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FINANCE & ECONOMICS

Economics focus

Soft science no more
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This year's Nobel prize shows how far number crunchers have come in economics

ONCE, a beautiful turn of phrase would take you a long way in economics. From Adam Smith to John Maynard Keynes, economists were content to put their theories and ideas into (mostly) English prose, and leave it at that. Their big, breezy thoughts made great, but imprecise reading. Contradictions were glossed over. So prolix was Keynes, for example, that he is thought to have said something at least once.

This will no longer do. Since 1945 or so, practitioners of what was once called “political economy” have become more demanding. They sought to test their grand thoughts against the hard facts of the real world. Incomes, interest rates, and prices of all sorts could be measured. Did they behave as theory supposed? National accounts, the detailed measures of GDP, were just being created, at Keynes’s behest. But economic data were, and still are, messy; analysing them even more so. It took decades to develop the tools to detect and measure economic relationships with much certainty.

This year's Nobel prize has gone to two economists who epitomise the rise of statistical techniques: Robert Engle, an American economist at New York University, and Clive Granger, a Briton at the University of California at San Diego. They have crafted some of the most sophisticated tools to analyse economic data. Their contributions, developed during the 1980s, deal especially with “time-series” data: share prices, household consumption, inflation—anything, in fact, that changes over time, and thus poses difficulties for older forms of statistical analysis.

Poets and plumbers

The Nobel committee seems to be highlighting the wide range of ideas and skills that comprise modern economics: a healthy equilibrium, you might say, between poets and plumbers. Last year one of the two winners was a psychologist whose findings contradict many of the assumptions of economic theory. This year the plumbers were back. Only three years have passed since James Heckman and Daniel McFadden were also honoured for sharpening econometrics, the statistical methods with which economic data are analysed.

Mr Engle and Mr Granger have crafted techniques that demand even greater virtuosity at maths, but which are nevertheless crucial in separating wheat from chaff. Mr Engle's work has helped build the foundations for measuring and avoiding myriad types of risks in the modern economy. He has studied the volatility—the severity of swings—of time series ranging from inflation to the prices of securities. Anyone who watches the stockmarkets knows that they undergo periods of wild adolescent swings as well as times of geriatric languor. Until Mr Engle came along, people interested in such things—financial
types, mostly, but also regulators—used crude measures of historical volatility, looking back over a year, say, to see what the average of the swings was. They would then use this as a gauge of likely future volatility.

Mr Engle's approach, ARCH (for autoregressive conditional heteroscedasticity, should you insist on knowing) gave researchers the power to test whether and how volatility in one period is related to volatility in earlier times. There often is a link, as casual observation suggests. After several days of stockmarket upheaval, there may be several days of calm. A 3% rise or fall in shares is often heralded by increasing volatility, much as an earthquake is preceded by tremors. Mr Engle's high-powered maths has made market risk easier to forecast. Thus banks and investors who use "value at risk" techniques to analyse their portfolios owe much to Mr Engle. So does the Basel committee which is drawing up new rules for banks' capital requirements.

Mr Granger's research was aimed more at coming to grips with longer-term swings in economic growth, inflation and currencies than with shorter bouts of risk and volatility. Macroeconomic data often share some common features. GDP per head, for example, has tended to grow over time (at least for as long as it has been reliably measured). But the "trend" rate of growth discussed by forecasters—and, yes, by journalists—is never as fixed as they make it seem: it can be influenced by shocks like rising oil prices or wars.

This may obscure deeper relationships hidden in the data, posing tricky problems for statisticians. Using standard statistical tools—derived from things that do not change much over time, such as the distribution of people's heights—can be misleading. An economist using these tools might conclude that a casual relationship existed where none really does, and thus be fooled by a statistical mirage.

Mr Granger devised a clever solution to this, called co-integration. He made use of the notion of economic equilibrium—the idea that variables tend to move towards particular values, and thus in a predictable direction. He found that when two sets of economic data are compared, for example inflation and exchange rates, they can often be treated with standard techniques. In collaboration with Mr Engle, he worked to create tests for economists to ensure that they were getting reliable results when making such comparisons.

Despite these sophisticated techniques, which economists now apply as a matter of course, the analysis of economic data remains messy. "Driving a Mercedes down a cow-track" is how Thomas Mayer, an American academic economist, once described the application of fancy tools to real-world phenomena that are not easy to model, much less to measure.

Even so, the place of econometricians at the centre of economics is now confirmed. Indeed, there now seems to be a dearth of the grand theorists of days past. Specialisation—to use an economists' term—is the order of the day. But then a good plumber is in greater demand than any poet.