National University of Singapore

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The financial innovator

Robert Merton talks to **Vikram Khanna** about financial innovation, risk and crises

NOBEL laureate Robert Merton is known to be brilliant, but this fast-and-straight-talking economist must also be one of the more colourful members of his profession. A risk taker in real life, he is also known to be a serious poker player and a fan of drag racing. He has been involved in a number of business ventures – including the hedge fund Long Term Capital Management, which closed in 1998 – and has been interested in the stock market since the age of 10. He won the Nobel Prize in 1997 for his pioneering work – together with Myron Scholes and the late Fischer Black – on the pricing of stock options and derivatives. Few economists have had as profound an impact, on Wall Street at least, as this trio.

But after the global financial crisis of 2008/09, a lot of what they pioneered and championed has come under attack. Many economists suggested that financial innovation was overrated, or worse. The legendary investor Warren Buffet described derivatives as "financial weapons of mass destruction". Former Federal Reserve Board chairman Paul Volcker famously declared that the only worthwhile financial innovation he could think of was the ATM. In a recent Raffles Conversation, Benjamin Friedman, professor of political economy at Harvard University, told BT that the way people in the financial sector talk about mortgage securities, you would think that 30 years ago, Americans were living in tents.

Comments such as these are clearly troubling to the combative Mr Merton. "I am not trying to be defensive, but a lot of nonsense has been said," he points out during our conversation at the NUS Business School, which had invited him to Singapore.

"We have had a huge amount of innovation that has done a great deal to expand global financial markets. People now routinely invest around the world. Just look at the growth of pension funds and that sort of thing – the progress has been enormous. Robert Vogel and Douglass North who won the Nobel Prize for Economic History showed how important the financial system was to economic development and growth. Countries with well functioning financial systems were the ones that grew and developed. The financial system is not a side show – it's critical. So, when central bankers make comments like there hasn't been an innovation in finance since the ATM, that's bizarre. All central banks use interest rate swaps. The interest rate swap market is the biggest swap market in the world – and by the way, it worked perfectly well throughout the global financial crisis. In a beautifully simple and elegant way, it solved one of the biggest problems that banks faced – the disintermediation between lending long at fixed rates and borrowing short. That by itself is an enormous innovation."

Even credit default swaps (CDS) are not intrinsically flawed, he adds, referring to the financial instruments that companies can buy to insure themselves against credit defaults. The mis-selling and speculation in these instruments bankrupted the insurance company AIG, but Mr Merton claims that this was more the result of institutional problems within the company itself – such as a lack of oversight – rather than any flaws in CDS, which provide a real benefit. "It's very important to protect yourself against credit risk – and not only if you're holding somebody's bonds," he points out. "If I'm an engine manufacturer doing business with airlines and I have to extend credit to them, I'm enormously exposed. I mean I'm an engine company, what am I doing in the credit business? These are real risks that CDS can take care of. But these things are not toys, they are not for speculators, they are insurance. You would not rule out insurance contracts right? So it's an issue of how the business is done and how it's monitored."

"Of course there are things you need to fix. There were a lot of fools and knaves, and mistakes. But you cannot have a modern financial system without structured products. When people say derivatives were the problem, we don't need such fancy things, that's a joke. Derivatives are ubiquitous. The system cannot function without them. No financial institution can operate without them. No central bank can operate without them. So we need to cut through all this stuff and get to the real issues."

Good old days weren't that good

To really understand the progress in finance, you have to go back at least 40 years, to the 1970s, says Mr Merton. That was when the innovation started. He says: "You sometimes hear people talk about the good old days. But I am old enough to have been there in the good old days and I know they weren't that good. Just to remind you about what happened in the 1970s: we had oil go from $2.50 to $30 a barrel for the first time. We had the Bretton Woods currency system which had been in place since 1946 come apart. We had double-digit interest rates in the US which hadn't been seen since the civil war. We had double digit inflation and high unemployment."

"As for the US stock market – remember we had double digit inflation – it fell about 50 per cent in real terms from 1973 to 74. Yes, we survived the 1970s and went on to flourish, so it doesn't look all that bad now. But at the time, we had no freaking clue what was happening, no one knew how to solve this. Also, in the old days, there was something called Regulation Q, which put a ceiling of 4 per cent on deposits when US government bonds

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were offering 10 per cent. How much do you think people were putting in banks to be lent out? In the old days, you couldn't get mortgages at any price."

Mr Merton points out that it was in response to the risky environment of the 1970s that the financial markets created various risk management and mitigation tools, including financial futures and options – which led to the adoption of the pioneering research that he did with Messrs Scholes and Black. A national mortgage market was also created for the first time.

