



## Building strong foundations: Risk budgeting

How viewing your portfolio through a risk lens can give you  
a greater perspective

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We have long argued that **good governance** is a key factor that distinguishes the very successful asset owner funds of the world.

In 2007, Roger Urwin (Willis Towers Watson's Global Head of Investment Content) and Professor Gordon Clark (Oxford University) conducted a landmark study of investment governance\*. The study was carried out by examining ten exemplar funds which were selected on the basis of their reputations for strong decision-making accompanied by performance success. The key conclusion of the study was that **strong governance is a critical requirement to allow organisations to achieve above average investment outcomes on a sustainable basis.**

The study identified 12 traits that are shared by the most successfully governed institutions. These are briefly summarised below:

'Core' business traits	'Exceptional' business traits
Mission clarity	Highly competent investment executive
Effective focusing of time	High level Board competencies
Leadership	Supportive compensation
Strong investment beliefs	Competitive positioning
<b>Risk budget framework</b>	Real-time decision making
Fit-for-purpose manager line-up	Learning organisation

\* Best-practice investment management: lessons for asset owners from the Oxford-Watson Wyatt project on governance, Gordon L Clark and Roger Urwin, September 2007.

This note is part of our **Building Strong Foundations** series which addresses these 12 factors in turn. In this note, we focus on the risk budget framework: what is risk budgeting; identifying risks; developing a risk management plan; and, setting the risk budget.



## What is risk budgeting

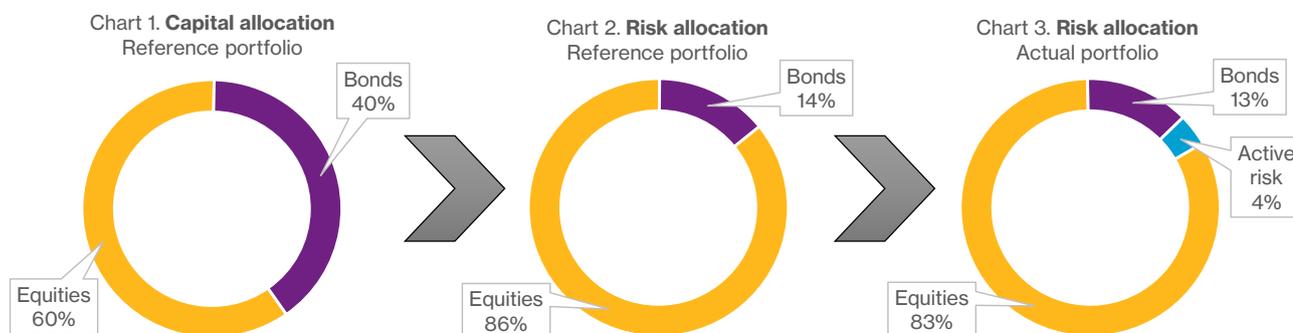
Risk budgeting is the process of translating an investor's beliefs, comparative advantages, risk appetite and risk tolerance into a portfolio that has the best chance of meeting the investor's objectives. It involves two steps: 1) setting a budget for the investments, and 2) allocating or spending that budget.

Risk budgeting is the investment equivalent of capital budgeting in corporate finance, i.e. it is about allocating risk (or risk capital) to investments as opposed to allocating dollar capital to projects.

It is important to think in risk space for a portfolio of investments because dollar value does not reflect the true size of an investment in terms of its contribution to the riskiness (and expected return) of a portfolio.

Risk budgets allow investors to focus on those elements that have the greatest impact on the portfolio. As an example, most investors spend a disproportionate share of their time thinking about active (manager) risk despite the fact that, typically, it is only a small component of total portfolio risk, which is normally dominated by market risk.

The first chart below shows a portfolio whose capital is allocated 60% to equities and 40% to bonds through passive (index-replicating) strategies. The second chart shows the same portfolio but now with allocations expressed in risk terms. The third chart assumes that the same portfolio is implemented using a blend of active managers, seeking to add value over and above passively managed strategies.



As can be seen, the share of total portfolio risk taken up by these active strategies is small. This is because a very significant part of most active strategies is in fact made up of just market exposure or beta, and a much smaller component of the total risk arises from active management decisions.

