

Helping the Romer Brothers

Author : James Annable

Date : Nov 29, 2019

Two decades ago, David Romer constructed the reigning New Keynesian, and therefore current mainstream, version of the Phillips curve. That contribution, which will be closely examined in a new GEM Project monograph, *Resurrecting Meaningful Wage Rigidity*, got me to thinking about the Romer brothers, two economists who have actively participated in the development of modern macro theory. The brothers' work says something important about the extraordinary reach of the Project's generalized-exchange modeling.

David Romer (b. 1958)

In 2001, the younger Romer published a free-parameter version of the Phillips curve that, as noted, quickly became the go-to NK single-equation wage model. He described it as a "natural compromise" between the competing catch-up and expectations interpretations of the influence of product-price inflation on nominal wage change:

$$w(t) = a_0 + a_1(U^N - U(t)) + (1 - \psi)p_k(t) + \psi E_t p(t+1) + \varepsilon(t),$$

where U^N denotes the natural rate of unemployment, U is actual joblessness, p_k is lagged consumer-price inflation, E represents expectations rationally rooted in the cost-effective use of available information, and ε is an error term. His innovation is $\psi \in [0,1]$, which represents the contribution of rational inflation expectations, relative to actual past inflation, to nominal wage change.

Like the Early Keynesian adaptive-expectations Phillips curve, Romer's NK adaptation is simply assumed. It is not derived from, and indeed is inherently inconsistent with, rational behavior. His analysis, however, is made more interesting by pushing the basic NK argument a step further, asserting that ψ is theoretically indeterminate. Not only is his stabilization-relevant model irrational, he appears to have concluded that no evidence-consistent Phillips curve can be rooted in rational behavior. It is instructive that that Rudd and Whelan (2005) tested the "natural compromise" hybrid and found little empirical support for the hypothesized role played by forward-looking inflation expectations.

This blog has argued, I believe convincingly, that the Project's generalized-exchange Phillips curve represents a better mousetrap:

$$w(t) = b_0 + b_1(U^N - U(t)) + b_2 p_{\ell}(t) + b_3(E_t p^M(t+1) - E_{t-1} p^M(t)) + e(t),$$

where ℓ is the price-inflation lag structure ($t-k$ to t), p^M denotes trend inflation, and e is an error term. E represents expectations rationally constructed on the cost-effective use of available information. There is no reliance on free parameters, including Romer's ψ . All of the behavioral variables are ultimately motivated by rational behavior organized by general decision-rule equilibrium.

The natural rate of unemployment (U^N) continues to occupy a central place in the revised approach, but price expectations recede to a more latent role, activated only during perceived changes in the central bank's inflation regime. Efficient wage-setting arrangements in the context of significant firm-specific human capital mandate that catch-up to past inflation carries the brunt of the periodic adjustments of nominal wages for the behavior of product prices. In an important contrast to David Romer, the weighting of catch-up to past inflation and expectations of future inflation is endogenous, eliminating his compromising use of the "theoretically indeterminate" free parameters. (ψ).

The GEM Phillips curve yields two conditions that enable an intuitive synthesis of money neutrality and non-neutrality:

- *The stable-inflation-regime condition.* If the central bank's inflation regime (p^M) is credibly stable, money is non-neutral. Nominal demand shocks interact with meaningful wage rigidity, producing inflation persistence and same-direction movement in production and employment.
- *The variable-inflation-regime condition.* Credible changes in the inflation regime produce labor pricing

consistent with money neutrality. In the generalized-exchange theory, a policy aimed at ever-faster money growth cannot sustain unemployment below its natural rate.

Paul Romer (b. 1955)

Paul Romer shared the 2018 Nobel Prize in Economics. In announcing the Prize, the Royal Swedish Academy of Sciences stated that he had shown “how knowledge can function as a driver of long-term economic growth. . . . [Prior macroeconomic studies] had not modelled how economic decisions and market conditions determine the creation of new technologies. Paul Romer solved this problem by demonstrating how economic forces govern the willingness of firms to produce new ideas and innovations.”

In support of his formal analysis of the endogenous production of “new ideas and innovation”, Romer (1990) constructed a multi-sector model of macrodynamic pricing power:

- His “final-goods sector” is comprised of numerous perfectly competitive firms that produce homogeneous consumption goods.
- His “intermediate-goods sector” is comprised of monopolists who produce heterogeneous capital goods sold to the final-goods sector.
- His “research sector” develops and sells various patent-protected designs of capital goods to the intermediate-goods sector, from which those firms derive their monopoly power.

An methodological message from Romer and other endogenous-growth theorists is that the partitioning of firms into multiple, fundamentally heterogeneous venues of exchange can confine increasing returns to scale sufficiently to enable a workable solution to the adding-up problem in pricing factors of production. In that context, it is notable that GEM venue partitioning, originally constructed a decade before Romer as a synthesis of workplace and marketplace exchange in Annable (1980, 1984), is both less arbitrary and more powerful than the Nobel-winning theory.

The two-venue general-equilibrium theory accommodates the textbook treatment of scale economies, typically induced by input indivisibilities/specialization, as well as the nonrivalrous ideas that occupy Romer. In a related difference, GEM product pricing, influenced by firm scale and labor rents, is more general than pricing power motivated by patent-protection. Finally, workplace-marketplace modeling is more tractable, having no critical need to kept track of multiple classes of capital.

The Message

The intent of this post is not instruction on the complex role of innovation or, more narrowly, nonrivalrous ideas in the trend behavior of productivity and living standards. Nor is to demonstrate, once again, the ease in taking down NK Phillips curves. It is not even to get you to think about interesting inter-family dynamics once one brother wins a Nobel Prize. Instead of any of that, the objective is to illustrate the extraordinary range and usefulness of the GEM Project’s generalized-exchange theory. It seems that no matter what the macro topic, GEM analysis significantly improves the explanatory power of the existing mainstream model.

Blog Type: [Wonkish Chicago, Illinois](#)