

# A Response to the Cynics

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*John Lynham discusses whether economics is a true or pseudo science. It is argued that econometrics while, having faults, compares well with the other physical sciences and concludes that economics and econometrics are true sciences.*

*'They don't ask themselves – and I think this is the worst sin of them all – whether there doesn't exist a different model that would fit the data equally well, and what does that tell me? So I think that the problem with economists is that they do too much uncritical empirical work, and that they deceive themselves with the refinements of their methods.'*

Robert Solow<sup>1</sup>

*'If there is one of you who has not sinned, let him be the first to throw a stone at her'*

John: 8:7

## Introduction

The general consensus reached by essays on this topic in past Student Economic Reviews and other publications is that the impact of econometrics on economic theory has been minimal and that far from cementing the scientific status of economics, it has only made economics appear pseudo-scientific, a social science parading around as a “real” one. This essay intends to buck the trend and it will argue that econometrics is more sinned against than sinning; that economics is indeed a scientific discipline and its scientific status is wholly dependent on econometrics.

## Economics as Science

The strength of economics lies in its perception as the most scientific of the social sciences and this explains why it is accorded more respect in the media, policymaking and the minds of the general public. Many economists have gone to great lengths to demonstrate economics' scientific status. For example, there are a number of links, similarities and overlaps between economics and the “real” sciences. For instance, Adam Smith's concept of “natural liberty” could be thought

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<sup>1</sup> Solow, R quoted by Blaug, M. (1992) *The Methodology of Economics – or How Economists Explain*, Cambridge University Press: Cambridge, p 242.

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of as an ecological concept. Under a regime of natural liberty, a society will develop specialised occupations and experience economic evolution. The biological world, likewise, operates under a regime of natural liberty and produces specialised species which interact with each other and produce a process of evolution which is unplanned, at least in the sense that the invisible hand does not have to be attached to a head.

Wade Hands has emphasised both the predictive success of economics as well as its scientific credentials:

*'...general equilibrium theory represents an apogee for economic theory. It has achieved a degree of formal rigor and sophistication comparable with the greatest physical theories, a sophistication which makes every other social science seem woefully parochial in comparison. Granted, elegance is neither necessary nor sufficient for science, but it certainly keeps economics above the muddle which often reigns in other social sciences'*<sup>2</sup>

In fact, the general equilibrium theory that Hands speaks of has begun to have an impact on the real sciences, for example in the field of biology. The formalism and results of general equilibrium theory are turning out to have applications for establishing stability conditions for ecosystems. The results of economists are being taken over and reinterpreted by mathematical ecology: they provide proofs and stability conditions for unique stable equilibriums that modern evolutionary biology requires in the development of its own theory of balance and competition in the evolution of the biosphere.<sup>3</sup>

### Three Charges, Three Responses

Nevertheless, the scientific status of economics is under threat and nowhere more belligerently than in the attacks on econometrics. Critics argue that econometrics provides an unsatisfactory analysis because it is plagued by three main problems: weak data, ideology affecting the outcome of empirical tests, and misdirected effort.

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<sup>2</sup> Hands, Wade (1984) "What Economics Is Not: An Economist's Response to Rosenberg," *Philosophy of Science* 51, p. 502

<sup>3</sup> Rosenberg, Alexander (1992) *Economics: Mathematical Politics or Science of Diminishing Returns*, University of Chicago Press: Chicago-London, p 250.

The first charge is that econometricians are obsessed with statistical pyrotechnics – ‘Physicists do not compete to find more and more elaborate ways of observing falling apples’<sup>4</sup> – whilst ignoring the problem with their data. The main distinction made between the data of economics and that of the natural sciences is that the economic data under consideration is liable to historical change. Cynics point out that the CPI measures something different from the CPI of 40 years ago whilst an atom of carbon has the same structures it did 40 years ago.<sup>5</sup> This type of reasoning ignores the fact that “real” scientific data, just like economic data, changes with time. Before the work of James Chadwick in 1932, an atom of carbon contained no neutrons. Today it does. The data used in econometrics does have its drawbacks but this does not mean that economics is in any way less scientific than the “real” sciences.

The second problem relates to the charge of data mining and aprioristic conclusions; researchers massage results so as to produce an outcome that accords with personal opinion. Econometricians rarely try to find out if there is another fit to the data, ‘acting as if the data admitted only a unique inference’<sup>6</sup>, the aforementioned “biggest sin of all”. Mayer claims that the practice of running thirty regressions and only publishing the one that confirms a hypothesis is widespread.<sup>7</sup> To think, however, that those academics in what Mayer terms the ‘hard sciences’ are not guilty of the same sins is to place scientists on an ethical pedestal they do not deserve. Scientists, like economists, have their own prejudices and ideologies. Take for example, Dr Brigitte Boisselier, a controversial scientist forging ahead in the field of human cloning, who is a member of the Raelian religious sect, which believes that cloning is the first step towards attaining eternal life.<sup>8</sup>

The third problem (that of misdirected effort) is similar to the second and was summed up by Patinkin as ‘the high correlation between the policy views of a

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<sup>4</sup> Summers in Poirier, Dale (1994) *The Methodology of Econometrics II*, Elgar: Aldershot, p 530.

