Designing retirement products: One size does not fit all!

Dr Don Hamson – July 2014

"*Any customer can have a car painted any color he wants so long as it is black*"

Henry Ford, in his 1923 autobiography

In our experience, the Australian funds management industry has largely adopted the Henry Ford "one size fits all approach" in that most fund managers don't tailor different strategies for different types of investors. Funds tend to be run the same "Henry Ford" way no matter who the underlying investor is. Yet there are significant differences between retirees and other investors, including investors who are still in the accumulation phase of superannuation. Assuming retirees hold their investments within superannuation[1], their investments are tax free and they receive rebates for franking credits. Another difference is that retirees need to live off the income stream from their investments, whereas accumulation-phase investors have no such objective. Finally, and probably most importantly, the risk tolerance of retirees is likely to be lower than for accumulation investors. Although an investor's risk tolerance doesn't necessarily change completely at retirement, the risks of investment sequencing risk peak around the time one retires. In this paper we will discuss these tax, income and risk differences and see how they affect the design of retirement products.

Tax differences

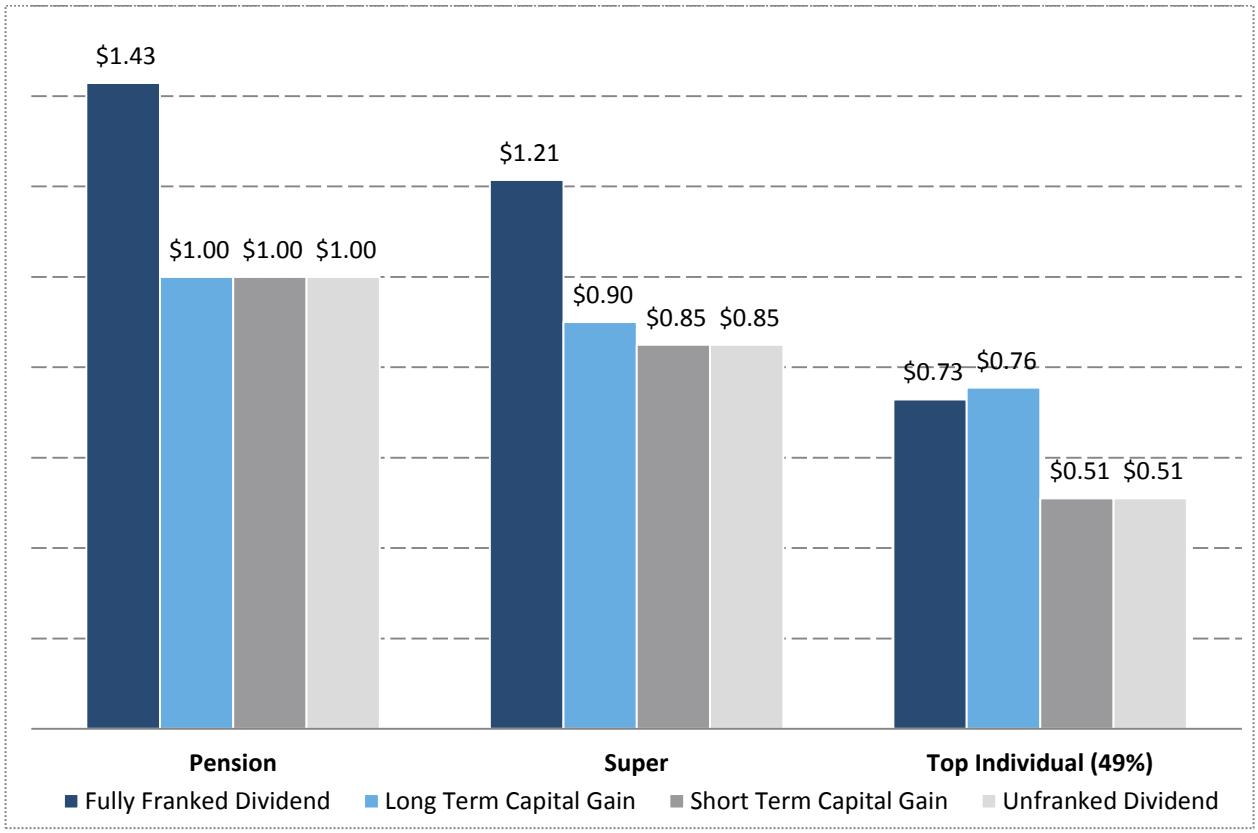
Figure 1 highlights the tax differences between pension, super and the highest individual tax rate, displaying the after tax value of $1 of pre-tax return for the different investors. For the pension investor $1 of pre-tax capital gain (short or long) or unfranked income is worth $1. However, $1 of fully franked dividend is worth $1.43 since the pension investor gets a $0.43 franking credit refund. Franked dividends are also worth the most for super investors at $1.21.

