

CashCalc Specification Sheets (Client Facing)

Pension Forecast Calculator

Overview

The Pension Forecast Calculator is used to show the client what monthly savings they would need to make, their target fund size and monthly income in retirement (gross) depending on the chosen option. If the client were to choose that they wanted to save a certain figure per month, then the target fund size and monthly income in retirement will be calculated accordingly. If the client were to choose that they wish to have a certain fund size by the time they retire, then the monthly savings and monthly income at retirement would be calculated to reflect this. If the client chooses to receive a certain income at retirement, then the monthly savings required and the target fund size would be calculated to achieve this income.

Assumptions

Below is a list of all assumptions made in order to perform the calculation:

- Assumed pension growth rate has a range between 0.0% and 10.0% (Default: 0.0%)
- Assumed inflation rate has a range between 0.0% and 10.0% (Default: 0.0%)
- Income percentage at retirement has a range between 0.0% and 50.0% (Default: 0.0%)
- The term of contribution is calculated to be 2 years in the future by default – e.g. a client aged 35 will have a default term of 37 years

Calculations Breakdown

The calculations require twelve parameters in order to calculate the given output, these being:

- Current Pension Pot Size
- Assumed Pension Growth Rate
- Assumed Inflation Rate
- Real Return Rate
- Income Percentage at Retirement
- Term of contribution
- Monthly Savings to Make
- RPI Linked
- Target Fund Size
- Desired Monthly Income in Retirement (gross)
- Term of drawdown income (Specific income only)
- Optional Target

The optional target is a set of three choices which allow for variable input in one of the fields for: Monthly Savings to Make, Target Fund Size and Desired Monthly Income in Retirement (gross). RPI Linked takes into account if the monthly saving to make increases alongside inflation. The Real Return Rate is automatically calculated by subtracting the Assumed Inflation Rate from the Assumed Pension Growth Rate.

$$\text{Real Return Rate} = \text{Growth Rate} - \text{Inflation Rate}$$

The Pension Forecast Calculator is split up into three separate calculations from variable input; following is the calculations performed for each section with the heading being the option displayed on the webpage.

Client wants to make a monthly pension saving until retirement

If the monthly savings is **RPI Linked**, then the target fund is calculated by repeatedly adding the input monthly savings to the current pot size for a calculated number of times. The number of times that this calculation is iterated is calculated by converting the number of years in the term into the equivalent in months. For each of these months, the following calculation is performed, where n is the month of the calculation:

$$\text{Pot}_{(n)} = (\text{Pot}_{(n-1)} + \text{Monthly Savings}) \times (1 + \text{Real Return Rate} / 12)$$

This calculation essentially means that the current month's pot (n) is equal to the previous month's pot (n-1) plus the input monthly savings. This is then multiplied by one plus the real return rate converted into a percentage per month. The final pot size can then be found by taking the last value produced.

The desired income in retirement would then be calculated by performing the following equation:

$$\text{Desired Income} = \text{Target Fund} \times \left(1 + \frac{\text{Real Return Rate} \div 12}{100}\right)$$

If the monthly savings is **NOT RPI Linked**, then the target fund is calculated by repeatedly adding the input monthly savings, with respect to the rate to inflation, to the current pot size for a calculated number of times. The number of times that this calculation is iterated is calculated converting the number of years in the term into the equivalent in months. For each of these months, the following calculations are performed, where n is the month of the calculation:

$$\begin{aligned} \text{Monthly Savings}_{(n)} &= \text{Monthly Savings}_{(n-1)} \times \left(1 - \frac{\text{Rate of Inflation} \div 12}{100}\right) \\ \text{Pot}_{(n)} &= (\text{Pot}_{(n-1)} + \text{Monthly Savings}_{(n)}) \times \left(1 + \frac{\text{Real Return Rate} \div 12}{100}\right) \end{aligned}$$

The Monthly Savings(n) is calculated by taking the previous month's (n-1) savings and multiplied by the rate of inflation converted into a percentage per month. This figure is then used in place of the previous Monthly Savings field in the calculation. The final pot size can then be found by taking the last value produced.

The desired income in retirement would then be calculated by performing the following equation:

$$\text{Desired Income} = \text{Target Fund} \times \frac{\text{Income Percentage at Retirement} \div 12}{100}$$

Client wants to reach a target pension fund size at retirement

If the client were to achieve a target pension fund size within the given term, the monthly savings to make would have to match that from the current pot size. The monthly savings is calculated by trying sequential numbers in a calculation until the closest value is found to the target fund size. This calculation is as follows, where n is the month of the calculation:

$$\text{Pot Size}_{(n)} = \text{Pot Size}_{(n-1)} + i) \times \left(1 + \frac{\text{Real Return Rate} \div 12}{100} \right)$$

This calculation means that the current pot size (n) is equal to the previous month's pot size (n-1) plus the value i which is the sequential number being tested. This is then multiplied by one plus the real return rate converted into a percentage per month. The value that is returned from this process will be equal to the required monthly savings to achieve the target pension fund size.

The desired income in retirement would then be calculated by performing the following equation:

$$\text{Desired Income} = \text{Target Fund} \times \frac{\text{Income Percentage at Retirement} \div 12}{100}$$

Client wants to take a specific income at retirement

If the client were to desire a specific income in retirement, then they must achieve a target fund size to sustain that and calculate how much they are required to save monthly to reach that fund size. The estimated value of the target fund size is estimated and then adjusted following calculations performed by the drawdown income class (see Pension Income Drawdown Planner specification sheet).

The drawdown required by the client is passed into the drawdown income calculations along with the estimated fund size, if the estimated value does not last the required length of time. The estimated fund size is then incremented and the calculations are run again, this is done until a sufficient pot size is found.

This pot size is then entered into the target fund size function which will then produce the value for the monthly saving to make.

A PDF report can be created from this calculator which contains detailed information about the relevant client's details and the outputs of the calculations performed. The data plotted in graphical form is created by using the GoogleChartAPI.