# USS Investment Management's Fundamental Building Blocks (FBB) approach to expected returns

(Published 22 March 2018)

## 1. Introduction

Different approaches are applied in the industry and academia to the challenge of long-term economic and financial market forecasts, with differences in the assessment of theoretical and empirical relationships between historical returns and fundamental/macroeconomic variables, in the long-term economic and market outlook and the models used for future asset valuation. All approaches are subject to considerable uncertainty.

USS Investment Management has developed a framework that allows a comparable methodology (the Fundamental Building Blocks or 'FBB' approach) to be applied across all asset classes to generate a self-consistent and reasonable set of best-estimate forecasts. This approach is described further below and is consistent with the approach applied by a number of long-term forecasters.

We do survey a wider range of forecasters to check the reasonableness of our fundamental assumptions and FBB outputs by comparison with different approaches and conclusions reached. This provides some perspective on the dispersion of potential outcomes and, if persuasive, may lead to adjustments to elements within the FBB approach.

## 2. FBB approach

The Fundamental Building Blocks (FBB) approach was developed by USS in 2016 to build long run return projections for multiple asset classes in the Reference Portfolio. It marked an evolution from the long-term returns model previously applied. The FBB approach provides an analytical framework to decompose returns into underlying components. It is also consistent with the framework employed by other leading industry providers (e.g., Dimensional Advisors, Morningstar, JP Morgan, AQR, Research Affiliates, BlackRock, Baillie Gifford etc.), who publish return forecasts derived from underlying building blocks. At a very high level, the approach decomposes asset returns according to the following components:

1. Income return, i.e. the return arising from coupons, dividends or rental streams
2. Growth, i.e. the expected growth in cash flows paid out by the asset
3. Valuation change, i.e. the change in the market pricing of future cash flows underlying the asset
4. Other adjustments (i.e. the expected capital losses from defaults or depreciation, foreign exchange variations for overseas assets etc.)

There are several advantages of the FBB framework, in particular:

- It can be applied to historical returns, where like an accounting identity it facilitates decomposition of returns. Reviewing historic experience across different regimes can then provide the context and the boundaries for forward-looking asset class expectations.

- It can be applied at different investment horizons stretching from 1-3 years (appropriate for Tactical or Medium-Term Asset Allocation) to 10-30 years (relevant for long term Strategic Asset Allocation), with the forecasts for underlying components varying across horizons.
- It facilitates identification of the underlying drivers of aggregate forecasts.
- It can incorporate subjective expert views which can be easily applied to underlying building blocks.
- It is amenable to conducting stress-tests and building a range of alternative macroeconomic or investment scenarios around a set of baseline projections.
- It does not require strong assumptions of market equilibrium.

**3. Application to the valuation**

For the 2017 valuation, the FBB expected return forecasts have been derived assuming a 30-year horizon. This is broken down into a 10-year convergence phase followed by a 20-year steady state phase. The triangulation process described above was used in the overall calibration.

In the 10-year convergence phase, key variables, such as interest rates and equity multiples, converge to steady-state levels which are then assumed to prevail during the 20-year steady-state phase. Hence 10-year expected returns are heavily influenced by the starting point (e.g. today's interest rates, price multiples etc.) and the convergence path. The 10-year forward 20-year returns can be interpreted as "steady state" returns, driven by cash flow yields and trend growth without any valuation adjustments.

Below we give some more detail for specific asset classes.

***Real Equity*** return projections are constructed by aggregating the following components which are our building blocks in the FBB framework:

1. **Yield** is an average of the current dividend yield and a projected dividend yield consistent with growth and valuation assumptions set out in the Growth and Valuation bullet points below.
2. **Growth** is built by aggregating the following inputs:
    a. Long-term regional GDP growth, based on USSIM view informed by Consensus Economics, OECD, IMF and other professional forecasters.
    b. Breakdown of listed companies' revenues by region of origin. For instance, UK and European companies derive around 20% of their revenues from operations in emerging markets which implies domestic GDP is not the correct reference point for revenues of listed companies. The breakdown enables to build a weighted GDP forecasts based the revenue breakdown and regional GDP forecasts.
    c. Profit margin adjustment, to enable translation from revenue growth into a bottom-line earnings growth forecast. This captures the cyclical nature of profit margins which tend to mean revert over the long run, as well as more secular changes in competition policies, taxation etc.
    d. Net dilution adjustment, which converts earnings into earnings per share (EPS) forecasts as these ultimately matter to equity holders. This reflects the impact of net issuance and buyback activities.

