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Investment Risk Mapping

Dimensional

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Risk estimates and investment mappings

Forward-looking risk estimates and mapped risk bands for each investment

Investment name	Ex ante 10yr risk estimate	Risk band (of 5)		Risk band (of 7)	
Dimensional World Allocation 20/80 Fund	4.6%	1	1.4	2	1.8
Dimensional World Allocation 40/60 Fund	6.8%	2	2.0	3	2.7
Dimensional World Allocation 60/40 Fund	9.4%	3	2.8	4	3.7
Dimensional World Allocation 80/20 Fund	12.3%	4	3.7	5	4.9
Dimensional World Equity Fund	15.1%	5	4.5	6	6.1

About these risk ratings

We report above the risk bands for each investment, including unrounded numbers (for example, 3.6 gets rounded up to 4).

These unrounded numbers should be treated with caution, to avoid leaning too heavily on spuriously precise estimates – however, they can be useful to see *roughly* where each investment sits within each risk band.

Selecting investments

We highlighted investments close to category boundaries. You can justifiably recommend them to investors on either side of the boundary.

This is particularly the case for:

- a risk band that has few or no alternative portfolios;
- portfolios that are on the verge of being too high risk for the band they are in;
- higher risk bands, where precise placement is more difficult.

It is typical for some bands to contain multiple portfolios. If this is the case, the adviser has flexibility to choose whichever is more appealing based on other relevant characteristics.

What to do if a risk band is empty

In some cases, there may not be a portfolio available in a particular category:

- If this is the case for the lowest risk band, the investor should hold one of the least risky investments and ensure that they also hold a portion of cash to bring their overall risk down sufficiently.
- If this happens for the highest risk band, the investor should opt for one of the riskier investments and consider a small portion in opportunistic assets.

Mapping investors to investments: our methodology in brief

What do we mean by risk?

A good risk measure is meaningful, and relevant to investors' goals. We believe it should be:

- Forward-looking
- Long-term

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- Focused on outcomes (i.e. the destination, not the journey)

Historical volatility may be ubiquitous in the investments industry, but it's hardly relevant to most people. Worse, short-term volatility is unstable, so that the same portfolio ends up with a different risk rating over time, sometimes within months.

We therefore define investment risk as the **standard deviation of projected long-term returns**. By "long-term" we mean 10 years, and we present the figure annualised.

How much risk is suitable?

The starting point for any mapping is an individual's **Suitable Risk Level**. The foundation for this is their **Risk Tolerance**: their long-term willingness to take risk with their total net wealth.

Since investors usually have other assets besides their portfolio (as well as liabilities, and human capital), their Risk Tolerance needs to be adjusted to account for their **Risk Capacity** (their financial ability to take risk).

Investors must also be mindful of their **Emotional Capacity** to take risk (that is, their composure), as well as their investing **Knowledge & Experience**.

For a full discussion of the Oxford Risk suitability methodology, and how we bring these elements together in a single Suitable Risk Level, please contact us.

Quantifying Suitable Risk Levels

The Suitable Risk Level puts each investor on a scale relative to the general population. We must then translate these *qualitative* descriptions into *quantitative* risk ranges, and from there identify suitable investments.

To do this, consider the full range of possible risk levels on a scale of 0 to 1 (from no risk tolerance at all, to being completely indifferent to risk). We assume that this theoretical upper limit could only be reached if someone had both exceptionally high Risk Tolerance and Risk Capacity.

We also think it reasonable that if an investor had either neutral Risk Capacity or medium Risk Tolerance, they would lie in the middle of this spectrum: 0.5.

We further assume that:

- Investors choose an optimal portfolio, according to a power utility function
- Multi-asset portfolio returns are lognormal
- The long-term Sharpe ratio is 0.4

We believe these assumptions make sense in the context of establishing broad risk bands to encompass sections of the population. Importantly, they allow us to traverse the gap from qualitative risk categories to quantitative limits in a rigorous way, without making reference to any pre-existing portfolios.

This leads us to the following (rounded) boundaries between risk bands:

Risk bands for five categories

Risk band	Lower limit (%)	Mid-point (%)	Upper limit (%)
Low		3.3	5.0
Medium-Low	5.0	6.7	8.3
Medium	8.3	10.0	11.7
Medium-High	11.7	13.3	15.0

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High	15.0	16.7	

Risk bands for seven categories

Risk band	Lower limit (%)	Mid-point (%)	Upper limit (%)
Very Low		2.50	3.75
Low	3.75	5.00	6.25
Medium-Low	6.25	7.50	8.75
Medium	8.75	10.00	11.25
Medium-High	11.25	12.50	13.75
High	13.75	15.00	16.25
Very High	16.25	17.50	

Measuring the risk of investments

We define risk in terms of projected long-term returns, but in making those projections we cannot simply copy and paste the past. Recent history offers a guide to the future in some respects, yet we have only a very limited supply of realised long-term outcomes – inadequate to fully sketch out their shape.

Instead, we simulate myriads of possible futures. This can be done by first describing an investment portfolio in terms of its allocation to broad asset classes, each represented by generic, diversified market indices.

Then, we generate a great many return paths for these asset classes, by remixing historical index data in such a way as to preserve important features such as cross-correlations and momentum.

As for multi-asset portfolios, we assume quarterly rebalancing.

Finally, we calculate the annualised standard deviation of these ex ante 10-year returns, our measure of portfolio risk.

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