Introductory texts in economic methodology

The following articles provide you with a basic understanding of those meta-theoretical topics that are most relevant for applied modelers. The selection is subjective and not necessarily complete. In case you do not have much time I suggest you reading article 1.6. since it contains a summary of many relevant philosophical concepts.

1.1. Basic terminology: Ontology and Epistemology

Suggested reading: Bates & Jenkins (2016)
These two terms describe two important areas in the philosophy of science. Understanding what they are about is necessary if you want to think systematically about the utility of different research methods. The article introduces the two concepts, and discusses their relationship to each other.

1.2. The ontology of economies and the concept of systemism

Suggested reading: Gräbner & Kapeller (2015)
Do social systems consist of individuals only, or is there something such as social structures? In the past, two ideal approaches were standing opposed to each other: individualistic and holistic approaches. Modern systemism suggests a golden middle way, which, I think, helps in structuring one's thoughts about the economy as a system under investigation.

1.3. How to study economies? Direct and indirect approaches

Suggested reading: Weisberg (2007)
How can scientists generate knowledge about the systems they investigate? Is there anything particular about social sciences? A widely used tool to study social system is a 'model'. But what is a model? Are their alternatives? Can we study social systems without models, and if yes, what would be the (dis)advantages?

1.4. Representational capacities of different modeling approaches

Suggested reading: Weisberg (2013), chapters 2 and 3
There are physical models of social systems, such as the hydraulic economies, and there are mathematical models. Are there other types of models? How do they differ from each other and how can I say the one type is better than the other?

1.5. Models as representations of reality

Suggested reading: Frigg & Nguyen (2017)
Models are helpful to study social systems by serving as *representations* of these systems. But when can we say that a model, which might consist only of some equations, actually represents a real economy? This review article discusses the most prominent answers to this question?

1.6. Relating models to reality

Suggested reading: Gräbner (2018)
A model represents a target system. How can and should we test *how well* it represents this target system? In addition to answering this question the article also summarizes and explains key epistemological concepts of to a more applied audience.

1.7. Learning from theoretical models

Suggested reading: Ylikoski & Aydinonat (2014)
How can we learn something about reality with simple, and necessarily incomplete models? This article focuses on very simple and abstract models.

1.**8. Choosing and testing assumptions in a fair way**
Suggested reading: Kapeller (2013)
How do models contribute to theory construction? And how can and should we use the assumptions of these models? This critical article makes the important distinction between core and auxiliary assumptions, and explains how confounding the two can harm scientific progress.

1.9. The particularities of agent-based models
Suggested reading: Epstein (1999), Foley & Farmer (2009)
Agent-based models are a particular type of models, but what makes them distinctive and why should we use them, and not other types?

Suggested readings

Frigg, Roman, and James Nguyen. 2017. "Models and Representation." *In Springer Handbook of Model-Based Science*, edited by Lorenzo Magnani and Tommaso Bertolotti, 49–102. Dordrecht, Heidelberg, London and New York.

Epstein, Joshua M. 1999. "Agent-Based Computational Models and Generative Social Science." Complexity 4 (5). John Wiley & Sons, Inc.: 41–60.

Foley, Duncan K, and J Doyne Farmer. 2009. "The Economy Needs Agent-Based Modelling." *Nature* 460 (6): 685–86.

Gräbner, Claudius, and Jakob Kapeller. 2015. "New Perspectives on Institutionalist Pattern Modeling: Systemism, Complexity, and Agent-Based Modeling." Journal of Economic Issues 49 (2): 433–40. doi:10.1080/00213624.2015.1042765.

Gräbner, Claudius, and Jakob Kapeller. 2017. "The Micro-Macro Link in Heterodox Economics." In *The Routledge Handbook of Heterodox Economics*, edited by Tae-Hee Jo, Lynne Chester, and Carlo D'Ippoliti, 145–59. London, UK, New York, NY.

Gräbner, Claudius. 2018. "How to Relate Models to Reality? An Epistemological Framework for the Validation and Verification of Computational Models." ICAE Working Paper 63.

Gobbi, Alessandro, and Jakob Grazzini. 2017. "A Basic New Keynesian DSGE Model with Dispersed Information: an Agent-Based Approach." *Journal of Economic Behavior and Organization*. doi:10.1016/j.jebo.2017.12.015.

Kapeller, Jakob. 2013. "'Model-Platonism' in Economics: on a Classical Epistemological Critique." *Journal of Institutional Economics* 9 (2): 199–221. doi:10.1017/S1744137413000052.

Matthewson, John, and Michael Weisberg. 2008. "The Structure of Tradeoffs in Model Building." *Synthese* 170 (1): 169–90. doi:10.1007/s11229-008-9366-y.

Ylikoski, Petri, and N Emrah Aydinonat. 2014. "Understanding with Theoretical Models." *Journal of Economic Methodology* 21 (1): 19–36. doi:10.1080/1350178X.2014.886470.

Weisberg, Michael. 2007. "Who Is a Modeler?" *The British Journal for the Philosophy of Science* 58 (2): 207–33. doi:10.1093/bjps/axm011.

Weisberg, Michael. 2013. Simulation and Similarity. New York, NY: Oxford University Press.