

Was Galileo a Scientist?

The shake up in economics in recent years has had the good effect of encouraging perceptive economists to explore the meaning of knowledge. How do we know the things we claim to know about the economy and what is the basis of the scientific method we claim to follow? The results of all such explorations have inevitably proved most damaging to current economic practice. It turns out that most of what we do, both theoretical and empirical, is based on the thinnest of tissues and cannot stand up to any critical examination. Our theories are based on assumptions we know to be silly and virtually all of our empirical work violates the conditions required for its validity. This has led some critics such as Blaug (1980) and Leamer (1978) to argue for virtually unattainable research programmes. They would continue to insist on the falsifiability of all preferred hypotheses. As soon becomes clear, however, a convincing standard of falsifiability is unattainable with the current techniques of investigation.

Donald McCloskey (1983) has recently gone further to suggest that falsifiability is unattainable under any circumstances and that the distinction drawn between the social sciences and the physical sciences is meaningless.

All knowledge is ultimately based on intuition and the ability of the investigator to make a persuasive case. He makes the case for a reinstatement of rhetoric - which was given a bad name by Plato - and suggests that we need a rhetoric of economics. Economists should not try to be "mechanistically scientific"; rather they should be honest, meticulous and persuasive. This line of argument has now been taken up by Richard Blandy in his article "Soft Science" in the December 1985 issue of the Economic Record.

Blandy argues that the scientific programme is a masquerade; falsifiability is an impossible dream; all theory is essentially grounded in a personal bias. He cites Lakatos who argues that all research programmes are built around a "hard core" of "beliefs about the world, which contains untestable metaphysical propositions about what is good, right, proper, important, just, beautiful and so on." He argues further that all theories, scientific and otherwise, prevail on the basis of rhetoric and that this has always been the case. Ideas prevail by appeals to authority, to elegance of presentation and, in the case of economics in the current era, to mathematical rigour.

Blandy cites examples from history of scientific programmes which came to be accepted because of rhetoric.

He argues that Gallileo "lacked the necessary knowledge to explain why the Copernican view of the world was accurate". "He was compelled to resort to irrational means to build support for the Copernican view such as propaganda, emotion, ad hoc hypotheses and appeals to prejudices of all kinds". Among other things, Galileo was persuasive because he wrote in Italian rather than Latin; because he stamped his ideas with the seal of new approaches as opposed to discredited convention and because he exhibited style and a sense of humour. Blandy also cites Darwin, arguing that his theory of evolution has no predictive content subject to falsifiable testing. If falsifiability were made the criterion for scientific knowledge, Darwin could not be considered a scientist.

Blandy argues for the reuniting of imagination, vision and intuition with empirical work and theorising in the development of economics. He suggests that the purely mechanistic mathematical approaches currently in vogue are basically incompetent to deal with the nature of the economic world. They may just succeed in giving a reasonable approximation during brief periods when the world is relatively tranquil and there are no substantial changes in values and aspirations. However, human society is dynamic and it is typically characterised by just such clashes of values. We must therefore bring to bear our imagination so as to be able to

Nonlinearities in econometric and statistical models are playing an increasingly important role; this has not been the case in the past. This is due to the fact that advanced desktop software is becoming easily available. It is also a fact that the statistical techniques used in both estimation and specification tests are biased towards linearity (Salmon and Wallis (1982)).

"The fact that the best estimator of a parameter is nonlinear should no longer be regarded as a deterrent to employing that estimator" (Harvey 1985). Accordingly, an examination of nonlinear estimators and their properties is important for econometricians, policymakers and all those involved in the difficult task of building structural models.

One of the best ways of exploring this avenue of econometric research is by an analysis of some of the techniques used to provide nonlinear estimates. This paper will examine the various approaches to nonlinear estimation. In particular the Gauss-Newton method is applied to the Box-Cox transformation. This transformation is used to determine the relationship of explanatory variables (relative prices, incomes and lagged nontraded output) to the assumed dependent variable, output of nontraded goods in the Barbadian economy. It is demonstrated