DYNAMIC PLANNER

Using the cash flow forecaster for good financial planning Adviser guide

Actuarial department

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Contents

1 Introduction

This document is written for those who want a high-level understanding of how the forecaster works to allow for excellent financial planning. For those wanting an actuarial level of detail, these are available in the “Monte-Carlo cash flow calculation details” document.

The tool is intended to be used by financial advisers and associated staff, it can be used in front of end clients if desired, or by back office staff to produce reports which are then shared with clients.

The cash flow tool can be used for a range of financial planning activities, including planning for a specific life phase (such as retirement), to inform decisions such as the level of investment risk to take, how much money to withdraw, and what order to draw down on investments.

The forecast runs in monthly time steps, but some processes (such as tax) occur annually, and the tool outputs annually. Investments are designed to be medium to long term **invest**ments. As such, the tool can run for a minimum of 1 year. The forecaster runs for 82 years, or until the youngest investor reaches age 100, whichever is earlier. It reaches this term for completeness, but it is expected that the forecast would be used to inform decisions made in the next 5-30 years.

The tool has been built with PROD and COBS rules in mind and is intended to be used in conjunction with Dynamic Planner’s risk profiling tools to assess of the investment risk an investor should take. The risk profiling tools concentrate on the investor’s risk appetite, and the cash flow tool provides information on the investor’s capacity for loss.

2 Forecast model

A full overview of the model is available in the appendix. This section covers the general process of how the returns are generated and why they are done this way.

2.1 What is Monte-Carlo

The forecast uses a flat file of returns. The benefit of this is that the output does not change every time it is run, as would be the case with a projection relying on random numbers generated during the projection. The flat file is created once, then updated quarterly to accommodate the latest return and volatility assumptions. The flat file has many sets of returns for each asset class. A Monte Carlo projection is simply one which uses randomised returns to project the fund forwards, the process is repeated thousands of times, where the returns are taken from a distribution that is representative of the returns expected.

Once the projection has been performed thousands of times, it is possible to pull out average returns.

