

The Epistemic Values of Mainstream Economics

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Abstract:

Contemporary mainstream economics is currently best characterised by an uncritical acceptance of mathematico-deductivist methods, in an attempt to mimic the methods of natural sciences like physics, while neglecting epistemic values like empirical adequacy, simplicity, coherence with other knowledge, or internal consistency. Here I will argue that the methodology that characterises mainstream economics is inappropriate for the analysis of social reality, since it ignores the nature of the latter. Heterodox traditions like Marxian economics, Austrian Economics, (old) Institutionalism, and Post Keynesianism, on the other hand, provide a more realist conception of social reality, by taking into account the epistemic capabilities of the human agent, and provide more promising routes to the study of social reality.

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1. Introduction

Epistemic values constitute important criteria in the selection of scientific theories. Such epistemic values include the simplicity of the theory, or the coherence of the theory, both in terms of its internal consistency, and in terms of its consistency with other theories, or with empirical data (i.e., its empirical adequacy). Mainstream economics constitutes however an example of a discipline with a set of theories which have little respect for any of these epistemic values. Mainstream economic theories often include complicated mathematical models, which are inconsistent with empirical facts (in fact many of its assumptions are false), and in many cases are actually internally inconsistent too.

In fact, the epistemic values of the mainstream community show instead a tendency to mimic the complex mathematical models of natural sciences. The success of the natural sciences like physics led mainstream economists to believe that the use of such complex mathematical models is essential for economics to become a successful scientific discipline too. The reliance on mathematico-deductivist models made mainstream economists assume unrealistic hypotheses on human behaviour and the functioning of the world economy, so that such models could be applied.

These hypotheses led to a conception of the human agent, and of social and economic activity, which prevented mainstream economists from addressing economic and social problems in an adequate way. Within heterodox economic traditions like Marxian economics, Austrian Economics, (old) Institutionalism, and Post Keynesianism, on the other hand, we find a more useful conception of the epistemic capabilities of the human agent, of the economy and society, in different leading key

authors of these traditions, like Marx, Hayek, Veblen and Keynes, which will be discussed here.

I shall discuss the causal efficacy of epistemological formations in section 2, while the false conception of science that underpins mainstream economic theory will be addressed in section 3. The place of realism and mathematics in this false conception of science will be discussed in section 4, while the contribution of mainstream economics to the recent economic crisis will be addressed in section 5. Alternative perspectives provided by heterodox economics will be discussed in section 6, while the role of social structures and conventions in heterodox economics will be addressed in section 7. The psychological structure of the human agent and its implications for the maintenance of false epistemological conceptions will be addressed in section 8, after which some concluding remarks will follow.

2. The causal efficacy of epistemic values

Before describing more specifically what the mainstream epistemic values are, and argue that they have an important causal efficacy in maintaining the current state of affairs not only in the economics academy, but also in the world economy (with implications for the recent financial and economic crisis), the causal efficacy of epistemic values in social processes must first be clarified. Different heterodox authors explained the role of epistemological conceptions in different ways. But in an occasion where we can find Friedrich von Hayek quoting John Maynard Keynes approvingly, he writes:

“I do not find myself often agreeing with the late Lord Keynes, but he has never said a truer thing than when he wrote, on a subject on which his own experience has singularly qualified him to speak, that “the ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else (...)” (Keynes 1936: 383)” (Hayek 1948: 108).

However, many heterodox economists like Thorstein Veblen (1914) emphasise also how ideas, habits of thought and institutions are shaped by practical activity. The view that ideas and habits of thought are, at least to some extent, shaped by practical activity, was already present in Karl Marx, who, as Althusser (1965) argues, explained how ideology (which includes what is termed here as “epistemic values”) is part of a superstructure which arises out of the mode of production.

A crucial question concerns how the elements of the superstructure, such as ideological forms, or what Veblen (1914) calls “habits of thought”, can have any sort of causal efficacy, like Hayek and Keynes suggest they have, if they are determined in the last instance by practical activity, as Marx and Veblen argue. In order to understand this issue, a notion of emergence grounded in the work of critical realist authors like Roy Bhaskar and Tony Lawson will now be described.

