News Briefs

Nobel Laureate@Rotman

Robert Engle, who received the Nobel Prize in Economic Sciences in 2003 for his work in methods of analyzing economic time series with time-varying volatility, spoke in the *Rotman Integrative Thinking Seminar Series* on February 16. Engle is the Michael Armellino Professor of Finance at New York University's Stern School of Business and the Chancellor's Associates Professor of Economics at the University of California.

"Risk evaluation is at the core of activities in financial markets," he began. "Investors assess expected returns of an asset against its risk, and banks and other financial institutions would like to ensure that the value of their assets does not fall below some minimum level that would expose them to insolvency." Because such evaluations cannot be made without measuring the volatility of asset returns, Engle developed improved methods for carrying out these kinds of evaluations.

"Statistical models of asset returns can only explain a fraction of the variation from one day to the next," he says. "Most of the volatility is thus embedded in the 'random-error term' – in other words, in the model's forecasting error." In standard statistical models, the expected variance of the random error is assumed to be constant over time. "Obviously, this is far from capturing the large variations in asset returns." Engle assumed instead that the variance of the random error in a certain statistical model, in a certain time period, systematically depends on previously-realized 'random errors', so that large (small) errors tend to be followed by large (small) errors. "In technical terms, the random variable displays 'autoregressive conditional heteroskedasticity' (ARCH)." Engle demonstrated how ARCH models could be estimated and introduced a practical test for the hypothesis that the conditional variance of the random error is constant.

In subsequent work, he and his colleagues developed this concept in several different directions – the best-known of which is the generalized ARCH model, 'GARCH'. "Here, the variance of the random error in a certain period depends not only on previous errors, but also on the variance itself in earlier periods. This development has turned out to be very useful." GARCH is the model most often applied today, he added.

In addition to their use in asset pricing, ARCH and GARCH models have also been applied in other areas of financial economics. "The pricing of options and other derivatives, where the variance of the underlying asset is a key parameter, is an obvious area of application," says Prof. Engle. These models have also become popular tools in modern risk management operations.

In addition to ARCH, Prof. Engle's research has introduced some of the most influential concepts in modern econometrics, including Cointegration, Weak Exogeneity, Band Spectrum Regression, Common Features, Autoregressive Conditional Duration (ACD), and, most recently, the CAViaR model.

by Karen Christensen

Robert Engle receiving his Nobel Prize from Carl XVI Gustaf Folke Hubertus, King of Sweden.

Awards for Excellence in Research and Teaching

A corporate Finance professor and a research leader in Marketing were the 2005 winners of the Rotman School's **Roger Martin and Nancy Lang Awards for Excellence in Research and Teaching**. Prof. **Jan Mahrt-Smith** received the award for excellence in teaching, while Prof. **Sridhar Moorthy** took the award for excellence in research. The Awards were established in 1999 by a generous donation from Dean Roger Martin and his wife, Nancy Lang. Their purpose is to recognize and encourage excellence in the research and teaching activities of Rotman faculty members.

Prof. Mahrt-Smith joined the Rotman School as an assistant professor of Finance in 2002. He has taught in the MBA and PhD programs, including the first-year Finance course in the Full-Time MBA program, winning several teaching awards for his work, including the Professor of the Year Award. He has also been at the forefront of bringing innovate technological teaching tools to the classroom, and is well known for his regular participation in student activities such as MBA Orientation and fundraising events. Previously, he was on the faculty at London Business School.

Currently on a research sabbatical in India, Sridhar Moorthy is the Manny Rotman Professor of Marketing at the