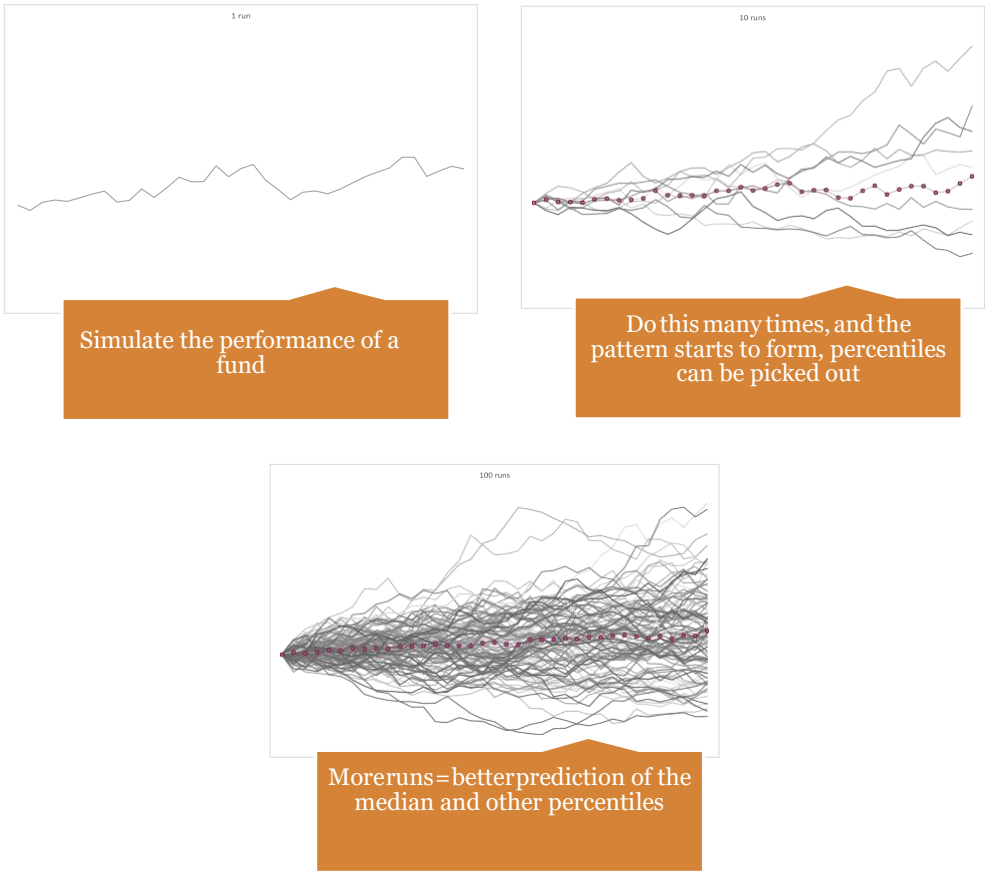

Figure 1: Monte-Carlo projections

2.2 The asset price model

Geometric Brownian Motion is a model widely used in finance, particularly for modelling stock price behaviour. It is easy to calibrate, leading to much lower calibration errors than more complex models. It does not allow stock prices to go negative and shows the same kind of “roughness” in its paths as real stock prices, making it a useful tool for setting expectations with investors. Return assumptions are not term based, which fits the Dynamic Planner ethos, and the fixed volatility assumption matches with that of our investor risk profiling methodology. All projections are over a long term, which is very well suited to this model.

It is well known that this model is very good over most of the observed stock price distribution, but it is less good at the tails of the distribution. Only the range between 5th and 95th percentiles are ever used within the projection, and the GBM model is very good within this region.

2.3 Generating price paths per risk level

At Dynamic Planner, there are 10 risk levels with associated expected returns and volatilities. Often funds will have a different asset allocation to that of its associated risk level as a short-term tactical position. It is not expected that this short term difference will persist for the whole projection, so rather than have a forecast that is susceptible to overpromising based on short term gains, the forecast will project by risk level rather than by asset allocation.

The funds are rebalanced to the target risk level monthly.

2.4 Real terms fund growth

The flat file of price paths calculates real returns and so has inflation “baked in”. All output from the forecast is in real terms. In other words, the monetary values output by the forecast represent the equivalent spending power of that amount of money today. Since spending power is the relevant quantity, price inflation (currently 2.5% annually) is the rate used.

2.5 Growth of payment amount

Payment (income or expenditure) amounts are specified in nominal terms and (by default) increase monthly with price inflation in nominal terms, both before and after the first payment.

For the purposes of income and expenditure, a fixed inflation assumption based on the Bank of England inflationary target is used. The fixed inflation assumption is currently 2.5% annually.

An increase may be specified against each income or expenditure as an annual nominal rate. This increase is applied monthly.

Since outputs are in real terms (see section 2.4) the forecast internally applies growth rates which are adjusted for inflation, and as such, are lower than the number entered.

Depreciation and increases happen between each month and do not affect the value in the very first month of the forecast.

Separate values can be provided for the annual nominal rate pre the first payment and for the annual nominal rate post the first payment. Both default to price inflation. These are applied as follows:

- For every month boundary between the first month of the forecast up to and including the boundary leading into the month in which the payment starts, the pre-first payment rate is applied.
- For every month boundary following the start month of the payment (including the boundary leaving that month) the post-first payment rate is applied. This is applied to the last, pre- rounded, payment amount.

- If a cash flow is specified to start in or before the first month of the forecast, the pre-first payment rate is never applied.
- If a cash flow is specified to have only one payment, the post-first payment rate is never applied.

The amount provided is assumed to be the amount as of the first month of the forecast regardless of the provided start date of the payment. Therefore, if the payment's start date is before the date. If the payment's start date is after the forecast start date, the forecast assumes price inflation growth up to the forecast start date and pre-first payment growth between the forecast start date and the start date of the payment.

2.6 Rounding of payment amounts

Some payments are based on a percentage of another amount (e.g. stochastic withdrawals can be defined as a percentage of the current arrangement value). Others can be based on an amount multiplied by a growth rate. In both cases the exact amount calculated cannot be used as it is more precise than the forecast currency supports. Therefore, all payment amounts are calculated "precisely" then rounded down to the nearest, smallest supported denomination of the forecast currency. For example, for a forecast specified in GBP, the amount used in each instance of a payment is currently the calculated amount rounded down to the nearest penny.

In the case of a withdrawal from an arrangement some additional rules are applied:

- If the percentage to be taken is 100%, the amount withdrawn will still be rounded down, however, no money will be left in the arrangement
- If the amount to be withdrawn is larger than the amount available, the amount withdrawn will be equal to the rounded down amount available, however, no money will be left in the arrangement
- If, after the rounded down amount has been removed from the arrangement, it has less than the smallest supported denomination of the forecast currency left in the arrangement, the value left in the arrangement will be set to zero.

