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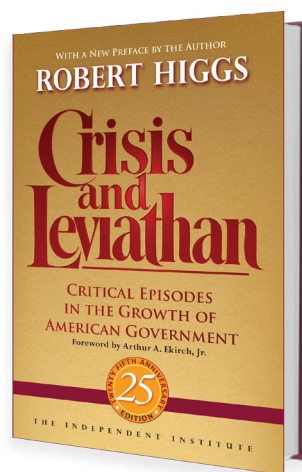
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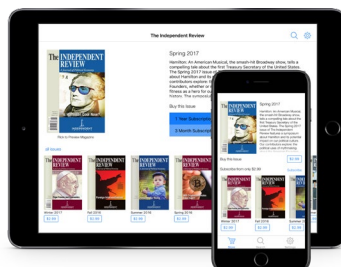
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Etceteras . . .

Economic Modeling

Why the Standard Model Survives Bad Performance

STEVEN D. GJERSTAD AND VERNON L. SMITH

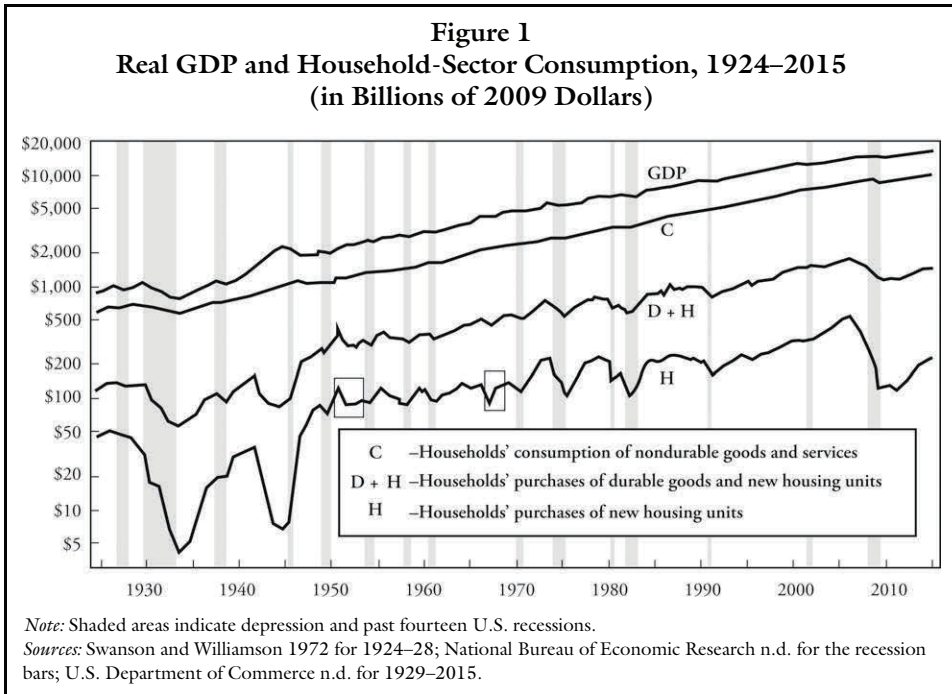
Many economists are reluctant to abandon their favored model of the general economy: the dynamic stochastic general equilibrium (DSGE) model.¹ This model is favored because most of the time if the economy departs from its accustomed long-term growth path, it returns to that path in a short-enough time to argue against abandoning the model. In thirteen of the past fifteen recessions—87 percent of the cases—the U.S. economy has avoided getting stuck in severe underperformance.

The top line in figure 1 plots the logarithm of real (inflation-adjusted) gross domestic product (GDP) over the past ninety-one years, from 1924 through the first quarter of 2015. There have been only two great peacetime declines in which economic growth fell substantially below its long-term trend: the decline of 1929–40 and the current decline beginning in 2007.

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1. A general-equilibrium model includes consumers and their demand over final products; it also includes firms that produce intermediate goods and final consumption goods. Households supply labor to firms and receive income from them. Firms earn profits, which they distribute to shareholders. A general-equilibrium model is closed in the sense that the resources required for production, such as labor and raw materials, arrive as endowments and are transformed into capital goods or consumption goods, and the profits that accrue to firms are returned to agents in the economy. The dynamic version of the general-equilibrium model has a sequence of time periods, which permits modeling and analysis of issues such as capital investment and accumulation, economic growth, and the effects of monetary policy. The stochastic version of the model includes productivity shocks, which these models treat as a significant factor in economic fluctuations. The internal consistency and flexibility of these models is a significant factor in their widespread adoption for academic modeling and macroeconomic policy analysis. For a summary of these models and their application to policy analysis, see Sbordone et al. 2010, 25.

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GDP's typically close adherence to its trend is attributable primarily to households' consumption spending for nondurable goods and services (C). Roughly two-thirds of GDP, C is the heavy flywheel that almost always maintains the momentum and stability of economic output and masks the inability of the DSGE model to capture instabilities arising from other components of GDP. Notice that in figure 1 GDP has some ripples in it, whereas C has almost none.

What is unique and special about C that normally imparts its stabilizing inertia to return GDP to its long-term trend?

Households' consumption is essentially composed of items that are perishable and not retraded, such as haircuts, hotel space, and hamburgers. You buy them for their immediate consumption value; consumers specialize as buyers and are well practiced in that role, as are producers in their role as sellers of these goods and services. Laboratory experiments corroborate such markets' ability to quickly converge to equilibrium outcomes. These defining features are so fundamental that you probably never think about their deeper significance. Neither do economists and policy makers. As a consequence, and critical to understanding models such as DSGE, there is never any conflict between the immediate consumption value of an item and its resale price. Resale is not an option and does not enter your thoughts or your market behavior.

