A simple instrument that can be used to manage finances on a rational basis before and after retirement

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With changes in the pension schemes of companies and longer life expectancy, it is becoming increasingly important for people still earning a salary and pensioners to take responsibility for their financial planning before and after retirement.

Seven factors play a role in managing pension funds. The first is how much money is available to be invested. The second is how much money is required annually. The third is the yield of the investment. This is correlated with the fourth factor, the annual rate of inflation. The last three factors are current age, life expectancy and the time before the investment is exhausted. By combining factors e.g. determining real growth after inflation and percentage of investment used the situation can be simplified. By calculating how long funds could be withdrawn before the investment is exhausted, simple graphs could be drawn up that can be used to answer a series of questions including: How much capital do I need to ensure a comfortable retirement? How long will my capital last under different scenarios? What should the real growth rate be to ensure that my capital lasts until I die? Although there are still many uncertainties, this instrument will help pensioners to make rational decisions on the management of their investments. It is also easy to make short term adjustments based on the recent real growth rate and the percentage of the capital withdrawn.

'n Eenvoudige instrument kan gebruik word om finansies na aftrede op `n rasionele basis te bestuur. Met die langer lewensverwagting en verandering van pensioenskemas van maatskappye die afgelope paar jaar word dit al hoe belangriker vir salaristrekkers en pensioenarisse om self verantwoordelikheid te neem vir hulle finansiële beplanning voor en na aftrede.

Sewe faktore speel 'n rol in die bestuur van pensioenfondse. Die eerste is hoeveel geld beskikbaar is om te belê . Die tweede is hoeveel geld jaarliks benodig word. Die derde is die opbrengs wat jaarliks op die belegging verdien word en die vierde, wat hiermee verband hou, is die jaarlikse inflasiekoers. Die laaste drie faktore is die huidige ouderdom, die voorsiene sterfdatum en laastens hoe lank die geld gaan hou voor dit op is. Deur faktore te kombineer bv die reële groei, die persentasie van fondse wat onttrek word, is die saak vereenvoudig. Die tyd hoe lank die fondse sou hou voor dit uitgeput is onder verskillende scenarios is bereken. 'n Eenvoudige grafiek is opgestel waardeur verskeie vrae betreklik maklik beantwoord kan word. Dit sluit vrae in soos hoeveel geld belê moet word om gemaklike aftrede te verseker. Hoe lank die geld gaan hou onder verskillende scenarios. Wat die groeikoers moet wees om te verseker dat my beleggings hou tot ek sterwe. Alhoewel daar nog steeds onsekerhede is, sal hierdie instrument pensionarisse help om goeie besluite te neem oor die rasionele bestuur van aftreefinansies en kan aanpassings op korter termyn gemaak word.

Introduction

Background

In a review undertaken by Old Mutual under more than a thousand South Africans, 75 to 77% were not sure if they had enough capital to ensure a carefree retirement. (Anonymous, 2010). A few decades ago this was not such a big problem because pensioners in the defined benefit system received a guaranteed pension based on the number of years of service and the final salary. In many pension schemes there was also an annual increase coupled in some way to the inflation rate, e.g. 70% of the inflation. With the increase in life expectancy and weak yields by pension funds, this target could not be attained in some cases. After questioning a large number of pensioners with a minimum income of R2 000 per month, only 17% felt that increases were in line with inflation, 51% felt that it was lower than inflation and 31% felt that it was much lower than inflation (Anonymous, 2010). Currently few employees belong to pension schemes with a guaranteed income. The result is that pensioners based on

a defined contribution system now have to make decisions on the management of their pensions with or without the assistance of financial advisers. Greeff (2018) states that this change may not have been to the benefit of pensioners.

One of the most important questions most pensioners face, is how much money is required to ensure that there will be sufficient funds to last their lifetimes. For anybody that has already retired the most important question is how much money can be withdrawn every month to ensure sufficient income until death. In the past a thumb-suck rule was that an investment of 15 times the annual salary at retirement is required to survive for 20 years after retirement. More recently Jeanette Marais, director of Alan Gray stated that at least 17 times the annual salary is required (Wood, 2017). One wonders if investment companies do not inflate the sums required to encourage employees to invest more. In this presentation I will show that it is very difficult to make an accurate statement on the sum required for a happy retirement because so many different factors play a role.

