

MUSINGS ON RETIREMENT SAVING

October 2018



BetaShares
Exchange Traded Funds

By Roger Cohen, Senior Investment Specialist, BetaShares

This is the first in a series of posts which I will be writing under the tagline “**Challenging the Norms**”. The aim of these pieces is to provoke thought by challenging commonly held views and practices relating to investing and investments, which to my mind need challenging.

To get us started, I examine default super allocations as they relate specifically to younger members of the workforce.

The millennial and default super

When a late teen or early twenty-something enters the workforce, a portion of their wages is compulsorily put into superannuation. Unless they take an active interest (which we know very few do), most likely it will go into an industry or employer designated fund and be automatically invested into a default growth or high growth accumulation option. Simplistically, this means a high allocation to equities and property, and low allocations to alternatives and defensive assets including bonds and cash.

Is this the right type of investment strategy for their circumstances?

An anecdote:

An eighteen-year-old, new to the workforce. Superannuation is the last thing on her mind. After a year of employment, she will have contributed about \$1,000 which she will not access until she is well into her 60s (probably 70s or 80s by the time she gets there!). Although she places no importance on how this contribution is managed, she does understand that it can and will accumulate and may be valuable in her retirement.

Finance Industry Father (“FIF”): “You’ve got \$1,000 in super. What will you do?”

Ms.18: “I’m not sure.... Invest in a bunch of things.? Keep it safe.”

Aside – “bunch of things” – good. She gets diversification; “keep it safe” – an oft repeated theme, but does she really understand the relationship between risk and potential return?

FIF: “Really – what would the impact be when you retire if you didn’t contribute that \$1,000?”

Ms.18: “hmmmm....”

FIF: “Ok. Assume you invested it and lost it all.”

Ms.18: “I’d be \$1,000 worse off.”

FIF: “Correct, and if you invested it at 2% return, it would be worth around \$2,600. At 3%, \$4,200. At 5%, \$10,900 and at 10%, \$106,000.”¹

Ms.18: “So – small increases to returns make a huge difference.”

She’s starting to understand the benefit of compounding....

FIF: “Correct. Now assume inflation is 2% to 3%, so you actually need to subtract 2% to 3% from these numbers to get the value in today’s dollars. What should you do?”

Ms.18: “If I lose it all, I’m \$1,000 worse off. If I make 2% to 3% I have about a thousand of today’s dollars. If I get higher returns I could have many thousands or even tens or hundreds of thousands.”

FIF: “Yes – that’s right. You could lose \$1,000 or make a lot. What should you do?”

Ms.18: “Make a lot.....”

The conversation continued. We didn’t discuss that returns are not constant, or the relationship between risk and potential return and many other important factors. Still, some messages resonated:

- Right now, with the relatively small amounts she will invest and long-time horizons, the impact of losing all is much smaller than the benefit of making it worth something significant.
- High (like double digit) returns generate surprisingly large retirement proceeds even with very small starting amounts.
- This means investing with the potential for double digit returns will create more impact if the returns eventuate than the loss incurred if they don’t.
- We learned about asymmetric opportunities, we may lose \$1,000, but could make \$2,000, \$5,000, \$10,000 or even \$100,000.

¹ Based on an 18-year-old retiring at 67 (i.e. 49 years of accumulation) with \$1,000 starting balance.

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With these insights, we concluded that, while it was not worth putting everything on a single “double or nothing” bet, it was certainly worth investing where there is the possibility of extremely high returns, even if this means risking it all. In other words, we should sweat the \$1,000 as much as possible.

We then discussed conventional superfund allocations, including high growth options. Even these we concluded were too conservative – why have any allocation to non-growth assets, for example, which may just keep pace or slightly outpace inflation. We understood the benefits of diversification, and then ended up talking about gearing and how it could help generate possible double digit returns that would really make a difference.

