Measuring Commercial Property Risk to Improve Investor Returns

Introduction to risk simulation

Being able to measure asset and portfolio volatility will improve decision making on portfolio composition. In this case study, a risk adjusted approach improved the return on a £100m portfolio by nearly £1 million a year.

Case Study

We ran a realistic portfolio of 10 diverse UK properties though a simulation model[(1)] to see how much risk was reduced through diversification

Fig 1

	RETURN (5 year IRR)	RISK (Standard deviation)	DIVERSIFICATION (Reduction in Std. Dev.)	TAIL RISK (IRR at 5% or 1 in 20)
Average of 10 assets	7.03%	4.93%		-0.75%
Portfolio	7.15%	4.09%	0.84%	1.12%

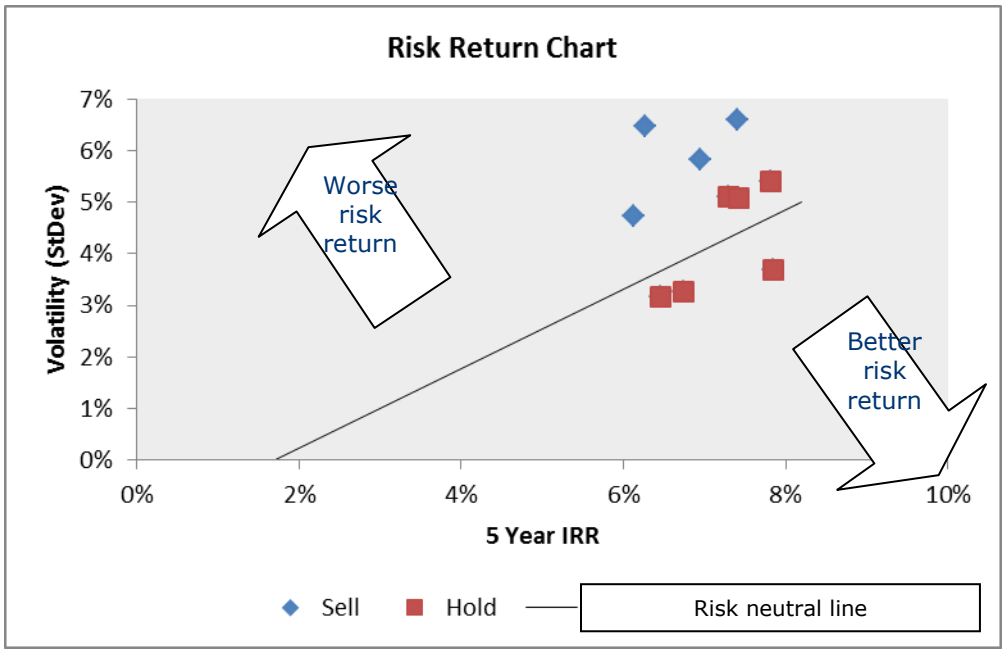
The average building, on its own has a 5 year IRR of about 7% and a volatility (standard deviation or risk measure) of 4.93%. Alternatively we can say that there is about a 5% chance that the 5 year IRR will be -0.75% or less. However, by adding all the buildings to a portfolio, the risk or uncertainty measure falls to 4.09% - a reduction of 0.84%. The tail risk is significantly improved. This is a measure of the diversification benefit of the portfolio.

How much is the diversification worth?

Looking at historical data and today's alternative investment opportunities, investors typically expect about 1.3% more return (over a 5 year holding period) for a 1% increase in standard deviation [(2)] . So the effect of diversification on our model portfolio is to reduce risk by 0.84% or, in effect, to improve risk adjusted returns by 1.1%.

Tactical risk return improvement

For CRE investments, many factors affect volatility (lease events, rent reviews, tenant credit quality, tenant concentration, depreciation, void periods to name a few), so selecting and deselecting assets to make lower risk portfolios is difficult without accurate measures of volatility. The risk and return of the 10 example assets are illustrated below:



Without risk measures, portfolio managers might be tempted to dispose of their lowest returning assets. In this portfolio, by ranking assets by IRR and 'selling' the worst 4, the portfolio IRR increases by 40bps to 7.55%. However, by selling these four, the risk increases by 54bps. In risk adjusted terms the sale would destroy value. But by holding the 6 best assets on a *risk adjusted* basis, the return improves by only 21bps but the risk is *reduced* by 40bps, significantly increasing risk adjusted return. On a £100m portfolio, the difference between these two decisions is worth nearly £1 million a year.

	RETURN (5 year IRR)	RISK (Standard deviation)	DIVERSIFICATION (reduction in Std. Dev.)
Portfolio 10	7.15%	4.09%	
Hold highest IRR 6	7.55%	4.63%	-0.54%
Hold optimal 6	7.36%	3.69%	0.40%

Currently, simulation modelling is the only practical way to measure the uncertainty or volatility of an asset's returns. To manage down risk or volatility and thus improve risk adjusted returns, Portfolio Managers will need practical but sophisticated tools that can model and measure risk.

(1) The analysis is carried out by Radley and Associates using ProMS, a proprietary macroeconomic simulation system for CRE investments and loans. (2) To keep Sharpe ratios constant using an alternative risk free investment of 5 year gilts at 1.7%, the implicit risk reward trade-off is 1.3% of return for every 1% reduction in standard deviation.

Full details and supporting data are available from Julian Goldberg on 0207 7940482