SEQUENCING RISK FOR BABY BOOMERS: PROSPERITY OR POVERTY*

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ABSTRACT

The number of baby boomers moving into retirement is growing and yet the level of mandated superannuation available to provide sufficient retirement funding for this group is relatively low. This unique group is more sensitive to negative cyclical events and to the impact of sequencing risk through their superannuation as part of their move to retirement.

Within the context of Australian superannuation, Industry superannuation accounts represent 17 per cent of the over two trillion dollar superannuation asset base, with the majority of these fund members automatically investing in high-risk "default investment strategies" as part of their MySuper contribution arrangement. This paper investigates the implications of sequencing risk for baby boomers, as typical members in these funds, how financial market volatility directly impacts on retirement outcomes and shows that investment results are sensitive in the retirement-drawdown phase.

*This paper is developed from Loretta Iskra's Master of Finance thesis on "Australian Industry Superannuation Default Funds: Examining Sequencing Risk for Baby Boomers" (University of Wollongong, 2016).

Introduction

Baby boomers are people born between 1946 and 1966, a period reflecting high birthrates after the end of World War II. This group has been moving through different life stages, with the shift to retirement occurring from 2001 for those aged 55. Demographic trends identify that in 2014 the 55-64 age groups represents 11.8 per cent of the total Australian population (IndexMundi, 2014).

Baby boomers have felt the ongoing effects of market volatility since the financial crisis in 2008. The fear of losing superannuation savings is more threatening and heightened by the news of market downturns. This unique cohort of investors faces significant financial issues as they are likely to have financial responsibility for three generations—their parents, themselves and their children—over a longer lifetime, using smaller levels of accumulated mandatory superannuation savings (Shacklock and Brunetto, 2011, p. 743). Given the value of funds held in default strategies, superannuation as an institutional investor shoulders the responsibility of investing for many in this group.

In the literature we note the contribution of Modern Portfolio Theory (MPT), a hypothesis about investment behaviour as detailed by Markowitz in his seminal articles on Portfolio Selection (1952, 1959). Markowitz argued that the optimal behaviour of an individual investor is the preference for the less risky investment, if offered the same expected returns. Markowitz used standard deviation, a statistical measure of dispersion, and variance analysis to evaluate the weightings of assets within a portfolio to derive efficiency. Past investment results are used as an input in the portfolio selection process, with diversification implicit and uncertainty acknowledged as part of the investment landscape.

Superannuation fund trustees have been guided to create default fund structures that diversify efficiently to maximise expected returns for given levels of risk (variance). Limitations in practice reflect the use of historical results to guide estimates for expected returns, without regard to understanding conditions relating to past performance.

In 'Retirement Ruin and the Sequencing of Returns', Milevsky (2006) explains how the cyclical impact of returns plays an important role in maintaining a nest egg over a lifetime. Milevsky (2009) found that, due to the impact of negative returns combined with drawdowns, a portfolio can be exhausted sooner in the "distribution phase of the lifecycle". Teh (2014) describes the outcomes of sequencing risk as "catastrophic", "tragic" and "the difference between living comfortably in the golden years where grandchildren are spoilt versus the harsh reality of dying in poverty" (p. 8).

As part of the literary debate on portfolio construction, sequencing risk—the "worst returns in their worst order" (Basu *et al.*, 2012, p. 7) has emerged as a key risk facing baby boomers in relation to their retirement funds (Drew *et al.*, 2014). Various literature examines issues of asset allocation optimality, while also considering management of the retirement risk zone (the "fragile period" 5-10 years either side of the retirement year), the effect on pension outcomes, retirement adequacy and sustainability (for discussions, see Milevsky, 1998; Booth and Yakoubov, 2000; Byrne *et al.* 2007; Basu and Drew, 2009; Ingles and Fear, 2009; Borowski, 2013; Gebler and Matterson, 2010; Basu *et al.*, 2011; Basu, Doran and Drew, 2012; Kingston and Fisher, 2013; Drew *et al.*, 2014; Johnson, Brimble and Worthington, 2016).