To sum up: Late teens/early twenties is the time to invest for ultra-high growth. Take sensible risks where the potential return justifies them. Use gearing and other techniques to amplify returns where possible. Try to make the end result significant as the price (or opportunity cost) of failure is low. Also, there won't be a better time to do this than at the beginning of one's investment journey.

We did flag that for early life cycle investing, the decision process is clear. It gets much more complex over time. What happens in your 30's, 40's or 50's. Balances are larger, the impact of loss is higher, preservation of capital becomes more important.

Based on my observations there are very few practitioners who talk this way. Subjects like “ultra-high growth” and “gearing” are regarded as taboo. Is it time for them to start challenging some of this for the children of older clients and the new generation of investors who will become their clients?

Testing this out

To substantiate the thoughts behind this, we undertook some analysis and modelling where we used expected returns from various traditional asset allocations² (typical of what would be prescribed by a super fund, model portfolio or financial planner). We added to these several ultra-high return expectations (with commensurate high risk). These ultra-high return scenarios are not the domain of typical asset allocations. They require investing in ultra-high growth assets (including alternatives and non-traditional investments), and – more importantly - using gearing (either directly or by investing in products with a high degree of internal gearing). Expected returns from traditional asset allocations, plus returns from three hypothetical ultra high growth allocations form the basis of simulations for which the results are in the Appendix.

A few observations - some counter-intuitive - from this work:

- When the expected return goes from 7.5% to 10%, the expected end amount increases from \$34,595 to \$106,719. When it goes to 12%, the expected end amount is \$258,038. While overall risk is higher in the latter, the potential for outsize returns increases exponentially!
- The expectation for outsize returns from conservative and moderate allocations is minimal. Only 1.8% and 30% of the trials returned above 5% for conservative and moderate allocations, respectively. Respectively, while for the ultra growth 2 and 3 options only 1% of the trials returned below 5%!
- The ultra aggressive investment allocations have a much higher probability of yielding above 8% (65%, 86% and 92% respectively) compared to 24% for high growth, even though high growth has an expected return of 7.5%.

Much more insight can be obtained from the simulations. For further discussion and interpretation of these results, as well as information on the limitations of such modelling, see the Appendix.

Discussion and Conclusion

From ASICs moneysmart site: “Growth – 85% in shares and property. High growth – 100% in shares and property.”

With reference to the above; are these growth and high growth options actually aggressive enough for a twenty-year-old? Using the scenario from above, a 1% increase in returns from 5% to 6% means approximately an extra \$6,400 from the original \$1,000, while 1% from 10% to 11% generates an extra \$59,500. Shouldn't we consider categories such as ultra-high growth or geared high growth, which seek even more aggressive returns for early stage accumulators?

Of course, this is very simplistic. It assumes aggregate returns at a steady rate. It assumes that they are sustained over the complete life cycle to retirement. Sequencing is ignored as are many other factors. Also, risk allocations will change over time and of course the whole process is path dependent.

As an illustration, this flies in the face of conventional wisdom. It suggests that there is a time and place for chasing the potential for ultra-high returns by taking risks. This time and place is early in the accumulation cycle, with small balances and long-time horizons.

Are there adequate ultra high growth choices for millennials to include in their retirement strategy?

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Appendix

Scenario analysis & modelling under varying "risk profiles" (49 years)								
"Risk Profiles"	Conservative	Moderate	Balanced	Growth	High Growth	Ultra Growth1	Ultra Growth2	Ultra Growth3
Expected Return (%)	4.25%	4.75%	5.50%	6.25%	7.50%	10.00%	12.00%	14.00%
StDev (%)	2.50%	4.00%	6.00%	8.00%	11.00%	15.00%	17.00%	20.00%
End Expectation (\$)	\$ 7,686	\$ 9,717	\$ 13,784	19,504	\$ 34,595	\$106,719	\$258,038	\$614,239
Simulation Results								
Average	\$ 7,606	\$ 9,853	\$ 14,021	\$ 19,357	\$ 34,092	\$100,993	\$252,578	\$620,997
Median	\$ 7,537	\$ 9,448	\$ 12,953	\$ 16,875	\$ 26,383	\$ 62,970	\$142,060	\$270,752
Median Return	4.20%	4.67%	5.33%	5.94%	6.91%	8.82%	10.64%	12.11%
Observed StDev	2.42%	4.06%	5.80%	8.02%	11.86%	16.57%	20.69%	22.76%
Percentage of trials with return above								
5.00%	1.80%	30.00%	64.00%	78.00%	88.00%	96.00%	99.00%	99.00%
8.00%	0.00%	0.00%	0.10%	3.30%	24.00%	65.00%	86.00%	92.00%
10.00%	0.00%	0.00%	0.00%	0.00%	2.00%	30.00%	58.00%	76.00%