Figure 1 clearly highlights why taxed investors should prefer low turnover strategies. Reducing realised short term capital gains, and deferring the realisation of long term capital gains reduces the time value of capital gains tax (CGT). However, for pension investors there is no cost to realising a capital gain since they pay no CGT. So the common perception that high turnover strategies are tax inefficient is not correct for pension investors. **For a given level of pre-tax return the only thing pension investors can do to improve after tax returns is to generate more franked income** which is worth 43% more than any other form of return. Paying no CGT is a real bonus for pension investors. Many super investors are loath to realise gains on long held

[1] We assume throughout this paper that retirement products are held within a superannuation fund.

appreciating assets in fear of paying CGT, but once they transition to pension phase they are able to completely restructure their assets to suit their needs without paying any CGT.

Figure 1. The after tax value of different returns for different Australian investors.



Source: ATO, Plato using 2014/15 tax rates.

The bottom line is that post-retirement investment products don't need to be concerned about portfolio turnover from a tax perspective[2]. On the other hand, wherever possible they should try to increase exposure to fully franked dividends.

One major failure of the Australian investment industry is that franking is largely ignored. By convention returns are usually reported on a pre-tax basis and thus exclude franking. Investment surveys generally fail to mention franking credits. Yet franking credits added approximately 1.6%

[2] Portfolio turnover does create transaction costs, so investors need to ensure that portfolio adjustments provide benefits in excess of any increased transaction costs.

pa to the total return on the S&P200 Accumulation index over the past 10 years to December 31 2013.

The need for income (and growth)

Retirees need income to live off, and by law they are required to drawdown a minimum income stream from their superannuation investments each year. For example, retirees aged between 65 and 74 generally need to drawdown a minimum 5% of the value of the superannuation investments each year. Accumulation phase investors have no income requirements. Typical managed funds distribute income annually, but retirees need regular income. So an attractive feature of a retirement product would be regular income, something noted in the FOFA safe harbor provisions (RG175.291). Theoretically, one can argue that for tax exempt pension investors, there is no real distinction between capital gains and income. If a superannuation fund doesn't generate 5% income, it can simply sell or redeem assets to make up the difference to fund the minimum drawdown. In practice there are transaction costs associated with selling or redeeming assets. Costs may include commissions and buy/sell spreads on direct equities and managed funds (typically 20-25bp each way). Selling an asset also requires someone to initiate the sale, whereas a regular income payment requires no action. Illiquid assets like real property (held directly or via a fund), private equity and other real assets (eg infrastructure) are not easily sold down. These types of assets may not be well suited to a retirement product, particularly if they are not generating high levels of regular income.

Given the mandatory drawdown requirement for pension phase superannuation, retirement products may benefit from having an income objective, as well as total return objective. Unfortunately, for today's retirees, traditional income generating assets such as cash, term deposits and bonds are trading on yields that are near all time lows, and well below the 5% minimum drawdown rate.