To understand the causal efficacy of epistemic values and habits of thought, it is important to distinguish two conceptions of ontology, which can be designated as an empirical realist ontology, and a structured ontology, respectively, following authors like Bhaskar (1975, 1989) or Lawson (1997, 2003). In an empirical realist ontology, reality is constituted by the events we perceive. The question that follows is which

conception of causality can be sustained within an empirical realist ontology. Since events are the only constituents of reality in an empirical realist ontology, causality can only mean a connection between events of the form “if event X, then event Y”. The form of explanation that draws upon regularities of this type can be termed as *deductivism*, following Lawson (1997).

In a structured ontology, on the other hand, reality is constituted not only by events and their sense impressions, but also by the underlying structures, powers, mechanisms and tendencies that cause events. These structures, powers, mechanisms and tendencies are out of phase with events, since they exist at a different level of reality, often a non-observable level. In a structured ontology, causal explanations rely upon retroduction, which means to move from a given level of reality to another.

For example, the explanation of the functioning of the steam machine relies upon the claim fact that the existence of heat causes water to expand. The explanation of this event, however, requires understanding of another level of reality, such as the molecular level, and the behaviour of water molecules in the presence of heat. Likewise, the explanation of changes in living entities, such as diseases, relies upon knowledge of cellular or even molecular mechanisms at a lower level than the level of living entities.

The distinction between different levels of reality entails a conception of a stratified reality, in which a given level of reality is not reducible to another level. Arguably, non-reductionism could be seen as an epistemological phenomenon, when we believe further knowledge would enable us to explain one level only in terms of the other level, or as an ontological property, in which case no further knowledge would enable us to completely understand one level only in terms of another level. Since we cannot predict which of these two situations will be the case, there is no reason to state

a priori that non-reductionism is an epistemological illusion. In the absence of a better explanation for the stratification of reality, non-reductionism as an ontological property of reality can be assumed as a working hypothesis until evidence to the contrary arises.

We can distinguish between two situations of non-reductionism, namely supervenience and emergence. A given level of reality B is supervenient on a given level of reality A when B arises from A, but the conditions present in A determine level B. That is, although we are in the presence of irreducible levels, it is not possible that level B would be any different from what it is unless there is a change in A too. There is a necessary connection between the entities in level A and the supervenient entities in level B.

On the other hand, a given level of reality B is emergent from level A when it arises from A, and B has causal powers which are irreducible to, and not determined by, the level A from which B emerged. In the case of emergence, we do not have a necessary connection between the entities in level A and the emergent entities in level B, since the causal powers of the latter are not completely determined by level A.

For example, if a living entity is seen as supervenient on the physico-chemical level, it is possible to predict its behaviour using knowledge about all the existing conditions at the physico-chemical level. But if a living entity is seen as emergent from the physico-chemical level, it is not possible to predict its behaviour even with knowledge about all the existing conditions at the physico-chemical level from which it emerged, since in the latter case we would still have no knowledge of the emergent causal powers. While in supervenience we cannot predict in advance whether we have a case of epistemological non-reductionism or ontological non-reductionism, in

emergence we have clearly a case of ontological non-reductionism, since we accept emergent causal powers as real ontological entities.

In critical realism, the social realm is seen as an emergent, open system, that is, a system in which constant conjunctions of the form “if event X then event Y” are not ubiquitous. Using the critical realist perspective, we can argue that the superstructure, including epistemological conceptions and the underlying epistemic values, is emergent from, and not supervenient on, the base from which the superstructure arises, in order to acknowledge the causal efficacy of ideas, habits of thought, and ideology in general – see also Andrew Collier (1989, 1994). For example, if we say that the mode of production, including of course the relations of production, are the material base from which the superstructure emerges, it would still be the case that the superstructure, including political and ideological forms, can have a causal effect on the base from which it emerged, in a reciprocal process of continuous interaction.

The economic base is determinant in the last instance in the sense that the superstructure emerged primarily from the base, regardless of any possible causal influence that the emergent superstructure may have afterwards on the base. The base would completely determine the superstructure only if it the latter were supervenient to, as opposed to emergent from, the base. So emergent ideological formations can have a causal effect on the base from which they emerged.

The same can be said of the relation between practical activity and habits of thought explained by Veblen. If habits of thought are emergent from, and not supervenient on, economic and practical activity, their causal efficacy on practical and economic activity is not ruled out. Epistemic values can then be seen as an ontological constituent of reality, with causal efficacy upon the reality from which they emerge. The

critical realist approach to the notion of emergence reconciles the view of the causal role of ideas of authors like Keynes and Hayek, with Marx's and Veblen's emphasis on the role of practical life in shaping ideas.

