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Myron Scholes predicts 'golden age' for quants

Published online only

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Scholes: quants entering "golden age"

Top quant sees bright future for mathematical finance as it tackles problems thrown up by the crisis

A top quantitative analyst and economics Nobel laureate says the coming years will be a "golden age" for financial modelling as it tackles problems highlighted by the global financial crisis – particularly relating to liquidity, intermediation and the role of the state.

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Myron Scholes, emeritus professor of finance at Stanford University and co-creator of the Black-Scholes option pricing formula, says that because the fundamental assumptions of dominant pre-crisis theory have been challenged, many lines of research are now open to exploration.

"I'm bullish on the future for quants," he says. "One thing about a crisis is that it shakes old opinions and you start learning new things. I hope we do – it should be a golden age for risk modelling and management."

I'm very bullish on the future for quants - it should be a golden age for risk modelling and management

In particular, Scholes singles out the returns from market-making and client business – a concept he dubs 'omega' – as an area in which quants can add value. "The most important thing in the coming years will be

intermediation – and modelling is a big part of that. How much capital do we want against a given strategy? What kind of capital structure should we have? How can we risk-manage dynamically, taking account of changes in the risk factors, changes in the risk appetite, the cost of adjusting the portfolio?

"The effect of intermediation is to correct prices, so it brings mean reversion into the processes – which one can attempt to capture with models. The idea is that you have a belief in where prices are going to revert to, and how fast they will do so, and this determines strategy. For example, if you have a lot of volatility you might want to go into your position sooner because mean reversion might occur more quickly," he says.

However, he warns against overreliance on models, and concedes they had a role in the crisis. The example he uses is the 'gaming' of structured credit ratings, through which issuers did the bare minimum required to obtain a AAA-rating.

"The rating agencies' model became an inventory transition mechanism. Their models did not take account of the fact that others would reverse-engineer their assumptions and place just enough good mortgages in the pool to achieve the desired rating. They didn't realise people would figure out how to make the AAA grade and game them.

"One of the problems we have is that we have to make assumptions about what the equilibrium will be and how that changes dynamically. You look at the economics – the capital flows in the market that determine the dynamics. That's where the expertise comes in – your technology shouldn't be a black box," he says.

But the common-sense reaction – embracing intuition, and rejecting the use of modelling and quantitative techniques – is also flawed, he argues.

"A model is a description of reality, so if it doesn't reflect reality then it's not going to work. If you think the model error is basically second-order and it's not, then the terms you neglected are going to come to the fore and the model will fail. That doesn't mean you're going to do any better with intuition – presumably you used your intuition in picking the model, and intuition can fail, too," he says.

An interview with Scholes, in which he discusses this issue at greater length, as well as [how changes in regulation will affect markets](#), the computational limits of quantitative finance and [the collapse of his hedge fund, Long Term Capital Management](#), will appear in the September issue of *Risk*.

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Will US regulators back down?

US regulators proposed earlier this year that margin requirements for uncleared swaps should apply to non-US operations of US banks – a move that some congressmen have complained will put US banks at a competitive disadvantage overseas. Regulators are now working to finalise their rules – will they back down?

- ☐ Yes – political pressure to ensure US banks are not at a competitive disadvantage is too great
- ☐ No – they will carry on regardless
- ☐ No – European regulators will apply similar rules

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