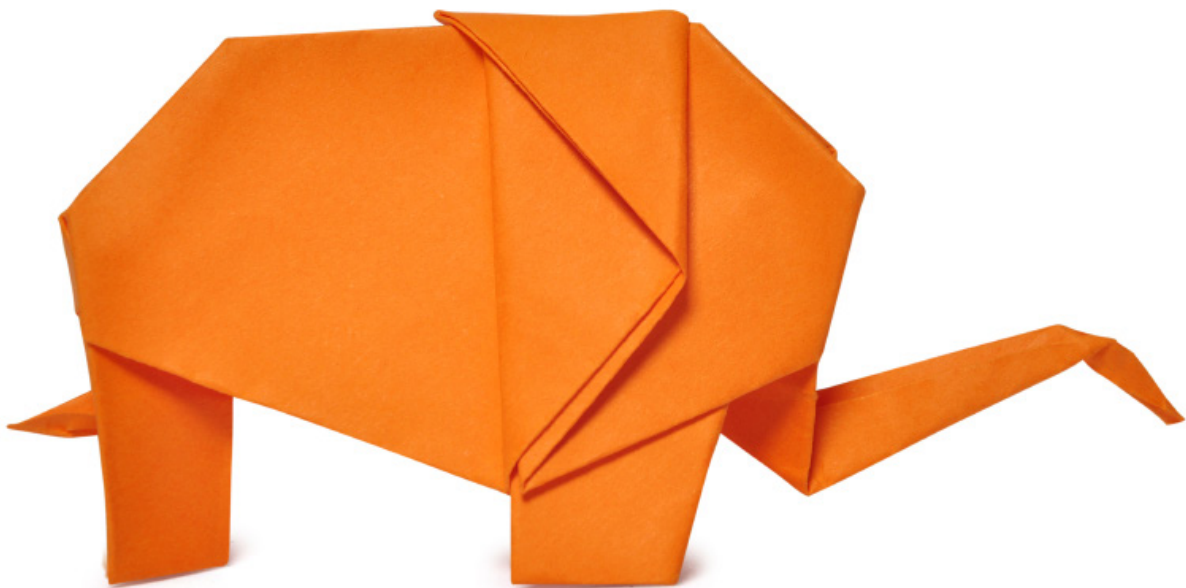# How to...
make sure your forecasts are realistic

How to Guide from eValue

Introduction

In the third of our 'How To' series for advisers we'll be looking at what you need to consider when selecting a financial forecast model.

This guide highlights the factors that you should assess when selecting a robust financial model to ensure that it produces realistic forecasts. Life is full of risk and we need to understand it to accept it. Mathematical models can be used to calculate risk and assist you in helping your clients make appropriate financial decisions. These models need to be as realistic as possible to ensure that the information upon which decisions are made is fit for the purpose for which it is used. There are many different types of forecasting models and the realism of any model will depend on the purpose for which it is used.

The following 8 steps outline the key factors that advisers should consider when selecting a robust financial model.

Step 1: Understand the purpose of the forecast model

Forecasts are used to give your clients a better understanding of their financial position. This helps them to make more informed investment decisions that will have a direct impact on their own future wealth and lifestyle.

As a result, the forecasts have to work for them as an individual and not as part of a large group of individuals. The forecasts need to be as realistic as possible and they need to relate to an individual's own specific circumstances both in terms of the timescale of their goals and how the results are shown.

Step 2: Establish the type of model to be used

There are two main methods of forecasting: deterministic and stochastic forecasts. These are described in more detail below.

Deterministic

This type of model is the simplest. A single projection result is given and the assumptions used do not change according to the term of the investment. This type of illustration is commonly used to compare charges between products, and is highly suited to this use, allowing the impact of charges to be viewed in isolation of any other consideration.

Although deterministic forecasts can provide consistency between different providers' product projections they do not give any concept of the real risk or likelihood of a particular outcome. They also assume that investment returns will be exactly the same every year even though the timing of high or low returns can make a significant difference to the final fund value.

Stochastic

Stochastic forecasts, on the other hand, use many different scenarios to give a range of answers rather than just a single figure.