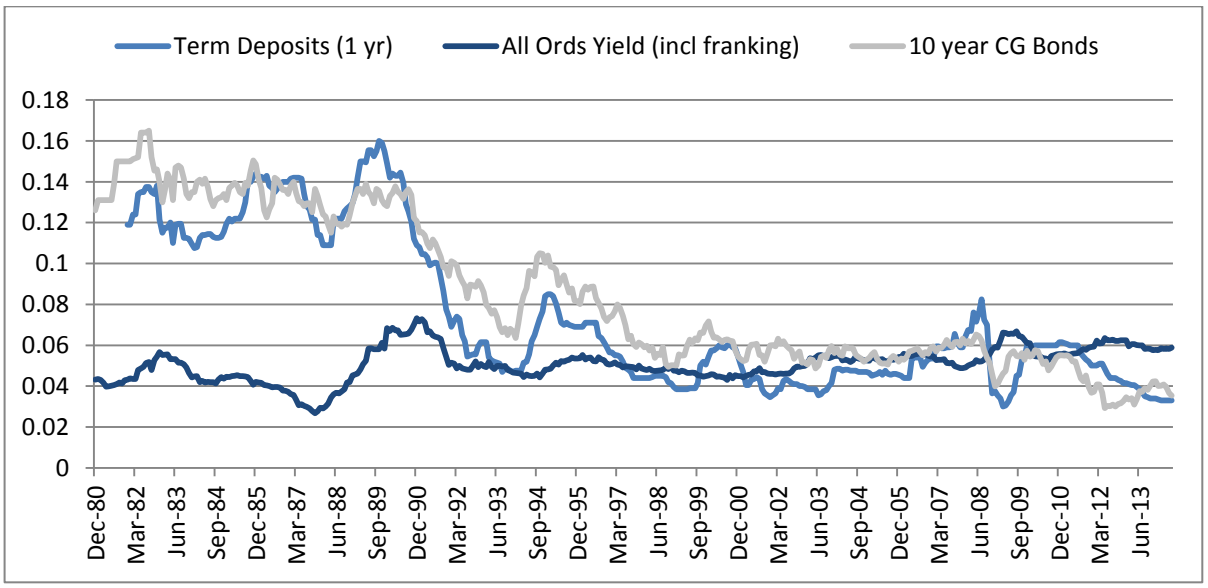
Luckily, Australian equities provide relatively high levels of income (approximately 6%)[3] when one factors in the value of franking credits which get fully rebated within pension phase superannuation. Australian Equities and other growth assets also provide investors with the potential for capital growth, and with the majority of retirees today being underfunded[4], we believe that most retirees today would benefit from that growth potential. The FOFA safe harbor provisions also discuss the need for capital growth.

[3] Plato estimate 5.74% based on 10 years to June 2014, with yields higher than this post GFC.

[4] ASFA estimate that over 60% of fully retired 65 year olds and 80% of retired 75 year olds rely on part or full pensions in 2013 ("*The equity and sustainability of government assistance for the retirement income in Australia*", July 2014).

Figure 2 plots yields on 1 year term deposit rates, 10 year Australian Government Bonds and the Australian share market (including franking) from December 1980 to June 30 2014.[5]

Figure 2. The yield on 1 year term deposits, 10 year Commonwealth Government Bonds and the Australian share market from December 31 1980 to June 30 2014



Source: RBA, Iress, Plato estimate

[5] The RBA term deposit series which commenced in December 1981. We estimate the Australian share market yield using the All Ordinaries Index adjusting for estimated franking credits post the implementation of the dividend imputation system in Australia.