Another thumb-suck rule developed in the USA is that it would be safe to withdraw 4% of the investment per year. When the stock market had a good return it was calculated that in South Africa withdrawing 5% per year would lead to a sustainable income (Cameron, 2011). In this communication the basis on which these thumb-suck guidelines were made will be discussed. One cynical statement is that retirement is a race between bankruptcy and death.

Proper management of retirement investment is difficult. According to du Preez (2017) William Sharpe, Nobel prize winner on the theory of investment income, made the following statement: "Working out how to provide a sustainable income is the nastiest, hardest problem in finance". In a related paper on the same page in Personal Finance, she quoted a Bridge Fund Managers statement that the simulated yield of typical balanced fund could yield between 7% and 24% per year. The average yield of high equity balanced funds varied strongly for the past number of years (http://www.fundsdata.co.za/navs/ZAHE.htm). The yields over different periods with an investment of R100 (with number of funds in brackets) for different periods was: 6 months 105.56 (237; 1 year 104.68 (229); 3 year 119.5 (152); 5 year 162.37 (113). Over one to three years the yield was lower than the inflation rate, but it was higher for the past 6 months. Strong arguments were made that pensioners should invest in balanced funds (Ahern, 2017).

There are two general mistakes that can be made in the use of invested funds. If too high a percentage is withdrawn it could lead to a shortage of funds and a serious decrease in quality of life. The second potential mistake is that pensioners could be too careful and not withdraw sufficient funds to enjoy the quality of life they can afford.

Much has been written in newspapers and in magazines, but it frequently does not clarify the difficulties much. A few years ago it was stated in a daily newspaper that if someone requires an income of R210 000 per year the person would need an investment of between 4 and 11 million Rand. The large difference in the investment required is concerning

and does not instill much confidence in financial reporting or at least shows how uncertain the whole situation is. It also does not offer relief to worried pensioners. This lack of confidence and uncertainty in the value of financial commentary may be caused by the many factors involved in managing retirement funding and motivated the writing of this paper.

Factors that play a role in the management of retirement finances

There are seven factors that play a role in this process. The first is how much money is available for investment. The second is how much money is required every year. The third is the annual yield of the investment and the fourth (and related) factor is the inflation rate. The last three factors are current age, life expectancy and finally how long the funds will last before it is exhausted.

The only two factors that the pensioner can control to a degree are where the funds should be invested and the percentage withdrawn every year. The value of advice by different financial advisers differ widely. Especially some actions of life insurance companies earlier were strongly criticised and led to the new legislation to protect investors and to ensure that only qualified people are allowed to provide advice. Providing poor advice have also lead to successful claims for compensation (Cameron 2013a). To guard against this possibility, advisors tend to recommend too low risk investments. A pensioner's investment of more than R2.5 million provided a monthly income of R14200. When the portfolio was evaluated it had a risk profile of 1.8 on a scale of 1 to 10 with 0 no risk and 10 maximum risk (van Gijsen, 2010). Because risk and yield is positively correlated over a long period, the risk and yield may be much too low.

If a pensioner knew exactly how long he would live and what the investment yield would be, it is easy to calculate the sum that can be withdrawn. If the capital should remain intact, the calculation is also not that difficult. Some people with this aim in mind use the income from money market funds with the conviction that if the invested capital is not decreased, there would not be a problem. It should not take long before the effect of inflation is realized. According to the "rule of 72" the buying power in real terms would halve in 10 years with an inflation rate of 7.2% (72/7.2) and 20 years with an inflation rate of 3.6% (72/3.6), etc. The better informed pensioner would take the effect of inflation into account and only use the real income. Inflation for pensioners may be higher than that of people still earning a salary. Between 1985 and 2011 the values were 9.3% for a pensioner compared to 8.9% for an employee and between 2003 and 2011 the values were 6/0% vs 5.2% (Cameron, 2012). The differences may probably be ascribed to medical costs.