Stochastic forecasting is a method for predicting the potential range of outcomes where those outcomes have a degree of uncertainty. Such forecasts determine not only which outcomes are expected to happen but also show those which are less likely to occur. This means that even if the starting point is known there are many possibilities the stochastic process might follow, with some paths being more likely than others.

There are two main types of stochastic model commonly used today: i) Mean / Variance / Covariance (MVC) model and ii) Economic Scenario Generator (ESG) model. Within each of these two types of model there is scope for considerable differences.

Mean / Variance / Covariance (MVC)

This model uses historic data to project values based on an assumed future average (mean), their assumed future variations (variance) and how they have historically been related to each other (covariance).

This type of model makes assumptions about these three elements and presumes that they will remain fixed for all future durations and that this will provide a good guide to the future.

The quality of an MVC model is highly impacted by the choice of time period over which performance is measured to set the three different parameters for each asset class. This is a somewhat arbitrary decision for which choosing a period that is too long, too short, or is a different period across different asset classes will lead to flawed and unrealistic results. For example, too short a period may not give a true long term indication but choosing too long a period will include factors which are no longer relevant.

MVC models also take no account of how long an investment is held for, as they assume the same average return irrespective of the investment term. In reality, risk and return characteristics of assets vary depending on the term of the investment. MVC models should therefore be used very cautiously for longer term projections and an awareness of their limitations is critical when using the output.

MVC models are used extensively where longer term projections are not needed, as with short term asset management for example.
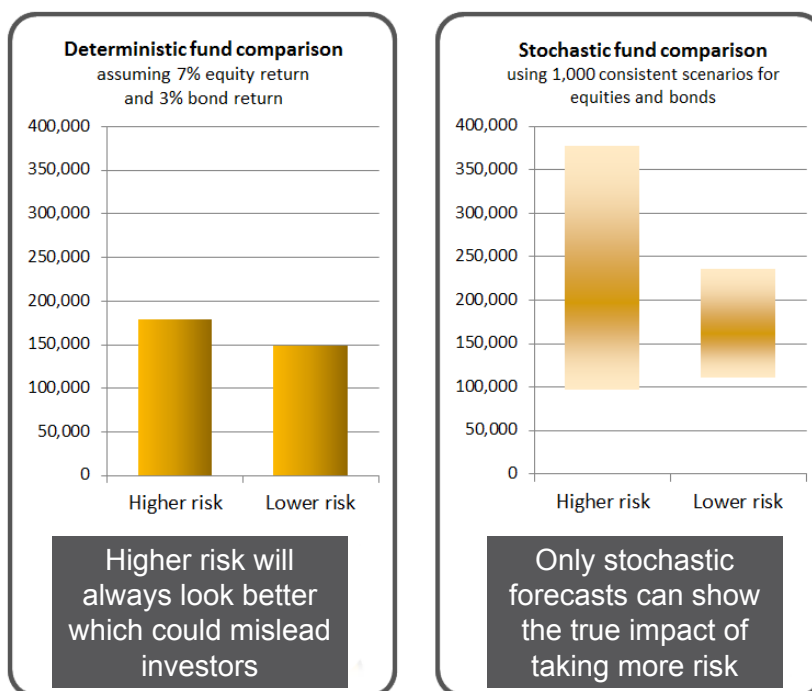
Economic Scenario Generator (ESG)

An economic scenario generator (ESG) has complex algorithms which model how the economy and various factors interact with each other. Combined with various calibration factors and assumptions this allows a real world model to be created of the world's economies, from which asset classes and other returns can be created. It allows forecasts where the characteristics of the assets vary over the term they are held, and for factors such as correlation to be dependent on the size of market movements.

To capture the randomness of markets, an ESG is run a large number of times to produce a statistical estimate of the likely returns on a portfolio. Thousands of separate calculations are carried out to produce a forecast based on plausible future economic scenarios. This large collection of future forecasts not only shows which outcomes are most likely but what range can be expected as well.

By reproducing real life characteristics of assets, an ESG model gives sensible and realistic forecasts. ESG forecasts do not depend on historic performance. This keeps the forecasts firmly looking forward from the current economic situation and makes them particularly suited for long term projections.