Source: BetaShares analysis

The top block in the table above are the expected return (% p.a.), standard deviation and expected value at the end of the simulation for each "risk profile". The lower block shows the percentage of trials in the simulation which yields an annual return above target values of 5%, 8% and 10% respectively.

What is interesting in these results is how significantly the expectation (i.e. the amount at the end based on the expected return being achieved) increases as the expected return increases. For example, as the expected return increases from 7.5% to 10%, the expected end amount increases from \$34,595 to \$106,719.

The middle block shows the simulation results. It shows the validity of the simulation (compare observed average returns and standard deviations with expectation). We also included median returns and end amounts. These are important as they are values for which half of the trials lie above and half below. Median returns tend to be below averages because of the lognormal price distribution.

The lower block shows the percentage of trials which end up achieving a return above the 5%, 8% and 10% return thresholds. This is useful as it gives an idea of how likely a given risk profile allocation will end up beating specified end assumptions. As expected, the conservative and moderate options show little dispersion (the return is likely to be clustered around the expectation), while the ultra-high returns are much more dispersed and show returns in a wide range around expectations. For example, when we look at the percentage of trials which end up in excess of 5%, we see low numbers for the moderate allocations (i.e. only 30% of the moderate simulation ended up above 5%), and high numbers for the more aggressive ones (i.e. 88% of the ultra growth categories end up returning above 5%). This yields what is to some counterintuitive outcomes. For example, the ultra aggressive investment allocations have a much higher probability of yielding above 8% (65%, 86% and 92% respectively) compared to 24% for high growth, even though high growth has an expected return of 7.5%. The answer to this is explained because for the ultra growth high return scenarios, the expected return is well above 8%, thus only a small part of the return distribution falls below 8%, while for the less aggressive scenarios, the expectation and the majority of the results fall below 8%.

While these results are based on a 49 year time period, they are also valid for "long" holding periods of less than 49 years. The outcomes and relativities will be similar, just with lower end amounts.

A caveat: We used lognormal distributions to model future stock prices. While this is a common practice, it is well acknowledged that it has limitations, including that it does not predict the "fat tails" (bubbles and crashes) which occur in real markets. As such, the results are illustrative only. Despite this, the author strongly believes that current allocations and methodologies should be challenged and that in the circumstances presented above, the conclusions are justified and consistent (if not by the numbers) with the results therein.

Note: Gearing magnifies gains and losses and may not be a suitable strategy for all investors. Investors in geared strategies should be willing to accept higher levels of investment volatility and potentially large moves (both up and down) in the value of their investment.

²Based on BetaShares Model Portfolio allocations for conservative, moderate, balanced, growth and high growth as at June 2018 (based on BetaShares Asset Allocation & Model Portfolio Report June 2018) and hypothetical scenarios for Ultra Growth1, Ultra Growth2 and Ultra Growth3 options.

³Simulations were based on sets of 1,000 trials using results randomly selected from a normal distribution of returns. While not perfect, this model describes prices which evolve following a lognormal distribution. The model has many limitations and has been used for illustrative purposes only.

⁴<https://www.moneysmart.gov.au/superannuation-and-retirement/how-super-works/super-investment-options>

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