

CashCalc Specification Sheets (Client Facing)

School Fees Calculator

Overview

The School Fees Calculator is used to show the client what monthly savings they would need to make, their target fund size and fees covered (in today's terms) 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 fee covered will be calculated accordingly. If the client were to choose that they wish to have a certain fund size by the time School / University starts, then the monthly savings and fee covered would be calculated to reflect this. If the client chooses a specific annual fee rate from School / University starting age up until it ends, 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:

- Figures are rounded up to the nearest pound
- Education type is either School or University
- Assumed savings 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%)

Calculations Breakdown

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

- Current Savings
- Assume Savings Growth Rate
- Assumed Inflation Rate
- Real Return Rate
- Childs Current Age
- Age when School / University Starts
- Age when School / University Ends
- Monthly Savings to Make
- RPI Linked?
- Target Savings Fund Size
- Specific Annual Fee rate

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 Savings Fund Size and Desired Specific Annual Fee Rate. 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 School Fees 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 saving until School / University starting age

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.

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 specific annual fee rate would then be calculated by performing the following equation:

$$\text{Annual Fee} = \frac{\text{Target Fund}}{\text{Start Age} - \text{End Age}}$$

Client wants to reach a target savings fund size at School / University starting age

If the client were to achieve a target savings fund 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 savings fund size.

The specific annual fee rate would then be calculated by performing the following equation:

$$\text{Annual Fee} = \frac{\text{Target Fund}}{\text{Start Age} - \text{End Age}}$$

Client wants to meet a specific annual fee rate at School / University starting age

If the client were to have a specific annual fee, 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. This is calculated by multiplying the Annual Fee by the number of years School / University lasts:

$$\text{Target Fund} = \text{Annual Fee} \times (\text{Start Age} - \text{End Age})$$

The Monthly Savings to make are then calculate using the same method as if the client would start with a desired Target Fund, instead using the Target Fund calculated from the Annual Fee.

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.