This means that whilst the wallet's value grows at price inflation, at any time its value will be no more precise than the lowest supported denomination of forecast currency.

3 Assumption setting and control processes

A key benefit of the new forecaster is the ability to continually grow and develop it. The initial forecaster was built with input from users, software developers and user experience designers, the calculations are owned by the actuarial team. The tool is intended to be released to a small group of early adopters while enhancements are made before being released with general availability later in the year. After the general availability release, there will be further refinements as needed including changes to tax rates and bands, and new functionality.

The control cycle of the tool ensures oversight such that the tool is always fit for purpose.

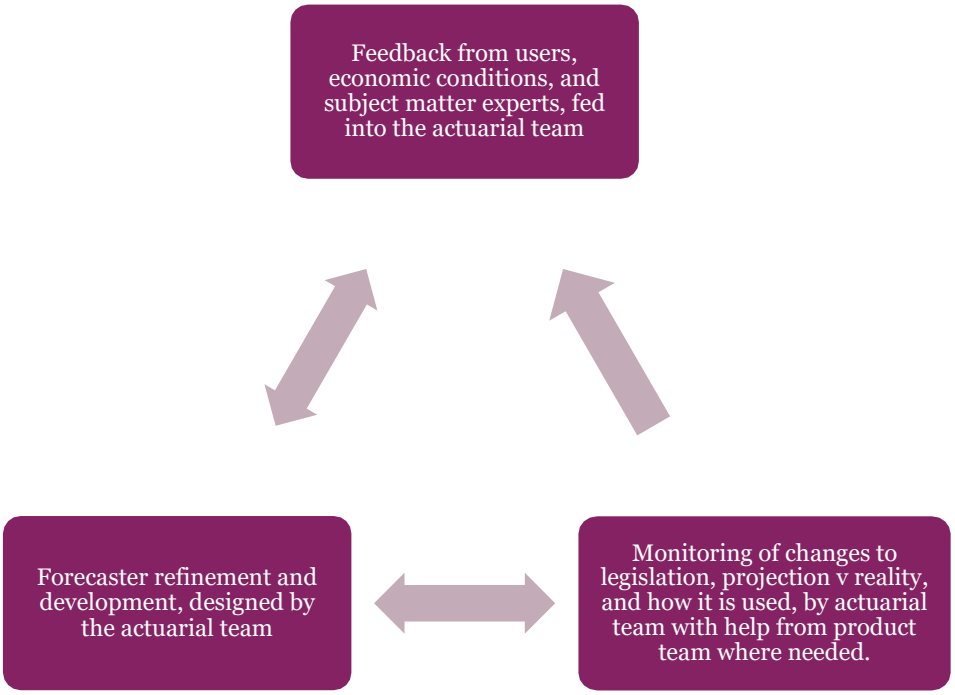

Figure 2: Control cycle

3.1 Growth assumptions

The growth assumptions are set by the Dynamic Planner Investment Committee. Further details of the committee and the assumption setting process can be found in the “Investment Process Document” and the “Tech Guide Dynamic Planner”.

3.2 Financial planning assumption values

The actuarial department keep track of changes to regulation, English tax rates (currently Scottish and non-UK tax rates are not supported) and updates these values accordingly. See the appendix for the values used.

Sources of data include:

- gov.uk website
- Institute and facility of actuaries website
- www.frc.org.uk
- FTSE actuaries gilts series (used to calculate the annuity net rate)

3.3 Annuity assumptions

In practice, the values used to calculate an annuity value will vary from firm to firm and usually be commercially sensitive. When we calculate annuities within Dynamic Planner, we use the rates specified by the Financial Reporting Council, “AS TM1: Statutory Money Purchase Illustrations”[1].