3. The epistemic values of mainstream economics

Different epistemological conceptions enable different adaptations to the conditions of existence with different levels of success. Human knowledge is not always (if ever) perfectly adapted to human conditions of existence, and to the extent that human knowledge is inadequate, there will be a greater or lesser extent of false consciousness. False beliefs are often very persuasive because they contain an idea which is true under a given context, but was removed from its original context. In fact, it will be argued that this is what happens in contemporary economics, namely, that a given vision of science, which was correct under a given context, is being advocated today in a different context from the one in which it was true, generating a theory which is not scientific.

Lawson (1997, 2003) argues that the uncritical acceptance of mathematico-deductivist models is the key feature of mainstream economics. The insistence on mathematico-deductivist models springs from an uncritical belief that such models are essential for economics to become a science, or for achieving a level of success comparable to that of the natural sciences. The successes of natural sciences like physics until today, led to the belief that economics had to adopt the methods of natural sciences like physics in order to become also a scientific discipline – see Lawson (2003) for a detailed analysis.

What are conditions for the success of the methods used in mainstream economics? Bhaskar (1975, 1989) and Lawson (1997, 2003) distinguish between two

ontological conceptions of reality, namely a closed system conception of reality, and an open system conception of reality. Closed systems are characterised by constant conjunctions of the form “if event x, then event y”. Systems where constant conjunctions of the form “if event x, then event y” do not typically occur are open systems. Deductivism is, remember, a mode of explanation which requires constant conjunctions of the form “if event x, then event y”. Thus, the mathematical models used in mainstream economic theory are deductivist models, and hence their successful use presupposes closed systems.

But as critical realists like Bhaskar (1975, 1989) and Lawson (1997, 2003) note, what is essential to science is the identification of the underlying structures, powers, mechanisms and tendencies which cause observed events. In natural sciences, closed systems, i.e., systems where event regularities of the sort “if event X then event Y” are ubiquitous, are generated in well-controlled experimental conditions, so that mathematico-deductivist methods can be successfully applied, and underlying structures, powers, mechanisms and tendencies are insulated and identified through mathematico-deductivist methods.

In economics it is not possible to isolate human individuals like in the natural sciences. The social realm is an irreducibly open system, where event regularities are not ubiquitous, and the underlying structures, powers, mechanisms and tendencies cannot be insulated in the same way as in the natural sciences. Thus, Keynes stresses that mathematical methods like econometrics (correlation analysis) would only be successful under an atomistic conception of the economy and society which he rejects, as Lawson (2003) explains, and Hayek (1948: 78) argues that a fundamental problem in economics, such as the use of knowledge in society has been “obscured rather than illuminated (...) by many of the uses made of mathematics”, and by an “erroneous

transfer to social phenomena of the habits of thought we have developed in dealing with the phenomena of nature”.

As Lawson (1989, 1997) notes, the empirical regularities which are found in economics are not strict event regularities, but rather partial regularities, and our understanding of them will not benefit significantly from an elaborated mathematical treatment as if they were strict event regularities, such as the ones we find in laboratory experiments in the natural sciences, or in astronomy.

Therefore, an idea which was true in another context, namely that mathematico-deductivist methods may be most useful when closed systems are generated, like in the natural sciences, became a false epistemological conception in another context, namely in economics, where reality is an open system. This led mainstream economists to use methods which are inappropriate for the study of social phenomena, which by its very nature is structured and interconnected in a way that prevents the emergence of exact regularities such as the ones which are present in natural sciences like astronomy, or are generated in experimental conditions.

In fact, even the pioneering contributions to physics and astronomy of authors like Isaac Newton’s was empirically driven, rather than a dogmatic application of a given mathematico-deductive method. Rather than presupposing that a given method, such as a particular mathematical method, would be universally applicable to the empirical phenomena he wanted to explain, Newton developed a new form of mathematics, namely differential calculus, which was appropriate for the study of the empirical regularities he wanted to explain, and applied mathematical methods to a type of phenomena which displays the properties of a closed system, not to open systems.

4. Realism and mathematics

The use of mathematics and quantitative methods can, of course, assume various forms. Firstly, we can distinguish between theoretical and empirical uses of quantitative methods in economics. Mainstream economic theory is concerned with the specification of models without necessarily taking into account the empirical validity of such models. In fact, Milton Friedman (1953: 26) famously argued that models are only instruments for prediction which need not correspond to reality, and that an important hypothesis “must be false in its assumptions”.

