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**DRAFT**

## **The State of Economics**

The reputation of economics and economists, never high, has been a victim of the crash of 2008. The Queen was hardly alone in asking why no one had predicted it. An even more serious criticism is that the economic policy debate that followed seems only to replay the similar debate after 1929. The issue is budgetary austerity versus fiscal stimulus, and the positions of the protagonists are entirely predictable from their previous political allegiances.

The doyen of modern macroeconomics, Robert Lucas, responded to the Queen's question in a guest article in *The Economist* in August 2009. The crisis was not predicted, he explained, because economic theory predicts that such events cannot be predicted. Faced with such a response, a wise sovereign will seek counsel elsewhere.

Lucas is gracious, and thoughtful. Thomas Sargent, whose role in developing Lucas's ideas has been decisive, takes a more robust approach in a recent interview on the website of the Federal Reserve Bank of Minnesota.<sup>1</sup> Criticism such as Her Majesty's 'reflect either woeful ignorance or intentional disregard of what modern macroeconomics is about'. 'Off with his head', perhaps. But before dismissing the responses

of Lucas and Sargent as ridiculous, consider why they thought them appropriate. And why many, even a majority, of their academic colleagues remain unapologetic.

In his official lecture on the award of the Nobel Prize for Economics in 1995 Lucas described his seminal model. That model developed into the dominant approach to macroeconomics today, now called dynamic stochastic general equilibrium. In that paper, Lucas makes (among others) the following assumptions: everyone lives for two periods, of equal length, and works for one and spends in another: there is only one good, and no possibility of storage of that good, or of investment. There is only one homogenous kind of labour, no mechanism of family support between older and younger generations. And so on.

All science uses unrealistic simplifying assumptions. Physicists describe motion on frictionless plains, gravity in a world without air resistance. Not because anyone believes that the world is frictionless and airless, but because it is too difficult to study everything at once. A simplifying model eliminates confounding factors and focuses on a particular issue of interest. To put such models to practical use, you must be willing to bring back the excluded factors. You will probably find that this modification will be important for some problems, and not others – air resistance makes a big difference to a falling feather, but not to a falling cannonball.

But Lucas, and those who follow him, was plainly engaged in a very different exercise, as the philosopher Nancy Cartwright explains. The distinguishing characteristic of his approach is that the list of unrealistic simplifying assumptions is extremely long. He was explicit about his objective – ‘the construction of a mechanical artificial world populated by interacting robots that economics typically studies’. An economic theory, he explains, is something which ‘can be put on a computer and run’. Lucas has called structures like these ‘analogue economies’, because they are, in a sense, complete economic systems. They loosely resemble the world, but a world so pared down that everything about them is either known, or can be made up. Such models are akin to Tolkien’s Middle Earth, or a computer game like Grand Theft Auto.

The knowledge that every problem has an answer, even and perhaps especially if that answer may be difficult to find, meets a deeply felt human need. For that reason many people become obsessive about artificial worlds like computer games in which they can see the connection between actions and outcomes. Many economists who pursue these approaches are similarly asocial. It is probably no accident that economics is by far the most male of the social sciences.

One might learn skills or acquire useful ideas through playing these games, and some users do. If the compilers are good at their job, as of course they are, the sound effects, events and outcomes of a computer game resemble those we hear and see – they can, in a phrase that Lucas

and his colleagues have popularised, be calibrated against the real world. But that correspondence does not, in any other sense, validate the model. The nature of such self-contained systems is that successful strategies are the product of the assumptions made by the authors. It obviously cannot be inferred that policies which work in Grand Theft Auto are appropriate policies for governments and businesses.

Yet this does seem to be what the proponents of this approach hope for. The debate on austerity versus stimulus, in academic circles, is in large part a debate about the validity of a property called Ricardian equivalence which is observed in this type of model. If government engages in fiscal stimulus by spending more or by reducing taxes, people will realise that such a policy means higher taxes or lower spending in future. Even if they seem to be better off today, they will be poorer in future, and by a similar amount. Anticipating this, they will cut back and government spending will crowd out private spending. Fiscal policy is therefore ineffective as a means of responding to economic dislocation.