1 [1] https://media.frc.org.uk/documents/AS_TM1_-_Statutory_Money_Purchase_Illustrations_Version_5.1.pdf

4 The forecaster

4.1 Forecast overview

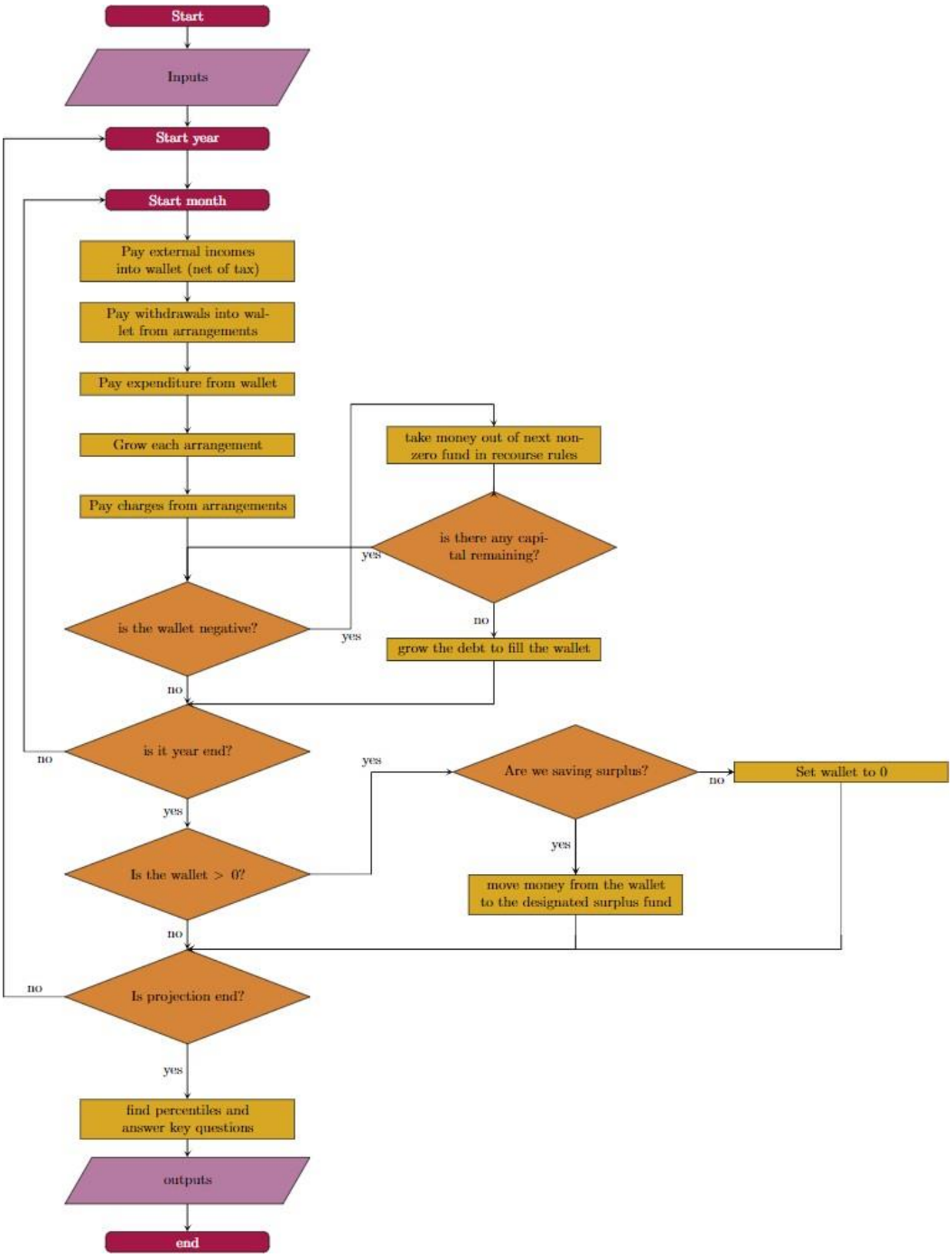

Figure 3:Flowchart of the steps in the forecaster

4.2 Percentile calculation

For each year of the forecast and for each stochastic output required, the values of the output from each run of the forecast are ordered, then the value corresponding the xth percentile position, by the nearest rank method, is extracted.

Where the probability of an outcome occurring is required, this is calculated by summing the number of runs for which the event is true and dividing by the number of runs.

4.3 Charges

All charges are applied at arrangement level and will usually be a percentage of the arrangement value at the time of withdrawal. Charges are specified as an annual percentage but are applied monthly, where the monthly value is $1/12^{th}$ of the annual value.

4.4 Timing and age details

The forecast applies monthly timesteps, everything within a month that occurs before the growth is applied is treated as happening at the start of the month, and everything after growth is the end of the month.

