

SECTION 1

THE ROLE OF ECONOMICS

Chapter 1 The Dismal Science

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Introduction

It is my intention to argue in this essay that in a world of ceaseless change in which an infinite number of variables relevant to the economic system interact with each other, and with time and uncertainty in unfathomable ways, such as that in which we live, that the role fitting for economics today is greatly exaggerated, and indeed in some areas may be non-existent. If there is to be a role for economics, its weak base must be fully recognized. Indeed, although some of the problems in economics could potentially be overcome in the distant future, the forecaster has an impact on the variables he forecasts in economics that makes at least some of the problems with economics inherent, not just a function of our current ignorance. I am following in particular the arguments of Shackle and of the Austrian school, the key postulate of which is that in economics there is an interaction of the present and expectations about the future that makes the system highly unpredictable and renders a positivist methodology inappropriate.

I propose to look at the aggregation and quantification of variables, at objectivity, at the meaning of equilibrium in economics, at how expectations affect current variables in such a way as to generate self-fulfilling prophesies, and to argue that these issues collectively render much of the economic system chaotic, perhaps even in a technical sense. Devoid of a strong theoretical base, as this leaves the subject economists try to extract more information from the data than it is possible to do; this leads to the successive inference problem discussed in the seventh section. Before concluding, I shall compare the problems of economics to those of the natural sciences.

The perceived failings of economics render it a subject in crisis. The response to this crisis is to set ever more rigorous standards for 'proof' of theories, to a point where a theory is never 'accepted' simply 'not rejected'. But in some sense acceptance and rejection are two sides of one coin; for example, in regression rejecting the hypothesis that a parameter is zero is accepting that it is significant. While ever greater rigour can be of great value in an already scientific subject, if we regard economics as inherently unscientific, it is inappropriate, and simply an attempt to paper over much deeper problems.

Economics; the aggregation of the incompatible, the quantification of the unquantifiable" . (Shackle) .

Although much modern economic research has been devoted to looking at the component parts of macroeconomic variables rather than at the variables themselves, and to building up macro theory from micro theory; in some sense this approach is bogus. For simplicity it still requires the micro variables to be uniform and homogeneous so that macro theory can be built up from them. No theory can simultaneously come near to doing justice to the diversity of the component parts of macro variables and yet represent a reasonable simplification of reality. If we try to do so we end up with variables which we do not, and cannot, understand, and then we enter into a senseless debate which asks which components of these

variables are dominant, for example with the concept of money supply.

The second, and not unrelated issue, is whether economic variables can be adequately quantified. The Treasury committee has recently expressed the view that economic statistics in the United Kingdom are so poorly constructed as to make them worse than useless. The United Kingdom has seen twenty-four definitions of unemployment since 1979; changes in these definitions are clearly based on political grounds alone. United States National Income statistics are regularly, almost systematically, revised for years afterwards; and these are not small alterations but changes that alter the whole meaning of the statistics. Northern Ireland G.N.P. figures for the whole of the 1980's were recently revised from a position of a stagnant economy to one booming at the same rate as the rest of the United Kingdom. The impossibility of quantification in economics does not merely lessen its power, it means that it provides us with a dangerous illusion of knowledge in relation to the state of the economy.

Objectivity in economics

The ambivalence of truth is an ancient theme which can be traced back to the following paradox discovered by the Ancient Greeks. Suppose two statements are written down. Statement A is that "statement B is false", and statement B is that "statement A is true". Now if statement A is false, B is true and A is true. But if statement A is true, B is false and A is false. So it is not possible even for such simple statements to be either unambiguously 'true' or 'false'.

Economics as a behavioural study is rooted in psychology. Many would accept that the study of the human mind has a complexity beyond the power of man to model, at least given his current level of understanding. But *a fortiori* this is then true of economics. The vast surfeit of variables relevant to economics is such that we cannot go beyond scratching its surface in our understanding of it. Combined with the difficulty of aggregating and quantifying economic variables, this makes economics an utterly subjective subject, unworthy of the name 'science'. In modelling economies, there is far too much that we need to know and far too little that we actually do know.

