Government Actuary's Department

Investment News

Monthly Bulletin from the Investment & Risk Team

November 2014

Last Month in Brief

In October, expectations of the timing of a BoE interest rate rise were pushed back by lower than expected inflation of 1.2%. Meanwhile, worries of deflation in the Eurozone eased marginally as inflation edged up to 0.4% although unemployment remained unchanged at 11.5% (with that figure significantly higher in countries such as Greece and Spain).

Nationwide Building Society reported that UK house price inflation slowed to 9% pa. Their Chief Economist said that low mortgage approvals, amongst other indicators, imply that the UK housing market is slowing.

Russia announced that it will raise interest rates to 9.5%, from the previous level of 8%, having already increased rates from 5.5% earlier in the year. Russia has struggled to battle inflation during a period of a weak rouble and difficult trading conditions.

The Bank of Japan announced a further expansion to monetary stimulus, increasing its asset purchase programme from ¥60-70 trillion to ¥80 trillion a year. Worries that the economy might dip back into deflation had been fanned by low consumer spending and oil prices. This followed the US announcement that it is ending its own 6-year QE programme amidst improving economic conditions.

Chart 1: Equity Indices

After falls early in October, equity markets rallied later in the month

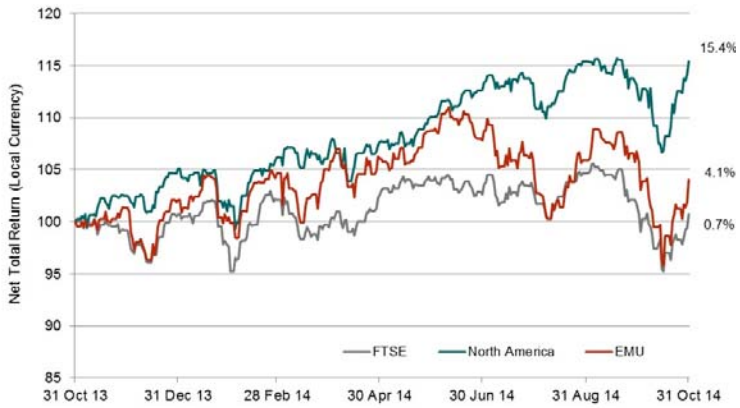


Chart 2: Sterling Credit Spreads

Spreads ended October slightly higher

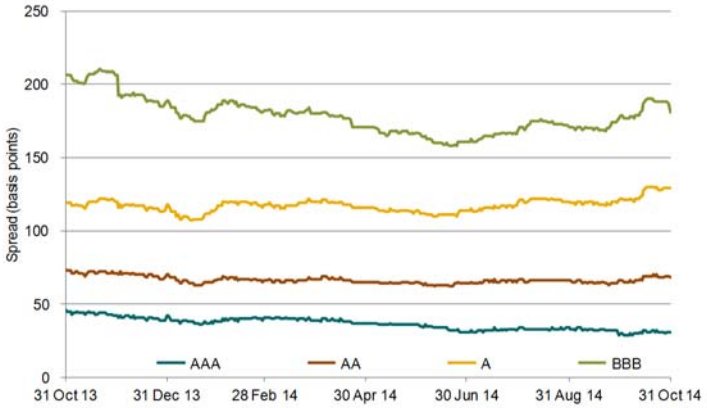


Chart 3: Gilt Yields

Gilt yields ended October slightly lower

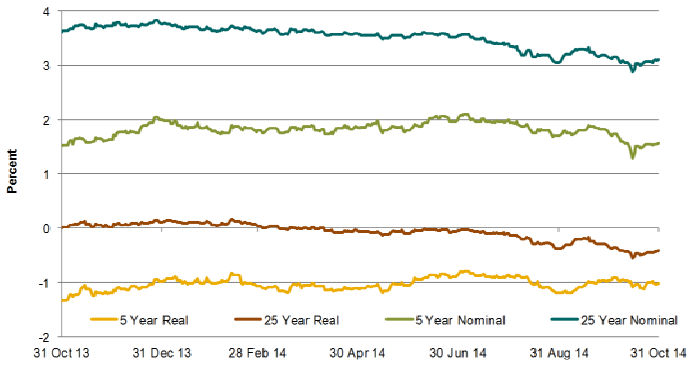
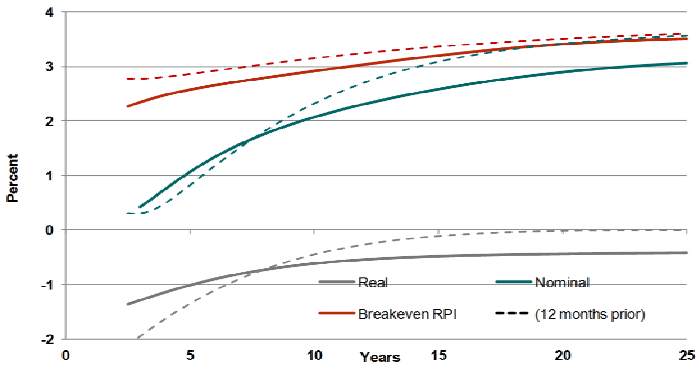


Chart 4: Gilt Spot Curves

Gilt yields remain upward sloping



Source: Financial Times, MSCI, Merrill Lynch Bank of America, & Bank of England

	Latest	Previous		Latest	Previous
CPI increase (annual change)	1.2%	1.5%	**Base rate**	0.5%	0.5%
PPF 7800 funding ratio	87.8%	87.6%	**QE Level**	£375bn	£375bn
Halifax house prices (monthly change)	0.6%	0.1%	**VIX (volatility) index**	14.03	16.31
IPD TR property index (monthly change)	1.7%	0.9%	**$/£ exchange rate**	1.60	1.62