One year is always defined as being twelve months, including the first year of the forecast. The forecast start date can only be specified as being the first of a month to ensure it is clear the entirety of the first month is being considered. Tax years are treated as a forecast year. A forecast year is therefore not necessarily aligned to a calendar year, real tax year or birthday to birthday etc. The forecast never provides output representing a partial year, i.e. a forecast's duration is always a whole number of years.

If there have been payments into or out of a fund since the start of the first month of the forecast and the date at which the fund value is obtained, the user should adjust the contribution and withdrawal start dates of these payments to the next scheduled payment date, to avoid the forecaster applying the payment again.

It is necessary to limit the length of time the forecaster will run for. The maximum time is 82 years, to allow support for an 18-year-old until they reach age 100. Over such a long period, investment markets are likely to go through so much change that the model will be of limited use. However, this tool is designed to be used by financial advisers advising clients on long term investments, with annual reviews. It is important to some users to allow for a long forecast to provide some data for short term decisions, such as how much to contribute into a pension today, but the annual review will mitigate against the uncertainty of just a long range forecast.

4.4.1 Start Date

The start date of a payment is defined either as a date or as the month in which a client reaches a specified age.

For a date-based start date, the start month will be the month within which the date falls. For example, a start date of 17 May 2035 will result in the forecast making the first payment in May 2035.

For age-based start dates, the start month will be the month in which the client is first deemed to have reached that age.

If the start date falls before the start of the forecast, the first payment will be the first scheduled payment after the start of the forecast. For a monthly payment, that would be the first month of the forecast. For "one off" payments, if the start date is before the forecast start date, they will be ignored. For all other periods that may be some months after the first month of the forecast.

4.4.2 End Date

Payments end on a specified date, event (such as death, or a client's specified birthday) or after a specified duration.

For a date-based end date, the last payment month will be the month within which the date falls. For example, an end date of 17 May 2035 will result in the forecast making the last payment in May 2035.

For age-based end dates, the last month will be the month before the client is first deemed to have reached that age.

For a duration-based end date, the last payment month will be month before the start month plus the number of years and months.

4.4.3 Period of Payment

Payments can be specified to be paid with the following periods:

- Monthly – every forecast month
- Quarterly – every third forecast month
- Half-yearly – every sixth forecast month
- Annually – every twelfth forecast month
- One-off – a single payment in the specified month

Payments are made according to the period specified. For example, if the payment is specified as having an Annual period the amount specified will be paid in a single month each year, and no money in the other eleven months.

The first payment will be made in the month containing the specified start date. If the start date is prior to the forecast start date, the next scheduled date will be the first payment made.

For a specific period, the second payment month will be the start month plus the number of years and months. For example:

The amount of each payment will be the entire amount specified (subject to growth see section 2.5). Therefore, if a payment is specified as quarterly and the amount is £1000, four payments would be made each year, each of £1000, with annual total payments of £4,000.

4.4.4 Age assumption

Where a person's age is relevant, the forecast considers their age for each month to be their age at the end of that month. (i.e. as if their birthday is on the boundary between the month of their actual birthday and the preceding month).

4.5 The wallet

The wallet is an ephemeral pot of money within the forecast that represents the “cash in hand” of the client. For simplicity, this money grows at price inflation (i.e. it does not depreciate) and has no charges applied.

At the start of the forecast, the wallet value is zero.

The wallet may go into debt. Debt grows at price inflation in the wallet, such that it does not depreciate with inflation.

Generally, the money/debt in the wallet is carried over from one month to the next. The specifics of what happens to any money/debt in the wallet at the end of a month and at the end of the year is covered in the Recourse Rules section.

The total capital owned by a household will include the wallet.

4.6 UK State Pension

UK state pension is payable monthly for the rest of life, starting at state pension date.

4.7 Investment contributions

Contributions are paid from the wallet (and therefore net income). Contributions are known in advance and the same for each run. If there are insufficient funds in the wallet to cover the contribution, the contribution is made anyway, even if this cause the wallet to be in debt.

The expenses coming out of the wallet will be known in advance for certain each year, and so are the same over all runs.

4.8 Surplus processing

The following processing is applied at the end of each year, i.e. between the twelfth and thirteenth months, twenty fourth and twenty fifth months etc. It is applied before the outputs for the year are generated.