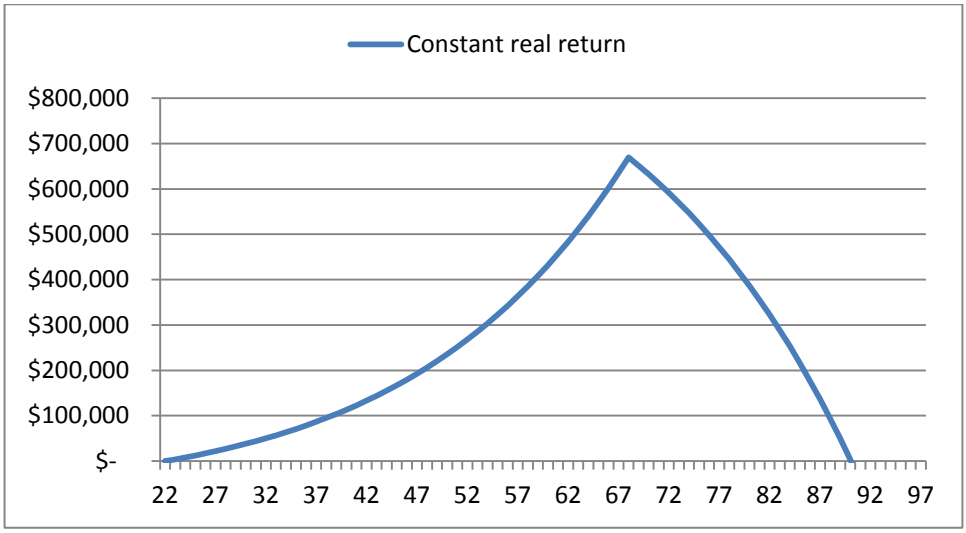
Risk considerations

Retirees and people approaching retirement age are likely to be less risk tolerant than investors who are many years away from retirement. With life expectancy rates ever increasing, so too is longevity risk, i.e. running out of money before they die. The GFC experience has highlighted the devastating effect of a very poor investment return on a retiree's investment balance and expected retirement income stream. The risk of getting a very poor return at the very worst time is called sequencing risk - the sequence of when returns occur can have a significant impact on retirement income and wealth. We will discuss the concepts of sequencing and longevity risk, how they interact, and discuss ways to reduce these risks.

Longevity risk

To illustrate the longevity and sequencing risk, we will use the hypothetical example of Susan who enters the workforce at age 22, earning $50,000, and contributes 9% of salary into super throughout her working life. Susan receives a 1% real increase in salary each year until she retires at age 67. Once retired, Susan expects to consume 60% of her final year salary each year in real terms. Susan invests in a balanced fund throughout her entire life, and expects to earn a 4.5% pa real return on the investment each year. Figure 3 charts the expected value of Susan's superannuation investment balance in real (current) dollars.

Figure 3. Expected superannuation balance of Susan based on 4.5% real investment return.



Source: Plato

Susan's balance is expected to grow to around $650,000 by retirement, and then fall to zero around age 90. Please note that we have not allowed for any other income such as the age pension in our calculations. In the absence of the age pension, Susan would face longevity risk if she lives longer than 90. Collecting some aged pension in retirement can obviously mitigate longevity risk, but relying completely on the aged pension can be dangerous if governments reduce aged pension benefits as has recently been announced.

