EST. 2001 BESPOKE FINANCIAL SERVICES

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The Hardest Problem in Finance

An integral part of the financial adviser's role is helping retired clients to draw a rising income from their investment portfolios. Most clients want to know that they will be able to live a dignified and independent retirement without sacrificing on the quality of life they grew accustomed to during their working years.

However, the challenges faced by retirees are vastly different to those faced by working professionals. The biggest difference is how the sequence of investment returns affect the outcome of their chosen withdrawal strategy. If good returns are experienced early in retirement, the chance of sustaining the desired income is much greater compared to experiencing poor returns in the first few years. In contrast, the returns experienced later in retirement have a much smaller effect.

Unfortunately, portfolio returns are unpredictable. Although impacted greatly by the portfolio choice, they are also impacted by many factors not within the investor's control.

What we know

How do investors draw an income that it is sustainable for the rest of their lives? This has been described by Nobel prize winner William Sharpe as the “nastiest, hardest problem in finance.” Research began 25 years ago when Bill Bengen published an article examining how spending would have been sustained looking not at average rates of return, but actual historical sequences of market returns.

Based on US data and a 50% equity and 50% bond portfolio, this gave birth to the “4% rule” – suggesting that if a retiree started with a 4% withdrawal and increased it annually by inflation, the portfolio would have survived even the worst historical 30 year period.

Although useful as a rule of thumb, the outcome for different portfolios and different markets can vary significantly.

When building an income drawing portfolio, you are generally faced with two competing needs that you need to balance;

- having enough exposure to growth assets (shares and listed property) to preserve the purchasing power of your capital over time. However, this creates a more variable return profile, and
- limiting the volatility in the portfolio (by adding money market and bonds for example) to create a more stable, but lower return portfolio from which to draw an income

Drawing an income after a significant market fall or after a time when returns have been low (as we face today) can lock in low values as income is paid out. This is known as sequence risk – the risk that the order of returns you receive will be unfavourable.

The conflict here is that while lower return, income-based portfolios reduce short term anxieties, they also impede long term success. Conversely, growth portfolios provide the best potential for long term gains, but at the cost of shorter-term anxieties when returns are weak.

The loss aversion bias

Recently, two factors have led to South African investors making portfolio changes which may not support a sustainable withdrawal over three decades (roughly the average retirement horizon).

The first is an extended period of local growth portfolios underperforming both their long-term expected returns and local income portfolios. Somewhat predictably, this has caused many investors to reduce their exposure to growth assets, seeking the short-term safety of income funds.

The second is a continued erosion of faith in South Africa's ability to produce a political and economic environment which will support stable long-term capital growth. This has caused many investors to materially increase their exposure to global assets, even if they have no plans to emigrate.

To understand why both of these reactions may be detrimental to the long-term prospects of a retiree, we analysed the range of possible outcomes for drawing a Rand-based income from three portfolios;

- a local portfolio built for supporting an income withdrawal and capital growth
- a local income portfolio, and
- a global growth portfolio.

To see the effect of sequence of returns risk, we've estimated retirement success rates for different portfolios, time frames, and initial withdrawal rates. Thinking of a retirement strategy in these terms should allow investors to form realistic expectations about the future.

Safety first?

The investor reacting to the sustained underperformance of growth assets by switching to an income portfolio does so to secure more predictable returns. Their perception is also that they are choosing superior returns in the near future, assuming that recent returns will continue. In reality, the investor is sacrificing long-term returns to secure a lower return with a narrower range of possible outcomes.

This trade-off is not supportive of an income withdrawal for a retirement of up to 30 years. The lack of exposure to growth assets mean that the capital base is not able to increase over time. This makes an increasing income withdrawal unsustainable.

In contrast, a portfolio which balances the opposing forces of capital preservation and income will have higher variability of returns, but provide the investor with a greater probability of retirement success. This is because the portfolio's growth assets allow the capital base to increase over time, providing the source for future withdrawals.

The table below compares the likely probabilities of success for investors drawing a starting income of 5% of their capital per year from the two portfolios over different time periods, with annual inflation-based increases and accounting for expected costs.