In a more extended defence of the DSGE approach, John Cochrane, Lucas's Chicago colleague, puts forward the policy ineffectiveness thesis - immediately acknowledging that the assumptions which give rise to it 'are, as usual, obviously not true'. For most people, that might seem to be the end of the matter. But it isn't. Cochrane goes on to say that if you want to understand the effects of government spending, you have to

specify why the assumptions leading to Ricardian equivalence are false. That is a reasonable demand, though one that is easy to satisfy.

Cochrane will not give up so easily. He goes on; 'economists have spent a generation tossing and turning the Ricardian equivalence theory, and assessing the likely effects of fiscal stimulus in its light, generalising the 'ifs' and figuring out the likely 'therefores'. This is exactly the right way to do things'. The programme Cochrane describes modifies the core model in a rather mechanical way that makes it more complex, but not necessarily more realistic, by introducing some additional parameters which have labels such as 'frictions', or 'transactions costs' – in much the same way as a game compiler might introduce a new module , or sound effect.

Why is this 'exactly the right way to do things'? There are at least two alternative ways to proceed. You could build a different analogue economy. Joe Stiglitz, for example, favours a model that retains many of the Lucas assumptions, but gives critical importance to imperfections of information. After all, Ricardian equivalence requires that households have a great deal of information about future budgetary options, or at least behave as if they did . A more radical modification might be an agent based model, for example, which assumes households respond routinely to events according to specific behavioural rules. Such models can also 'be put on a computer and run'. It is not obvious in advance - or, generally, in retrospect - whether the assumptions, or conclusions, of

these models are more, or less, plausible than those of the kind of model favoured by Lucas and Cochrane.

But another approach would discard altogether the idea that the economic world can be described by a universally applicable model in which all key relationships are predetermined. Economic behaviour is influenced by technologies and cultures which evolve in ways that are certainly not random but which cannot be fully, or perhaps at all, described by the kinds of variables and equations with which economists are familiar. Models, when employed, must therefore be context specific, in the manner suggested in a recent book by Roman Frydman and Michael Goldberg.

In that eclectic world Ricardian equivalence is no more than a suggestive hypothesis. It is possible that some such effect exists. One might be sceptical about whether it is very large, and suspect its size depends on a range of confounding and contingent factors – the nature of the stimulus, the overall political situation, the nature of financial markets and welfare systems. This is what the generation of economists who followed Keynes did when they estimated a consumption function – they tried to measure how much of a fiscal stimulus was spent – and the ‘multiplier’ that resulted.

But you would not nowadays be able to publish similar articles in a good economics journal. You would be told that your model was theoretically inadequate – it lacked rigour, failed to demonstrate

consistency. You might be accused of the cardinal sin of being 'ad hoc' Rigour and consistency are the two most powerful words in economics today.

Consistency and rigour are undeniable virtues, but for economists they have particular interpretations. Consistency means that any statement about the world must be made in the light of a comprehensive descriptive theory of the world. Rigour means that the only valid claims are logical deductions from specified assumptions. Consistency is therefore an invitation to ideology, rigour an invitation to mathematics. This curious combination of ideology and mathematics is the hallmark of what is often called 'freshwater economics' – the name reflecting the proximity of Chicago, and of other centres such as Rochester, to the Great Lakes.

Consistency and rigour are features of a deductive approach, which draws conclusions from a group of axioms – and whose empirical relevance depends entirely on the universal validity of the axioms. The only descriptions which fully meet the requirements of consistency and rigour are complete artificial words, like those of Grand Theft Auto, which can 'be put on a computer and run'.

For many people, deductive reasoning is the mark of science, while induction - in which the argument is derived from the subject matter is the characteristic method of history or literary criticism. But this is an artificial, exaggerated distinction. 'The first siren of beauty', says

Cochrane, 'is logical consistency'. It seems impossible that anyone acquainted with great human achievements– whether in the arts, the humanities or the sciences = could really believe that the first siren of beauty is consistency. This is not how Shakespeare, Mozart or Picasso – or Newton or Darwin – approached their task.

Much scientific progress has been inductive: empirical regularities are observed in advance of any clear understanding of the mechanisms that give rise to them. This is true even of hard sciences such as physics, and more true of applied disciplines such as medicine or engineering. Economists who assert that the only valid prescriptions in economic policy are logical deductions from complete axiomatic systems take prescriptions from doctors who often know little more about these medicines than that they appear to treat the disease. Such physicians are unashamedly ad hoc; perhaps pragmatic is a better word. With exquisite irony, Lucas holds a chair named for John Dewey, the theorist of American pragmatism.