An invested surplus will be saved into a cash account. An invested surplus will be saved as into a cash account. If no arrangement is specified, the wallet value is reset to zero under the “use it or lose it” rules.

If an arrangement is specified, all surplus in the wallet is contributed to that arrangement. This contribution should be treated as any predetermined contribution (e.g. any tax benefits applied).

If surplus is being invested, then the paths visible after “show paths” is selected, will contain positive wallet balances. If not, the paths will no include any positive wallet balance.

4.9 Recourse rules

If at the end of a month, the wallet is negative, the arrangements are examined in recourse rule order. Money is disinvested, in order from each arrangement, until the wallet is back to 0. I.E. if the first arrangement does not contain sufficient funds to meet the net amount required, a new net “hole” is created, and the next arrangement is examined to see if it has sufficient funds to fill that hole.

If there is insufficient money after all the available arrangements have been disinvested from, then the remaining debt amount is carried forward to the next month.

4.9.1 Recourse Disinvestment from a UK Defined Contribution pension

UK DC Pensions will not be available for disinvestment until the owner of the pension has met the minimum pension age specified on the pension. If no age is set the Normal Minimum Pension Age, as set by the Government, will be used.

For withdrawals from UK DC pensions tax needs to be considered. The forecast supports the following approaches to disinvestment from the pension. These are applied, in this order, until either the net hole in the wallet is filled or there are no more funds available in the arrangement:

- Flexi access drawdown from any already crystallised money still in the pension (no uncrystallised funds will be crystallised)
- UFPLS from any uncrystallised funds still in the pension These are described in the following sections.

4.10 Stochastic withdrawals

These are payments into the wallet from arrangements that are part of the forecast. They may vary for each “run” of the Monte Carlo Forecast depending on the performance of the arrangement.

A withdrawal never takes an arrangement to a negative value. If the full amount cannot be withdrawn, then a partial withdrawal is made, taking the value of the arrangement to zero. For this reason, the actual amount of any withdrawal cannot be predetermined.

Where planned withdrawals occur in the same forecast month, they will be applied in the following order ignoring any more specific date within the month:

- Withdrawals based on a percentage of the arrangement’s current value
- Withdrawals based on a fixed amount (either a specified value or a percentage of a fixed value such as the arrangement’s initial value)

Where two of the same type of withdrawal fall in the same month, they will be applied in the order in which they were listed in the forecast specification.

The following sub-sections describe how withdrawals work for different types of arrangement.

4.11 UK Investment withdrawals

All withdrawals are currently treated as tax free (e.g. Capital Gains tax is ignored). Withdrawal amounts can be specified as (and will be taken in this order):

- A percentage of the arrangement’s current value at the time of the withdrawal (which will not include any contributions being made that month)
- A percentage of the arrangement’s original investment value
- A monetary value

4.12 Show paths

This option will show a selection of 20 paths on the wealth chart. The paths displayed will be the same for each named client, but not the same across different clients. Nothing is shown above the “be pleasantly surprised” line, to as to not to give a false impression of the potential growth.

4.13 Segmentation of incomes

The segmented income chart splits the top four highest incomes across the duration of the plan, plus another group containing the others. Portfolio withdrawals (that is incomes which depend on the value of the fund) are always grouped together.

The income values are displayed net of tax. Tax is not usually segmented in practice, but for the purposes of the chart, the tax and NI is allocated proportionally for the planned incomes/withdrawals. Portfolio withdrawals that are taxed (for example pension withdrawals) are shown as being taxed at the marginal rate of that withdrawal. (If a basic rate tax payer wants to withdraw their entire pension in one go, cashflow will show the impact of tax on that specific pension withdrawal).

4.14 Tax

The forecaster can currently deduct Class I NI and income tax. Some incomes are known about in advance, the predetermined incomes. These include incomes entered by the user from sources such as salary. As the income is known about in advance, the tax due can be calculated in advance taking only these incomes into account. Incomes which are not known in advance, such as withdrawals from pension under recourse rules, are taxed at the point of withdrawal, at the marginal rate, after all predetermined income for the year has been taxed.

4.14.1 UK National Insurance (NI)

NI is calculated on a monthly basis, so an income of £1,000 per month would attract a different amount of NI to an income of £12,000 in a single month and nothing for the rest of the year. The rates and bands used are shown in Table 1: current rates and bands

The amount of NI due for the month is rounded down to the nearest penny, subtracted from the gross income before it is added to the wallet.