Stochastic forecasting gives a fuller picture

Deterministic fund comparison
assuming 7% equity return
and 3% bond return

Higher risk will always look better which could mislead investors

Stochastic fund comparison
using 1,000 consistent scenarios for equities and bonds

Only stochastic forecasts can show the true impact of taking more risk

Step 3: Ensure the forecast methodology is realistic

We wouldn't expect the Met Office to provide a forecast based entirely on last week's weather, or on average monthly rainfall or other statistical figures whilst completely ignoring what it looks like out of the window. We expect them, instead, to be able to take account of the current conditions to see where the weather could be heading based on what is going on around us.

To achieve a better level of accuracy, weather forecasters run sophisticated models which take into account how weather systems react together and what is happening now to see what the most likely outcome is. The result of this most likely outcome is then presented daily to an expectant nation.

Where there is uncertainty, as with forecasting weather out into the future, we understand quite rightly that there will be a range of outcomes that could be possible. So we expect to see a range of temperatures and words like "showers are likely" and we wouldn't expect precise predictions for longer term forecasts.

A similar situation exists for investment projections. Important financial decisions are now being made based on the potential returns given in investment forecasts. Although some models still use historical data to provide forecasts to investors, just as with the weather, forward looking models provide the greatest element of realism for clients. Forecasts based on historic methodology, such as identifying the average return and standard deviation in the past and using this to project the future, do not provide sufficient similarity to the real world to be of much use to investors looking for long term forecasts. There are a number of reasons for this:

The past may not reflect all possible events that could happen in the future. The recent global credit crunch shows how the financial world can be affected by events that no-one could have foreseen by looking backwards. There may still be other events which have not happened yet. By considering potential future scenarios, these types of event can be taken into account and the forecast is more realistic as a result.

Forecasts need to start from current conditions. Projecting investments from today into the future means you should at least start from current conditions. This is particularly important where current conditions are some distance from historic averages, such as the UK's current low bond yield and low cash returns environment. A forecast methodology therefore needs to ensure current economic indicators are a key starting point for all projections.

Returns are dependent on the recent past. This means that to be realistic and reflect how investments actually work, the forecast method must take into account how future returns are dependent on current levels. For example, a period of high bond returns will produce low returns in the following periods. Similarly, the higher equity returns go, the more likely a drop is to occur in the future.

Correlation between assets is complex. A simple correlation factor can give a sensible reflection of relative movements between various equity classes within normal markets over short time periods. However, as we have seen with recent market turbulence, otherwise uncorrelated markets can all move in the same direction in times of trouble. Diversification is therefore of less benefit when times are tough and forecasts which ignore this fact don't give sufficient downside variation to be realistic for investors' long term predictions.

Step 4: Make sure that the forecasts relate to individual asset classes and their risk

For projections completed on a single return, such as those in illustrations, a more risky asset class will show better returns and will ignore the higher risk that is implicit in those higher returns. Therefore, projections will systematically show investments with a higher risk as having higher projected forecasts. This will lead to individuals making investment decisions with a vital piece of the jigsaw missing unless the forecasts can also show that there is a higher risk associated with those assets. The best way of providing forecasts that can explain investment risk is to use a robust stochastic model which considers a range of potential outcomes and shows the variation of these for each investment choice. This helps to make it clear to investors both the potential risk and return of their investment decisions. This is almost impossible to do with a single estimate, or even a range of single estimates.

Step 5: Ensure that the forecast reflects a real life scenario

The test of a realistic forecast is to consider if the projection could actually happen. This means that as far as possible the forecast should reflect what happens in the real markets. Since markets vary from year to year and from asset class to asset class, so should the projections. A single average assumption does not reflect reality and will therefore not provide sufficient information for a reasoned investment decision.

When considering paying contributions or taking out withdrawals, the timing of returns can be critical to the return that an investor receives. Using a fixed assumption ignores this key factor. To be realistic, ups and downs in the market need to be included in the forecast to show the potential impact that the level and timing of cash flows has on funds.

For example, the standard projection method for illustrations uses a single rate for each asset class which is assumed to stay constant throughout the term of the investment. Whilst this is useful for understanding the comparison of charges, it is not useful for seeing what might be received from the investment to meet an objective when contributions are being paid.

Step 6: Confirm that every scenario used is realistic

A projection provided to make a sensible financial decision needs to be realistic not only overall, but also in each scenario which makes up the forecast. Suggesting a potential outcome which in reality is impossible is not helpful for the client's decision making process.