Engineers and doctors can perhaps be criticised for attaching too much weight to their own experience and personal observations. They are often sceptical, not just of theory, but of data they have not themselves collected. In contrast, most modern economists make no personal observations at all. Empirical work in economics, of which there is a great deal, consists predominantly of the statistical analysis of large data sets compiled by other people.

Few modern economists would, for example, monitor the behaviour of Procter and Gamble, assemble data on the market for steel, or observe the behaviour of traders. The modern economist is the clinician with no patients, the engineer with no projects. And since these economists do not appear to engage with the issues that confront real businesses and actual households, the clients do not come.

There are, nevertheless, many well paid jobs for economists outside academia. Not, any more, in industrial and commercial companies, which have mainly decided economists are of no use to them. Business economists work in financial institutions, but they principally use them to entertain their clients at lunch or advertise their banks in fillers on CNBC. Economic consulting employs economists who write lobbying documents addressed to other economists in government or regulatory agencies.

The mutual disdain of economists and practical people is not because practical people are not interested in economic issues – they are obsessed by them. Frustrated, they base their macroeconomic views on rudimentary inductive reasoning, as in the attempts to find elementary patterns in data - will the recession be V-shaped, or L-shaped, or double dip? *Freakonomics*<sup>2</sup>, which applies simple analytic thinking to everyday problems, has been a best seller for years. Elegantly labelled ideas that resonate with recent experience – the Minsky moment, the tipping point,<sup>3</sup> the Black Swan<sup>4</sup> – are enthusiastically absorbed into popular discourse.

If much of the modern research agenda of the economics profession is thus unconnected to the everyday world of business and finance, this is also largely true of what is taught to students. Most people finishing an undergraduate course today would not be equipped to read the *Financial Times*. They could import data on GDP and consumer prices into a statistical package, and would have done so, but would have no idea how these numbers were derived. They would be little better equipped than the person in the street to answer questions such as 'why were nationalised industries more efficient in France than in Britain?' 'Why is a school teacher in Switzerland paid much more than an Indian one?' or the oldest of examination chestnuts 'are cinema seats in London expensive because rents in London are high, or vice versa?'

In a much mocked defence of his recent graduate school education, Kartik Athreya explains – with approval - that 'much of my first year (PhD) homework involved writing down tedious definitions of internally consistent outcomes. Not analysing them, just defining them'.<sup>5</sup> Many subjects involve tedious rote acquisition of essential basic knowledge – think law or medicine – but can it really be right that the essence of advanced economic training is checking definitions of consistency?

A review of economics education two decades ago concluded that students should be taught 'to think like economists'. But 'thinking like an economist' has come to be interpreted as the application of deductive reasoning based on a particular set of axioms. Another Chicago Nobel

Prize winner, Gary Becker, offered the following definition; 'the combined assumptions of maximising behaviour, market equilibrium, and stable preferences, used relentlessly and consistently form the heart of the economic approach'. Becker's Nobel citation rewards him for 'having extended the domain of macroeconomic analysis to a wide range of economic behaviour', But such extension is not an end in itself: its value can lie only in new insights into that behaviour.

'The economic approach' as described by Becker is not, in itself, absurd. What is absurd is the claim to exclusivity he makes for it: *a priori deduction from* a particular set of unrealistic simplifying assumptions is not just a tool but 'the heart of the economic approach'. This is not simply about mathematics versus poetry. Deductive reasoning of any kind, necessarily draws on mathematics and formal logic: inductive reasoning is based on experience and above all on careful observation, and may, or may not, make use of statistics and mathematics. The real issue is the need to recognise that economics is not a technique in search of problems but a set of problems in need of solution. Such problems are varied and the solutions will inevitably be eclectic.

As with analysis of the financial market crisis of 2008. Lucas's assertion that 'no one could have predicted it' contains an important, though partial, insight. There can be no objective basis for a prediction of the kind 'Lehman Bros will go into liquidation on September 15', because

if there was, people would act on that expectation and, most likely, Lehman would go into liquidation straight away. The economic world, far more than the physical world, is influenced by our beliefs about it.