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## Identifying the risks facing the organisation

Investment organisations face a variety of financial risks. Some of these risks will be **Rewarded** – that is, they are associated with a higher expected return than the alternative of not taking that risk (for example: credit risk results in higher expected returns, over the long term, compared with sovereign bonds). Other risks will be **Unrewarded** – that is, they are not associated with a higher expected return, over the long term, than the alternative. In general, unrewarded risks should be avoided.

Another way to look at risks is whether they are **Hedgeable** – that is, they can be insured against or removed e.g. Currency risk – or **Unhedgeable** e.g. Political risk.

Depending on the exact nature of the underlying fund being invested, risks facing investors might include the following:

Risk name	Description of risk	Rewarded?	Hedgeable?
<b>Investment risks</b>			
<b>Market risk</b>	Risk that the assets deliver a return lower than expected or than required to fund the investor's liabilities or planned expenditure	☑	☑
<b>Inflation risk</b>	Inflation sensitivity of the assets is different to that of the liabilities or planned expenditure	?	?
<b>Reinvestment risk</b>	Risk of reinvestment terms for asset cashflows being worse than anticipated	?	☑
<b>Credit risk</b>	Risk that loan issuer will default on their interest or principal repayments	☑	☑
<b>Currency risk</b>	Loss of value as a result of investing in foreign currency assets	Depends on base currency	☑
<b>Manager risk</b>	Risk of asset manager underperforming due to poor or unlucky investment decisions	Depends on skill	☒
<b>Interest rate risk</b>	Changes in the level or shape of interest rates have a net negative impact on assets or liabilities	☒	☑
<b>Liquidity risk</b>	Insufficient liquid assets readily available to make payments as they fall due	☑	☑
<b>Sustainability</b>	Long-term value of assets may become impaired as a result of Environmental, Social or Governance (ESG) issues, including climate change	?	?
<b>Liability risks</b>			
<b>Longevity risk</b>	Risk of unexpected adverse changes in: <ul style="list-style-type: none"> <li>• experienced mortality rates</li> <li>• expectations of future mortality rates</li> </ul>	☒	☑
<b>Political / legislative risks</b>	Political events or legislative change impact negatively on asset or liability values	☒	☒
<b>Covenant risks</b>			
<b>Covenant risk</b>	For defined benefit pension plans, insolvency of the company backing the pension plan	☒	?

## Developing a risk plan

Prior to constructing an investment portfolio, an asset owner should develop a risk management plan:

- Which risks matter the most and how will they be measured (risk metrics)?
- What level of risk is acceptable (considering both expected size and frequency of risk events) and provides the returns necessary to meet the investor's objectives (risk appetite)?
- What risk limits or investment constraints are appropriate (risk tolerance)?

Different risk metrics will be appropriate considering the context of the investor. Some common metrics include: volatility; Value at Risk (VaR); Conditional Value at Risk (CVaR); Probability of loss.