3. **Valuation** is based on expected change in the price earnings (PE) ratio. The terminal value for the price earnings ratio is a weighted combination of current levels and the history before and after the Global Financial Crisis (GFC).
4. **Foreign Exchange (FX)**, for unhedged projections, is derived by assuming reversion to purchasing power parity and long-term inflation differentials. For emerging markets, we also consider the long-term growth differential to capture the tendency of real exchange rates to appreciate in fast growing economies (Balassa-Samuelson effect). For currency-hedged projections, an adjustment to capture FX hedging 'carry' is included. This is calibrated in function of the longer-term path of interest rate differentials vs. the UK, which are derived consistently with expected shifts in UK and foreign yield curves (see Gilts and other Government bond returns section below).
5. **Inflation** (relative to UK inflation rate) captures an adjustment for overseas returns based on long term inflation expectations. These are based on the USSIM view informed by Consensus Economics, OECD, IMF and other professional forecasters. This enables expression of all forecasts in real terms from the viewpoint of a UK investor.

***Gilts and other government bond*** returns (nominal and index-linked) are derived by aggregating the following building blocks (components):

1. **Yield** is an average of the current yield to maturity and a projected yield consistent with valuation assumptions set out in the Valuation bullet point below. The assumption is also adjusted to take into account the roll-down effect which captures the price appreciation associated with rebalancing to a fixed duration in an upward sloping yield curve.
2. **Valuation** is based upon the expected shift in the yield curve. The terminal value for the yield curve is calibrated taking into account the 10-year forward curve, as well as the pre- and the post-GFC experience.
3. **Inflation** is derived as described in the Equities section and is subtracted from the expected nominal bond returns to derive real return projections. For the UK index linked bonds, an adjustment is made to reflect the long-term gap between the CPI inflation used as baseline for cross-country comparability and the UK RPI measure.
4. **Foreign Exchange (FX)** is as described above for equity forecasts and is similarly applied to non-UK bond forecasts.

Forecasts for ***corporate and emerging market bonds*** are constructed in a similar fashion, as outlined below, based on following building blocks:

1. Yield, which is an average of the current yield to maturity for the relevant index and a projected yield consistent with valuation assumptions set out in the Valuation bullet point below.
2. Valuation, which is derived similarly to government bonds but a terminal value for spread levels is added to the expected government yield derived as described above. This is defined using a consistent methodology to government bond curves.
3. Default premium, which is an adjustment to reflect expected default losses calibrated using default and recovery data since 1920 provided by Moody's.
4. Inflation, which is derived as described in the Equities section and the same adjustment to government bonds is applied.

5. Foreign Exchange (FX), which is as described above for equity forecasts, based on FX expectations of underlying currencies (i.e. blend of US dollar and Euro for global investment grade, EM countries for EM local currency etc.).

The forecast for ***UK property*** is constructed in a similar fashion to that for Equities, i.e. based on the following building blocks:

1. **Yield** is the average of the current rental yield for the IPD universe and a projected yield consistent with valuation assumptions set out in the Valuation bullet point.
2. **Rental growth** is calibrated consistently with Property Market Analysis (PMA) baseline projections and presently assumed to be lower than UK CPI.
3. **Valuation** is derived similarly to corporate bonds where the spread level is defined as the gap between property and long-dated real gilt yields.
4. **Depreciation** reflects the cost of refurbishing and repairs. This is assumed to be 2% based on research from Property Market Analysis (PMA).
5. **Transaction costs** reflect the impact of stamp duty on buying and selling underlying properties. Based on an assumed holding period of 10 years, this reduces projected returns by c. 0.50% p.a.
6. **Inflation** is derived as described in the Equities section and is subtracted from the expected nominal property returns to derive real return projections.

**Authors**

Roger Gray, USS Chief Investment Officer & USS Investment Management Chief Executive

Mirko Cardinale, Head of Multi-Asset Allocation (Macro Strategies), USS Investment Management