DRW Investment Research

The Short Series on Retirement Planning

Edition 1

Investment returns required to meet inflation-adjusted income during retirement

By

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When reaching retirement (resigning from one's retirement fund) one should have a pretty good idea of the income needs that one will require at least for the next few years of retirement. Most retirees opt for the living annuity retirement product (ILLA) where one has relatively freedom of choice of selecting your own investment portfolio and income levels plus the potential benefit of preserving and growing your retirement capital over time (conventional life annuities pay a guaranteed income stream until death but with no return of capital).

Living annuities allow retirees to withdraw between a minimum rate of 2.5% and a maximum rate of 17.5% of the capital value per annum. Obviously, the income level chosen should be realistic and linked to your overall capital available to generate an income stream. The challenge of a living annuity, however, is to construct one's investment portfolio in not only meeting current income requirements, but also rising income needs in the future. The initial retirement income amount (or initial withdrawal rate) is paramount to the sustainability of one's retirement plan over the long term.

In this article, I examined the minimum investment return one's retirement portfolio should yield to provide sufficient and growing income for different post-retirement periods. Thereby one can easily identify sustainable withdrawal rates, based on realistic return expectations. For this purpose, I used a simplified calculation model to derive at several minimum portfolio returns required under different scenarios.

For example, consider the following situation: A retiree with R5m retirement capital requires a 5% withdrawal rate in the first year of retirement, thus R250,000. Thereafter, this amount should increase every year with inflation, say, 6% per annum and by the 20th year of retirement this will equate to R756,400 per annum. For the retirement plan to yield such an income at the 20th year of retirement,

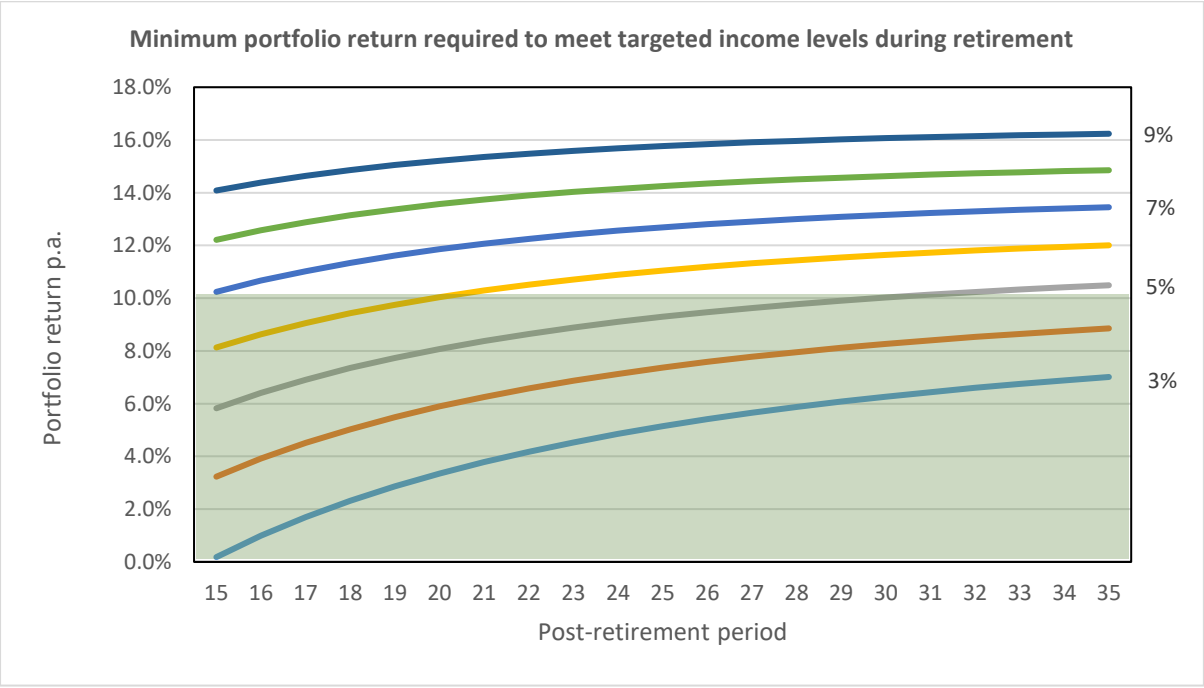
and bearing in mind the maximum withdrawal amount is limited to 17.5% of the capital value, what should be the minimum amount of capital available at the time to meet this income target? It would be equal to about R4,320,000 (R756,400 divided by 17.5%) or 86% of the initial retirement capital. If one's retirement capital is worth that amount in year 20, and the plan met the income targets in every preceding year, what return per annum (internal rate of return) should the retirement portfolio have been yielding over that 20 years? In this case the answer is 8.1% per annum in nominal terms – considering inflation was assumed at 6% over that period, it equates to about a real rate of return of about 2% per annum. This seems quite feasible, even with a relatively conservative portfolio construction, but bear in mind, if one's income needs were extended to 25 years or perhaps even 30 years of retirement this type of portfolio return would not suffice, simply because one would have reached already the maximum withdrawal amount in year 20. For the latter two periods, the nominal portfolio returns should have been 9.3% and 10.0% per annum respectively. Again, it is possible, but now the retiree should construct a more growth-orientated and riskier investment portfolio in the hope of meeting those return targets.