Kuhn, writing more in relation to the natural sciences, claimed that where objectivity is lost it is replaced by a fixed, narrow and blinkered view of the state of nature known as a Kuhnian paradigm, a "pair of spectacles through which all events are observed" (Green). But although Kuhn's paradigms were dreamt up in the context of the natural sciences they are of far more significance in economics. Any subjectivity combined with such a paradigm becomes amplified, and often attains an ideological tone. So the subjectivity is reinforced by ideology and by a blinkered view of the world around us. Neo-Classical/neo-Keynesian models, the Marshallian supply and demand analysis, or the concept of the individual as the basic unit of society are all examples of these paradigms. They exist not just in normative areas of welfare economics but throughout economics and even in the natural sciences. Values play a dominant role in economics which is irreconcilable with the notion of objectivity in economics.

Can one talk of equilibrium in economics?

When the economist poses this question he is generally concerned with proving the existence of equilibrium in response to a single shock. What I am trying to ask is quite different, namely whether the concept of long-run equilibrium is one capable of any meaning in economics. A point which is theoretically devastating

to this concept in economics, although perhaps of little practical significance, is that time is not a continuum in economics as it is in physics and as is implicit in equilibrium theory. One can talk of the position of a particle at a point in time; one cannot talk of the expectation of an economic agent (for example) at a point in time, because the formation of his expectation spans a period of time. "What I call my present is really my attitude to the immediate future." (Bergson). Another flaw in equilibrium economics is that it implicitly assumes some parameters to be fixed; none are in reality. Finally, as the economic system is in a state of constant flux, the criterion of equilibrium theory which is of most practical importance is that for equilibrium to have any meaning, changes in independent economic variables must be followed by periods of stability in them, an assumption patently absurd in the world of constant change in which we live.

Self-fulfilling prophesies

Expectations interact with the present in economics in a way that is clearly inconceivable in the natural sciences. For the economic agent an expectation is generated primarily for individual profit and will be acted upon, immediately, for individual profit. The most obvious example of this is in stock market behaviour but it also applies in more economically significant areas; like in the speculative demand for money, commodity markets and foreign exchange markets. By acting on the expectation the agent helps to ensure that it comes true. These markets are driven by expectation, at least in the short-run. But this means that it is impossible for the average agent to predict any shifts in price in advance, inherently impossible, not just requiring a depth of knowledge beyond that which really exists. Forecasting in this context is a positional game where each individual tries to outguess the market; as an individual he may succeed, but the agents in the market collectively cannot, because of the impact of his forecast, forecast feedback. For the economic researcher this means that his forecasts can only conceivably bear any nonstochastic relationship to reality if some agents do not believe him. These markets have such a key role in the economic system that if agents cannot forecast them, their scope for short-run forecasting is very limited indeed. Long-run forecasting would run into this problem less, but it is widely accepted that our general understanding of economics limits how far into the future we can hope to see.

Chaos

For Shackle the economic system is one which intersperses "its moments or intervals of order, assurance and beauty with sudden disintegration and a cascade into a new pattern...".

Shackle here is hinting at the idea of an erratic economic system in which tiny changes in parameters lead to vast changes in the state of the system; one which is, for various reasons, beyond our power to model. Austrian economics and the work of Shackle suggests that the economic system is chaotic in a strictly non-technical way.

Modern mathematical analysis however offers us a means for rigorously exploring the phenomenon of infinitesimal changes in a control variable leading to vast changes in the state of a system; namely Chaos theory. The idea of the self-fulfilling prophesy might be amenable to such analysis. It is a close analogy to the idea of a camera pointed at a screen displaying an image of what is seen by the camera, a classic example of Chaos seen in physics. In this way markets display

expectations and are governed by expectations. Although Chaos theory was initially applied primarily to the natural sciences, it has recently been used extensively in economics. The chaotic system, because it is so sensitive to changes in the control variables, will display purely random behaviour unless we know precisely the relationships between variables governing the system. Hence, if the economic system is chaotic it is inherently impossible to model, short, of course, of the underlying deterministic pattern being found.

