The New Keynesian 3-Equation Model

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Two characteristics of the famous New Keynesian (NK) three-equation model (hereafter 3EM) are, from the perspective of the GEM Project, especially interesting. First, it has become important, broadly used in modern mainstream teaching and research. Second, it is misleading, dismayingly so, failing fundamental tests of stabilization relevance and micro-macro coherence. It should be scrapped.

Poutineau *et al*. (2015, pp.3-4) describe the consensus 3EM as combining "… the methodology of Real Business Cycles (RBC) with nominal and real rigidities to characterise short run macroeconomic developments. More particularly, the NK seeks to explain the macroeconomic short run evolution of an economy subject to real and monetary shocks and to replicate business cycle statistics. The core representation of this synthesis has given rise to what is called the '3-equation model' as the basic NK setting reduces to a simple system of three equations corresponding to an AS-AD model. First, the AS curve is represented by the New Keynesian Phillips curve that relates inflation to the output gap. Second, the AD component of the model combines a dynamic IS curve (that relates the evolution of the output gap to the interest rate) and a MP (Monetary Policy) schedule that describes how the nominal interest rate is set by the central bank following fluctuations in the output gap and in the inflation rate. This model is based on agents' micro founded decision rules where consumers maximize their welfare subject to an intertemporal budget constraint and where firms maximize their profit, subject to nominal rigidities, characterising the imperfect adjustment of prices on the goods market."

This post focuses on two interrelated 3EM problems. First, the compact model omits both meaningful wage rigidity (MWR) and its unique capacity to short-circuit wage recontracting. As a result, 3EM cannot come close to replicating the most crucial business-cycle statistics, notably the behavior of involuntary job loss (IJL) and involuntary unemployment (IU), and therefore cannot be stabilization-relevant. Second, many users of 3EM falsely claim microfoundations rooted in rational price-mediated exchange organized by continuous general decision-rule equilibrium. The fact is that the 3EM falls well short of such micro-macro coherence. Taken together, the problems fatally compromise the ubiquitous NK model.

Missing IJL. The 3EM reliance on the NK Phillips curve, which relates product-price inflation to an output-gap, crowds out the meaningful treatment of labor pricing and, consequently, the most consequential outcomes of labor-market failure. One result of the model's focus on product pricing illustrates its capacity to mislead: The truncated model provides support for the NK consensus that central banks should have a single stabilization objective: low, stable product-price inflation. The GEM Project easily demonstrates the mainstream design of monetary-policy to be dangerously wrong, a conclusion rooted in readily observable characteristics of highly specialized economies. Most critically, nominal demand disturbances uniquely interact with MWR to produce recognizable movement in forced job loss, involuntary unemployment, total employment, real output, wage income, and profits. (Chapter 6) The contemporaneous inflation response is relatively modest. Taken alone, product prices provide information that is neither timely nor much indicative of what's happening in the labor market or, more generally, the real economy as a whole. Central-bank monitoring confined to inflation cannot support effective stabilization management of highly specialized economies. (Chapter 10)

Moreover, further pushing the 3EM model out of line with business-cycle statistics, it has no room for pure profits,. The GEM Project identifies profit expectations to be the primary determinant of volatile investment spending, reducing the unreasonable adjustment burden on interest rates in market-centric mainstream modeling. The singular importance of interest rates is another deeply misleading feature that must make students suspicious about the 3EM capacity to explain recognizable economic behavior.

Micro-macro incoherence. Poutineau *et al*. are typical in claiming that the 3EM "is based on agents' microfounded decision rules where consumers maximize their welfare subject to an intertemporal budget constraint and where firms maximize their profit, subject to nominal rigidities, characterising the imperfect adjustment of prices on the goods market." An interesting question in the NK literature is whether the widespread false advertising is deliberate.

NK authors simply assert the microfoundation of nominal rigidities needed to make 3EM simultaneously micro-macro coherent and stabilization-relevant. Poutineau *et al*. typically argue that nominal rigidity "comes from the aggregation of the supply decision of firms that have market power and can re-optimize their selling price with discontinuities (*i.e.* nominal rigidities – they cannot modify their selling price at any point in time)…. The New

Keynesian Phillips' Curve is derived from the Calvo model [1983] which combines staggered price-setting by imperfectly competitive firms.... [T]he Calvo approach assumes that in each period, only a fraction Θ of firms, randomly chosen, can reset their selling prices."

Poutineau *et al*. fail to explain why it is not in the profit-seeking self-interest of firms in (1- Θ) subset to adjust their prices. Lower prices in circumstances of changed demand can result from altered posted prices or targeted discounts. From Sims (2001, p.265): "… firms with sticky prices are offering unbounded call options. That is, they are offering to sell as much of their product as the market demands at their 'stuck' prices, no matter how long their price is stuck. This is not the way actual sticky prices work. Even in retail catalogues, everyone understands that an attractively priced and popular product may sell out, and the seller has no obligation to provide arbitrary amounts of the product at the quoted price."

More consequential, product-price rigidity (including Calvo's arbitrarily rotating class) provides no mechanism that suppresses wage recontracting. That's a big deal. Rational recontracting eliminates involuntary job loss, which the evidence always identifies as the primary engine of involuntary unemployment in recession. Stabilization authorities must reject any model that cannot accommodate forced layoffs and involuntary joblessness. The 3EM is neither coherent nor stabilization-relevant. It should be scrapped.

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