

Period	Country	20 year (out)performance (% p.a.)
1900 – 1920	Canada	5.9%
1904 – 1924	Switzerland	-1.2%
1908 – 1928	Belgium	11.0%
1912 – 1932	Sweden	-8.9%
1916 – 1936	South Africa	7.7%
1920 – 1940	France	3.2%
1924 – 1944	World	1.1%
1928 – 1948	Germany	-0.9%
1932 – 1952	United Kingdom	3.9%
1936 – 1956	Norway	3.6%
1940 – 1960	Europe	8.6%
1944 – 1964	Australia	10.0%
1948 – 1968	Italy	7.1%
1952 – 1972	Austria	6.3%
1956 – 1976	The Netherlands	5.0%
1960 – 1980	Spain	1.7%
1964 – 1984	United States	3.7%
1968 – 1988	Portugal	13.8%
1972 – 1992	Australia	3.0%
1976 – 1996	Finland	5.0%
1980 – 2000	Japan	-2.9%
1984 – 2004	Ireland	3.7%
1988 – 2008	New Zealand	-2.3%
1992 – 2012	Denmark	2.3%

Source: Morningstar DMS database

This forward-looking range might not be as high as the Australian history, but it still highlights a benefit from equity exposure for the retiree. The outcome buckets would be a little different, but at an average of 3.8 per cent per annum, a retiree could expect their equity investment to be more than double what a similar risk-free investment would be after 20 years, if the historical average is delivered. The risk of a different outcome still very much needs to be managed and could be more extreme. The worst case could leave an almost empty bucket after 20 years. An equities bucket created in 2015 will not necessarily deliver outperformance over the risk free return by 2035. If we look back over the last 20 years in Australia, the average outperformance was only 1 per cent per annum.

Concluding thoughts

There is an expected premium for taking equity risk that can and should be accessed by most retirees to assist in meeting their retirement income goals. That said, the actual delivery of equity outperformance is uncertain and should not be taken for granted, even over very long periods of time. After all, it's called an equity risk premium for a reason. Outperformance is not always achieved, even over a 20-year period. It is also very hard to predict the ERP on a forward-looking basis.

Retirees would do well to expect equity return outperformance, but to be prepared for the worst, and the range of safety strategies they can employ will be the subject of future papers.

The information in the report has been compiled by the Challenger Retirement Income Research team.

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