The implications of a reduced portfolio base—the limits of diversification in practice and longevity-risk—heighten the fiduciary obligations for investment committee members in relation to the baby boomer superannuation default fund asset base. This study examines the effects of sequencing risk for this unique cohort as represented in Australian Industry superannuation default funds.

Data and Methodology

We examined the case of a baby boomer retiring with a superannuation portfolio hypothetically invested in a MySuper default account. This means that, based on the MySuper investment mandate, funds are required to be invested in either a single diversified investment strategy or in an account that uses a life cycle investment approach.

Given Industry superannuation default fund data1, the single diversified investment option (SDIO) is represented by a typical *Growth* strategic asset allocation (SAA) benchmark, with 80 per cent of fund assets invested in listed property and equity (growth assets) and the remaining 20 per cent invested in cash and fixed interest (defensive) investments. In contrast, life cycle products are a new development in the Australian superannuation landscape and there is limited fund data available (Mercer, 2013).

For the purposes of this study we relied on typical strategic asset allocation (SAA) benchmarks to construct the underlying mix of defensive and growth assets for each of the portfolios, see Table 1.

[1] Sourced from APRA Annual Superannuation Bulletins.

Table 1. Strategic Asset Allocation Benchmarks

	Capital Stable/ Conservative	Balanced	Growth
Cash	25	5	5
Australian fixed interest	35	15	10
International fixed interest	10	10	5
Listed property	5	10	10
Australian shares	15	35	40
International shares	10	25	30

Source: Griffith, 2009, p. 542, cited in Australian Master Financial Planning Guide.

To broaden the conceptual approach in analysing this type of portfolio, the life cycle investment option (LIO) has been established using a mix of *Capital Stable/Conservative*, *Balanced* and *Growth* benchmarks, with the proportion of each reflecting cash flow needs anticipated in retirement. To accommodate funding, we used the minimum drawdown level of 5 per cent, based on a 65-year-old using an account-based income stream. We adopted a time-based strategy of using two years cash flow for each strategic benchmark. This means that at five years from retirement, a 10 per cent move of funds to a Cash-based benchmark asset allocation protects this portion of capital from volatility, and matches eventual drawings required relative to account-based pension minimum drawdown levels for the first two years of retirement, refer Table 2.

Table 2. Cash Flow Based Asset Allocation

Age 60	Age 65	Year 1 & 2	Year 3 & 4	Balance
↑ 10% Cash		Use Cash Reserve	Use Balanced Reserve	Retain Growth
↑ 20% Balanced	Retire			
↓ 30% Growth		10%	20%	70%

The adjustments we made to the underlying asset structures were assessed on a theoretical static basis, rather than as part of a dynamic approach, and were considered in terms of a time based method interposed with cash flow needs as part of an account-based pension arrangement. This approach relied on the 'mean reversion' concept to manage risk, in that the need to draw on growth assets during a market downturn (crystallise losses) is minimised and equities have time to recover (McCulloch, 2014).

Once the cash flow adjustments were reflected in the strategic benchmarks, the underlying assets were determined, with the life cycle option represented by 73 per cent of fund assets invested in listed property and equity (growth) and the remaining 27 per cent of assets invested in cash and fixed interest (defensive) investments.

The detailed mix of growth and defensive assets for the single diversified investment option (SDIO) and the Life cycle Investment Option (LIO) is shown in Table 3.

Table 3. Asset Allocation: Single, Diversified (SDIO) & Life cycle Investment Options (LIO)

	Defensive Assets			Growth Assets		
Investment option	**Cash**	**Australian fixed interest**	**International fixed interest**	**Listed property**	**Australian shares**	**International shares**
SDIO	5%	10%	**5%**	**10%**	**40%**	**30%**
LIO	7%	13.5%	**6.5%**	**9.5%**	**36.5%**	**27%**

Although it is typical to analyse investment data over long periods, it is important to note that Australian MySuper legislation was formulated to make simple comparisons between investment strategies, based on rolling ten-year investment periods. To suitably showcase this initiative, sequencing risk is examined by finding the risk and return distributions for the major asset classes over the preceding 10 years from a fictitious retirement date and applying the results to the two investment options.