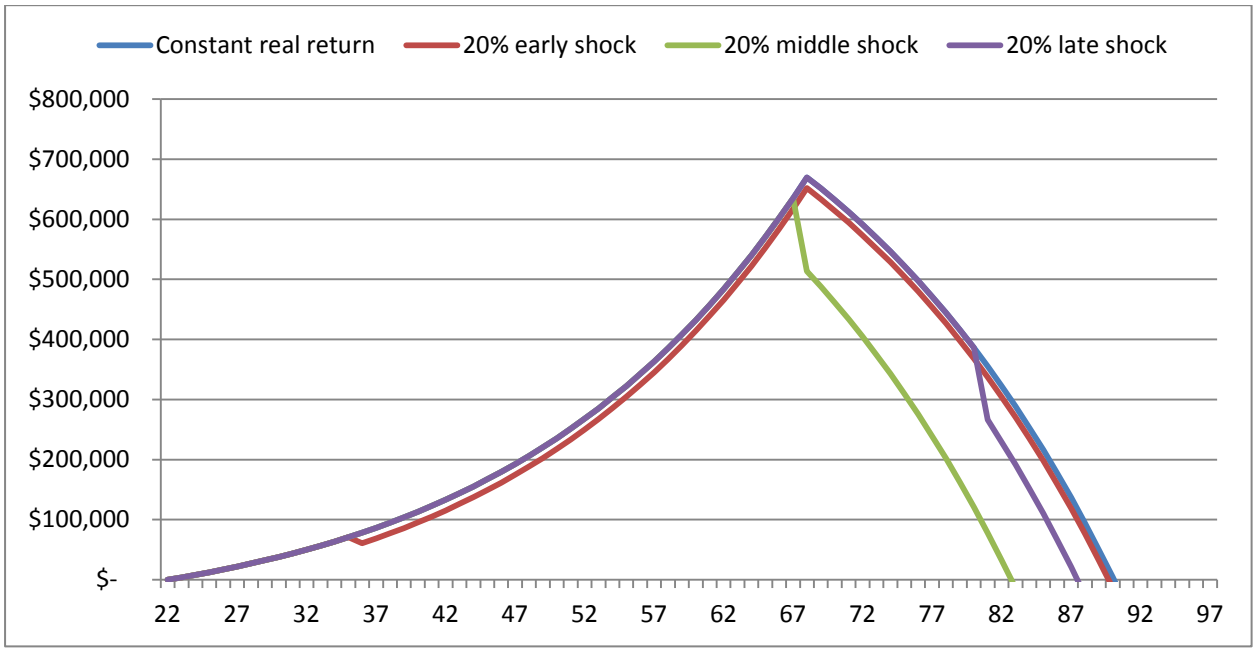
Sequencing risk

In our hypothetical example in Figure 3, we have not allowed for investment risk. This is clearly incorrect, as investment returns vary considerably year to year, yet it tends to be the assumption used by most on-line investment calculators, including ASIC's Superannuation Calculator. To provide a simplified example of the impact of investment risk, let us assume that there is a once in an investment lifetime risk of earning a -20% real return, whilst returns in all other years are still 4.5% pa real. The once in a lifetime negative return is about the size of the return experienced by a typical Australian balanced fund in the GFC. Depending on where in one's lifetime the GFC return occurs will have a large impact on how long Susan's retirement money lasts. To show this we "shock" returns at different times, specifically at age 35, 67 and 80. Figure 4 shows the impact of extreme negative returns at different times.

The early "GFC shock" at age 35 has little impact on how long Susan's expected retirement income lasts. This early loss cuts expected retirement income by less than one year. However, if the same "GFC shock" occurs at age 67, the impact is significant, reducing expected retirement income by around 8 years. Encountering the "GFC shock" in late retirement has less of an impact, with a "GFC shock" at 80 