The Real Business Cycles Model

Introduction

Real business cycle theory arose in part as a counter to the growing popularity of monetary explanations for business cycles. In particular, conclusions drawn from the new rational expectations concept included statement that anticipated changes in the money supply should have no effect on real output. This harkens back to the Classical Model as a long-run statement, but is put forward as a specifically short run result.

Business cycles do exist so real business cycle theory needs a model that explains business cycles. The very simple model presented here explains business cycles in terms of shocks to a production function. These shocks are often labeled as technology shocks, but the most well-known empirical examples are the energy price shocks in the 1970's. These shocks can be interpreted as making part of the capital stock economically obsolete.

The Model

Robinson Crusoe's production function is

$$Q = T1 (N + T2 + 0.001)^{T3},$$

where N is hours of labor, T1 = 10, T2 = 0, and T3 = 0.50 are technology parameters, and 0.001 keeps the sum inside the parentheses from ever being zero. His leisure L is determined by the time constraint

$$L = 24 - N.$$

His utility is a function of consumption and leisure

$$U = Q \bullet L.$$

Exercises

1. Draw his production function on a diagram of Q vs. N. Determine the utility-maximizing N. Draw the indifference curve that is tangent to his production function at that point.

2. Analyze how changes in each of the three technology parameters affect the optimal labor N and the resulting consumption Q.

3. Do business cycles caused by changes in technology require the model to

include money, the prices, wage rates, or interest rates?