

How Not to Build a Useful Macro Model

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This post continues the focus on proper macroeconomic model construction. This short piece offers advice on how *not* to build a useful model. Economists will unfortunately recognize the offending three-step approach as commonplace in modern research.

First, identify an interesting (preferably not well known to economists) mathematic technique. Second, rummage around in available macro issues for one that, within the mainstream market-centric general-equilibrium framework, can be adapted to the technique. This step is not particularly difficult. Textbook competitive market-equilibrium analysis already employs highly simplified assumptions that facilitate mathematical analysis. Third, assemble and publish the model.

Be clear that I am not arguing that math cannot be used in useful model-building. It has obviously been highly productive in the GEM Project. My argument is instead that, to be policy-relevant, mathematic technique must be carefully employed in the context of the five-step process described two weeks ago.

Robert Lucas has led the way in legitimizing the short-cut three-step approach. He recommends focusing on the technical as the most productive approach to model-building: "I see the progressive element - I don't want to say that everything is in Smith and Ricardo - the progressive element in economics as entirely technical: better mathematics, better data, better data-processing methods, better statistical methods, better computational methods. I think of all progress in economic thinking, in the basic core of economic theory, as developing entirely as learning how to do what Hume and Smith and Ricardo wanted to do, only better." (*Collected Papers on Monetary Theory*, p.513)

The advantages of the three-step mathematic modeling are considerable. Chief among them is that theorists no longer have to endure the time-consuming process of gathering evidence and previous analyses that are typically needed to inform themselves about the actual nature of the problem. When evidence is considered in the short-cut math-centric three-step modeling, facts are carefully selected to be supportive of the theory. Also important is that criticism is likely directed to the mathematics, not the economics, of the model - once again, a much easier proposition for the ill-informed. Inherent problems with the easy short-cut, of course, begin with the high likelihood that the model will be useless for practical application. The three-step approach methodology has never had much claim to being policy relevant.

Math centric three-step model-building is little more than a labor-saving strategy that most frequently results in a product with little practical use. Better mathematics *et al.* are a slender reed with which to transform modern macro theory into something stabilization relevant. The Lucas three-step approach cannot hope to produce models that are helpful in both understanding and effectively responding to real-world stabilization problems. They will never explain the Great Depression, the stagflation decade, the Great Recession, or any other broad market breakdown made significant by their huge monetary and nonmonetary costs. The adequate analysis of macro stabilization in highly specialized economies, especially given the advent of information-challenged workplaces, requires a fundamental shift in the way Hume, Smith, and Ricardo did economics. More rigorous technique will not do.

In my PhD dissertation at Princeton, I modeled unemployment in developing countries. I was explicitly working within the two-sector growth model that Arthur Lewis developed in the 1950s. Being good at math, I used nonlinear difference equations to fancy up Sir Arthur's explanation of unemployment that rationally results from labor flows between his two low- and high-productivity sectors. Even then I knew that the real progress in how to understand and respond to this important problem was made, without mathematics, by Lewis's careful five-step model-building recently described in this Blog. My three-step (reversing the first two steps) contribution was trivial. By contrast, the GEM Project's five-step generalized-exchange modeling fundamentally enriches Lewis's contribution, generalizing it from its original context of developing countries to all modern highly specialized economies. The Sir Arthur, a professor of mine at Princeton, would have been pleased.

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