reducing expected retirement income by less than 3 years. Figure 4 clearly shows the impact of sequencing risk. Sequencing risk is quite low when one starts investing for retirement, increases in size as one approaches retirement, and then reduces the longer one is retired. The "best time" to endure a once in a lifetime negative return would either be in one's very first year of investing, when investment balance is negligible or in one's very last year of retirement when investment balances are almost fully depleted. The very worst time to experience a large negative investment return is when your investment balance is at its peak, which for most people is expected to be at the time of retirement. The 5-10 years either side of retirement have been called the "retirement risk zone", as this is when sequencing risk is at its peak[6]. Figure 4 also highlights that sequencing risk exacerbates longevity risk.

[6] Milevsky and Salisbury, "Asset Allocation and the transition to income: the importance of product allocation in the retirement risk zone", 2006, available at http://www.math.yorku.ca/Who/Faculty/Salisbury/preprints/IFIDriskZoneReport27SEPT200final.pdf

Figure 4. Sequencing risk: expected superannuation balance of Susan incorporating the risk of a -20% shock return.



Source: Plato

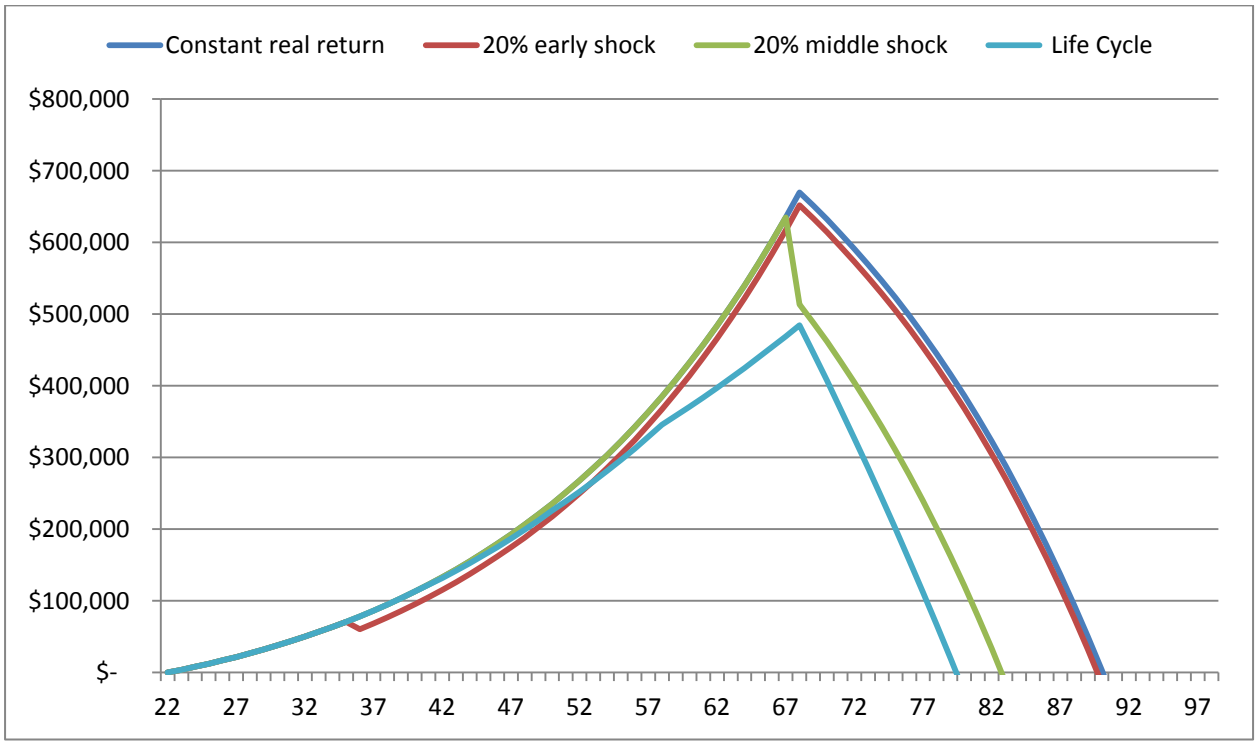
Adjusting investment risk – a lifecycle approach