For very rich people that want to retain the capital for their estate, only the real income above inflation can be used. This would reduce the monthly income drastically and for certain periods may even have no income if yield is lower than inflation and is certainly not an option for most people with only a salary as income. The approach followed in this publication is that the capital of the investment will

decrease and should only provide the income during the lifespan of the pensioner.

The aim of this publication is not to provide investment advice, but to present an instrument that would facilitate investment decisions with or without the advice of a qualified advisor before or after going on pension.

Method used

Most financial advisors have programmes that can be used to advise clients. There are also programmes available on the internet that can be used to a certain degree. It appears that a simple graph that can be used by pensioners to manage their funds is not generally available. A graph indicating the effect of the seven variables listed above is complex to develop and to use.

Two variables i.e. the sum invested and the sum withdrawn every month can easily be combined into a single variable as the percentage of the investment that is withdrawn every month. Two of the other variables i.e. the annual percentage growth of the investment and the inflation rate can be combined as the real growth rate. With these combined variables I calculated how many years the capital will last until it is exhausted under different (3-14%) annual withdrawals of the investment and different (3-8%) annual real growth rates.

Results

The percentage of the investment withdrawn and the real growth rate has a marked influence on how long the capital would last (Figure 1). The results may also be presented in another way, but in the format presented here it is relatively easy to use.
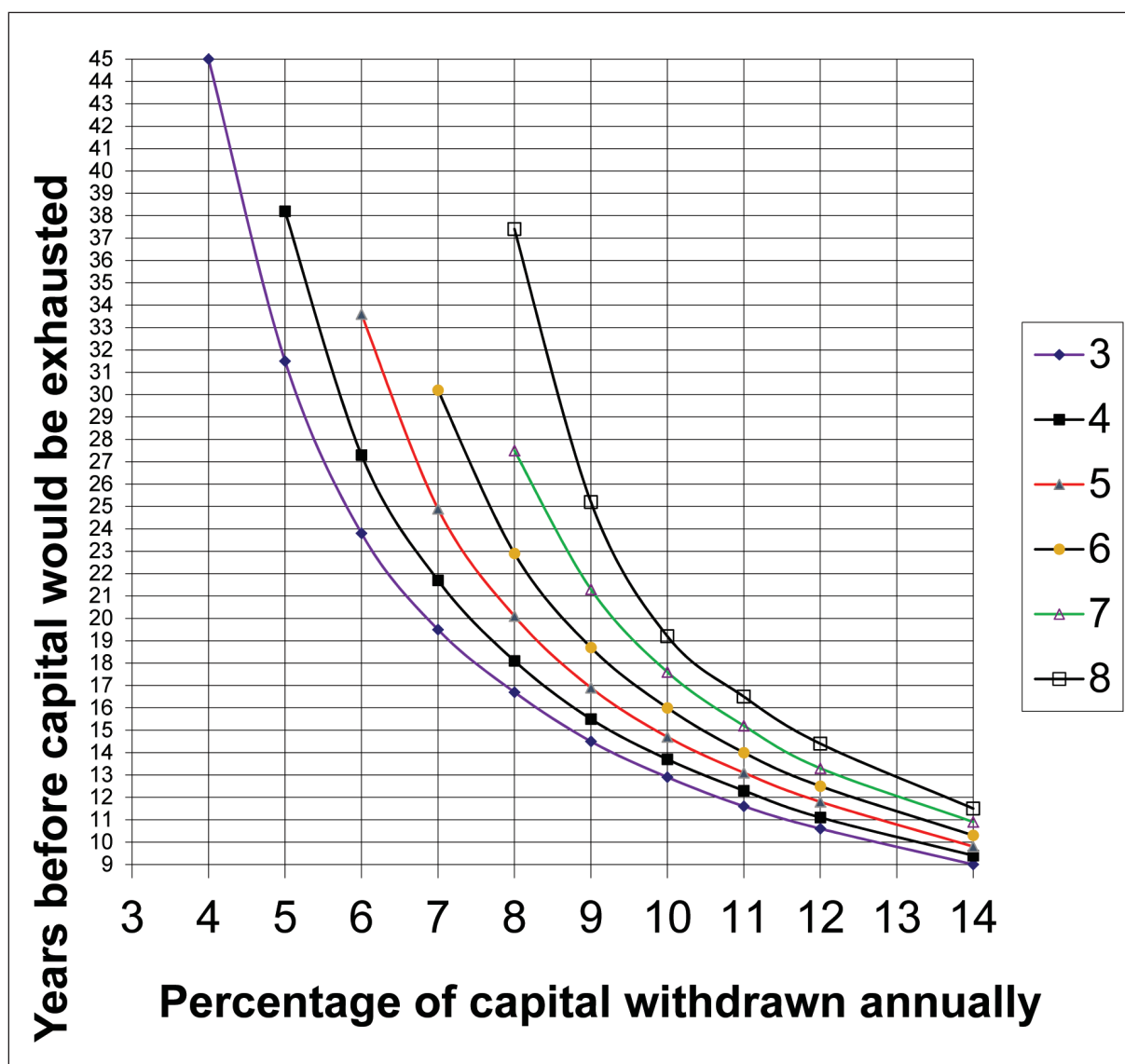
FIGURE 1: The number of years before the capital is exhausted at different real growth rates (3-8%) and different percentages (3-14%) of capital withdrawn annually.