Other authors, like Paul Samuelson (1963: 236), suggest instead that economic models should be used to build a structure which need not be based on false assumptions, which are a characteristic only of economic models, and not of the theory that is built using them. Of course, both Friedman and Samuelson acknowledge the usefulness of unrealistic models, in line with the contemporary mainstream emphasis on the use of mathematical techniques, which are regarded as necessary if economics is to become a scientific discipline.

Mainstream economics developed however many empirical methods too, aimed at measuring economic phenomena. An interesting question is whether these methods share a deductivist structure too. The use of empirical methods in economics can be seen under two different perspectives: as a statistical measurement of observable data, or as correlation analysis aimed at modeling causal sequence relations between observable phenomena.

The former is essentially a descriptive exercise which need not impose a closed system structure upon reality (and includes the development of statistical tools or indicators, like national accounts’ aggregates), while the latter is an explanatory

endeavour, which aims at establishing causal sequence correlations, and to do so relies on mathematico-deductive models while presupposing closed systems.

Thus, empirical methods in economics can be used both in a non-deductivist way, or in a deductivist fashion similarly to the way these methods are used in economic theory. Whilst mathematical methods can be very useful even for the analysis of open systems if applied under the first perspective described above, the causal analysis of open systems using methods that presuppose closed systems generates a methodological inconsistency.

Measurement undertaken following the first perspective named above may be termed as “statistics”. The use of mathematical methods in the second perspective named above – i.e., the deductivist use of mathematical methods – has been dominant not only in economic theory (as noted above), but in the field of “econometrics”, which relies on quantitative techniques such as regression analysis, where closed systems regularities of the form “if event X then event Y” are assumed, typically with a stochastic component added to the functional form.

Even the more recent developments of econometrics still maintain a distinction between two sets of variables, namely, a set of dependent variables, and another set of independent variables, with the aim of establishing correlations between these variables. This has been so to the neglect of other quantitative techniques referred to broadly as “statistics” above. So the use of quantitative methods in economics has been mostly characterised by a dominance of deductivist methods, both in theoretical economics and empirical economics, with the latter being characterised by a dominance of “econometric” methods over “statistical” methods.

Of course, many statistical techniques, such as hypothesis testing and time series analysis, are often used in economics. However, even the use of the latter techniques is often (and indeed mostly) undertaken within the context of (econometric) regression analysis, such as when testing the significance of regression coefficients, or when using time series analysis in order to model the disturbance terms of a regression model.

In this sense, both in the empirical and in the theoretical uses of mathematics, mainstream economics maintains a deductivist approach to mathematical modelling. But the use of mathematico-deductivist methods which are divorced from the underlying reality under study distracts from, and can even constrain (rather than enable), the identification of socio-economic structures, and our understanding of human behaviour.

In order to model the economy and the human agent using such models, it becomes necessary to assume that the economy, and human agents, can be described by mathematical regularities. Postulates such as optimisation, equilibrium, rational expectations, perfect foresight, and the like, are all subsidiary to the goal of mathematico-deductivist modelling, and even when relaxed, are replaced by equally unrealistic and fictitious postulates, which enable mathematico-deductivist modelling.

5. The economic crisis and the crisis in economics

This state of affairs has, of course, consequences not only for economic models, but for the policy recommendations based on such models. An illustration of the implications of the crisis in economics for the economy and society can be found in the recent financial and economic crisis. The belief in rational expectations, perfect foresight, and equilibrium (assumptions which are made in order to enable the use of mathematico-

deductivist models), leads to the belief in the efficient market hypothesis, i.e., the belief that market prices are, or at least tend to be, correct, where “correct” signifies that they reflect preferences, technology and endowments, which are taken to be the underlying “fundamentals” of the economy. This is so because it is believed that agents who engage in market transactions have a correct (rational) expectation concerning the probability distribution that governs future events (so that mathematico-deductivist techniques can be employed) – where the assumptions of stationarity or ergodicity lead to the belief that such probability distribution does not change significantly through time, or that changes or innovations can be anticipated.

The efficient market hypothesis, in turn, led to the conviction that economic and financial markets needed less regulation than what they had so far. So the more recent decades have been characterised by the deregulation of financial markets. This deregulation, in turn, facilitated the construction of financial instruments which enabled credit expansion, financing consumption and investment, with increasing capital mobility, and the volatility of capital markets.