Investment risk is at the heart of sequencing risk, so reducing investment risk as one gets closer to retirement can reduce the impact of sequencing risk. A number of Australian institutions have built default lifecycle asset allocations which vary investment risk according to investor's ages. We have selected one such allocation. The lifecycle return assumptions that we are using are that up to 40 one Susan invests in a balanced fund with expected return of 4.5%pa, for the next 10 years the asset mix is marginally de-risked, with real return expectations of 4%pa, from 50-57 risk and returns are lowered with expected real returns of 3.5%, and from age 58 risk is permanently lowered to a level consistent with 2%pa real returns.

Note that this zone nicely ties in from where transition to retirement strategies start.

Figure 5 shows the impact of this lifecycle approach[7]. This life cycle investment mix reduces the expected life of Susan's retirement income stream by more than 10 years, a high price to pay for reducing sequencing risk. The life cycle results are expected to be inferior to experiencing the worst possible sequencing risk, although please note that this is just one hypothetical life cycle approach, not all life cycles are the same. However, approaches which significantly reduce expected returns when most money is invested, will be expected to reduce retirement income streams.

Figure 5. Mitigating sequencing risk for Susan by adopting a life cycle approach to investing.



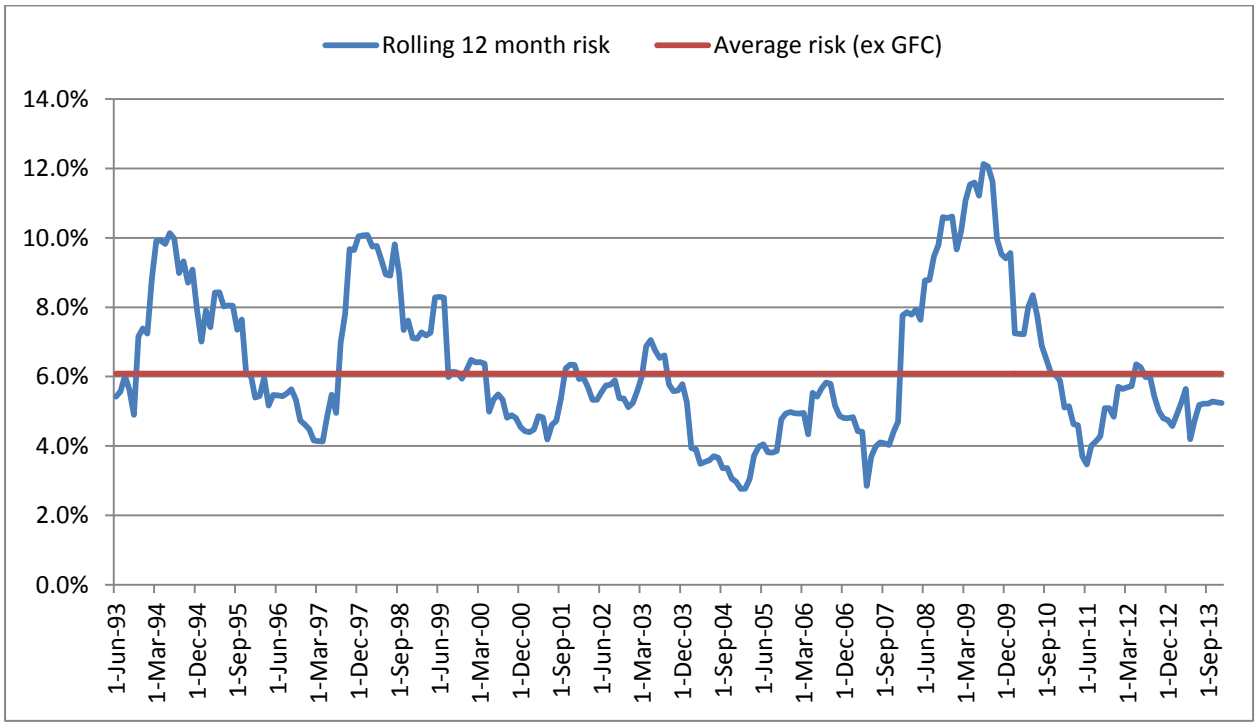
Source: Plato

[7] Please note that life cycle approaches differ and the conclusions we draw are based on our assumptions for both the life cycle strategy and Susan's situation. Investors should undertake their own analysis based on the own circumstances and the risk/return parameters of individual life cycle approaches.

Assessing the magnitude of sequencing risk

So far we have provided simplified examples of the impact of sequencing risk based on a 20% negative real return shock occurring at 3 different times in Susan's lifetime. We chose that number because it is roughly matches the GFC experience for Australian balanced fund investors. We will now be more scientific in the way we estimate sequencing risk. To estimate the magnitude of the worst potential expected investment return we calculated the standard deviations of returns for a simulated Australian 60/40 balanced fund.[8] Over the period, the standard deviation of returns was just over 6.9% pa, excluding the volatile GFC period (2008-2009) the standard deviation was 6%. Figure 6 displays both the average risk (ex GFC) and the estimated rolling annual risk of the balanced fund. Risk peaked at over 12% during the GFC.

Figure 6. Rolling annual estimated risk of an Australian balanced fund June 1992 to December 2013.