An example of this is considering bond yields, which are currently very low. At the moment we are in a situation whereby fitting a standard statistical curve to the yields would give some results which imply negative yields on bonds– a situation which could not occur in real life. A simple mean/variance /covariance model does not allow these unrealistic scenarios to be removed, but a model based on an economic scenario generator can if it is carefully calibrated.

However, not all economic scenario generators are realistic in the current low yield environment. As a result of the complexities of dealing with yields which are close to zero, most will simply assume that normal yields will apply in quick order. In times of higher yields this has not been such a noticeable assumption, but currently it is overpowering since it is effectively assuming that "normal" economic conditions will return almost straight away with almost absolute certainty. In reality, there is the possibility of either remaining in low yield territory, seeing a large spike in yields, or returning to normal. For a realistic forecasts all three possibilities should be considered, not just the normal scenario.

Step 7: Ascertain that the forecast correctly takes into account inflation

For an investor to be able to relate to the outcome, forecasts are usually adjusted to take into account inflation. Telling someone that £10,000 invested for 20 years could give them £25,000 sounds great and is likely to make a sale of an investment product. However, it misses the point that £25,000 would only buy the investor £15,000 worth of goods in today's prices – and this is the realism that investors need to understand to make the right decision. For example a comparison of not investing but instead leaving money in cash could give a figure of, say, £8,000 in today's prices after 20 years.

To be realistic, the inflation used in the forecast needs to be linked to the asset returns and other factors within the forecast. For example, when long term equity returns are higher, the chances are that inflation is also higher, and vice versa. Therefore any model which needs to show results in today's prices needs to have inflation built into the investment forecast, and not added on as an inconsistent afterthought. This will give the investor a realistic forecast as the inflation figure will then vary with the forecast, and not just remain a single fixed factor.

Without taking into account inflation

Money you could have after **20 years**		£10,000 invested
	☑ Stocks & Shares ISA	☑ Cash ISA
High return	£99,700	£41,500
Mid return	£31,500	£16,700
Low return	£10,500	£10,200

Taking into account inflation

Money you could have after **20 years**		£10,000 invested
	☑ Stocks & Shares ISA	☑ Cash ISA
High return	£46,800	£14,500
Mid return	£15,700	£8,720
Low return	£5,220	£5,190

Step 8: Consider whether the conversion of a fund value to an income is realistic

Despite the changes proposed in the Government's budget in March 2014, the financial needs of many investors are fundamentally all about providing an income for meeting expenses in the future. Whether this income is regular or a one-off, the funds from which purchases are made can be considered as income. Therefore, any forecast provided needs to be able to give a sensible figure for income.

eValue
Investment Solutions

There are two key stages in providing income.

- **Stage 1:** Before retirement, the forecast should include the split in returns between capital and income for any investment.

- **Stage 2:** After retirement, for those who still wish to take a secure income for life by buying an annuity, the annuity conversion rate is critical.

Therefore a realistic outcome of income needs to be provided, which can only be done if the conversion to an income for life is completed using a realistic annuity rate. Annuity rates are dependent on bond yields, so it is vital for realistic forecasts that these yields are consistently projected using the relevant asset classes.

A considerable part of the benefit of reducing risk for income in retirement, commonly known as lifestyling, is to match the investment to bond prices to remove risk of large swings in annuity rates just before retirement. Only if bond yields are a core element of the model projections can this be sensibly forecast.

The eValue approach

For a forecast to be realistic there are many factors that need to be considered. It has to be fit for purpose, so when advising on investment decisions, the projections need to be able to include inflation and bond yields, reflect the real world, and not be either too cautious or too optimistic. There should be no impossible scenarios even if the overall projection looks sensible. It also needs to take account of current economic conditions and be able to give sensible results even in difficult and unusual times.

A considerable amount of research and effort has been undertaken to improve our own eValue asset model to take into account the low yield environment, provide realistic forecasts and sensibly consider all the potential future economic outcomes.

We hope you found this eValue 'How To' Guide helpful. Look out for others appearing on our website at evalueis.com where you can also find details about our range of eValue's Advisa Centa solutions.

If there is subject you'd like to know more about, then we'd love to hear from you. Please email us directly.

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