Next, I expanded the above methodology to include different initial withdrawal rates, ranging from 3% to 9%, and for different post-retirement holding periods, from 15 years up to 35 years, under different annual income escalation regimes, and the results are shown below.

Minimum portfolio return required to meet income targets for different post-retirement holding periods

- Assume annual escalation in income required = 6% p.a.

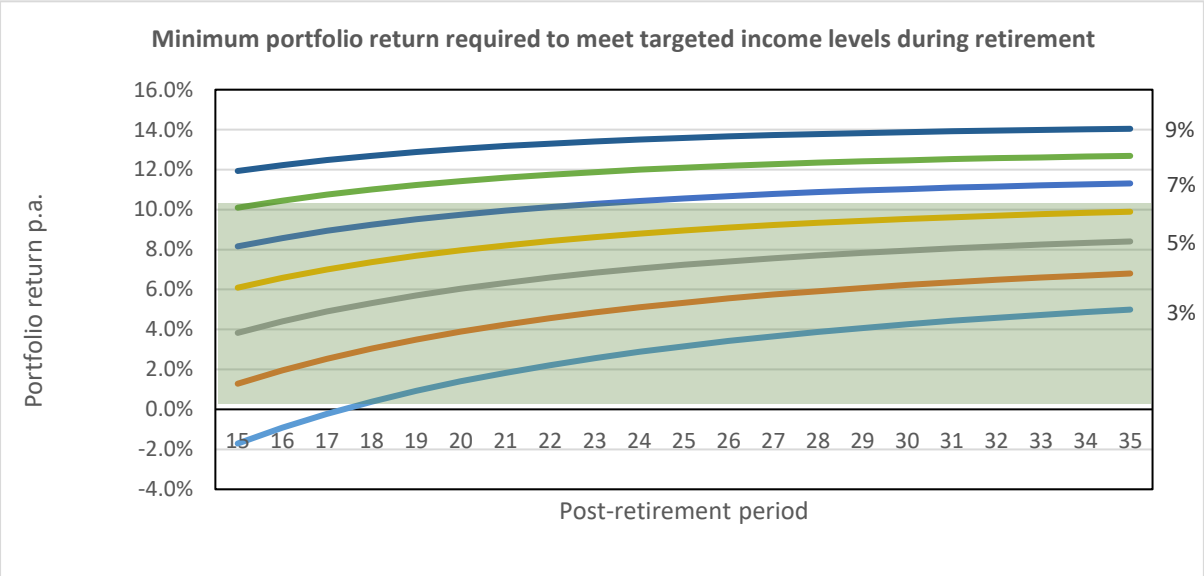
Initial withdrawal rate	Post-retirement period = 15 years	Post-retirement period = 20 years	Post-retirement period = 25 years	Post-retirement period = 30 years	Post-retirement period = 35 years
3%	0.2%	3.4%	5.1%	6.3%	7.0%
4%	3.2%	5.9%	7.4%	8.3%	8.9%
5%	5.8%	8.1%	9.3%	10.0%	10.5%
6%	8.1%	10.0%	11.0%	11.6%	12.0%
7%	10.2%	11.9%	12.7%	13.2%	13.4%
8%	12.2%	13.6%	14.3%	14.6%	14.9%
9%	14.1%	15.2%	15.8%	16.1%	16.2%



Clearly, for initial withdrawal rates of 5% and less, it seems quite feasible that living annuities with the proper portfolio construction will be sustainable over the long term, indicated by the colour-coded segment of the graph. With higher withdrawal rates required, it is likely that the plan will only be sustainable over relatively short post-retirement periods.

