‘Uncertainty: A Diagrammatic Treatment’: Reply to the Referee

I am grateful to the referee for raising a number of issues with the paper which show that, and how, the paper needs to be revised in order to make the argument to be more clear. Since some of my replies refer to more than one aspect of the report, I preface each paragraph with the relevant paragraph numbers from the report.

Paras 2, 3, 10: The first thing that I need to do is to clarify the aim of the paper, which is to explore a different way of expressing the differences between the mainstream understanding of uncertainty and the Keynesian understanding, and to use the crisis as a way of illustrating the differences. It is the case that the Keynesian understanding is the one I find more persuasive, but I did not set out to make that case (something which has already been done in several excellent Post Keynesian analyses of the crisis focusing on uncertainty).

Para 7: Further my focus was on teasing apart different meanings of terms used in common; in my view this is more of a problem than common meanings of different terms (although that too is certainly worth exploring as a separate exercise).

Paras 2, 8, 9: The referee’s main concern relates to the level at which the analysis is conducted – micro or macro? Inevitably a diagrammatic approach has to simplify, but the referee is right that this aspect needs to be explained more fully. Regarding the observations about parallels in physics, the completely uncertain universe corresponds to the nihilistic interpretation of Keynesian uncertainty, while mainstream theory and its empirical application identify causal relations which are nevertheless stochastic in the sense that further, unidentified causes are treated as random, captured in an error term.

I had presented the ‘universe of expectations’ as a macro phenomenon, although reference was made to interactions within that. But if we take the mainstream approach, its use of the representative agent, possibly within a few well-defined subgroups (like professional investors and non-professional investors), does allow the analysis to be conducted at the macro level while referring to individuals’ expectations. In the Keynesian approach the justification is different: the influence of social conventions and systemic developments on expectations indicates an emphasis on the macro level as influencing the micro level.

If we take the mainstream approach to ambiguity as the result of missing information, we can, as the referee points out, discuss asymmetries between different groups. Thus, according to this approach, ‘experts’ characterised as having all the information can calculate probabilities (thus coming under the ‘risk’ category) while ‘non-experts’ may not have full information to allow them to calculate risk but nevertheless behaved as if they did (thus also falling into the ‘risk’ category). It was only when the extent of missing information was realised that these non-experts understood that their expectations were actually subject to ambiguity. As this realisation spread markets collapsed. The implication is that, if the risk arising from sub-prime mortgages had been transparent within structured products, the crisis would not have occurred.

The Keynesian account is different. The pricing of assets is based on a conventional assessment of risk, drawing as much as possible on a range of types of evidence and argument, but ultimately on

judgment. Some market players of course have more recourse to evidence than others and their judgments influence market sentiment. But these expert players themselves grew over-confident that what they were actually measuring true risk, influencing others to share their confidence, and the seeds were sewn for the boom. The collapse followed as reality broke through to encourage more reasonable assessments of the extent of fundamental uncertainty. The implication is that, if it hadn't been the opaqueness of structured products which hid subprime mortgages, it would have been something else which would have woken markets up to the fragility of the financial structure.

Para 4: Although rational expectations are embedded in the discussion of the mainstream approach, I take the referee's point that it would be helpful to discuss them more explicitly, drawing the parallels between the debates over rational expectations and the different understandings of uncertainty set out in the paper.

Para 5: Yes indeed, confidence depends on how much support there is for a judgement about probability. This is captured in the ambiguity approach as a measure of how complete is the information supporting a quantified probability. In a Keynesian approach it is captured by the concept of weight of argument with respect to probability, something which is not itself quantifiable given the inability to specify what complete information would be; weight is also subject to discrete shifts (up or down) as judgments change about what is in fact relevant information.

Para 6: As far as sets of models are concerned, the main issue in my view as to what divides the mainstream and Keynesian approaches is how models are regarded. From a mainstream perspective, the corollary of the conditions for calculating risk is the scope for identifying causal relations which are open to calculation and testing. The issue of choosing among a range of models can itself be dealt with by testing. Where there is 'model uncertainty', rational expectations theory provides a way forward by means of complex error structures. As theory develops in order to endogenise more relationships, or to take on board the outcome of shocks, new models will emerge. But the system is still closed (just extended) since it is still presumed that it can be represented by a calculable model. The Keynesian view of models is that (as long as they simplify, but do not contradict, reality) they can constitute contributions to the collection of arguments which go into theorising. But, since the economic system is open, any model is not only partial but also inevitably provisional, requiring adjustment as the economy evolves.

Para 7: Finally there is the matter of terminology. It is suggested that the paper should refer to a 'pictorial' treatment rather than a 'diagrammatic' treatment. But I find it hard to go along with the referee's argument that diagrams should only refer to 'quantitative' relationships rather than conceptual relationships. There are many examples of standard diagrams in economics which do not refer to quantitative relationships.

Sheila Dow

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