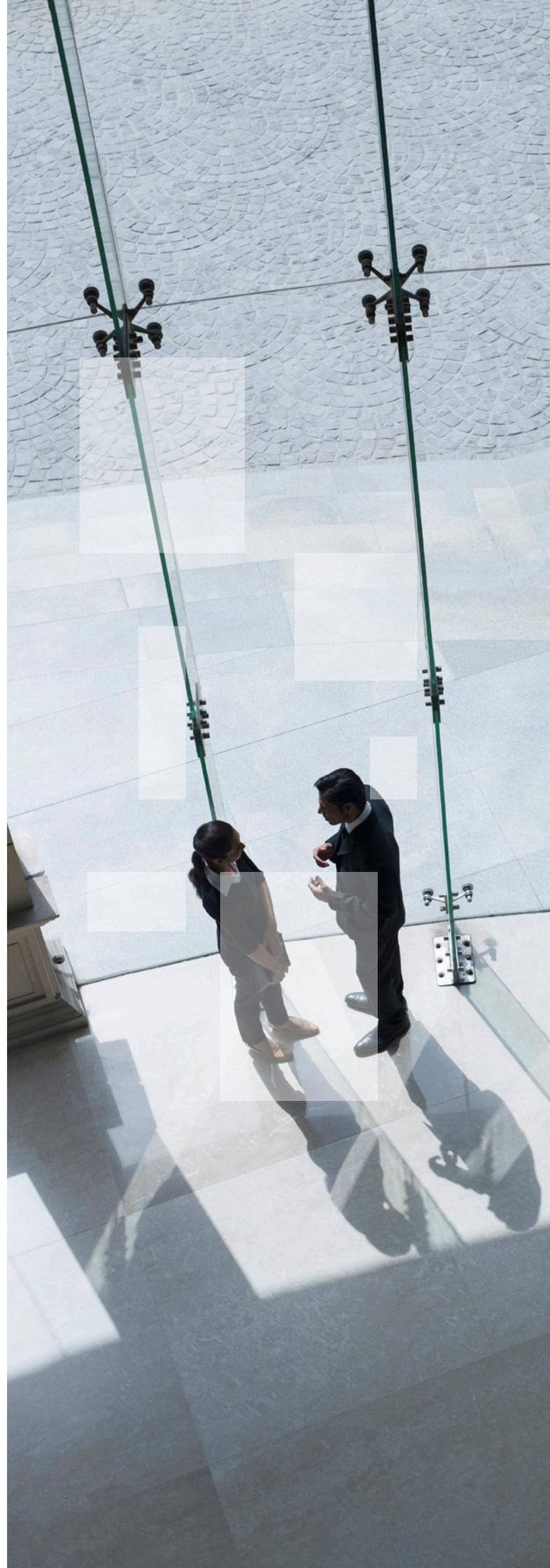
This risk management plan will include not only the overall level of risk of the portfolio but also the investment constraints that must be adhered to in building a portfolio. These set up the foundation of the risk budget.

### Accepting the challenges of measuring and managing risk

Not all risks are numerically quantifiable and so judgment will often be required. It is more helpful to think of risk as a multi-dimensional concept that may incorporate a number of aspects (with different metrics to measure them). These include, but are not limited to:

- The variability of portfolio outcomes or the potential severity of poor portfolio outcomes;
- The likelihood of a portfolio (and, in particular, less well understood strategies within a portfolio) delivering outcomes that are worse than predicted by traditional risk models in stressed environments;
- The potential for a portfolio to produce outcomes that are materially worse than those generated by other comparable portfolios;
- The potential for poor market outcomes to result in an inability to make payments as they fall due, either due to a lack of assets (solvency) or a lack of realisable assets (liquidity).

As risk is most acutely felt when things turn out worse than expected, scenario analysis is a commonly used tool to show how the portfolio will perform under a variety of (typically adverse) circumstances. Scenario analysis is useful to help determine an appropriate level of risk to take in a portfolio.



## Setting the risk budget

Risk budgeting builds upon the risk management plan by specifying the amount of risk to allocate to various strategies. In its simplest form this might just translate the capital allocations in the strategic asset allocation into risk allocations and incorporate the active risk from any active management applied.

However, thinking in terms of risk capital is not intuitive for most investors. While the budgeting process will be undertaken looking at the risk contribution of various strategies, the budgets themselves can be expressed in terms of the equivalent dollar value. The process can be thought of as examining the portfolio through two different lenses – the capital allocation lens and the risk allocation lens.

We believe that the primary aim of risk budgeting is to find the portfolio that has the best “quality” when assessed in multiple dimensions. This is best measured via a “balanced scorecard” of factors, considering the extent to which it demonstrates the following positive attributes:

1. **Efficiency** – the portfolio has high return per unit of risk, and has a high probability of meeting its overall risk and return objectives
2. **Diversity** – the portfolio has good diversification by reference to the return driver / risk factors framework, with limited overall dependency on any one source of risk
3. **Ancillary factors** – additional factors that need to be assessed, for example: liquidity, sustainability, balancing costs and complexity, peer risk

The detailed factors to be used will be fund specific and will require some customisation in order to be relevant. An example of what could be included in a portfolio quality scorecard is shown below:

### A Portfolio Quality Scorecard

<p><b>Efficiency</b></p> <ul style="list-style-type: none"><li>▪ Excess return after all costs</li><li>▪ Expected volatility</li><li>▪ Left tail risk assessment</li></ul>	<p><b>Robustness</b></p> <ul style="list-style-type: none"><li>▪ Sensitivity to GDP growth</li><li>▪ Balanced exposure to different return drivers / risk factors</li><li>▪ Differentiated approaches to alpha generation</li><li>▪ Implications of scenario analysis</li></ul>
<p><b>Implementation</b></p> <ul style="list-style-type: none"><li>▪ Liquidity</li><li>▪ Simplicity</li><li>▪ Flexibility</li><li>▪ Cost</li></ul>	<p><b>Sustainability</b></p> <ul style="list-style-type: none"><li>▪ Portfolio resilience score (sensitivity to sustainability risks)</li><li>▪ Sustainability of alpha through mandate design</li><li>▪ Impact of peer risk</li></ul>

Importantly, risk budgeting cannot be seen as a purely quantitative exercise: judgment must also be applied.

## Allocating to return drivers

While asset classes have different labels, they often share to some degree common return drivers (also called risk factors or risk premia). Return drivers can be thought of also as the premiums paid for taking on risk. Examining the contribution to total portfolio return and risk from these various return drivers is therefore another lens through which to view a portfolio and provides useful information on how well diversified a portfolio is. For example, if two different asset classes have common return drivers, then it is very likely that they will perform similarly under most economic conditions.

Whilst there is no single, universally accepted way of defining these return drivers, there is reasonable degree of understanding amongst investors as to what the main risk premia are. The 8 return drivers that Willis Towers Watson has identified are described below.

Return driver / risk premium	Investors are rewarded for bearing the risk of:
<b>Equity</b>	Future cashflows to shareholders of corporations being lower than expected
<b>Credit</b>	Corporate bond issuers defaulting on their bond obligations
<b>Illiquidity</b>	Holding an asset that cannot be quickly or cheaply sold
<b>Insurance / Uncertainty</b>	Providing protection against losses
<b>Term</b>	The uncertain return and mark-to-market volatility of long bonds compared to cash
<b>Inflation</b>	Inflation being higher than anticipated and therefore reducing real returns
<b>Real assets</b>	Future cashflows to owners of real assets such as property and infrastructure being lower than expected
<b>Skill</b>	A manager, previously considered skillful, underperforming its benchmark

Allocating a risk budget to individual return drivers should be done in accordance with the attractiveness of those opportunities, which in turn should be consistent with beliefs<sup>1</sup>, competitive advantages<sup>2</sup> and any risk limits. It can be used as another input into the portfolio construction process, in particular for assessing the level of diversification inherent in the portfolio.

<sup>1</sup> See Building strong foundations: Investment beliefs

<sup>2</sup> See Building Strong foundations: Competitive positioning

## Summarising the process

Risk plan	
<b>Define risk metrics</b>	For example volatility, CVaR, probability of loss. It is important to consider the time period over which these are measured.
<b>Set risk appetite and risk tolerance</b>	Both the level of risk required to achieve the investment objective (appetite), and any appropriate risk limits or investment constraints (tolerance). Recognise limitations of models used and complement with scenario analysis.



Risk budgeting	
<b>Identify return drivers</b>	For example, interest rates, inflation, credit, equity, currency, skill. Within equities, country, sector, size, value, momentum, etc. This will be based on investment beliefs.
<b>Set total risk budget</b>	Total risk budget will be consistent with objectives, risk appetite, risk tolerance, beliefs and competitive advantages.
<b>Allocate budget to individual return drivers</b>	Sizing will be consistent with increasing portfolio quality, which in turn will be consistent with beliefs and competitive advantages.

### Further information

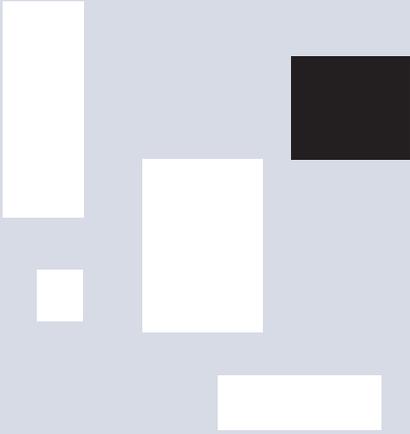
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