In times of complexity, common sense must prevail

By John Kay

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Confidence in the models used for risk management in financial institutions is a casualty of the credit crunch. In this newspaper, <u>Alan Greenspan</u> observed that these models were not complex enough to capture reality. Mr Greenspan is right. But his comment could be mistaken to imply that if only the models were more complex still, if only they incorporated even more aspects of reality, then future disasters might be averted.

This is the wrong answer but it is the conclusion already being reached. As the former chairman of the US Federal Reserve noted, discussions are beginning for Basel III to follow Basel II. This process of refinement will never end. After the next crisis, perhaps earlier, there will be Basel IV. As our grandchildren sit through the credit crunch of 2050, they will doubtless be reading of preparatory discussions for Basel XV.

Almost all quantitative risk management models have a common structure. These models compute the risks associated with a portfolio of assets. The basic inputs to the model are information about actual returns, and about their volatility. But the way these data are treated depends on the degree to which the returns on different assets are related to each other. This last element – the covariance or correlation – is critical. In City lunch rooms, people who a year ago had never heard the word are talking today about correlation.

Every student of statistics learns how the stork population of Sweden was correlated with the birth rate. Storks are attracted to warm rooftops, and warm rooftops imply – well, I do not have to go into details. The message is that correlation does not imply causation.

Only if you understand the process can you begin to assess whether a correlation will, or will not, persist. If new houses are built, the correlation will still hold – more houses, more storks, more babies. But if illness strikes the stork population, the birth rate will not fall. Only information and judgment from outside the model – what we call general knowledge and common sense – enable us to tell when correlations will remain stable.

That does not mean that observation of correlations is useless. Correlations play a central role in risk models because correlation – or lack of it – is the key to diversification. Relative security in a loan book or investment portfolio comes through holding assets with unrelated risks. The problem for the risk manager lies in the modeller's assumption that historical correlations are enduring empirical constants when the going gets tough. Assets whose returns are uncorrelated with each other in placid economic conditions may turn out to behave in very similar ways: related assets may move in different directions. Such breakdowns in statistical relationships brought down Long Term Capital Management a decade ago. In the past few months, many financial institutions have lived through similar experiences.

Structural changes in the environment frequently invalidate historical correlations. Central heating, or the use of loft insulation, may change the nesting habits of storks, and neither birdwatchers nor demographers would necessarily realise the significance of the event.

Sometimes correlations are changed simply by being observed. When private equity was mostly early-stage funding for small businesses, investment risks were largely independent of each other and the general economic cycle. But private equity has now become a large asset class because of the perceived lack of correlation with other securities. And in the process it has become a geared exposure to general share prices. This is Goodhart's law: as soon as reliance is placed on a relationship, the significance of the relationship changes. In markets as in love.

Portfolio planning is an example of how models can illustrate issues but should never drive decisions. The greater sophistication of risk models has widened the gulf between those with

quantitative skills and those with more qualitative insight. Every additional complication increases the division between technicians and managers. That is why the construction of "more realistic" models and more elaborate regulatory rules will aggravate, not relieve, the problems they seek to address.

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