The belief that it is possible to quantify risk, grounded on the false belief that economic agents can calculate the probability distribution of future events, led economic agents to assume that insurers had a reasonable estimate of risks (since it was assumed that these were mathematically quantifiable), and also led financial institutions to underestimate the effects of uncertainty during a liquidity crisis. Thus, financial speculation and credit expansion continued until 2007 under the belief that risks were carefully measured – see Davidson (2008) for a discussion.

This does not mean that mainstream economics was the only factor contributing to deregulation, and the subsequent crisis. There were strong political and institutional

forces attempting to achieve such deregulation, such as the large financial corporations which emerged also as a result of concentration, in a process which can be easily explained using the theory of heterodox economists like Marx and Veblen. But mainstream economics, by reducing economic analysis to the mathematico-deductivist modelling of the behaviour of agents with rational expectations, prevented a realist analysis of political and economic institutions which would enable academic economists to carefully scrutinise the political and economic causes of the crisis, including the political and economic changes brought by deregulation.

A crucial moment in the sequence of events which led to the contemporary crisis was the repeal by the United States Congress of the Glass-Steagall Act in 1999, which had been approved by the United States Congress in 1933, in order to prevent financial institutions from engaging in the type of financial activities which contributed to the 1929 crisis, such as the underwriting of securities. Amongst other things, the Glass-Steagall Act prevented banks from underwriting securities originated from mortgage loans – see Davidson (2008) or Lawson (2009b) for a discussion. So between 1933 and 1999, commercial banks had the incentive to provide loans to clients who would not default, since the loans conceded by commercial banks would stay on their balance sheet.

But since the repeal of the Glass-Steagall act in 1999, banks started to have the incentive to provide loans regardless of the reliability of the client, since banks could securitise and sell their loans out of their balance sheet. This led to the ‘sub-prime’ mortgages, that is, mortgages provided to clients who had a much higher probability of defaulting than the traditional costumers of commercial banks.

From the repeal of the Glass-Steagall act in 1999 until 2007, the financial products that were originated on mortgage loans led to a further stimulation of the financial markets which promoted investment in capital markets. The deregulation of economic and financial markets enabled the creation of the financial products that generated a financial expansion, which in turn allowed bankers to further engage in the expansion of credit both for consumption and investment purposes.

Financial speculation and credit expansion enabled thus an increase in investment and consumption which led to a further stimulation of aggregate demand (both in developed countries and in emergent developing countries) that fostered economic growth, and thus compensating in some way the abandonment of Keynesian policies of demand stimulation, and the existence of income inequality, which reduces the income of the agents that have a higher marginal propensity to consume, and thus aggregate demand. In fact, it was because the financial system was so crucial to the stimulation of aggregate demand in a context of increasing inequality that the financial crisis in 2007 quickly became a severe economic crisis in 2008.

But as is well-known, throughout this process loan-originated securities became incorporated in investment funds and other complex financial products, and were sold throughout the financial system. This made it difficult for financial institutions to know exactly where the securities originated in unreliable loans – the “toxic” assets – were. Thus, after 2007 financial institutions started to restrict credit, due to the uncertainty regarding whether the borrowing partner has, or is dependent upon institutions which have, “toxic” assets – see Lawson (2009b) for a discussion.

Because mainstream economic models presuppose efficient markets, both in what concerns financial markets and economic markets, they are unable to diagnose the

causes of, or provide a solution to, the contemporary financial and economic crisis. According to mainstream models, and such assumptions as the efficient market hypothesis, or rational expectations, financial agents would price the funds which contain “toxic” assets using an appropriate measure of risk and return. Rating agencies would also be able to rate these funds realistically.

But the complex mathematical analysis of (supposedly) quantifiable risk, undertaken by mainstream economists, failed to take into account the notion of uncertainty which, for Keynes, is a case when the probability distribution of future events is not known, and thus is not reducible to risk given known probabilities, or amenable to any other type of quantification. For mainstream economists, situations of Keynesian uncertainty are out of the scope of economic analysis, as Lucas (1981) notes. This is so because under the conception of science defended by mainstream economists, where the use of mathematico-deductivist methods is essential to science, probability distributions concerning future events must be known – see Davidson (2008) or Lawson (2009b).

