Economic Theory and Explanation: A Constructive Empiricist Perspective

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Introduction
Given the recent revival of interest in methodological issues within economics, the task of codifying the varied contributions has become an increasingly necessary task in its own right. While a number of different approaches can be adopted for this purpose, the most obvious and perhaps the most firmly installed is based on the sequence of major developments within the philosophy of science during the twentieth century and its consequent application to economics. Hence Caldwell (1984) identifies the 'positivist epoch' which, apart from the classical positivism of the nineteenth century, included both logical positivism and its more modified variant logical empiricism. In addition a number of other empirically committed positions in twentieth-century philosophy of science such as operationalism and behaviorism are also included under this rubric.

By the middle of the twentieth century, however, the 'growth of knowledge' movement was underway and the prodigious flood of Popperian, Kuhnian and Lakatosian contributions was unleashed. The output of this period has since become the subject of numerous evaluative surveys including those of Suppe (1977), Blaug (1980), Caldwell (1982), and de Marchi (1988), and will doubtless continue to generate a considerable volume of literature.

The interlude of the 'growth of knowledge' can now be viewed as a critical transition phase between the 'positivist epoch' and Caldwell's 'post-positivist era'. This latter development is unquestionably the most unsettling but vibrant phase of methodological discourse with an expanding array of alternative methodological positions competing for attention. These methodological developments, which include the emergence of rhetoric with its hostility to conventional methodology, the sociology of knowledge approach which remains underdeveloped but with immense latent potential, and more recently the re-emergence of realism, are mirrored by developments within economics such as the formulation of behavioral economics, the new institutional economics, and the revitalization of Austrian economics. A salient feature of the 'post-positivist era' is the increasing attention that the actual practice of economists is receiving from economic methodologists in an attempt to establish the methodological practices of economists as a reaction against the heavily prescriptive norms of 'external' philosophies of science. In the light of developments in the 'post-positivist era', Caldwell's attempt to articulate a framework of evaluation between competing perspectives, which he terms critical pluralism, while ambitious seems both reasonable and necessary.

In this short paper we address the central issue of explanation in economics, more specifically its relation to economic theory, by drawing on the work of van Fraassen (1980, 1989) and the philosophy of science which he terms 'constructive empiricism'. Constructive empiricism attempts to negotiate the difficult terrain between empiricism and realism and offers, we believe, a challenging perspective for economic methodology, the extended implications of which we are currently examining. The structure of the paper is as follows. In the next section we briefly outline the conventional view of theory as explanation. In the following section we examine how theory is viewed within contemporary philosophy of science as contained in the works of Quine (1960), Hanson (1965), and Hesse (1974) along with the radical relativists. In the final section, against the background of these contemporary perspectives, we outline a constructive empiricist interpretation of explanation and its implications for economics.

Economic Theory and Economic Explanation
Many practising economists either tacitly assume or explicitly hold that the function of economic theory is to furnish explanations of economic events or law-like generalizations. Thus the pure economist begins his work with a summary of the known facts including statistical
generalizations about empirical regulations. Armed with these relevant facts, the theoretical economist develops higher-level hypotheses and thereby constructs an economic theory. This economic theory is empirically tested by comparing its consequences with the relevant facts. Moreover each successful novel prediction of the theory is seen as enhancing the explanatory power of its core postulates. In other words, the predictive success of a theory is the measure of its explanatory capacity. The core of a predictively successful theory supplies the basic explanatory principles of the domain in question.

Allied to this intimate relationship between theory and explanation is the additional requirement of formulating the theory in the most sophisticated possible way and, according to logic, this is accomplished by axiomatizing the theory. In this connection it is of central importance to distinguish between an interpreted and uninterpreted axiomatic system. An uninterpreted axiomatic system is a piece of logic or mathematics, which makes no empirical claims about the economic world. The criteria for the evaluation of a purely mathematical axiomatic system focus on consistency, simplicity and completeness. In other words, the driving force behind a piece of economics understood as an uninterpreted axiomatic system are considerations of coherence and elegance. Such a system does not purport to give us any information about actual economies or economic actions. However, once such a system is interpreted in terms of some economic order or other we are said to have a model of that economic domain. Thus the axioms of the uninterpreted system become the core principles of the model and these core principles have empirical content, i.e. they purport to give the model user accurate information about actual economies. Moreover these core principles are held to be the fundamental explanatory factors of the economic order in question. In this fashion, when equilibrium economics is interpreted, its core principles are held to be fundamental in that they furnish the basic explanation of what is actually happening in real economies.