Economic instability derives from the components of final demand that are durable and retraded. In sharp contrast with households' consumption, which is smooth, consumer spending on durable goods (D) plus that most lasting of all

consumer goods, new housing expenditures (H), $D + H$, is a much more volatile component of final output. Figure 1 also shows that households' purchases of new housing units are the most volatile component of GDP; this variable is a leading indicator in recessions both small and large. Eleven of the past fourteen recessions have been preceded by downturns in H.

Housing is sometimes especially troubling, as we witnessed with the national collapse in house prices in the Great Recession as well as in the Great Depression. In housing markets, people can get caught up in self-reinforcing expectations of rising (or collapsing) prices. In such episodes, the immediate consumption value of a house as shelter conflicts with its resale or expected resale value. When house prices are rising, the prospect of capital gains for new home buyers can bolster an already strong market, leading to a positive-feedback effect. Conversely, when house prices are falling, many potential buyers delay their purchases. Their absence from the market reinforces the downturn. This is the Achilles heel of the DSGE model: in the DSGE model, households purchase capital goods only for the utility they provide, whereas in the economy people at times make purchases out of a speculative motive. The fact that housing is generally purchased largely with borrowed money and that the amount of credit provided for home mortgages can vary greatly compounds the problem and adds to the instability of the housing market.² Moreover, the monetary fuel for housing bubbles not only depends on domestic policy but is also importantly influenced by international capital flows. From 1999 to 2007, nearly \$5 trillion flowed into the U.S. economy from abroad, which supported the large increase in mortgage lending that pushed up house prices (Gjerstad and Smith 2014, 66.) Globally, capital flows exacerbate the tendency for regional asset-market bubbles to form as investors pursue higher speculative yields in the next hot market.

To summarize, the DSGE model doesn't account for housing purchases motivated in whole or part by speculation on capital gains, nor does it account for the positive-feedback loop that mortgage lending creates when unusual levels of mortgage credit push house prices higher and those price increases justify additional lending. The fact that international capital flows can provide enormous external stimulus to these feedback loops exacerbates the problem. This limitation of the DSGE model alone would limit its ability to predict the impact of housing cycles: the balance-sheet problems that result from a bursting bubble compound the problems for the DSGE model.

After unusually large accumulations of mortgage debt, sharp declines in house prices that occurred in the Depression and the Great Recession caused unaccustomed damage to households' and their lender banks' balance sheets. Single and multi-family real estate equity fell by a third from 1929 to 1932 and by more than half

2. In laboratory asset-market experiments, it is common to observe spontaneously generated price bubbles and to verify that they are exacerbated by cash or credit abundance and new cash inflows. See Smith, Suchanek, and Williams 1988 for the original experimental study of asset bubbles. For a discussion of and references to subsequent replications of and extensions to their experiment, see Gjerstad et al. 2015.

from 2006 to 2009. Housing equity did not recover its 1929 level until 1940 (Gjerstad and Smith 2014, 275). In early 2015, national housing equity, at \$11.25 trillion, was still 12 percent below its 2006 peak after nine years (Gjerstad and Smith 2014, 74, 274). In none of the other recessions shown in figure 1 were there housing-equity declines comparable to these outlying cases. And in none of those minor recessions did the Federal Reserve lose control of either the housing market or the economic recovery process through low interest rates.

Stock-market bubbles have historically not presented a challenge to the economy similar to that of housing bubbles: high-margin requirements and the fact that the loans can be called mean that balance sheets do not accumulate recovery-killing debt burdens, as with homeowners and their banks (Gjerstad and Smith 2014, 219). The fresh volatility in world stock markets beginning the week of August 17, 2015, is most likely a reflection of regional signs of economic deceleration, not itself a cause of the new tremors.

Figure 1 contains evidence consistent with the proposition that when households and their banks have healthy balance sheets, government spending can indeed compensate for a decline in private spending. The declines in the construction of new homes (H) in 1950–51 and again in 1966–67 constitute the only two declines of more than 10 percent in H since World War II that were not followed soon by a recession. In the first case, government spending in the Korean War helped delay a recession, and in the second case spending on the Vietnam War explains the delay. (These periods are marked by boxes in figure 1.)

The strong recovery in the United States after 1940 has long been attributed to government spending: the buildup to World War II. Thus, analysts have generalized that one fiscal-stimulus episode as appropriate policy *whenever* monetary policy is ineffective. But the truth is that by 1940 the United States had experienced eleven years of balance-sheet repair. Households and their banks were whole once again, and government spending could pick up any slack. In short, even if fiscal stimulus “worked” in 1940, in no sense can we infer that it would have worked in 1930! Indeed, this explains the widespread disappointment with the Bush–Obama spending stimulus; it sputtered because there were too many damaged balance sheets. And today, eight years after the downturn, we still seem to have a distance to go, with an uncertain Federal Reserve reluctant to ease up on its monetary stimulus.

Of course, some claim that the stimulus failed because it was not large enough; and some, basing their view on models that failed to predict the 2007–2009 collapse, claim that the stimulus prevented a far worse outcome (see, e.g., Blinder and Zandi 2015). Maybe so, but neither argument excuses leaving balance sheets out of the models.

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