So the very analytical framework of mainstream economics excludes notions which are fundamental to understand the crisis, such as uncertainty, much developed within Post Keynesian economics, following the writings of Keynes. The failure of mainstream economics to explain the crisis, and to explain the behaviour of economic agents who do not follow the behavioural patterns foreseen in mainstream models, is thus making economists look for alternative policies and theories.

6. Heterodox economics and mainstream economics

Given the failure of mainstream economics, an alternative approach which illuminates the underlying structures of the economy is necessary. Various alternatives to mainstream economics exist within heterodox traditions like Post Keynesianism, 'old' Institutionalism, Austrian economics or Marxian economics, amongst many others. In fact, heterodox economics is a label that covers a wide diversity of economic traditions. But these traditions share some common features, one of which is their opposition to mainstream economics, and to the belief that mathematico-deductive methods are essential for the explanation of human behaviour to be a scientific endeavour.

Keynes, for example, criticised the use of mathematical techniques such as correlation analysis, noting that in many cases the latter are not appropriate for the study of socio-economic phenomena. Keynes notes that these techniques presuppose a world of isolated atoms, which does not necessarily correspond to the existing social reality – see Lawson (2003, chapter 7) for a discussion of Keynes' position on this issue. Hayek (1948) also criticised the attempt to imitate the methods of the physical sciences in the social sciences that is pervasive in mainstream economics. In fact, Hayek, together with other economists like Alfred Marshall (1890), or Thorstein Veblen (1898), the founder of the (old) institutional tradition, notes that economics would have more to learn from evolutionary biology than from physics.

Heterodox economists like Joseph Schumpeter (1954) are careful enough to note that any attempt to imitate biology could be as limiting as the mainstream effort to imitate the techniques used in sciences like physics. But the criticism of the belief that copying the mathematico-deductivist methods of the physical sciences is essential for economics to become a scientific discipline is a common characteristic of the heterodox projects.

It is important to note that heterodox economists do not deny the usefulness of mathematics, to which they resort amongst other methods, but only the belief that mathematico-deductivist methods are the only methods which deserve the label “scientific”, and the conviction that these methods are always appropriate under every circumstance. Keynes’ target was what was termed above as “econometrics” (in his discussion of Tinbergen’s method of multiple correlation analysis), and not what was termed above as “statistics”. Furthermore, the neo-Ricardian economic tradition is a prominent example of a heterodox approach that makes extensive use of mathematical tools. But even Piero Sraffa, the most influential economist of the neo-Ricardian tradition, regarded mathematics as a useful tool to be adopted only when appropriate.

Heterodox economists also reject the neoclassical postulate of optimisation. Heterodox traditions are not always in agreement on their conception of the human agent. Austrian economists, for example, emphasise that subjective preferences are to be taken as exogenous data, while Veblen (1898) refutes the very notion of an individual that reacts passively to subjective preferences, and does not take the latter as exogenous data only. But the rejection of the conception of a human agent who chooses optimal outcomes is widespread amongst heterodox economists (including Austrian economists).

In fact, another common feature of most heterodox traditions is their elaboration of a conception of a human agent embedded in a social structure, going beyond the atomistic account of human agency that pervades mainstream economics. The Austrian, Marxian, Evolutionary and (Old) Institutional traditions put much effort in elaborating the social structures which condition or facilitate human agency, as many interdisciplinary approaches to economics (such as Social Economics, Socio-Economics and Economic Sociology) also do.

7. Social structures and human behaviour in heterodox economics

Heterodox traditions like post-Keynesianism, ‘old’ Institutionalism, Austrian economics, social economics or Marxian economics, try to address fundamental structures of economic behaviour without the constraint that the economy must necessarily conform to mathematico-deductivist models (and to the subsidiary hypotheses unrealistic hypotheses which facilitate the use of such models), and attempt a realistic analysis of social structures, including rules and conventions – see Lawson (2006). If it is the identification of these structures that essential to science, and not the use of a particular method, such as mathematico-deductivist methods, heterodox economists can be (and indeed have been) much more successful social scientists than mainstream economists.

The role of social structures was crucial to authors like Veblen and Marx, who also devoted much time to the explanation of how these structures emerge and evolve. Once social structures emerge, they provide a stable framework for human agency to take place. As Keynes (1936) argues, because social processes are characterised by uncertainty (which, remember, is a case when the probability distribution of future events is not known, and thus is not reducible to risk given known probabilities), it becomes necessary to adopt conventions for engaging in coordinated human activity. Hayek (1948) also stresses how economic order can only emerge when individuals are willing to recognise the existence of conventions to be followed, and make use of both discursive and tacit knowledge in their economic behaviour.