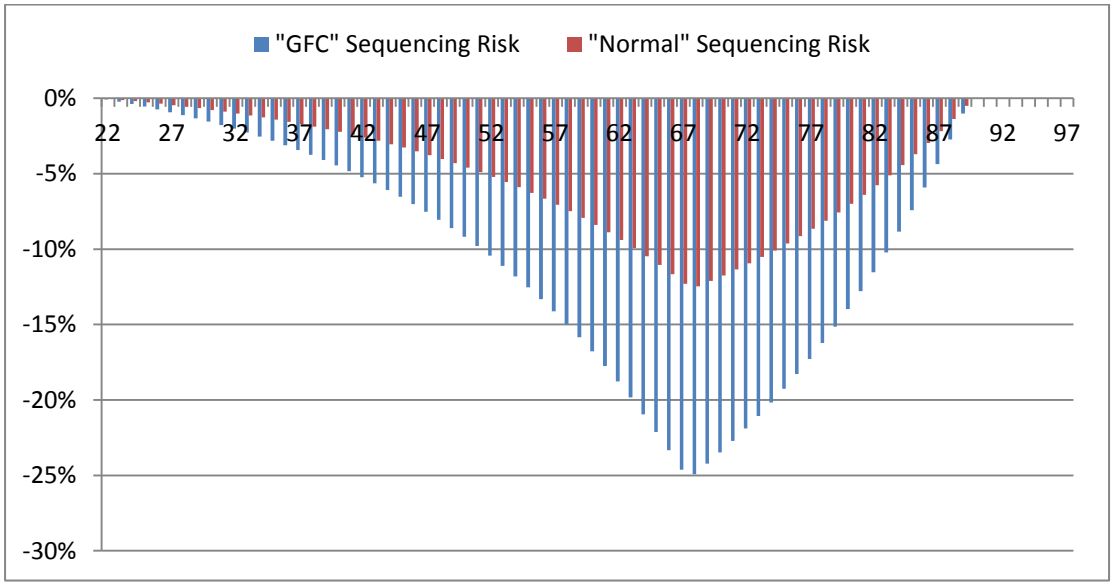


Source: Plato

[8] Precisely we used 35% S&P/ASX200, 20% MSCI World (ex Aust unhedged), 5% A-REITs, 15% UBSA Composite Bonds, 15% Citi WGBI (Ex- Aust) Hedged (A$) and 10% UBSA Bank Bills over the period June 1992 to December 2013.

In assessing risk, one normally considers the impact of a large outlier event, such as a two standard deviation event. If investment risk is 6%pa, a two standard deviation event is 12%, in our case 12% below a 4.5% real return - a real loss of 7.5%. However, if investment risk spikes to 12%, a two standard deviation event is 24% below the expected return of 4.5% or -19.5% real, which is pretty much spot on with the GFC experience. Now that we have reasonable estimates for the worst likely returns, we can estimate the impact of a normal shock (ex GFC) and a GFC type shock. Figure 7 displays the 2 standard deviation sequencing risk on Susan's retirement balance at age 67, based on normal and "GFC"-style risk of an Australian balanced fund. Sequencing risk is very small when one starts work, increases to a peak at retirement, and then falls after one retires.

Figure 7. Estimated sequencing risk as a percentage of retiring superannuation balance for Susan by year of shock return using normal and "GFC-style" risk.



Source: Plato

Figures 6 and 7 highlight that a significant component of sequencing risk is due to the instability of investment risk. If investment risk was static (and equal to the average ex GFC period), maximum losses should have been more like 7.5% rather than the 20% experienced during the GFC.

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Can investors do anything about the fact that risk is not static? Thankfully the answer is yes. Post the GFC, over 50 "Managed Risk" funds have been launched in the US. Instead of maintaining a largely static allocation to growth assets, these funds monitor and manage the risk of the fund, reducing exposure to risky growth assets in periods of higher than average investment risk such as the GFC period. Managing risk can significantly reduce draw-downs in volatile investment regimes, thus significantly reducing the impact of sequencing risk. More importantly, these funds expect to earn around the same long term return as normal funds, because periods of high risk are generally associated with large negative returns.

Summary

Traditionally, retirement investment products in Australia have looked pretty similar to accumulation phase products. However, retirees have different needs to accumulation phase investors and we believe these differences should be reflected in the design of retirement products. Retirees need income to live off, are likely to be less risk tolerant than working investors, and their investments within pension-phase superannuation are tax free.

Many investment products aren't structured to distribute regular income, and in the current low interest rate environment many traditional cash, bond or annuity based products are unlikely to be able to deliver the minimum 5% income stream that a 65-74 retiree must take. Helpfully, Australian shares deliver approximately 6% income and also provide growth potential which most retirees will need to minimise longevity risk. We believe Australian retirees should include an allocation to Australian shares in their pension fund for both capital growth and income generation.

Pension assets are not taxed so retirees can actively restructure and trade their portfolios to generate extra returns without the fear of paying tax. Strategies that are explicitly managed from a pension perspective are better placed to maximize returns and income for pension investors compared to traditional "one size fits all" approaches adopted by most Australian fund managers which often adopt buy and hold strategies.

Poor return sequencing (sequencing risk) can significantly increase longevity risk for those unlucky enough to experience very poor returns around retirement (the "retirement risk zone"). Some balanced funds experienced losses in the order of 20% during the GFC, which would have had a significant impact on expected retirement income for someone about to retire. Using the hypothetical example of Susan, we have demonstrated how sequencing risk changes over one's lifetime. Life cycle funds which de-risk portfolios as one approaches retirement can alleviate sequencing risk. Unfortunately, permanently de-risking portfolios around retirement also permanently reduces investment returns at the time when most investors have the largest sum

invested. We believe retirement products need to develop innovative approaches to mitigating sequencing risk without increasing longevity risk. Dynamic risk management may provide a solution to these problems.

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