<sup>5</sup> Dixon, Padraig (1998) “Econometrics and the Science of Economics,” *Student Economic Review 1998*, (Colourbooks) p. 76

<sup>6</sup> Leamer, Edward (1985) “Sensitivity Analysis Would Help”, in *American Economic Review*, vol. 75, no 3. p 324.

<sup>7</sup> Mayer, Thomas (1993) *Truth Versus Precision in Economics*, Elgar: Aldershot, p 141.

<sup>8</sup> <http://www.guardian.co.uk/Archive/Article/0,4273,4224163,00.html>

researcher and his empirical findings'.<sup>9</sup> Econometricians, apparently, are only willing to put effort into research that will be personally beneficial. Yet again, scientists have been given an ethical higher ground that they do not deserve. Scientists pursue projects for the sake of profit or research grants. They disagree on a wide variety of “facts”, often dependent on their financial backing. A group of scientists funded by major oil companies have proven that global warming is just as likely to be a natural fluctuation in the earth’s temperature. Until very recently, some groups claimed that there was no definite link between smoking cigarettes and lung cancer with scientific research to back up their claim.

### Should we heed the “stone-throwers”?

Econometrics is, first and foremost, a relatively young discipline (the Econometrics Society was founded in 1930). It is crucially important to note that the aforementioned flaws of econometrics are a result of the “sins” of econometricians. This does not imply that the purpose of econometrics, namely to apply mathematical statistics to economic data to lend empirical support to economic models,<sup>10</sup> is at fault. The problem lies, not with the discipline, but with the practitioners. But I believe that the cynics are still unduly harsh on econometricians, and I have attempted to show that criticisms made about econometricians can also be made about “hard” scientists. Furthermore, it is only fair to expect mistakes and sins in a field that, in relative terms, is still in its infancy.

Heeding the “stone-throwers” by rejecting econometrics is not an attractive alternative. It would leave economics with almost no quantitative and qualitative way of selecting from among an abundance of possible explanations the one that best explains economic events. Even if there are other methods for testing economic hypotheses, such as the looser methods of colligation practised by economic historians, or ethnographic methods,<sup>11</sup> the demands of policymakers for scientific theory will nevertheless drive us back to the use of econometrics.

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<sup>9</sup> Latsis, Spiro (ed.) (1976) *Method and Appraisal in Economics*, Cambridge University Press: Cambridge, p202.

<sup>10</sup> Tintner, G. (1968) *Methodology of Mathematical Economics and Econometrics*, The University of Chicago Press, Chicago, p. 74.

<sup>11</sup> Blaug, M. (1992) *The Methodology of Economics – or How Economists Explain*, Cambridge University Press: Cambridge, p. 245.

## Suggestions for the future

The way forward, therefore, is not with constant ridicule but with suggestions to improve both theoretical and applied econometrics. The suggestions made by Thomas Mayer in 1980 are still relevant today:

- More emphasis should be placed on the problem of data collection.
- Econometric results should not be treated as evidence from a “crucial experiment”.
- Journals should encourage work on the basis of the likely validity of the results reported and not on the basis of the technical sophistication of the techniques employed.
- Requiring authors to present all the regressions they ran can reduce data mining.
- Authors should not use up all their data in fitting their regressions, leaving a reserve against which to test the regressions.
- Journals should publish papers that report insignificant results and require authors to submit their unpublished data so others can easily verify their work.<sup>12</sup>

My own personal suggestion would be to change the way in which economics is taught. Since universities, by and large, produce the econometricians of the future it is perhaps not surprising that they can be guilty of ideological bias when the general progression of economics courses is to start with the teaching of economic history and competing ideologies/interpretations and to conclude with the teaching of econometrics and methodology. Empirical analysis should be one of the first skills that students of economics learn and not one of the last.

## Conclusion

Yes, econometrics has its faults. And these faults do make it easy to attack the scientific status of economics, since econometrics aims to be the scientific backbone of economic theory. But if we are going to attack econometrics when it fails to live

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<sup>12</sup> Mayer, 1980

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up to our expectations of real scientific analysis, surely we should also allow it the privileges that we grant real scientific analysis.

Do we expect benefits from scientific analysis? Yes, of course we do. Do we say in advance what they are, where they will come from, and when? Definitely not. Is this the slightest reason to either deny the importance of scientific analysis or to suggest that attention should not continue to be lavished upon it? On the contrary, it is reason to give it a slack rein, to accept that scientists are fallible and to give it all the intellectual freedom it demands. *Mutatis mutandis* for econometrics.

*'The only cure for the shortcomings of econometrics is more and better econometrics'.*

Pesaran<sup>13</sup>

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<sup>13</sup> Pesaran in Blaug, M. (1992) *The Methodology of Economics – or How Economists Explain*, Cambridge University Press: Cambridge.

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