For monthly published indices "Latest" and "Previous" refers to the two most recently published statistics, otherwise numbers are quoted as at the month end.

Government Actuary's Department, Finlaison House, 15-17 Furnival Street, London, EC4A 1AB Telephone +44 (0)20 7211 2601

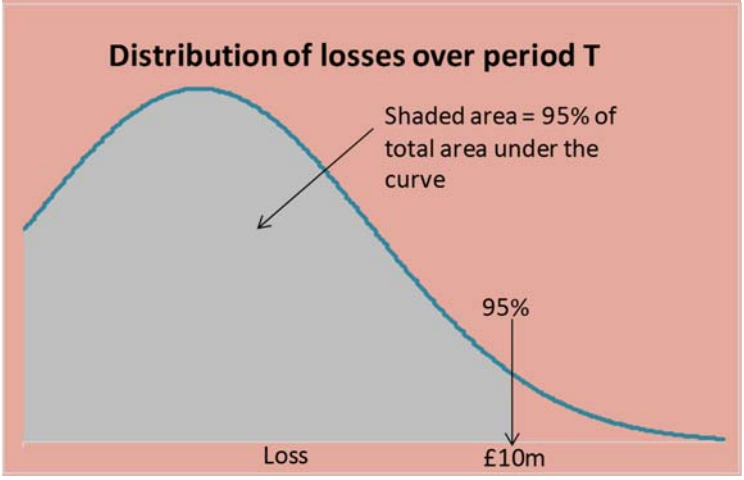
Value at Risk - what is it and is it useful?

Value at Risk (VaR) is widely used as a way of quantifying the risks that organisations are exposed to. It is commonly used to communicate and monitor investment risks but can also be used for other types of risks. However, reliance on it came under considerable criticism following the credit crisis. In this note we explore the strengths and weakness of the VaR metric and in particular its applicability to pension funds.

What is VaR?

VaR's wide ranging use is in part because it provides an easily interpretable risk metric. VaR is the amount that is expected to be lost, for a given probability level, over a fixed period of time. For example, if it was specified that a one-day 95% VaR was £10m then it is expected that, 95 times out of 100, losses over a day will be £10m or less. VaR therefore provides a measure of downside risk in a single number. Box 1 below provides an illustration of the VaR metric.

Box 1: VaR for a given probability distribution of losses



Using VaR

VaR first became widely used by banks in the risk management of their trading books and in the 1990s grew in popularity as a way of aggregating risks across firms. It is also now used as part of some regulatory frameworks for banks and insurance companies. Some pension funds also use the VaR metric in assessing their risks, for example to help understand the extent to which the deficit may increase over a period (such as a valuation cycle). Used by pension schemes in this way, VaR encompasses both sides of the balance sheet and can help give an understanding of the overall magnitude of (investment) risks that are faced (see Box 2). If available, the Pensions Regulator now requests this information as part of the scheme return to provide it with a greater understanding of schemes' risks.

