

Comment

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If we are to understand the role of debt, and especially government debt, in the economy, the starting point has to be macroeconomic models that admit financial frictions. And these frictions must create market imperfections both atemporally and intertemporally. Furthermore, debt has to matter both in the private and in the public sphere. To put it more generally, we need to understand why the Modigliani-Miller theorem fails and why Ricardian equivalence fails. Without models that admit financial frictions and a clear role for both public and private debt, we cannot start to understand why the structure and size of central bank balance sheets matter, nor can we understand why the maturity structure of government finances should have an impact on aggregate activity.

The papers in this workshop help move us towards this understanding. By building models that bring finance explicitly into the New Keynesian macroeconomic framework, they provide us with the first glimpses of the direction we need to go. With these objectives clearly in mind, Fabrizio Zampolli reviews theories in which sovereign debt management plays a role as a monetary policy tool. Jagjit Chadha looks at the effects of quantitative easing in dynamic stochastic general equilibrium (DSGE) models with certain financial frictions. And Robert Cumby considers a DSGE model in which government bonds have liquidity value.

Before proceeding to my main remarks, let me make a general point about modelling. First, without models – by which I mean simple mathematical representations of economic systems – we are lost. At the very least, models give us a structure to organise our thinking and provide a check on the logical consistency of our conclusions. Models are transparent, putting everything out in the open. At their best, models reveal astonishing conclusions driven by the inescapable logic arising from the assumptions they embody. In these critical respects, DSGE models are no different from any other models, so we should not campaign against them. What is critical, however, is that models not be built or used mindlessly. They are a means to an end, and that end is to understand relationships in the economy.

Second, I should reveal my preferences for linear models relative to non-linear ones. This is a practical preference, not a theoretical one. Of course, reality is non-linear. Even the smallest amount of introspection reveals non-linearities in one's own thinking. But our ability to model non-linear systems is, in my view, destined to fail. Recall that several decades ago there was a move to try to distinguish non-linear deterministic systems from linear stochastic ones.¹ This caught many people's fancy, including mine. But after playing around with this for a while, most of us realised that statistical tests had zero power – and I mean zero power – to distinguish the non-linear from the linear. The reason is simple: everything is locally linear, so what you need to find non-linearity is a large amount of data in what appears to be the tail of the distribution of the stochastic model. But the tail events that could identify the non-linearity are sparse. So, in the end, the econometrician trying to find convincing evidence of non-linearity is dead in the water.

Turning to my main points, I would like to discuss four challenges to macroeconomic modelling: the introduction of financial intermediation, the assumption of rational behaviour

¹ See, for example, the material that is presented in Brock, Hsieh and LeBaron (1991).

and optimisation, the use of representative agent models, and the use of general equilibrium.²

Starting with financial intermediation, recall that banks play no role whatsoever in macroeconomic models of the pre-crisis era. These traditional models are based on the distinction between nominal and real quantities, and there are interest rates. But the only friction is the one associated with nominal price changes, so inflation and inflation control become the focus. (If it is costly to change prices, inflation creates a deadweight loss.) And, since the model is devoid of banks, there is no private debt. As I suggested at the beginning, the macroeconomic models of the future, with their added focus on financial linkages, need to have a rationale for debt as distinct from equity. We need to understand why the predominant financial contract is a loan or a bond rather than equity. In fact, we need a clear understanding of the optimal debt/equity ratio for the economy as a whole. We know that high levels of debt can lead to disaster for a society, but beyond notions from crude empirical work, we don't have any idea what the right level of debt is. A rich enough macro/monetary/financial model will tell us the answer.

Next, I have a few comments about rational behaviour, information structures and optimisation. The adoption of optimal control methods with rational expectations, and the associated information structures, is comfortable. Alternative formulations do not have either unique equilibria or straightforward solution techniques. For a theorist, having a continuum of equilibria is unsettling. For a policymaker, it is a disaster. What central banker, when asking his or her economic adviser to characterise the likely impact of a change in policy, wants to hear: "Well, to tell you the truth, anything can happen"? With uniqueness comes a good night's sleep. But, in the end, the models are wrong and the equilibria are numerous. This means that persistent deviations from fundamentals are the norm, not the exception, and we need to move away from our desperate psychological need for uniqueness.

The third item on my list is representative agent models. For several decades, we have insisted that macroeconomic models be built on solid microeconomic foundations. And, even worse, that the microeconomic foundations be those for a representative agent. This created a lack of any real distinction between macroeconomics and microeconomics, beyond the questions the models were used to address. But the insistence on microeconomic foundations may have blinded us to the fact that the macroeconomic models are not up to the task of addressing the questions we really need to answer. An analogy may help illustrate what I have in mind. Let's say that we are trying to measure tide height at the beach. We know that the sea is filled with fish, and so we exhaustively model fish behaviour, developing complex models of their movements and interactions. Finally, we have a model of the fish that we are able to simulate and compare to the data from monitoring the fish themselves. The model is great. And the model is useless. What we needed was a model of the moon! The behaviour of the fish is irrelevant for the question we are interested in: how high will the seawater go up the beach? I worry that by building microeconomic foundations we are focusing on the fish when we should be studying the moon.

Finally, there is the issue of partial versus general equilibrium. Most macroeconomists, including me, have spent our entire professional careers trying to ensure that we focus on general equilibrium. We have various tricks and rules of thumb for making sure that we don't fall into traps, ascribing partial equilibrium results to general equilibrium systems. But the fact that there may be fallacies of composition doesn't mean that we should always insist on general equilibrium. In those cases where general equilibrium is too hard – and there are many – shouldn't we accept and use the lessons partial equilibrium has to offer?

² These remarks are based on Cecchetti, Disyatat and Kohler (2009).

In conclusion, let me say that the work presented in this workshop is of clear value. It moves us forward, helping us to understand many of the key questions that arise in the aftermath of the financial crisis. Integrating financial systems into monetary models helps us to understand how we should be thinking about interactions between the real economy and the financial system. This is essential work if policymakers are to succeed in delivering high, stable growth, low, stable inflation and a stable financial system.

References

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