As for the financial crisis of 2008, he suggests that a lot of its causes are still unclear – overly lax central bank policies, over-ebullient expectations of real estate prices, the existence of government mortgage agencies that got special treatment and bad luck – all of those played a part, but they're not the whole story. "What did the crisis centre on? Did it centre on the exotic financial stuff? A lot of it was in the mortgage market. That wasn't really exotic. We've had a mortgage market since the 1980s, it's been functioning around the world. And structuring has been going on and will need to go on. Let's have no illusions: You cannot have a modern finan-

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PHOTO: ARTHUR LEE

ROBERT C MERTON

School of Management Distinguished Professor of Finance, Sloan School of Management, Massachussetts Institute of Technology (MIT) since 2010

Winner of the Nobel Prize for Economics, 1997

Born: New York City, July 31, 1944

1966: BS in Engineering Mathematics, Columbia University

1967: MS California Institute of Technology

1970: PhD in Economics, MIT

1970-98: Served on the finance faculty of MIT Sloan School of Management

1988-98: George Fisher Baker Professor of Business Administration, Harvard Business School

1998-2010: John and Natty McArthur University Professor, Harvard Business School

1997: Awarded Nobel Prize in Economic Sciences for a new method to determine the value of derivatives

Co-Founder, Management Committee, Long-Term Capital Management, LP 1993-1999

Co-Founder, Chief Science Officer, Integrated Finance Limited 2002-2007

Past President, American Finance Association

Member of the National Academy of Sciences and fellow of the American Academy of Arts and Sciences

Serves on the boards of several companies, funds and educational institutions

cial system without structured products."

He acknowledges, though, that some financial instruments, like derivatives, were misused – "absolutely, just as any tool can be misused". But that doesn't mean they are intrinsically bad, he adds. "Obesity is caused by food. So should we get rid of food? I'm being absurd, but you get the point."

As for what we have learnt from the crisis, one big lesson is that financial institutions and companies need to have senior managements that understand their businesses. "They do not have to be quants, Phds or rocket scientists, but they need to understand, for example, the following: If you are on the risk committee of a bank board and the head of the mortgage department comes in and says to you, we have the same mortgages that we had last quarter, we haven't added to them and they're all performing – everybody's made their last interest payment, therefore the price on the risk is unchanged. You then say to him, 'look what happened to the price of real estate in the last quarter, it's down 6 per cent. So what you just told me can't be true'. This is one of the basic things about credit: when real estate prices go down, the same mortgage loan – even though it hasn't defaulted – goes down in value because it's become more risky. Senior managements need to have the knowledge base to understand things like that."

Risk-taking and fraud

To what extent were reckless risk-taking and fraud responsible for the financial crisis? "A lot of people say, let's just get rid of the fools and knaves and life will get better," says Mr Merton. "But the problem is that we create a false confidence when we say it was all about the fools and the knaves. There are also a lot of structural things we need to understand – for example, about the trade-offs between risk and safety and how they work in real life.

"I often get asked, have derivatives made the world safer? That sounds like a good question, but it's not the question you should ask. The question you should ask is, have they made us better off?"

He illustrates what he means with an analogy. "In my part of the world, we have a lot of snow. So if I have a four-wheel drive car, is it safer to drive through snow than a two-wheel drive? Yes. But now suppose I tell you that there were big sales of four-wheel drives over the last 15 years. And then you ask me, have four-wheel drive cars made driving safer? I look at the accident data and it shows that we have the same number of accidents per passenger mile as we had before. So my answer to you would be, no, four-wheel drive cars have not made driving safer. So what's going on?"

"If people continue to drive the same way as they used to before there were four-wheel drives, the answer would be yes, driving would be safer. But when we are given things that make us safer, we often use them to do things that used to not be safe. When you had a two-wheel drive, and you went out in the snow, you drove slowly. But now you have a four-wheel drive, you drive faster and in deeper snow. There was a risk that was unacceptable before, but is acceptable now, because of a new tool. It gives you a benefit, but it's not safety. Once you see that, you realise that this focus on safety, as if that was all we should care about, is misplaced. If you were only focused on safety, you wouldn't be here; you wouldn't have left your home today. That's what I mean when I say you have to ask the right question. The right question is: have derivatives made us better off. That's the question you should ask about the four-wheel drive too."

Safety is also sometimes at odds with innovation, he points out. "Suppose you innovate and develop a train that can go at 360 miles (579 km) an hour. If the tracks can only support a train that can go at 200 miles an hour, you'd be crazy to run it at 360. But if you say let's keep it absolutely safe, we can't take any risk, the only way you can do that is to keep the speed limit to 200. But then what do you get for your innovation? Nothing."

All innovation entails some risk, he points out. This is exacerbated by the fact that the infrastructure to support innovation always lags, which is also true of financial innovation.

"Everything in life, individually or socially, is a trade-off. We determine the risk levels we're willing to tolerate. We have to understand that structurally, that we can't eliminate crises, we're always going to have crises, because we're always going to move to the margin we're comfortable with, so there are always going to be risks. Does that mean I am being blasé about it? Absolutely not. We want to do the forensics. We want to understand what went wrong. But armchair statements like let's go back to the good old days, or let's just get rid of all the bad guys and life will be fine, are not meaningful. Sure, the fools should be fired, and the knaves should go to jail. We all agree on that. But then what next? We need to realise that there are structural problems and they're a part of life; even if everybody was totally ethical, dedicated and hard-working, disasters can still happen."

The most important thing, says Mr Merton, is to recognise what economic reality is about.

"The first insight you should have if you're serious about any economic issue is that there are no corner solutions – all the things that are all good and have no problems have been done. All the things that are all bad, we don't do. So, reality is all about trade-offs. Once you recognise that, the discussion changes to what are the best trade-offs, rather than safety first at any price. That's not reality, we don't behave that way individually or collectively. It's also not the optimal answer. So when you start with looking at trade-offs, you develop the mindset to ask the right questions."

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