Only Class IV NI is calculated currently, so self-employed incomes are not paid.

4.14.2 UK Income Tax

UK Tax is paid monthly from all applicable pre-determined incomes. These are:

Summary Incomes	Maintenance Payment Received
Salary	Other
Self Employed Earnings	Alimony
Rental Income	Child Maintenance
Pension	Private Insurance Income
UK State Pension	Guaranteed Bonuses or Over Time Before Tax
State Benefits	Non-Guaranteed Bonuses or Over Time Before Tax

For UK Income Tax the forecast considers annual allowances and bands. It assumes that all tax bands increase monthly with price inflation and so are flat in real terms.

The Income Tax year is aligned with the forecast year (rather than April to April or January to January). At the beginning of each forecast year, the sum of all the taxable predetermined incomes for the coming year is taken and used to calculate the total predetermined annual tax.

UK Income Tax has the concept of a Personal Allowance. This is effectively a nil rate band that is applied before all other bands. The Personal Allowance can vary from person to person. The forecast assumes the same base Personal Allowance for all clients.

The Personal Allowance for an individual is gradually removed once a person is earning more than the Income Limit for Personal Allowance such that for every £2 over this limit a person earns, they lose £1 of personal allowance. The forecast approximates the reduction by adding an extra tax band between the Income Limit for Personal Allowance and a value twice the Personal allowance higher, to reflect the overall net rate in this range. This approximation gives an immaterial inaccuracy, with a higher rate tax rate of 40%, the maximum inaccuracy is less than 40p. It would be impossible for this inaccuracy to be more than £1, and thus acceptable for financial planning purposes.

The forecast approximates a Pay As You Go approach to taxation for predetermined incomes and therefore spreads the tax payments over the year. The monthly tax is calculated as it would be for PAYE, but as the total planned payments for the year are known in advance, the total tax paid at any point in the year is capped at the total tax due for the year.

Where the chart shows net incomes, separated into their constituent parts, the tax is allocated across each tax-paying income, in proportion to the amount of each income.

Note: the amount of predetermined tax due in the year is generally based off the predetermined incomes, however predetermined payments related to some products (such as contributions to UK Defined Contribution Pensions) will also have an impact. The details are covered in the sections specific to those products.

4.14.3 Taxing stochastic withdrawals

Where a recourse-rule withdrawal is made from a product such as a pension, where withdrawals are taxable, the net amount required is known, but not the gross amount required for withdrawal. It is necessary to convert from net to gross. This is done by modifying the tax bands accordingly, then applying these rates to the tax calculator to get from net to gross. The gross amount is withdrawn, and the net amount added into the wallet.

4.14.4 UFPLS taxation

When withdrawing via UFPLS, 25% of the pension amount is not taxable. When doing the net to gross calculations, and adjustment must be made to the gross tax rates and bands before the gross to net calculations are carried out.

4.14.5 UK Defined Contribution (DC) Pension contributions

Contributions are made even if there is insufficient money in the wallet. Currently, they stop after the first crystallisation event. A withdrawal from recourse rules does not cause the contributions to stop.

Two sources of contributions are supported:

- Employer contributions are made with no tax relief and do not come from the wallet, it is "new money".
- Employee contributions have tax relief as detailed below and come out of the wallet after salary is paid in.

The period of the employee and employer contributions are independent of each other.

Pension contributions are taken under the Net Pay method, meaning the employer takes the pension from pay after NI contributions but before income tax.

The forecast applies the tax relief assuming the Net Pay method. The tax relief is accounted for when applying UK Income Tax to predetermined incomes (see the UK Income Tax section). The additions to the process outlined in the UK Income Tax section are:

- The calculated “annual total gross income” should be reduced by the sum of the planned DC pension contributions for the current forecast year. The annual total gross income cannot fall below zero.
- The calculated “cumulative gross income” for each month should be reduced by the cumulative planned DC pension contributions from the start of the forecast year up to and including those in the current month. The cumulative gross income cannot fall below zero.

4.15 Pension withdrawals

Flexi-access drawdown and annuitisation are applied to crystallised fund. The crystallisation event needs to be specified separately for flexi-access drawdown or annuitisation to occur. The amount withdrawn for drawdown or annuitisation is capped at the amount of crystallised funds.