- Assume annual escalation in income required = 4% p.a.

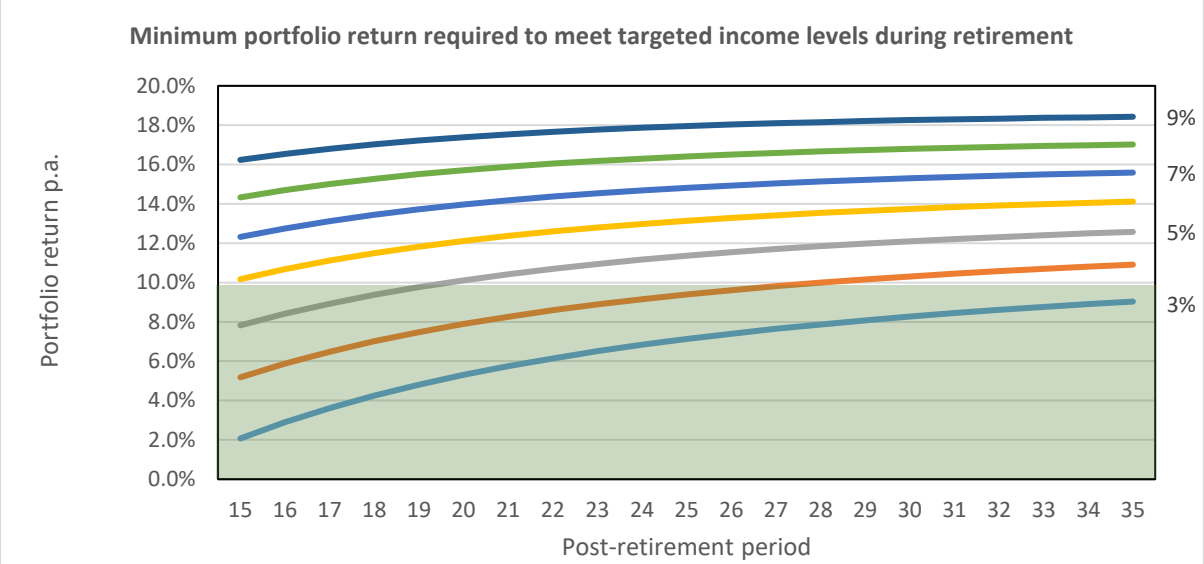
Initial withdrawal rate	Post-retirement period = 15 years	Post-retirement period = 20 years	Post-retirement period = 25 years	Post-retirement period = 30 years	Post-retirement period = 35 years
3%	-1.7%	1.4%	3.2%	4.3%	5.0%
4%	1.3%	3.9%	5.3%	6.2%	6.8%
5%	3.8%	6.0%	7.2%	7.9%	8.4%
6%	6.1%	8.0%	9.0%	9.5%	9.9%
7%	8.2%	9.7%	10.6%	11.0%	11.3%
8%	10.1%	11.4%	12.1%	12.5%	12.7%
9%	11.9%	13.0%	13.6%	13.9%	14.0%



Obviously, with lower annual escalation in income required, it means that the initial withdrawal rate can be higher, say 6% of retirement capital, and not jeopardising the long-term sustainability of the plan.

- Assume annual escalation in income required = 8% p.a.

Initial withdrawal rate	Post-retirement period = 15 years	Post-retirement period = 20 years	Post-retirement period = 25 years	Post-retirement period = 30 years	Post-retirement period = 35 years
3%	2.1%	5.3%	7.1%	8.3%	9.0%
4%	5.2%	7.9%	9.4%	10.3%	10.9%
5%	7.8%	10.1%	11.4%	12.1%	12.6%
6%	10.2%	12.1%	13.1%	13.7%	14.1%
7%	12.3%	14.0%	14.8%	15.3%	15.6%
8%	14.3%	15.7%	16.4%	16.8%	17.0%
9%	16.2%	17.4%	18.0%	18.3%	18.4%



Likewise, if the annual escalations in income required is set at 8% per annum, then even an initial withdrawal rate of 5% is likely too high to ensure long-term sustainability of the retirement plan.