Keynesian Versus Real Business Cycle Models

Keynesian macroeconomics and real business cycle macroeconomics have different approaches to modelling methodology.

Aggregate Demand

Keynesian macroeconomics models aggregate demand—the demand for consumption and for investment, plus the demand for money.

For example, one might disaggregate by constructing consumption demand functions for goods and services, for nondurables, for automobiles, and for durables other than automobiles.

One uses statistical methods to fit the demand functions from historical data. For example, what variables best explain the demand for automobiles? The variables might be price, income, and the cost of gasoline.

Simulation

Given the fitted demand functions, one simulates the model. Given the exogenous variables, one solves the equations of the model for the endogenous variables. Effectively one is solving an elaborate version of the Keynesian cross model—aggregate demand for goods equals national product.

The goal is for the solution to the simulation to be near the historical values.

Interpretation

A further goal is to interpret past expansions and contractions. What caused each to occur?

For example, one might blame a particular recession on too tight monetary policy, which raised the interest rate, which reduced investment demand, followed by a multiplier effect on consumption.

Alternatively, one might blame a particular recession on weak consumption demand. Given the national income, consumption demand was less than usual. This lack of demand might be the cause of the recession.

Utility and Production

In contrast, real business cycle theory models the business cycle in a more abstract way. One analyzes a one-sector neoclassical model, with utility and profit maximization. The utility function of a "representative" consumer depends on his leisure and his consumption of goods. The consumer maximizes his lifetime utility, subject to his budget constraint. One postulates a production function for a typical firm, and the firm produces to maximize profit.

Simulation

The economy is in general equilibrium, with demand equal to supply for labor and for the single produced good.

Given the utility function, the production function, and the resource endowment, one solves for the general equilibrium.

Technology Shocks

The methodology is that shocks to technology explain the business cycle. If the level of technology advances, then the general equilibrium changes.

Since the consumer maximizes lifetime utility, a shock to technology in one period can affect the economy not only when the shock occurs, but also in other periods.

Problem

A problem for real business cycle theory is that one cannot observe the assumed shocks to technology. One cannot prove that a particular contraction in the past was caused by particular changes in technology, because these changes are not observable.

Hence the theory does not try to explain why or when particular business cycles occurred.

Simulation

Instead, one simulates the model by assuming a probability distribution of the shocks to technology. Some years technology improves, but other years it may stay constant or decline.

The goal is to find that the probability distribution of expansion and contraction generated by the model agrees with historical observation.

The theory does attain this goal, in the sense that a choice of utility and production functions and a choice of the probability distribution of the technology shocks generates a probability distribution for expansion and contraction that does agree with historical observation.

That one does not explain or interpret any particular expansion or contraction in the past remains a basic weakness.

Explanation?

The issue remains of whether the real business cycle methodology is valid. Do shocks to technology indeed explain expansion and contraction?

Unless one can measure technology shocks independently of the business cycle, the asserted relationship remains unproved.