Clive Granger and Robert Engle share the 2003 Nobel Memorial Prize in Economic Sciences Nobel Prize for their discoveries in the analysis of time series data. Time series data are sequences of numerical observations over time, such as the levels of stock prices each day or the levels of national income each year. Granger and Engle's work has fundamentally changed the way economists think about financial and macroeconomic data.

Clive Granger's great breakthroughs concerned the relationships between different financial or economic variables over time. He showed that traditional statistical methods could be misleading if applied to variables that tend to wander over time without returning to some long-run resting point. He also demonstrated that many variables display similar long-run patterns that can be exploited in statistical analysis. Combining several of these variables can create a joint variable that returns to a resting point, allowing traditional methods to be used. For example, economic forces such as uneven technological progress cause consumption and income to grow over time, but other economic forces, such as constraints on budgets, make them follow similar paths ("Cointegration"). This discovery not only led to significant breakthroughs in statistics and macroeconomic forecasting, but also to an important reconciliation between macroeconomic theory and data. Clive Granger also developed a formal statistical notion of causality based on which variables help to predict other variables. His discovery is widely used and is commonly known as "Granger Causality."

In addition to his joint work with Granger on cointegration, Robert Engle's most important contribution was his path-breaking discovery of a method for analyzing unpredictable movements in financial market prices and interest rates. Accurate characterization and prediction of these volatile movements are essential for quantifying and effectively managing risk. For example, risk measurement plays a key role in pricing options and financial derivatives. Previous researchers had either assumed constant volatility or had used simple devices to approximate it. Engle developed new statistical models of volatility that captured the tendency of stock prices and other financial variables to move between high volatility and low volatility periods ("Autoregressive Conditional Heterskedasticity: ARCH"). These statistical models have become essential tools of modern asset pricing theory and practice.

Clive Granger joined the UCSD faculty in 1974 and retired in 2003. He is now a Professor Emeritus at UCSD. Robert Engle joined the UCSD faculty in 1975 and retired in 2003. He now holds positions of Professor Emeritus and Research Professor at UCSD, and of Professor at the Stern School at New York University.