Successive inferences or 'degrees of freedom' problem

Much economic research entails search procedures to find the explanatory variables 'best' in terms of some criterion (e.g. significance or coefficients of determination) in a set of data for explaining some phenomenon. This method is known as data-mining. Data-mining is not just associated with elaborate search algorithms; data is being mined as soon as the researcher starts comparing different models on one set of data. Indeed even if all economic researchers performed only one test on each set of data, the problem would still not be solved, because, collectively, the researchers would be drawing several inferences from one data set. The research process itself is a subtle search algorithm in which data-mining is conducted on a huge scale. It is hence a very widespread practice in econometrics.

The problem with such procedures is that the probability of committing a Type I error is no longer equal to the significance level. If b is the significance level and n independent inferences are drawn it is $1-(1-b)^n$. So ultimately a type I error is

sure to be made. More loosely, a relationship is bound to be discovered in a set of data by chance alone if one continues searching long enough.

This is a simultaneous inference problem generally known as the 'degrees of freedom' problem. This is something of a misnomer because the problem occurs even if the population variance is known and degrees of freedom cease to be a feature in the analysis, although, obviously, in a t-distribution successive inference causes a loss of degrees of freedom. It can be corrected (strictly over-corrected) for by a generalization of the t-distribution, but only if all observations are independent both of each other and of the variance. In general, statistical tests have not been designed to overcome it. As much economic research entails data-mining, one must therefore ask if many econometric findings are more than the product of sampling error. The standard response that "loose interpretation of statistical rules is sometimes necessary" (Koutsoyiannis) sits ill with the claims economists make to have a scientific methodology. It is the root cause of why economics can pretend to explain what has happened, but is a very poor forecaster of things to come.

"Of degree not of kind"

The classic defence of economics and of its imprecision is that differences between it and the natural sciences are 'of degree not of kind', and that only differences of kind ought to be taken into account. The logical conclusion of this argument is one of two absurd positions: either to a position of accepting all theories in all fields of learning without questioning their accuracy or to a nihilistic position where because of the perceived ambivalence of truth, one cannot even make an assertion about the criteria one sets for acceptance of theories.

A more flexible criterion is needed for discussing imprecision in fields of

learning. It is dangerous to get carried away with abstract thinking in this context because it is observed predictive power that is the crucial measure of the worth of any of theory. Newtonian mechanics may have been theoretically superseded by the work of Einstein, but at the speeds at which bodies generally move it is an extremely good approximation and one that can never be approached by any economic forecasts. In the same way, for some, Keynes superseded classical economics but the error in both is observed to be on a totally different scale to that in the physics of Newton or Einstein. Differences of scale must be considered as well as differences of kind; doing so elevates physics not to being in a position of absolute truth, but of great power to mankind, while damning economics to be the twin of astrology, psychology, or crystal-ball gazing.

Conclusion

Vast spheres of economic activity are chaotic and inherently impossible to model, and even those which are not entail such a complex interaction of variables that they are beyond current human comprehension. Faced with such a weak theoretical base, the economist leans excessively on his data (especially in the case of successive inference) which gives an illusion that an understanding of economic systems has been attained, an appearance that is both misleading and dangerous.

Criticism of economics does not, however, put anything else in its place. Although woefully inadequate, economic forecasts generally tend to be better than a random walk. Since economic forecasts are implicit in all economic decisions, this represents a strong defence for economics. But for economics to have even this limited role people must recognize its limitations. It is in human nature to replace uncertainty with a false certainty even at enormous cost, where one can do no better, like the drowning man clutching at anything he can get hold of. The forecasts of economists are generated at great expense and then treated as gospel. Pursuing a target in relation to some unquantifiable entity becomes uppermost in the minds of policy makers. Markets hang on forecasts of appalling inaccuracy and seem to treat them as knowledge, not guesswork. Economic indicators are not thought of as rough guides but as precise measures and are pursued like "looming phantoms" (Shackle). If its limitations and imprecision were recognized economics might have a considerable role, but if its limitations are ignored and its imprecision is almost raised to the status of a virtue; its fitting role in modern society must be very limited... Paradoxically it is a sceptical and almost cynical approach towards economics that is essential for it to have any serious position.

Bibliography

- Green and Nore, "Economics an Anti-Text", Macmillan, 1977.
Lachmann, "From Mises to Shackle: An Essay on Austrian Economics and the Kaledic Society", *Journal of Economic Literature*, 1976.
Kaldor, "The irrelevance of equilibrium economics", *Economic Journal*, 1972.