

# Dangerous adaptation: the evolution of risk

*Adaptation is a powerful force that helps ensure the survival of species, but David Rowe argues it also has a dark side risk managers should keep in mind*

**Adaptation is** one of the most powerful phenomena in nature, and is one we tend to regard as favourable: it is the means by which species survive changes – often major changes – in their environments. It is not always a good thing, however. Adaptation can also be a source of strength and resilience for dangerous threats.

In the aftermath of the global financial crisis, considerable thought has been given to what we in finance can learn about systemic risk from other disciplines that study highly interconnected, dynamic, adaptive systems – such as epidemiology, for example, which seeks to understand and combat biological epidemics.

Recent concern about the H1N1 influenza virus is a classic example of the challenges faced by epidemiologists. As in many previous cases, it was similar to known viruses but had mutated to become resistant to existing forms of prevention and treatment.

Capital markets risk managers face similar problems in terms of adaptation. We are not external observers of a distinct and independent system. Risk management is an integral part of the system we seek to control – and controls are a trigger to adaptation for risk-takers, products and markets.

Among other things, this realisation highlights the ultimate futility of attempts to direct financial institutions using detailed micro-regulations, especially when such regulations evolve not over weeks or months but over years. The underlying institutions and systems adapt much faster than such rules and regulations can possibly be updated.

I have previously cited one classic example of financial sector adaptation, namely behavioural adjustments to the introduction of value-at-risk as the standard metric for controlling market risk (*Risk* January 2009, page 99, [www.risk.net/1498102](http://www.risk.net/1498102)). Once traders were constrained by a fairly comprehensive measure of 99% risk, one way to take positions with additional risk – and the associated

expected return – was to sell out-of-the-money options. Since the value of the options did not change significantly in response to daily market moves of up to two-and-a-half standard deviations, they had little impact on the reported 99% VAR figure. In the face of larger black swan events, however, losses could accelerate rapidly as options approached an at-the-money position. This is a perfect example of how controlling one form of risk can cause risk to evolve in other, often more virulent, forms.

The subprime mortgage experience highlights a related issue known as Goodhart's law.<sup>1</sup> One way of expressing this is that when a reliable indicator is embedded in social, economic or organisational policy, it quickly loses its effectiveness as a meaningful indicator. There are numerous criticisms of the methodology used by rating agencies to determine how much subordination was required for a tranche of a subprime collateralised debt obligation to achieve AAA status, and Goodhart's law is one of them: once the agencies published their methodologies, the market began to game them in every way possible. This undermined the ratings' already limited reliability.

A closely related adaptation was the massive increase in the volume of such securities, altering the nature of the market itself. By driving home prices higher, easy financing temporarily supported the idea that lending on the basis of collateral only – rather than the borrower's ability to repay from future income – was an acceptable banking strategy.

While politicians and regulators are busy fighting the last war, it is essential for risk managers to remain alert to the ways markets and institutions are adapting their products and strategies. Ours is a profession in which there are no final victories. Adaptation is the fundamental reason any claims that regulation can prevent a new crisis cannot be taken seriously. Human beings are too ingenious and too much a part of the highly adaptive biological system for such claims to be sustained. As Shakespeare has Cassius say, "The fault ... is not in our stars ... but in ourselves."

Only constant vigilance – and special attention to the risk inherent in the adaptive changes taking place around us – will allow organisations to avoid the worst consequences when the next crisis occurs, as it inevitably will. ■

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<sup>1</sup> The law is named after Charles Goodhart, a former adviser to the Bank of England and emeritus professor at the London School of Economics