Calculating VaR

There is no standard way of calculating VaR and a lack of observed tail events can make the choice of reliable models difficult. Indeed, many models appeared to understate the likelihood of losses experienced during the credit crisis. More recently, after announcing a $2 billion loss as a result of trading in credit default swaps, JP Morgan restated their VaR, doubling it from US$67m to US$129m after switching between different calculation methods.

This highlights that estimates of VaR from different sources may not be comparable and the importance of choosing a suitable method to calculate any estimate. There are three broad approaches which can be used:

- Historical (based on the historical returns of the constituents of the current portfolio)
- Parametric (typically assuming normally distributed returns)
- Monte Carlo simulation (using more complex distributions and relationships between factors)

However, within each of these there a number of further variations and differences in approach. The choice of approach is often a trade-off between having tractable and transparent calculations, which are quick to implement and run, and the use of more complex relationships, which may better represent real world dynamics.

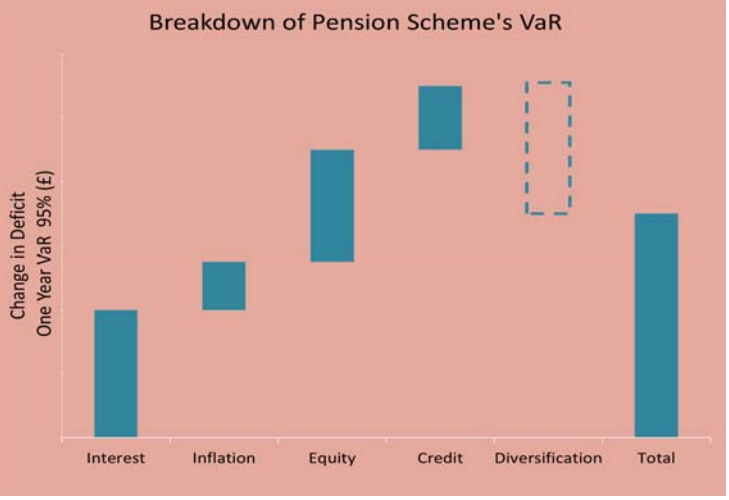
Alternatives to VaR

One criticism of VaR is that it doesn't provide any indication of the size of a loss in the tail (and hence it can lead to perverse behaviours where it is used as a metric to limit risk). Alternative metrics have therefore been developed which address this, such as the expected shortfall.

However, VaR's flexibility along with the relative ease of calculating and communicating it means that its popularity is unlikely to diminish. VaR can be a very valuable metric when it is used with full awareness of its limitations and with other tools. Stress and scenario testing are further methods that can be used alongside VaR to help ensure a fully understanding of risks.

Box 2: Use of VaR by pension schemes

The use of VaR by pension schemes often concerns much longer time periods than typically considered by banks. Monte Carlo models are therefore used to generate thousands of possible future scenarios which reflect the expected characteristics of different asset classes. These can then show how different investment strategies result in different levels of VaR.



Any material or information in this document is based on sources believed to be reliable; however, we can not warrant accuracy, completeness or otherwise, or accept responsibility for any error, omission or other inaccuracy, or for any consequences arising from any reliance upon such information. The facts and data contained are not intended to be a substitute for commercial judgement or professional or legal advice, and you should not act in reliance upon any of the facts and data contained, without first obtaining professional advice relevant to your circumstances. Expressions of opinion may be subject to change without notice.

Contact Information

Colin Wilson
Technical Director
T: +44 (0)20 7211 2672
E: colin.wilson@gad.gov.uk

Matt Gurden
Investment & Risk Actuary
T: +44 (0)20 7211 3498
E: matt.gurden@gad.gov.uk

Andrew Jinks
Investment & Risk Actuary
T: +44 (0)20 7211 2655
E: andrew.jinks@gad.gov.uk

Chris Bull
Investment & Risk Actuary
T: +44 (0)20 7211 2739
E: christopher.bull@gad.gov.uk