In other words there are two distinct domains of criteria governing the choice of pure economic theory. The first domain, which is the domain of the formal or logical criteria, pertains to the axiomatization of the theory independently of what it says about any economic system. The second domain concerns the criteria used in assessing the interpreted system and its core principles, especially the criteria for evaluating its explanatory capacity. Usually the predictive success of these core principles, when combined with appropriate boundary or initial conditions based on the observation of actual economies, enhances the economist's epistemic commitment to these principles as the fundamental explanatory axioms of the economic order under observation. The imposition of plausibility constraints on these core principles is more controversial.

Theory in Contemporary Philosophy of Science

Contemporary philosophy of science as reflected in the works of Hanson, Hesse and Quine on the one hand and on the other hand the works of Kuhn, Feyerabend and other more radical relativists, relocates theory in an entirely different context. They break the intuitive link between theory and explanation as outlined in the previous section. Despite the major differences between these writers, they hold at least one important thesis in common. This common position is summed up in the claim that all description is theory laden. Many methodologists of economics, however, though accepting this contemporary thesis, do not fully recognize its implications for the tacit assumption that the principal aim of an economic theory is to furnish the correct explanation of economic events and regularities observed in the actual world. In order to spell out these implications let us briefly look at the model of the scientist as a feedback, sentential automation (O'Gorman, 1989). When a scientist observes a situation, event or happening or identifies something or other, his observations or identifications are an inextricable product of inputs from the external environment and a linguistic code which he has acquired during his scientific education. For instance when a chemist identifies the content of a test tube as oxygen, he carries out certain experiments and concludes that the content is oxygen and not, say, hydrogen. However, this identification of oxygen presupposes the linguistic code of atomic theory. Without this code the content could not be identified as oxygen: we know that the same stuff was identified as dephlogisticated air before the discovery or construction of modern atomic theory. Thus, in making observations or
in identifying entities or processes, the scientist is already using some theory or other. His observational descriptions or identifications are theory-laden.

The logical positivist program presupposed that scientific language was dualist in nature. On the one hand the language of science contained observational terms, i.e. terms untainted by theory which directly referred to observable entities and, on the other, theoretical terms which were subsequently introduced as an additional separate layer on top of the observational language. Indeed this dualist conception of the language of science is also frequently assumed in the account of economic explanation outlined in the last section: the facts are first presented in a neutral observational language and theoretical postulates are subsequently introduced to explain these facts. Due to the influence of Wittgenstein, Hanson, Quine, and others, philosophers of science began to recognize that this dualist picture was mistaken. Scientific language is like a web or net with the observational and theoretical inextricably linked. This is evident in the scientific experimentations used to identify oxygen mentioned above. The same is true in other experimentations or observations. For instance, the web of theory underlines the chemist’s criterion for the identification of an acid: if the liquid turns litmus paper red it is immediately identified as an acid.

However, if all scientific descriptions are theory-laden then a principal aim in the construction of a better theory is to furnish more adequate terms for the accurate description of reality. Theories are constructed and developed centrally for descriptive purposes. Thus contemporary theory furnishes more accurate and more extensive theory-laden descriptions of the actual events and happening in the real world than the earlier theories it has replaced. All description is theory-laden but some theory-laden descriptions are more adequate than others. The scientific situation, resulting from the fact that the scientist is a sentential automation, is that theory-laden descriptions are endemic to the scientific endeavor, there are simply no other kinds of descriptions available. Finally once this inextricable link between the demand for accurate descriptions and theory is recognized – theory is indispensable to science at the descriptive level – the tacitly held link between theory and explanation can be broken. In the view outlined in the previous section, the whole ethos of theory was to furnish explanations of the facts. In light of contemporary philosophy of science the scientific facts themselves are theory-laden: the whole ethos of theory construction is to supply adequate descriptions of the observable events and happenings in the world.

Constructive Empiricism and the Relocation of Economic Explanation

In view of the intimate relationship between theory and description, must we conclude that there is no such thing as an economic explanation? Does contemporary philosophy of science simply reinstate the logical positivist doctrine that the central aim of pure economics is to describe without getting entangled in its unnecessary and misguided program of translating the upper layer of theory into the lower layer of observation? In order to unravel these and other related questions vis-a-vis the obvious fact that economists do offer explanations, we will adumbrate a constructive empiricist approach to this central economic activity.