Amongst the notions used by heterodox economists, the concepts of rules, convention and uncertainty, are particularly helpful to understand the recent economic

and financial crisis. In fact, financial markets were much more stable when financial activity was undertaken by agents who were more aware of the imprecise nature of human knowledge, and tried to supplement such imperfection of human knowledge by relying on conventions – see Lawson (1985) for a discussion.

For example, it was the belief that it is possible to calculate mathematically the risks associated with financial transactions that led to the abandonment of a system where brokers and dealers, based on their intuition and perception, would act as market makers whenever there was too much buying or selling of a given financial product – see Paul Davidson (2008) for a discussion. But the latter system, which was underpinned by a realist view of the limited epistemic capabilities of human agents, and based on conventions and human intuition without the illusion that it was possible to predict mathematically every contingency, was a much more stable system, than a system where it is believed that all information can be incorporated into a mathematico-deductivist model.

Mainstream economists would argue that to say that intuition and conventions provide a more useful guidance to financial and economic decisions than mathematico-deductivist models ultimately means that economic thinking is just commonsense, and not science. But such a perspective springs from a conception of science where the latter merely means using mathematico-deductivist methods regardless of the nature of social reality. If the goal of science is to uncover structures behind events, then economics can become a science if it succeeds in uncovering the social and psychological structures behind observed economic events, regardless of the methods used.

Economics can become a relevant science if it provides a useful description of the social and psychological structures behind events, a task which has been pursued by

various heterodox economists. Economic activities like consumption and investment ultimately depend upon the conventions and habits of society, and expectations are also grounded on the conventions and “habits of thought” that a given person has regarding the evolution of society, of the economy, or regarding the stability of the financial system.

Since mainstream economics (driven by a mathematising tendency) overlooks the fact that social structures, conventions, and the like, are irreducible to the interaction of optimising agents with rational expectations, an alternative conception of the human agent, which takes into account the role of social structures and conventions, is then necessary in order to understand financial and economic behaviour. Now, a crucial question for addressing this issue concerns the epistemic capabilities of human agents, and how the latter enables them to engage in conventional and social behaviour. To answer this question, a discussion of the psychological structure of the human agent is now necessary.

8. The reproduction of epistemic values

Having argued that economics should aim at uncovering the social and psychological structures that cause events, one must now explain these social and psychological structures in more detail. It was noted above that intuition, tacit knowledge and conventional behaviour provide a better guide for financial and economic activity than the reliance on mathematico-deductivist methods that characterises mainstream economics. Such a claim concerning intuition and tacit knowledge points towards the role of non-conscious dispositions in human behaviour.

The underlying dispositions that structure consciousness have only recently begun to be analysed in more detail, leading towards a structured conception of the human agent, on which see for example Lawson (2003: chapter 2), who uses Pierre Bourdieu's notion of the "habitus" to explain the human agent. Another example of an useful explanation of the underlying dispositions that structure consciousness, very similar to Bourdieu's "habitus", is John Searle's (1995) thesis of the Background, which asserts that intentional states function only against a set of non-intentional capacities, dispositions, and causal structures in general, which enable the formation of intentional states.

Bourdieu's "habitus", and Searle's thesis of the Background, point towards an essential component of behaviour, habit and rule-following, namely non-conscious dispositions, which are often neglected by mainstream economists, who mostly assume that human agents are thoroughly rational, or use again mathematico-deductivist models in order to address these topics.

Searle (1995) argues that the Background is causally sensitive to the specific form of rules and institutions without containing any conscious representation of such rules and institutions, and thus enables rule-following behaviour, even when the agent has no conscious representation of the rules followed. This set of non-conscious capacities and dispositions enables human agents to perform various actions simultaneously without needing to consciously represent all the actions to be performed.

In fact, the simultaneous performance of various actions would not be possible without these Background capacities and dispositions. Of course, the conscious representation of any entity, like any type of human (physical or mental) activity, will also rely on Background capacities and dispositions, including the implicit (hence

covert, or non-conscious) emotional responses that take place when representing a given object, person or group. Culture is to a great extent dependent on these dispositions, which enable the continuous repetition of given cultural norms, rules and practices.