Portfolio	Probability of Success over 15 Years	Probability of Success over 20 Years	Probability of Success over 25 Years	Probability of Success over 30 Years
Income only	100%	99%	1%	0%
Growth + Income	99%	98%	89%	71%

From the table it can be seen that, while a low-return low-volatility portfolio can be very successful over the first 20 years, its success rate beyond that is very low. This is because the capital base has not been allowed to grow sufficiently to provide for the increasing income withdrawals.

As soon as the investment time frame extends beyond 20 years, a portfolio with more growth assets is required. This comes at the cost of more volatility.

Many investors attempt to hold the “safer” portfolio for a period, intending to switch to the more volatile portfolio when return expectations are more optimistic. Although good in theory, we have not seen any proof that timing the market in this way can be done consistently, and quite often is a net cost to investors.

Is the grass always greener?

The investor reacting to political and economic instability in South Africa by materially increasing their exposure to global assets is doing so to secure a perceived higher, and more reliable, rate of return. While this may make sense for an investor with Dollar-denominated expenses, it carries a high risk for a South African retiree with future Rand-denominated living expenses.

During periods when the Rand is strengthening relative to the Dollar, the offshore assets will lose value in Rand terms. When this happens at the same time as a market fall, the portfolio's capital value can fall enough to make future income withdrawals unsustainable. The effect of the currency on the range of investment outcomes is significant.

The table below shows the likely probabilities of success for investors drawing a starting income of 5% from a global portfolio over different time periods. This is again contrasted with a portfolio built for retirement withdrawal.

Portfolio	Probability of Success over 15 Years	Probability of Success over 20 Years	Probability of Success over 25 Years	Probability of Success over 30 Years
Growth + Income	99%	98%	89%	71%
Global Growth	99%	91%	74%	54%

Compared to a growth plus income portfolio, the added currency exposure of a global growth portfolio creates more volatility. For the investor with a reasonable starting withdrawal, this added volatility does not increase the probability of success.

The effect of increased withdrawals

The investor's probability of success decreases rapidly as withdrawal rates are increased. This is because the sequence of return risk is magnified, increasing the percentage of scenarios during which the portfolio capital is unable to keep up with the requirement to provide an income.

Many retirees are drawing an income much higher than the research suggests is sustainable. The table below shows the probabilities of success for investors drawing a starting income of 7% from the three portfolios over different time periods.

Portfolio	Probability of Success over 15 Years	Probability of Success over 20 Years	Probability of Success over 25 Years	Probability of Success over 30 Years
Income	90%	0%	0%	0%
Growth + Income	95%	50%	14%	3%
Global Growth	79%	42%	17%	4%

From the table it can be seen that, over longer periods, an initial withdrawal of 7% is not sustainable.

In this scenario, an income portfolio is only effective for about 15 years. Beyond 15 years, a portfolio with an allocation to growth assets is required. However, beyond 20 years, the probability of success is very low regardless of the portfolio makeup.

This shows the importance of drawing a reasonable starting income.

Making adjustments to extend your portfolio longevity

Investing is an emotional exercise and investor behaviour is as important to client outcomes as portfolio returns. During times of poor market returns, investors can be tempted to take matters into their own hands. Often, these decisions are not in their long-term interests.

For the investor currently drawing more than what is recommended by the research, there are a few practical solutions for improving their chances of success. They could consider:

- Reducing their income needs over time while still maintaining their quality of life. This could take the form of lower overhead expenses, less frequent travel as they age, or more affordable entertainment.
- Liquidating surplus assets at a suitable time – downscaling the primary residence or selling a second property can unlock much-needed capital.
- Moving to a more flexible annual income review. This should take into account recent market performance as well as an assessment of living costs.

The combination of unpredictable markets, sequence of returns risk, and behavioural temptations are what make retirement income planning the hardest problem in finance. However, these challenges can be overcome with a sensible investment and financial planning process.