As sequencing risk emphasises the impact of market cycles and how the timing of one's retirement can be significantly impacted during an economic downturn, this study reviews two 10-year time periods: the years 2000 to 2009 and the years 2004 to 2013. This enables an overall comparison incorporating the impact of the Global Financial Crisis (GFC), for the period ending 31 December 2009, and the year preceding implementation of MySuper reforms, 30 December 2013. While having the years of analysis cross over is not ideal, the key issue for this study is to relate the issue of baby boomers and their retirement to the current investment climate, its link with the global financial crisis, and how 10-year investment periods were legislated as being the appropriate mechanism for assessment.

Market data sourced from IRESS, Citi Smith Barney and Morgan Stanley Smith Barney (as cited by Griffith, 2009:2012 and Irwin, 2013, in CCH Australian Master Financial Planning Guide, 2009:2013 editions), is based on the performance of each of the major asset classes using their relative indices:

- Cash: UBS Warburg Bank Bill Index
- Australian Fixed Interest: UBS Warburg Composite Bond Index
- International Fixed Interest: Citigroup Hedged Interest Bond Index in $A
- Listed Property: S&P/ASX300 Property Trust Accumulation Index
- Australian Equities: ASX All Ordinaries Accumulation Index
- International Equities: MSCI World Index (ex Australia in $A net dividends)

Market returns are analysed with mean and standard deviation calculated for each asset class over the two 10-year periods—to link back to the MySuper performance comparison mechanism enshrined in legislation.

In addition, we examined the market results for a 100 per cent defensive investment option (DIO) and a 100 per cent growth investment option (GIO), for each of the two periods under examination. This allowed us to test the impact of extreme positions.

Results

On assessment of the two 10-year investment periods for the four different investment options – the single, diversified (SDIO), life cycle (LIO), defensive (DIO) and growth (GIO), we report the impact of sequencing risks dominating the outcome of the earlier period, reflecting the significance of the 2008 economic crisis (see Table 4).

Table 4: Impact of Market Returns on Investment Options

	SDIO		LIO		100% DIO		100% GIO	
	Mean, μ Percent	Standard Deviation, σ	Mean, μ Percent	Standard Deviation, σ	Mean, μ Percent	Standard Deviation, σ	Mean, μ Percent	Standard Deviation, σ
2000:2009	5.86	14.29	6.13	13.05	6.7	2.83	5.5	20.81
2004:2013	8.73	15.21	8.67	13.87	6.3	3.0	8.4	22.87

In the first 10-year period, years 2000 to 2009, the 100 per cent defensive (DIO) portfolio has achieved the higher average return of 6.7 per cent, with least risk, s=3.0. While for the second 10-year period, the years 2004 to 2013, although the single, diversified investment option (SDIO) achieved the higher average return of 8.73 per cent, it only provided a marginal improvement on the average return for the life cycle option (LIO) of 8.67 per cent, and 2.4 per cent more than the defensive option (DIO), and yet was five times more risky.

Findings and Conclusion

Sequencing risk for baby boomers presents as a significant threat as part of the retirement phase. This study found that the high exposures to growth assets in typical MySuper default funds would lead to significant losses in growth assets. For the period ending 2009, a defensive investment strategy was able to provide an average return of almost 7 per cent with standard deviation at 2.83. Growth investments averaged 5.5 per cent with standard deviation of 20.81 for the same period at seven times the risk.