Constructive empiricism was first introduced by van Fraassen in the *Scientific Image* and later developed in his *Laws and Symmetry*. While this methodology is articulated in relationship to the physical sciences we will reinterpret its challenging views in the specific context of economic explanation. According to the constructive empiricist it is vitally important to distinguish between pure and applied economics. The principal aim of pure economics is to construct economic theories which furnish accurate descriptions of economic events or systems. In this context, the core principles of an economic theory are not explanatory at all. Rather these core theoretical principles are indispensable for the construction of accurate descriptions of an economy. Moreover the central methodological preoccupation of the pure economist is whether or not his theory is empirically adequate. An economic theory is empirically adequate if it furnishes true descriptions of all observable economic events. Negatively speaking if some observable economic events “do not fit” the theory, the theory is empirically inadequate, (Boylan and O’Gorman (1991) provide a more detailed account). Thus the pure economist is centrally concerned with the construction of an empirically adequate economic theory and this had absolutely nothing to do with explanation.
Economic explanation is relocated in the domain of applied economics. In general, any explanation is an answer to a ‘why question’, i.e. an explanation is proffered when one is asked why did such an event occur? According to constructive empiricism why questions are context dependent, a fact which is completely ignored by those who postulate an intimate relationship between theory and explanation. For instance, the question “Why did Peter invest five hundred pounds in the bank?” has differed meanings in different contexts. Different contrasts are tacitly assumed in different contexts and when these are made explicit, the differences in meaning become evident. For instance, the above question could mean any of the following:

(a) Why did Peter, rather than John, invest five hundred pounds in a bank?
(b) Why did Peter invest in a current, rather than in a deposit, account?
(c) Why did Peter invest yesterday rather than last month?
(d) Why did Peter invest in a bank rather than a building society?

Clearly the appropriate answer to the original question depends on the contrast drawn in (a), (b), (c) and (d) and hence different answers will be forthcoming relative to the different contrasts drawn. Thus acceptable explanations depend on the choice of contrast and in this sense the task of economic explanation is context dependent.

The context dependency of economic explanation goes further than the choice of contrasts presupposed or explicitly stated. The choice of salient explanatory factors is also context dependent. The relevant expert chooses the salient factors in light of his specific interests or range of expertise. The applied economist explains why Peter invested yesterday rather than last week in terms of the announced rise in the bank’s rates the day before yesterday, while the psychologist explains it in terms of Peter meeting an old friend whom he discovers to be the manager of the bank and in the light of his conversation he decided to invest. The urban geographer points out that the location of the bank was conveniently situated close to Peter’s work. Different explanatory factors are chosen by the different experts, clearly illustrating that the plurality of acceptable explanations result from the specific interests of the person offering the explanation. In particular an explanation is economic, if the relevant explanatory factor is chosen from an economic theory which is not known to be empirically inadequate, rather than from some other discipline. In other words, the applied economist has recourse to the theory of the pure economist in choosing the relevant observable factor to be used in answering the contextually-located why question. This is what makes the explanation economic, rather than psychological or sociological.

In other words the logic of economic explanation is a matter of a three term relationship between (a) the event to be explained (b) the specific context and (c) an economic theory which is justifiably believed by the pure economist to be empirically adequate. The account of explanation assumed in the second section of this paper views the logic of economic explanation as a two term deductive relationship between the core principles combined with appropriate boundary conditions and the event to be explained. The mistake here is that this conception fails to appreciate the contextual dimension of economic explanation which is frequently acknowledged by practising economists but totally ignored in this erroneous approach.

In short the pure economist constructs an economic theory with a view to showing that it is empirically adequate and the applied economist offers explanations in specific contexts by choosing relevant causal or explanatory factors from such an economic theory. Hence at the level of applied economics any explanatory condition must be shown to be plausible in the sense of being relevant to the event requiring explanation. This, however, does not imply that the core theoretical principles of an economic theory in the domain of pure economics must be similarly plausible. the construction of an economic theory which is adequate to all economic phenomena may require the introduction of implausible core hypotheses. Thus constructive empiricism succeeds in reconciling the view that an economic explanation must be plausible with the view that the construction of a comprehensive, empirically adequate theory may demand the introduction of implausible idealization by relocating economic explanation in the domain of applied economics and severing the tacit link between theory and explanation.

In our opinion when constructive empiricism is applied to economic methodology it offers a rich range of possibilities and has clear advantages over traditional approaches such as instrumentalism on the one hand and more
contemporary approaches such as rhetoric, critical pluralism or realism on the other hand. Particularly with respect to the central issue of economic explanation, the constructive empiricist offers a challenging reinterpretation of theory, which extricates explanation from the realm of pure theory and relocates it in the applied domain.

References