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data provided by Reuters and Datastream

31 October 2019

		3m	YTD	1yr	3yr pa	5yr pa	10yr pa	5yr Vol1	10yr Vol1
LOCAL MARKET INDICES									
FTSE/JSE All Share Index (ALSI)	ZAR	0.8%	10.4%	11.5%	7.1%	5.8%	11.2%	11.4%	11.8%
FTSE/JSE SA Listed Property	ZAR	-1.5%	3.2%	0.8%	-3.1%	2.3%	11.2%	13.5%	13.3%
SA All Bond Index (ALBI)	ZAR	1.1%	8.1%	13.0%	8.5%	7.5%	8.8%	7.5%	6.9%
SA Cash Index (SteFI)	ZAR	1.8%	6.1%	7.3%	7.4%	7.2%	6.5%	0.2%	0.3%
Balanced Benchmark	ZAR	2.5%	11.7%	11.8%	8.2%	7.6%	11.4%	7.5%	7.4%
SA Inflation (1 month lag)	ZAR	0.9%	3.7%	4.2%	4.7%	5.0%	5.1%	1.3%	1.3%
GLOBAL MARKET INDICES									
Global Equity (Datastream World)	USD	2.7%	21.2%	13.3%	12.5%	8.2%	10.1%	11.7%	13.0%
Emerging Markets Equity (Datastream EM)	USD	1.1%	10.7%	12.3%	7.8%	3.3%	4.1%	15.6%	17.1%
Global Property	USD	5.8%	24.4%	23.4%	10.4%	7.5%	10.1%	11.3%	13.9%
Global Bonds (Barclays Global Bond Index)	USD	1.9%	6.8%	9.9%	2.6%	2.0%	1.7%	5.3%	5.6%
Global Cash	USD	0.5%	2.0%	2.5%	1.9%	1.3%	0.8%	0.3%	0.2%
MAJOR INDICES BASED TO RANDS									
FTSE/JSE All Share Index (ALSI)	ZAR	0.8%	10.4%	11.5%	7.1%	5.8%	11.2%	11.4%	11.8%
Global Equity (Datastream World)	ZAR	9.2%	26.9%	15.6%	16.7%	15.1%	17.5%	15.6%	13.9%
Emerging Markets Equity (Datastream EM)	ZAR	7.4%	15.9%	14.6%	11.8%	9.9%	11.2%	13.6%	12.7%
Global Property	ZAR	12.4%	30.3%	25.8%	14.6%	14.3%	17.5%	15.6%	13.7%
SA All Bond Index (ALBI)	ZAR	1.1%	8.1%	13.0%	8.5%	7.5%	8.8%	7.5%	6.9%
Global Bonds (Citigroup)	ZAR	8.3%	11.9%	12.1%	6.4%	8.5%	8.6%	14.9%	14.0%
COMMODITIES									
Gold (US Dollars)	USD	5.8%	17.9%	24.3%	5.8%	5.3%	3.7%	13.1%	16.4%
Gold (Rands)	ZAR	12.4%	23.4%	26.8%	9.8%	12.1%	10.8%		
CURRENCIES									
Rand / Dollar	ZAR	-6.3%	-4.7%	-2.0%	-3.8%	-6.4%	-6.8%	15.7%	15.1%
Rand / GBP Pound	ZAR	-12.3%	-6.4%	-3.3%	-5.8%	-2.0%	-4.2%	16.6%	14.7%
Rand / Euro	ZAR	-6.5%	-2.2%	-0.4%	-4.4%	-4.0%	-3.8%	14.7%	13.4%

Spot Rates		31-Oct-19	Latest Quarter	1 Year Ago	5 Years Ago	10 Years Ago	20 Years Ago
CURRENCIES							
Rand/US$	Rand	15.06	15.16	14.77	11.05	7.83	6.15
Rand/GBP	Rand	19.50	18.68	18.87	17.68	12.89	10.08
Rand/EUR	Rand	16.81	16.53	16.73	13.84	11.55	6.46
RATES							
Libor 6m $	US$	1.92	2.06	2.80	0.33	0.56	6.12
Repo Rate	Rand	6.50	6.50	6.50	5.75	7.00	12.19
Prime	Rand	10.00	10.00	10.00	9.25	10.50	15.50
All Bond Index Yield	Rand	9.63	9.47	10.00	8.10	9.02	N/a
COMMODITIES							
Gold ($/oz)	US$	1,510.23	1,473.85	1,215.54	1,165.69	1,046.00	300.50
Platinum	US$	936.00	900.00	834.00	1,227.00	1,320.00	418.00
Oil (Brent Crude) $	US$	60.21	60.89	75.71	84.45	75.32	21.63
INFLATION							
SA Inflation	%	4.1	4.1	5.1	5.9	5.0	N/a

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