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Trusted to make the right decision

Dr Laurence Wormald, head of research at SunGard's APT, discusses new research that illustrates how the right risk analytics can help firms manage their portfolios during this volatile time

In volatile and falling markets, firms need to prove to their investors that they can be trusted to make the right forecasts and decisions. It is the same with risk analytics; in times like these, a best-of-breed model will really show its worth. More than ever, today's asset managers and fund managers need to see behind conventional tracking error (TE) and value-at-risk metrics to discover their exposures to fundamental economic factors.

Background
The volatility of most equities markets increased very sharply during 2008, especially after the events of September 2008. In this synopsis of our recent paper, we consider how the SunGard APT risk models performed during 2008, focusing on the concepts of responsiveness and robustness.

The analysis is based on model forecasts at several different dates during the year, for both short-term volatility (STV) and medium-term volatility (MTV) models. Specific examples for the UK and US markets are considered, with the aim of providing readers a richer interpretive framework when reporting portfolio risk.

The paper demonstrates the extent to which APT models have responded to market changes during 2008, with all risk forecasts increasing markedly. In particular, it shows how the STV models have evolved and have been forecasting increases in short-term tracking deviation and volatility since the beginning of the year. As systematic risk has increased greatly for almost all portfolios, we illustrate how APT's tracking-at-risk (TaR) measure has been an effective forecast of short-term tracking deviation even during the extreme events of the third quarter of 2008.

Methodology
The most effective way to judge the integrity of any risk model is to test the model's forecasts against actual portfolio outturns (out-of-sample testing). APT does this by generating a variety of portfolios whose forecast risks are calculated with a model at time T, and then observing the realised return and risk of each portfolio over a period of time subsequent to T. Other statistics, such as the realised correlation to a given index, may also be calculated from the observed outturns.

Responsiveness is the ability of the models to change adequately over relatively short timescales with the markets in order to provide risk forecasts that are reasonable over the timescales for which the models have been designed. To illustrate this ability, we present forecasts derived from several different

1. Evolution of forecast TE and TaR measures
GBP portfolio – 70 names vs FTSE100
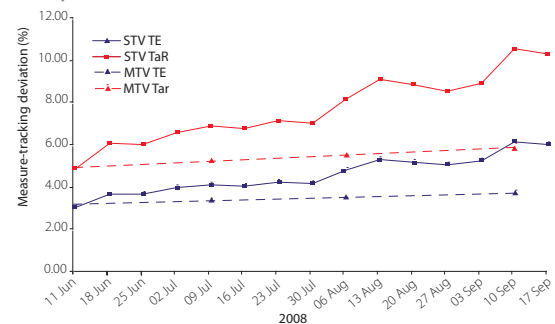
periods during 2008 to show how they have changed, and we also compare forecasts derived from both MTV and STV versions of our models with portfolio outturns in the third quarter of 2008.

Robustness is the ability of the models and portfolio risk measures to provide forecasts that remain valid, even as the underlying market behaviour deviates more strongly from normality. It is worth stressing that APT's approach to modelling does not depend on an assumption of normality – in fact, it is clear that the APT components exhibit significant skewness and excess kurtosis, which makes them reasonable forecasters of the systematic part of portfolio risk even under extreme market conditions. To illustrate this ability we compare forecasts derived from both TE and TaR measures with portfolio outturns.

A case in point
The first APT portfolio example (see figure 1) shows the evolution of different APT forecasts for tracking deviation for a single portfolio. The portfolio is a long-only portfolio of approx 70 UK names, benchmarked against the FTSE100. Forecasts are from APT's WorldBonds model.

Figure 1 shows the evolution of TE and TaR forecasts weekly for this portfolio over the period between June and September 2008.

This demonstrates how both TE and TaR forecasts of tracking deviation in the MTV and STV models have varied over the period. Whereas MTV TE forecasts increased from 3.2% to 3.8% over the period, STV TaR forecasts increased from 4.9% to 10.3%. This confirms that the STV models are much more responsive to short-term volatility than the MTV.

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SunGard APT
T: +44 (0)20 8081 2720
E: ai.solutions@sungard.com
Visit www.sungard.com/apt/learnmore
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