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Robert Merton

Use more derivatives to cut risk **INTERVIEW Page 12**

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The appliance of financial science

Robert Merton, Harvard economist and partner in the failed LTCM fund, tells Gillian Tett that managers must make more use of derivatives

The Monday Interview
ROBERT MERTON

When Robert Merton invented the "Black-Scholes" formula back in the early 1970s, he never bothered to file a patent for the idea.

For though the formula – created by the Nobel-prize-winning economist and two other academics – enabled the highly profitable world of derivatives to explode, "it never occurred to [us] not to put the Black-Scholes formula into the public domain", recalls the professor of finance at Harvard University, with an impish grin that belies his 62 years.

"We didn't really look for commercial opportunities [in quite the same way]," he adds. Indeed, when Texas Instruments, the electronics group, subsequently launched a best-selling calculator that incorporated the model, it even refused to provide free samples to the academics.

Three decades later, however, people such as Prof Merton are becoming more savvy about getting their just rewards – and on a bigger scale than free calculators. Since Mr Merton invented Black-Scholes, together with Myron Scholes and Fischer Black, he has come to be viewed as a founding figure of the modern financial world. Indeed, some bankers argue that the Black-Scholes theory, which provides an easy way to value options, has had as much impact on finance as the discovery of DNA has had on medicine.

But aside from options theory, Prof Merton has also won academic acclaim by producing a host of other ideas, such as a model for predicting credit defaults that has become highly influential in the City and on Wall Street in the past decade. "Some of my ideas found their way into practice quickly and some only after a considerable lag." Prof Merton notes.

Putting panic in perspective: LTCM as a learning experience

The spectacular implosion of Long Term Capital Management in 1998 has come to symbolise the perils of excessive speculation.

The causes of the hedge fund's collapse, though, are widely misunderstood, says Robert Merton. While some observers blamed events on the faith that the fund placed in financial models – founded on a belief in rational markets – Prof Merton says the real problem was the way that LTCM's counterparties behaved.

When the fund started to suffer losses, the counterparties did not behave as proponents of finance science – or rational markets – predicted. Instead, they sold assets in a seemingly indiscriminate panic, triggering market swings more violent than anything Prof Merton expected.

In that respect, the events were thus a brutal learning experience – not just for Prof Merton but Wall Street too. But that may also be a boon. "The real story is not what

happened to LTCM in 1998 but what happened to Amaranth later – or rather, what didn't happen," Prof Merton says.

"Just think about all the crises that haven't happened, say with the downgrade of General Motors and Ford or the collapse of Amaranth. Look at how much more resilient the system is now – how institutions have adjusted and we have learnt to deal with some of these crises which are not really crises any more as a result."



The son of Robert K. Merton, a prominent social scientist, he apparently displayed an interest in number crunching from a young age. According to Roger Lowenstein, the author of *When Genius Failed*, "the younger Merton... showed a knack for devising systematic approaches to whatever he tackled. A devotee of baseball and cars, he studiously memorised first the batting averages of players and then the engine specs of virtually every American automobile."

When he began studying economics at university, he would spend hours at brokerages watching how the markets moved. He transferred to the Massachusetts Institute of Technology in the late 1960s, just as the field of finance was gaining acceptance as a mathematical discipline.

Alongside his academic work, he has also been seeking ways to translate his esoteric concepts into profitable practice. Not all of these endeavours have been a success: in the late 1990s, Prof Merton became a partner in the Long Term Capital Management hedge fund, which had \$100bn in estimated trading positions before imploding in dramatic fashion (see right).

However, after that shocking episode - which created losses for Prof Merton and the other partners - he created a financial consultancy, IFL, with Roberto Mendoza and Peter Hancock, two Wall Street luminaries who used to

work at JPMorgan. And now this trio has upped its ambitions by linking up with another consultancy called Marakon.

Their hope is that the merged entity, known as Trinum, will allow IFL's brainpower to reach a wider pool of clients in a more practical manner. "What we are basically doing... is taking all these ideas from finance science that have been already proven in the financial markets and then apply them strategically to compa-

nies, to whole firm risk, and even country risk," he explains.

In practical terms, this means IFL is now promoting some radical ideas about how companies should manage their finances. Until now, Prof Merton argues, most compa-

Robert Merton: 'Derivatives are like anti-lock brake systems - they can make things safer'

Charlie Bibby

nies have been extraordinarily inefficient in their use of capital, because they have not worked out which risks they have a comparative advantage in handling - and which they do not. Managers have wasted capital by inadvertently assuming risks they are ill-suited to hold, such as property exposure (via real estate assets) or markets (through pension holdings).

However, if companies would only shed that risk, or outsource the management of it, they would have more capital to support growth, Prof Merton argues. And one of the best ways to do this, he concludes, is to use derivatives. "The major advantages of using derivatives are that they are efficient in transferring huge amounts of risk. They can be customised, and policies implemented with them [are] reversible and non invasive," he enthuses.

Such sentiments might horrify some corporate executives. Ever since Wall Street suffered a series of derivatives scandals in the 1990s, the "D" word has been viewed with deep distrust in many business quarters. And Prof Merton's evangelical zeal for the product might seem particularly controversial after the media blamed derivatives in part for the implosion at LTCM.

But Prof Merton insists that derivatives have been grossly misunderstood: if things go wrong, it should not be blamed on these instruments per se, but on the way they are used. And he insists it is entirely possible - desirable, in fact - for institutions to use them for benign purposes that reduce exposure to risk. "Asking whether the world today wants to use derivatives or not is a bit of a meaningless question - it is like asking whether we want to use cars. They are an integral part of the financial system," he says.

"Derivatives are like anti-lock brake systems in a way - there is no question that they can make things safer, but only if people choose to use them that way. Often they don't - they might choose, for example, to drive faster in worse weather. Often we have chosen to use these tools not to decrease risks but to increase the benefits of taking the same risks."

Will business leaders succumb to these ideas? Marakon's strong franchise among blue-chip clients and IFL's Nobel-prize-winning name should help open doors. And Prof Merton, Mr Hancock and Mr Mendoza have already made a striking convert to their cause.

In the past year IFL has been designing a new pensions system for Philips, the electronics group. It uses derivatives to customise an individual's long-term investments - fine-tuning them to whatever level of pay-outs, contributions and risk profile he or she prefers.

The scheme, which is neither a standard defined contribution system nor a defined benefit plan, has been adopted by Philips' top 400 executives in Europe and will be rolled out across the European operations this year. However, Prof Merton hopes it can then spread to other companies. And behind the scenes he and his colleagues are now drawing up other schemes to help companies manage capital or fight off the private equity threat.

"[Applying finance science to companies] is a fascinating intellectual challenge," enthuses Prof Merton. "But it is obviously also a commercial opportunity."