Financial intermediation and the Great Depression: a multiple equilibrium interpretation

A comment

Stephen D. Williamson

University of Iowa

This paper by Cooper and Ejarque has two major faults. First, the authors attempt to wring more implication from their model than it is capable of delivering. In particular, the model has little, if anything, to do with financial intermediation, the Great Depression, or multiple equilibria. Second, the authors have failed to build on closely-related previous work.

The starting point for this paper is the real business-cycle (RBC) model of Greenwood, Hercowitz, and Huffman (1988), where business cycles are driven by shocks to the marginal efficiency of investment (MEI) rather than total factor productivity, as in the standard RBC model (Prescott 1986). It was well-known, at least as early as Barro and King (1984), that MEI shocks, when introduced in the standard neoclassical growth model, tend to produce counterfactual correlations in aggregate quantities. That is, a positive MEI shock permits more future capital to be produced with the same current input of consumption goods, which essentially lowers the price of future consumption goods in terms of current consumption. As a result, current consumption falls, investment, employment, and output rise, and productivity falls. Thus, consumption and productivity will tend to be countercyclical, which does not fit the facts. The contribution of Greenwood, Hercowitz, and Huffman was to incorporate MEI shocks into an RBC model with variable capacity utilization and variable depreciation. These innovations produce a much better fit to postwar U.S. time series data. That is, for reasonable parameterizations, consumption and productivity are procyclical, and the quantitative fit to the second moments in the data is tolerably good. One potential problem of the model of Greenwood, Hercowitz, and Huffman is...
that, for values of the intertemporal elasticity of substitution close to one, the variability in investment about trend is much higher than in the data.

The base model that Cooper and Ejarque work with is essentially identical to Greenwood, Hercowitz, and Huffman, absent variable capacity utilization. The fact that there is a fixed cost associated with investment in the "optimistic" state appears to be unimportant for the results. Now, what was a problem for the Greenwood, Hercowitz, and Huffman model in fitting post-war U.S. data is a virtue here. In the interwar period, investment was much more volatile than it was postwar, and a key characteristic of the MEI shock model is the high volatility that it imparts to investment. In general though, Cooper and Ejarque find that their model fits some facts for the interwar period, but is grossly inconsistent with others. In particular, they obtain a negative correlation between consumption and investment. That this surprises them is surprising to me, as even a casual reading of Greenwood, Hercowitz, and Huffman reveals the source of this counterfactual correlation and indicates clearly how the problem can be fixed, as discussed above.

There are two remaining puzzles concerning Cooper and Ejarque's numerical work. These are:

1. Why are consumption and productivity procyclical in the simulated data?

2. Why doesn't variable capacity utilization fix the counterfactual consumption-investment correlation?

My conjecture is that the solutions to these two puzzles are closely related. Cooper and Ejarque model the MEI shock as a two-state Markov chain with infrequent transitions between states. An examination of Figures 3 and 4 indicates, as one would expect given Greenwood, Hercowitz, and Huffman, that in transition periods consumption and output move in opposite directions and productivity and output move in opposite directions (given the movements in hours). Consumption and productivity are both procyclical over the entire simulated data set, as the character of the time series is primarily determined by the behavior of the model between transitions. In fact, my guess is that consumption and productivity would be countercyclical if the simulated data were run through the standard Hodrick-Prescott filter. Similarly, the consumption-investment correlation remains negative even with variable capacity utilization, as this correlation is also dominated by the between-transition behavior of the time series. That is, following a negative (positive) shock consumption declines while investment increases (decreases). Thus, the model will better fit the business-cycle facts if the simulated data are treated properly to separate secular from cyclical behavior.
The authors fail most dramatically in their attempt to interpret the Greenwood, Hercowitz, and Huffman model in terms of multiple equilibria in explaining the Great Depression. The multiple equilibria which occur here are not dynamic sunspot equilibria, but simply a reinterpretation of the technological impulses in the Greenwood, Hercowitz, and Huffman model. One could apply this reinterpretation in virtually the same way to any RBC model. For example in Hansen (1985), we could argue that there is an externality in production, whereby individual producers always have access to the worst production technology and can use successively better technologies if all other producers do likewise. Producers coordinate on a technology based on the observation of a sunspot variable. In this case, business cycles are driven by “sunspots” and there are “multiple equilibria,” but the model is in all respects identical to Hansen’s in which the impulses are labelled “technology shocks.” Similarly, Cooper and Ejarque are free to give the impulses in their model any interpretation they like, but their arguments for a multiple equilibrium/sunspot interpretation as an alternative to a technology shock interpretation are not convincing. The authors argue that a technology shock interpretation of the Great Depression is implausible, as there could not have been “technological regress.” However, their alternative is no more plausible; it appears to me equally difficult to interpret the events of the Great Depression in terms of “optimism” and “pessimism.” The important financial events concerning the Great Depression, which Cooper and Ejarque argue are the “motivating features” of their paper, are documented in Friedman and Schwartz (1963). These events include massive bank failures and dramatic increases in the currency/deposit and deposit/loan ratios of banks. To explain these features of the data, it appears to me necessary to build a model with an explicit role for financial intermediation and for monetary factors. How else can one hope to determine the cause(s) and propagation of the Great Depression, and how Federal Reserve Policy and deposit insurance affected the length and severity of the downturn? The Greenwood, Hercowitz, and Huffman model, being a modified RBC model, is simply not an adequate vehicle for studying the problem at hand.

In conclusion, I find this paper very disappointing. The Great Depression is fertile ground for studying the roles of financial intermediation, monetary policy, and banking regulation in the business cycle. Given this, Cooper and Ejarque’s title and the introduction to their paper are very enticing. However, expectations are quickly deflated when one finds the authors fumbling with a decade-old technology (note my ancient reference list) and forgoing an opportunity to make real progress.
References


