

## **Comment on John Davis's 'A methodological perspective on economic modelling and the global pandemic'**

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By exploring what economic methodology can learn from epidemiology John Davis provides a constructive foray into another discipline, accompanied by an insightful critical commentary on the current state of the field of economic methodology.

He notes that epidemiological models of contagion are more complex than most economics models by dint of starting from the nature of the subject matter. A pandemic is seen as a 'two-direction, two-level feedback system': between individual behaviour and interactions at the first level and the aggregate outcomes which set the circumstances which motivate subsequent behaviour and interactions at the second level. It is argued, using some examples, that the independent individualistic nature of the rational optimising agent in mainstream economic models precludes the possibility of a second level; motivation for choice continues to be individual optimisation rather than social, and interactions only influence the information base. There is no scope for contagion.

Davis argues further that the resulting limits on economic modelling are not addressed by the mainstream economic methodology literature. He notes the predominant (i.e. mainstream) approach to economic methodology as being the positivist study of actual practice such that judgments are not made, e.g. about the characterisation of individual behaviour. Rather economic methodologists could usefully consider a broader range of understandings of the subject matter, such as is found in other disciplines. This would provide the basis for critically examining the mainstream characterisation of individual behaviour and its motivation. Options would then open up to new methodologies, including importing new methods from other disciplines like epidemiology.

Davis explores other examples in economics which do account for feedback systems, such as Minsky's financial instability hypothesis. This account of the open-system subject matter of socio-economic systems means that knowledge in financial markets is generally uncertain. Interactions in expectations formation at a social, conventional level are fundamental and in turn influence outcomes which are the basis of further expectations formation. These outcomes depend not only on shifting conventional expectations but also on the evolution of institutions and practices, including the consequences of financial innovation. The transmission of expectations can thus be understood as a form of contagion.

So Post-Keynesian theory would seem to be a good potential comparator for epidemiological models. Davis's argument that the starting-point should be discussion of the nature of the subject matter accords well with Post-Keynesian philosophy. There would also be agreement that the independent-agent basis of mainstream models conflicts with the nature of feedback loops within real socio-economic systems (an analysis that draws on other disciplines' understanding of the subject matter). Further there is a substantial Post-Keynesian literature on economic methodology which, as Davis advocates, makes judgements about how theory can best capture the nature of socio-economic systems.

It is important for this discussion that the issue is framed by Davis in terms of modelling, leaving unanswered the question of the sufficiency of mathematical models to account for complex feedback systems. It would be interesting to have more discussion of this issue in relation to complexity economics since it is explicitly couched in terms of complex feedback systems. As far as Minsky is concerned, he quite deliberately avoided embodying his theory within a single formal model; rather he used models à la Keynes as aids to thought. This methodological position was grounded in the view that, given the nature of the subject matter, uncertainty was the norm. The processes he identified were systemic but not deterministic.

It could be argued then that epidemiological models would be too deterministic for economics. But the argument could be turned around: perhaps epidemiological models are too deterministic for pandemics. It was clear early on in the COVID pandemic that widely-cited epidemiological models were too limited. They needed to be considered alongside specialist knowledge based on behavioural research and on public health practice. These can contribute knowledge of behavioural responses to different types of policy and of institutional design and adaptation in light of public health requirements based on both experience and theory. All of these have the capacity to alter the nature of the feedback loops. Many epidemiological models now incorporate behavioural changes identified ex post through statistical analysis. But projecting behaviour forward in predictive modelling is still subject to considerable uncertainty. Key factors are the importance for outcomes of the degree of trust in the policy-making authorities, the clarity of communication and the effectiveness of policy delivery. In general there is considerable variability in the degree to which causal factors are even approximately deterministic, and therefore amenable to inductive extrapolation. Inputs from other types of expertise are still required. There is scope for non-mainstream economic methodology to inform discussion of epidemiological models.

Davis has shown that looking outside economics allows us to address methodological issues with a fresh eye. But it is not made altogether clear why economics should turn first to other disciplines as the source for new economic methodologies rather than to pre-existing bodies of economic theory and associated methodologies (like those of Minsky or of complexity theory). The noted marginalisation of non-mainstream theory within the hierarchical structure of economics could well be of rhetorical importance. When faced with an argument for ontological awareness, there could be resistance to references to particular ontologies which are uncongenial. Arguing that economics should be more like other disciplines in being open to different understandings of the subject matter and consequent methodology may well have more rhetorical force within mainstream economics than arguments in favour of non-mainstream

economics. Would this be the case particularly for disciplines in the physical sciences rather than the social sciences?

This is a thought-provoking analysis from John Davis, raising questions, answering some and provoking others. I hope that he builds further on this paper in future research.

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SUGGESTED CITATION:

Dow, Sheila (2021) 'Comment on John Davis's "A methodological perspective on economic modelling and the global pandemic"' *Economic Thought*, 10.2, pp. 9-11.

<http://www.worldeconomicsassociation.org/files/journals/economicthought/WEA-ET-10-2-Dow.pdf>