On "Toy Models"[*]

Fabio Ghironi[†]
University of Washington, CEPR, and NBER
Director, Research Program in International Trade and Macroeconomics, Central Bank Research Association

July 18, 2016

Narayana Kocherlakota posted an interesting essay on "Toy Models" online on July 17, 2016. The essay is available at https://t.co/8dS85Nlpg9. Below are the comments I sent to Narayana via Twitter today.

Interesting essay, but your characterization of "serious" models seems oversimplified, and too easy to cast as an attack against all dynamic, microfounded, general equilibrium models under uncertainty—for our readers who are not into our lingo, those are the models commonly referred to as DSGE. From my perspective, the essay can be used too easily by those who oppose DSGE models almost as a matter of dogma, which I hope is not your position. Usually, these people do not recognize that one can do quite a lot of what you call for ("drastically simplified models to actively explore core mechanisms, forces, and their interactions") while remaining within the context of dynamic, stochastic, general equilibrium—and (I believe) without turning into engineers.

I always thought (and still think) that a model should contain the ingredients that are necessary to address the question(s) of interest—be the model of the DSGE variety or not. In my opinion, the first paragraph in your description of "toy" models applies also to a lot of what I would define "serious" DSGE models. In the DSGE context, an interesting, important question is where to draw the line between "toy" DSGE models and "quantitative" ones, or even—in some cases— "kitchen sink" ones. I would draw the line based on the criterion above: does the model build on the ingredients that are necessary for the question(s) of interest and only on those ingredients? Then I can easily think of "baby-toy" DSGE models that can give misleading answers to important questions because they do not incorporate ingredients that are really necessary; and I can easily think of "kitchen sink" models where economics is buried in engineering far beyond the purpose of producing a reasonable quantitative model. My view is that "kitchen sink" models probably did a disservice to the DSGE literature ("baby-toy" models have more value as starting points for discussion).

While most of my work since graduate school has been of DSGE nature, I actually have no problem with departing from DSGE, but we need some clarity on what should discipline model building when we do depart. The choice of ingredients that are necessary to address a question

can be subjective. There is a set of criteria for evaluation of DSGE model performance in relation to the question(s) of interest. What criteria other than necessity of ingredients do you think we should use to discipline model development when we abandon DSGE? Frankly, I was very perplexed when I saw some very ad hoc models presented at recent conferences. I found myself wondering how the same work would have been received by the conference organizers and audiences (and how it would be received by editors and referees) if the authors had been different. That's a problem for the profession and the development of a "toy" model agenda that is not ultimately confined to very small groups of researchers.

Finally, while you had negative things to say about the state of macroeconomic modeling in your 2009 FRB Minneapolis Annual Report Essay on "Modern Macroeconomic Models as Tools for Economic Policy," I wonder how you reconcile your most recent essay with that one, as I am not sure they are entirely consistent with each other (and maybe you do not want them to be).

Thank you for causing me to think about interesting, important questions, as always.