There is already much evidence concerning the neurobiological structures underlying non-conscious behaviour – see, for example, Antonio Damasio (1994). So the role of non-conscious dispositions in shaping given epistemological formations, and the social structures and conventions which we follow in daily affairs, need not be seen as a non-scientific endeavour, as it may have been seen in the past. It is under this structured conception of the economic agent that we can now understand the recent behaviour of financial and economic markets, and the reason why false epistemological representations can be maintained for long periods regardless of their inadequateness for studying social reality.

If we understand the role of non-conscious dispositions in behaviour, we can understand why financial and economic behaviour is often irrational. When representing a given idea, there will be a series of non-conscious dispositions which will play an important role in the formation of our representation of a given reality. Now, when confronted with an unfamiliar situation, dispositions which generate greater levels of anxiety are triggered. This tendency, which emerges as the outcome of a series of emotional responses, can be understood using Ronald Laing's (1965) notion of ontological security, which denotes a tendency to find psychological comfort in sameness and continuity, that is, in the daily repetition of familiar routines, where the disruption of these routines (and the consequent break of continuity) triggers the dispositions which lead to psychological anxiety – see also Lawson (1997).

In periods of high uncertainty, the level of anxiety increases, sometimes leading to panic, such as in the cases of a financial crisis in which the agents feel that any basis for the construction of expectations has been totally lost, as Keynes (1936) noted. Thus, financial panics often reach irrational proportions, as it was the case in 1873, 1929, and more recently in 2008. In such cases, the abrupt interruption of the success of established conventions and routines, and the consequent change of the expectations on the future of the economy, leads to a profound disruption of ontological security.

The mainstream perspective of the economic agent, by suggesting a conception of a rational agent who engages in predictable behaviour regardless of the context in which the agent is embedded, fails to note that agents only engage in stable and predictable behaviour under a stable set of conventions and routines, which in turn require, for example, a stable regulation of financial and economic markets. Expectations are not “rational” predictions given on supposedly known probabilities, but rather a psychological phenomenon supported by multiple structures, including the neurobiological dispositions that support conscious states, and the social structures and conventions which provide stability to human agents. Thus, the stability of conventions, rules and regulation in financial and economic markets, stressed by heterodox economists like Keynes and Hayek, is essential for the functioning of financial, economic and social activity.

As noted above, the notion of ontological security is important not only for understanding society and the economy, but also for explaining the maintenance of false epistemic conceptions regardless of their inadequateness for long periods. Lawson (2003, 2009a) and Bigo (2008) recently suggested that mechanisms of this type are also at play in maintaining the current mainstream orientation towards mathematical modelling. Their argument is that the belief that it is possible to predict the future

through exact regularities of a mathematical type endows mainstream economists with a sense of ontological security, and anxiety is generated when faced with alternative (heterodox) explanations which emphasise the open and unpredictable nature of socio-economic reality. This constitutes a most plausible psychological explanation for the unwillingness of mainstream economists to accept alternative theories and methods, despite the failure of the mainstream project.

9. Concluding remarks

The generalised belief that the use of mathematico-deductivist models is essential for economics to become a science constitutes a false epistemological conception, underpinned by epistemic values which lead to an attempt to mimic natural sciences, and led mainstream economists to assume unrealistic hypotheses on human behaviour, such as perfect foresight and rational expectations, and on the functioning of the economy, such as the efficient market hypothesis, contributing to the recent economic crisis.

As Lawson (1985) notes, mainstream economists like Lucas (1981: 224) argue that in the absence of correct rational expectations, which presuppose correct knowledge about quantifiable and measurable risk (so that mathematico-deductivist methods can be successfully employed) “economic reasoning will be on no value”. The mainstream perspective of the economic agent, by suggesting a conception of a rational agent who engages in predictable behaviour regardless of the context in which the agent is embedded, fails to note that agents only engage in stable and predictable behaviour under a stable set of conventions and routines which require, for example, a stable regulation of financial and economic markets, and not the deregulation that was

sponsored recently under the belief in rational expectations, the efficient market hypothesis, and other unrealistic hypotheses aimed at facilitating mathematic-deductivist modeling.

The heterodox economic traditions, which have attempted to identify the structures that cause social and economic activity without imposing a deductivist structure on their theories, provide a more illuminating perspective of the economy and society than mainstream economics, and perform better than the latter if assessed in terms of important epistemic values like empirical adequacy, coherence and simplicity.

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