When a flexi-access drawdown or annuitisation triggers crystallisation of uncrystallised funds, how much tax-free cash is taken can be specified, as a percentage of a £ amount. If it is a percentage, it will not be limited to the usual 25% (it will however be defaulted to 25% if not specified explicitly). If it is a value, then the value will be capped at 25% of the pot if the pot at the point of retirement is less than 4 times the requested value. If a person does not want to take a pension commencement lump sum, they must specify 0% here.

The tax-free amount is rounded down to the nearest, smallest supported denomination of the forecast currency and put into the wallet tax-free.

All remaining funds are transferred to the crystallised pot.

The forecaster will never withdraw from a UK DC pension before the owner has met the minimum pension age specified on the pension, or the Normal Minimum Pension Age as specified by the Government if it is not set.

Three types of planned withdrawal are supported, these are, in order they should be applied:

- Uncrystallised Funds Pension Lump Sum
- Flexi-Access Drawdown
- Annuitisation

The amount of tax-free cash available from UFPLS is fixed. Both Flexi-Access Drawdown and Annuitisation allow a variable amount of tax-free cash. For more detail see the following sections.

4.15.1 Uncrystallised Funds Pension Lump Sum (UFPLS)

Every withdrawal is taken from uncrystallised funds; therefore, every withdrawal is a crystallisation event. On the crystallisation event:

- 25% of the withdrawal is transferred to the wallet tax-free. The 25% value should be rounded down to the nearest, smallest supported denomination of the forecast currency.
- The remainder of the withdrawal is transferred to the wallet but is taxable, where tax is applied as described in section 5.

If there are not enough uncrystallised funds, the withdrawal will be capped at the amount of uncrystallised funds.

Note: Since currently a planned (as opposed to one made due to recourse rules) Flexi-Access Drawdown will cause crystallisation of all remaining uncrystallised funds, then no more UFPLS withdrawals will be possible.

4.15.2 Flexi Access Drawdown

Multiple drawdowns can be specified. Funds will only be taken from the crystallised pot. They will not cause a crystallisation event, which must be performed first. These funds will be subject to UK Income Tax. See the section on income tax for details of how this should be applied.

4.15.3 Annuitisation

Multiple annuitisations can be specified for an arrangement.

An annuity income growth rate may be specified.

The purchase value calculated above divided by the annuity rate is used to calculate a taxable income for the rest of the arrangement owner's life. The income calculated will be an annual income, however it should be paid into the wallet monthly. Tax is applied to the income as described in the section 4.14.3

The annuity rate can be calculated by the tool, or if the user has an annuity quote, this value can be entered into the system and used to calculate annuity income.

4.16 Key question – How long will my income last?

This will flag the first point at which the income, including from withdrawal from investments, excluding those marked as "do not disinvest", is less than expenditure in this year. At this point, incomes might still be coming in, but these are not sufficient to cover the expenditure, and there are insufficient available funds to disinvest and fill the gap. It is possible that someone reaches this point before their minimum pension age with substantial pension income, but as the pension is not available, this counts as running out of income. With this question we are trying to highlight when the client's/clients' invested capital will be eroded.

5 Appendix - Financial planning assumption made within the forecast process

A number of assumptions have been made during the building of the forecaster; they are listed here.

5.1 State pension age

The state pension age used in the tool is that currently defined in UK legalisation, including all planned increases to state pension age.

5.2 Current tax rates and bands

Name	Value 2025/64
Personal Allowance	£12,570
Income Limit for full Personal Allowance	£100,000
Basic rate upper limit 20%	£37,700
Additional Rate	£125,140
Primary Threshold (PT) - monthly	£1,048
Upper Earnings (UEL) - monthly	£4,189
Employee NI rate (PTUEL/UPL)	12%
Employee NI rate (above UEL/UPL)	2%
Annuity Interest Rate for fixed-interest annuities[3]	4.7%
Annuity Interest Rate for inflation-linked annuities	1.2%
Flat rate state pension	£11,973.00

Table 1: current rates and bands

[2] [3] The annuity interest rate is the intermediate rate of return appropriate for a level or fixed rate of increase annuity (COBS 13 Annex 2 3.1R(6)) or the rate for annuities in payment (if less) http://fsahandbook.info/FSA/html/handbook/COBS/13/Annex2#DES210
Note, due to data licencing restrictions, we only publish the calculated annuity net rate in our documentation, not the underlying gilt rates.

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