

The DSGE models and the Lucas Critique. A Historical Appraisal.

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*Communication proposal
for the 16th Colloque International
de l'Association Charles Gide
(Strasbourg, April 14-16 2016)*

The aim of the article is to confront Lucas recommendations about modelling methodology with the dynamic stochastic general equilibrium (DSGE) approach. The narrow question which will be analyzed here is the so-called Lucas Critique (Lucas, 1976) and its relevance for the DSGE models.

The DSGE are systematically presented by their supporters as a sound tool for economic policy expertise. To back their claim, DSGE modelers often appeal to the fact that DSGE are consistent with the methodological principles exposed in Lucas (1976). Since DSGE models follow Lucas's methodological recommendations about modelling explicitly dynamic optimal decision rules of the economic agents with rational expectations (the "microfoundations"), they are not vulnerable to the Lucas Critique.² As a consequence, econometric evaluation of the effects of alternative policies is supposed to be free from the burden of invariance in agent's behavior face to economic policy changes and to changes in the "environment" in a larger sense. Following this argument, DSGE models are widely used by central banks and international institutions (e.g., IMF) for policy-simulation exercises.

Recently, DSGE models have gone through harsh criticism precisely on this point. Interestingly, some criticism came from macroeconomists who are either in the core of central bank modeling practices (such as Hurtado, 2014) or from major figures of the real business cycle approach (such as Plosser, 2012), the very forerunners of the DSGE. Those debates focus on the truly "structural" nature of the parameters (Fernández-Villaverde and Rubio-Ramírez, 2007; Chang *et al.*, 2010), especially by investigating if the policy invariance of the

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² For instance, in the presentation of MOISE, a recent DSGE model of the Bank of Israel, we can read: "Being micro-founded, the model enables the central bank to assess the effect of its alternative policy choices on the future paths of the economy's endogenous variables, in a way that is immune to the Lucas (1976) critique." (Argov *et al.*, 2012, p. 5)

parameters is empirically relevant (Estrella and Fuhrer, 2003; Rudebusch, 2005; Lubik and Surico, 2010; Cogley and Yagihashi, 2010). Therefore, the fundamental question to be answered, as Chari *et al.* (2008) put it, is if DSGE models are actually “useful for policy-making”, i.e. if they provide consistent conditional forecasts in the sense of Lucas (1976).

My contribution will try to put this debate in a historical perspective.

We will start with an overview of the ambiguous reception of the Lucas Critique in the further generation of macroeconomic models, especially real business cycles (RBC) and new Keynesian models. We discuss, on the one hand, how the RBC theory claimed to account for the Critique but failed in respecting its fundamental message because of their empirical methods (calibration); and, in the other hand, how the New Keynesian program was silent about the Critique but fundamentally endorse its methodological prescriptions through the quest for microfoundations.

We will then focus on the debates, in the DSGE literature, about the relevance of the Lucas Critique for this class of models. Therefore, we will enlighten how DSGE modellers reached a precarious methodological “compromise” about the Critique: indeed, the DSGE approach stands in an intermediate situation, which is inherited from the RBC and the New Keynesian ambiguous reception of Lucas (1976).

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