Application of the graph to answer different questions.

What should the sustainable real growth rate of my investment be?

At what real growth rate should my investments grow if my life expectancy is 20 years and I need an income of 8% of my capital before tax annually? By looking up the y axis for 20 years and the x axis for 8% withdrawal, it is clear that I need a real growth rate of 5% per year. It is important to realise that the income is after all investment costs, but before income tax, if relevant. With this information a rational choice can be made about the risk required to yield 5% per year. A lower withdrawal can also be made if a 5% real growth rate was not attained during the preceding year.

How much money do I need before I retire?

If I need a pre-tax income of R2 000 per month, my life expectancy is 23 years after retirement and I expect a real return of 6%, how much money do I need before I can retire? By checking the y axis at 23 years and the 6% real return line it is clear from the x axis that I will have to withdraw 8% of my investment per year. By a simple calculation I need R24 000 per year and as this represents 8% of my capital, my capital should be 24 000/0.08, a sum of R3 million.

How long can I survive with different withdrawals of my capital?

If I have an investment of R1.5 million and I require R15 000 per month, how long can I survive with different real growth rates? My need per year is R180 000 and this represent 12% of my capital. By investigating which lines intersect 12% of capital used annually, I would be able to survive between 10.5 and 14.5 years with real annual growth rates of 3% to 8% respectively.

Information required to use the graph

What is the real growth rate that I can expect over a long period?

It is easy to find out what the real growth rates for different investment portfolios were in the past. The link http://www.fundsdata.co.za/navs/ provides extremely useful information on different investment products over the past five years. To predict the future growth accurately is much more difficult. For a living annuity a withdrawal rate between 2.5 and 17% is legally allowed.

In a calculation how much a retirement annuity would be worth after different periods Liberty Life after markets were growing relatively strongly Liberty Life predicted a yield of 10% after fees and commissions. If inflation is taken into account, the 3-8% real growth rates selected here appear to be rational.

The careful person receiving a pension will ensure that a buffer is built up to handle variations in the real growth especially during periods of strong growth. It may also be necessary to decrease drawdowns during periods of low growth. A reasonable policy would be to investigate yields once or twice a year and then modify drawdowns if required.

