

The stress-testing trident

While stress testing is a much discussed topic, an accepted definition of best practice remains elusive. David Rowe proposes a three-pronged approach

We humans have a difficult time incorporating highly unlikely events into our thought processes. More often than not we either ignore them as too unlikely to be relevant or obsess about them beyond any justifiable degree of concern. Which of these extreme mental states prevails usually depends on whether we have recently experienced something that dramatises a given event. Thus, most people today have an unrealistically high level of concern about the individual risk from a terrorist attack but worry little about being struck by lightning. This attitude prevails even though, for most of us in the industrial world, the odds of injury or death from both these sources are comparably remote. Surely this reaction is induced by recurring news stories of terrorism in action in several remote parts of the world.

Stress testing in organisational risk management is complicated by this human tendency to swing from complacency to obsession and back again. The usual reaction of many to any given stress test is to dismiss the exercise as useless because “that could never happen”. On the other hand, whole organisations can be paralysed by fear in the aftermath of a specific disastrous event. The trick, to paraphrase Kipling, is to “keep your head when all about you are losing theirs”. How then can an organisation incorporate extreme stress scenarios into its decision-making without being whipsawed between complacency and despair?

Discussions with many risk managers have led me to conclude that a comprehensive treatment of stress testing requires a three-pronged approach. The components can be characterised as follows:

- *The market’s greatest hits* – this involves defining

stress scenarios that replicate the relative changes in all applicable market variables for selected historical events. Typical historical events to be included might be:

- The October 1987 stock market crash in the US.
- Britain’s forced withdrawal from the ERM in September 1992.
- Selected dates during the Asian currency crisis of 1997/98.
- The Russian debt crisis and devaluation of August 1998.

The obvious advantage of this exercise is that no-one can defend the position that this scenario could never happen. The big drawback is that the market movements being simulated usually have nothing to do with the vulnerabilities of the current trading positions. While such simulations may alleviate the anxiety of some who lived through the trauma of these events, they represent a scatter-shot approach that is not guaranteed to highlight current worst-case losses.

- *Endogenous stress testing* – this approach involves what I have termed ‘pessimisation’. The idea of this approach – which others call constrained loss maximisation – is to examine the existing portfolio in a systematic way to define its particular vulnerabilities and then construct stress scenarios that exploit these vulnerabilities to the full.¹ Among other things, this type of exercise can reveal cases where traders are systematically ‘selling the wings’ by writing out-of-the-money options. Often this will not become obvious in standard value-at-risk results without analysing the market scenarios that generate losses beyond the 1% cut-off point.

- *Imagination* – the third prong of a comprehensive approach is to use subjective assessment of current socioeconomic and geopolitical conditions to define dangerous scenarios. This requires thinking through both the initial and potential secondary effects of a hypothetical disaster. Like the market’s greatest hits, this approach fails to tailor the scenarios to vulnerabilities in the current portfolio. In contrast, however, it is forward looking and driven by current external conditions. The exercise is also useful in forcing an assessment of secondary implications that may not be immediately obvious. Furthermore, by engaging a wide range of staff from a variety of functions across the institution it can stimulate thought about how to respond. Such forward thinking about consequences and potential responses can facilitate faster reaction in the midst of an actual crisis when speed is of the essence.²

Effective stress testing is a bit like trying to cure the common cold. Like infectious viruses, crises come in too many varieties to allow a single silver bullet solution. Nevertheless, applying all three approaches described here can do a great deal to limit exposure to a crisis and to respond more effectively when a crisis does occur. ■

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¹ See Rowe, D, *Building pessimised scenarios*, Risk January 2006, page 90

² For an excellent recent discussion of imagination-based stress testing, see *Financial Risk Outlook 2007*, UK Financial Services Authority, February 1, 2007. Available at www.fsa.gov.uk/pubs/plan/financial_risk_outlook_2007.pdf