Such thinking leads, as Lucas explains, directly to the efficient market hypothesis – available knowledge is already incorporated in the price of securities. And there is a substantial amount of truth in this – the growth prospects of Apple and Google, the problems of Greece and the Eurozone, are all reflected in the prices of shares, bonds and currencies. But not necessarily accurately, or completely. There are wide differences in understanding and belief, and different perceptions of a future that can be at best dimly perceived.

In his *Economist* response, Lucas acknowledges that ‘exceptions and anomalies’ to the efficient market hypothesis have been discovered, ‘but for the purposes of macroeconomic analyses and forecasts they are too small to matter’. But how could anyone know, in advance not just of this crisis but of any future crisis, that exceptions and anomalies to the efficient market hypothesis are ‘too small to matter’?

You can learn a great deal about deviations from the efficient market hypothesis, and the role they played in the recent financial crisis, from journalistic descriptions by people like Michael Lewis and Greg Zuckerman, who describe the activities of some individuals who did predict it. The large volume of such material that has appeared suggests many avenues of understanding which might be explored. You

could develop models in which some trading agents have incentives aligned with those of the investors who finance them, and others do not. You might describe how prices are determined in a clash between competing narratives about the world. You might seek to understand the institutional problems that made it difficult to find, or access, the instruments that established short positions, and appreciate the natural human reactions that made it difficult to hold these positions when they returned losses quarter after quarter.

This pragmatic thinking, employing many tools, is a better means of understanding economic phenomena than 'the combined assumptions of maximising behaviour, market equilibrium, and stable preferences, used relentlessly and consistently' – and to the exclusion of any other 'ad hoc' approach. More eclectic analysis would require not just deductive logic, but an understanding of processes of belief formation, of anthropology, psychology and organisational behaviour, and meticulous observation of what people, businesses and governments actually do. You could learn nothing about these things if you started with the proposition that deviations are 'too small to matter' and all that is knowable is already known and therefore 'in the price'. And that is why today's students do, in fact, learn nothing about these things, except perhaps from extra-curricular reading.

What Lucas means when he asserts that deviations are 'too small to matter' is that attempts to construct general models of deviations from

the efficient market hypothesis – by specifying mechanical trading rules or by writing equations to identify bubbles in asset prices – have not met with much success. But this is to miss the point: the expert billiard player plays a nearly perfect game, but it is the imperfections of play between experts that determine the result. There is a – trivial – sense in which the deviations from efficient markets are too small to matter – and a more important sense in which these deviations are the principal thing that matters.

The claim that most profit opportunities in business or in securities markets have been taken is justified. But it is the search for the profit opportunities that have not been taken that drives business forward, the belief that profit opportunities that have not been arbitrated away exist that explains why there is so much trade in securities. Far from being ‘too small to matter’, these deviations from efficient market assumptions, not necessarily large, are the dynamic of the capitalist economy.

Such anomalies are idiosyncratic and cannot, by their very nature, be derived as logical deductions from an axiomatic system. The distinguishing characteristic of Henry Ford or Steve Jobs, Warren Buffett or George Soros, is that their behaviour cannot be predicted from any prespecified model. If their behaviour could be predicted in this way, they would not have been either innovative or rich. But the consequences are plainly not ‘too small to matter’.

The preposterous claim that deviations from market efficiency were not only irrelevant to the recent crisis but could never be relevant is the product of an environment in which deduction has driven out induction, and ideology has taken over from observation. The belief that models are not just useful tools but are capable of yielding comprehensive and universal descriptions of the world, blinded proponents to realities that had been staring them in the face. That blindness was an element in our present crisis, and conditions our still ineffectual responses. Economists – in government agencies as well as universities – were obsessively playing Grand Theft Auto while the world around them was falling apart.

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<sup>2</sup> Levitt, S. and J.S. Dubner, 2005, *Freakonomics: A Rogue Economist Explores the Hidden Side of Everything*, William Morrow, US.

<sup>3</sup> Gladwell, M., 2001, *The Tipping Point: How Little Things Can Make a Big Difference*, London, Abacus New Ed edition

<sup>4</sup> Taleb, N. N, 2008, *The Black Swan: The Impact of the Highly Improbable*, London, Penguin

<sup>5</sup> Athreya, K., 2010, *Economics is Hard*, Federal Reserve Bank of Richmond.