The correlation between yield and risk should be kept in mind. One of the advantages of using the graph is that if a real yield of 4% is enough, an investment instrument with lower risk and volatility can be selected. The target real yield of many balanced funds over a 5-year period is currently about 3%. The RSA retail savings bond also delivers real yields of 3%. There have been some advertisements of interest of 11.5% on sums of more than a million rand invested for a five-year period (Finbond Mutual Bank). This offer has to addressed with circumspection. Because the interest apparently is only calculated and added to the final sum at the end of five years the yield on monthly basis including interest on interest is much lower. These high interest may also involve high risk and the funds are not available for a five-year period (van Gijsen, 2017).

What is my life expectation?

There are actuarial tables available that can predict the life expectancy (e.g. http://www.ssa.gov/oact/STATS/table4c6.html), but there are so many variables in individual cases that this is not worth much. On the internet there are different web pages where a large number of factors are assessed to predict the life expectancy (Abaris, 2017). Cameron (2017) identified the following factors that may influence life expectancy: standard of living, HIV status, ethnic background, weight, exercise, family history, stress, use of drugs and diet.

The period for which provision should be made remains one of the main problems in retirement planning. The purchase of a pension with a guaranteed income removes many of the uncertainties. The disadvantage of this option is that the remaining capital is not available in the estate. The possibilities and ramifications are discussed extensively elsewhere (du Preez, 2016).

Practical use of the graph and testing of thumb suck rules.

Because there may be large variations in year to year yields of investments, the use of the graph will make it possible to change the sum withdrawn on an annual or even shorter term. It the yield is better than expected it may be a good policy to save some money to compensate for periods with a lower yield or for luxury or unexpected expenses.

At retirement there are two options i.e. to purchase a guaranteed pension or to invest in a living annuity with a flexible withdrawal rate. Each of these possibilities has its advantages or disadvantages (du Preez, 2015; Graham 2018). Investors in living annuities can select a withdrawal rate of between 2.5% and 17.5% once a year. The graph in Figure 1 may help in the decision. Investec recommended that based, on the age of the pensioner, withdrawals of between 4.7% and 16.3% can be made (Anonymous, 2009) as shown in Table 1

TABLE 1: Recommendation by Investec of percentage that can be withdrawn from living annuities at different ages

age	55	60	65	70	75	80	85
male	5.4%	6.2%	7.2%	8.5%	10.3%	12.8%	16.3%
female	4.7%	5.3%	6.1%	7.2%	8.7%	10.9%	14.1%

The South African government was worried about the pension situation of South Africans and they have recently increased the percentage of taxable income that could be invested in annuities and deducted from income tax from 15% to 27.5%. The government has also recommended that unless the pensioner specifically requests another percentage the default maximum withdrawal percentage should vary from 7% to 17.5% as shown in Table 2. (du Preez, 2015)

TABLE 2: Default maximum withdrawal from living annuities at different ages

Age	< 60	60-65	65-70	70-75	75-80	80-85	>85
Percentage per year	7	8	9	10	12	15	17.5

Such recommendations represent a broad generalisation that could be affected by the real performance yield and factors that affect the pensioner's health and life expectation. The advantages and disadvantages of different pension options and possible hybrid options are discussed by du Preez (2015).

If the thumb-suck rule that 15 times the final salary is required to ensure a sustainable income of 80% of the final salary it means that the income on the investment should be 0.8/15 x 100 that is 5.3% of the original investment. To receive 80% of the final salary 6.67% will have to be drawn annually. According to Figure 1 the capital will last for c. 30 years before it is exhausted. The thumb suck rule is not unreasonable, but it would require growth of 5.3% plus inflation. The uncertainty on the real growth rate still remains. The use of this graph should make it possible for pensioners to monitor the withdrawal and make changes if required.

Conclusion

Although this graph may be useful in guiding decisions, it still has to be handled with circumspection because there are risks in e.g. the assumption of lifespan and investment yield. The other parameters are handled with the graph. People are living longer and the basis of this analysis is that there may not be much money left in the estate. The advantage in using this instrument is that it is easy to determine regularly how much funds can be confidently used as conditions change. It should not only ensure that sufficient finds are available continuously but also that excess funds can be used for enjoyment of life without unnecessary concerns.

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