Modern Portfolio Theory (MPT) accommodates cyclical market movements as part of mean-variance reversion, with investment portfolios adopting a long-term perspective for asset allocation, and with growth assets providing higher investment returns. Construction and maintenance of diversified portfolios for superannuation on the basis of MPT during the accumulation phase is appropriate. However, in the process of transitioning to retirement, sequencing risk triggers a potential change to investment constructs. Superannuation capital becomes a means for cash flow and capital expenditure funding in retirement. The optimal portfolio in this lifecycle stage is less homogenous. Conversion of capital to income streams permanently alters asset allocation arrangements.

Baby boomer default and life cycle benchmarks were used to determine market changes over two 10-year periods for industry fund retirement wealth. Results show that sequencing risk is more prominent in periods of market downturn when relying on the industry default asset allocation. This means that when growth assets are affected by negative results, greater losses are evident. By contrast, the reverse is true – when markets are performing well, better results are apparent.

The results from life cycle benchmarks show improved results during a market downturn and lower returns when markets are favourable. The reduced exposure to growth assets protects the portfolio when losses occur and inhibits performance when they are positive. However, risks are lower with the life cycle portfolio. While the 10-year time frame restricts the overall assessment, it helps to position the issue of sequencing risk relative to the 10-year retirement risk zone applicable to baby boomers.

Going forward, baby boomers will find it very difficult to assess the merits of the two legislated investment options as typical default superannuation asset allocations are devoid of individual investor preferences and needs. While this preliminary analysis provides an example of a different approach to life cycle products (matched to account-based pension drawdown levels), there is still a significant disconnect with baby boomer retirement needs. It is very difficult to assess appropriateness of an investment option without understanding the true financial position and needs of the baby boomer investor.

This study has been able to demonstrate how the dominant elements of Modern Portfolio Theory, that is, the use of a diversified, long-term investment, structured to cater for the suitable strategic risk and return benchmark, has optimality constraints for superannuation relative to the retirement process for baby boomers.

Recommendations

This research examined sequencing risk for baby boomers in industry default funds and provided insight into the investment considerations that apply. While investment performance and market cycles play a major role in portfolio outcomes, the consequence of the "worst returns in their worst order" (Basu *et al.*, 2012, p. 7) adds a more significant dimension to an already multifaceted ageing problem. Isolating investment performance as an efficiency measure can detract from the overall financial needs of baby boomer investors and lead to an unreliable yardstick for establishing income arrangements in retirement.

Development of an assessment framework—to filter and provide a mechanism for decision-making—could assist in the complex retirement strategy process. Linking targeted initiatives, and reflecting issues associated with the retirement risk zone, could better accommodate baby boomer needs. Establishing a hierarchical sense of funding requirements, whether repaying a mortgage, keeping money for aged care, having a comfortable retirement or safeguarding cash flow for life, can be used to improve the transition to retirement choice options.

Future research

Throughout this study it was noted that the context of retirement covers a broad range of areas, with limited research available on their interconnectedness. In many respects, improved life expectancies are creating an unknown future. Parents moving towards retirement are juggling intergenerational demands of their parents, their children and grandchildren. From a pragmatic point of view, understanding how decisions are being made, how priorities are set and how funding is arranged is important. Research focused on gathering detailed information on these issues from the current retiree cohort could identify triggers and other mechanisms that could assist in delivering improved retirement income solutions to baby boomers.

Longer term solutions need to focus on practical outcomes. To offset government age pension funding with annuities as a means to addressing sustainability issues is one-dimensional and insufficient as a policy platform. Greater stability and fairness for all is achievable.

It is difficult to know if Australia is well placed to meet the issues of an ageing population, through its 'three-pillar' retirement income support mechanism. Implementing reform for success will require an understanding of the implications of sequencing risk for baby boomers and how this will translate on an intergenerational scale. Supporting elements of transparency and efficiency will be important to ensure that superannuation is not used as a commodity nor exploited for either individual or corporate gain. Optimistically, demographic change will continue to be a catalyst for ongoing improvement.

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