Econ 301: Topics in Microeconomics

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Week 3: Time Allocation and Labor Supply Models

Reading Assignment


Homework Assignment

1. Do a brief literature review of recent articles (past five years) to find any new published or working papers that build on the theories of time allocation to analyze labor supply, time use, home production etc. Find two interesting papers and provide the citations.

2. Consider an individual that has the following utility function

\[ U(C, l) = \frac{1}{3}C + \frac{1}{3}l + \frac{1}{3}Cl \]  

(1)

According to this specification of the utility function, are consumption and leisure substitutes, complements or both?
3. Suppose this person has the following binding budget and time constraints

\[ PC = wL + V \]  
\[ L + l = T \]

Set up the Lagrangian and carry out the optimization problem. Be sure to use the general form that accounts of the possibility of corner solutions. Find expressions for the demand for consumption \( C^* \) and the labor supply \( L^* \) and derive the conditions under which this individual would participate in the labor force (i.e. \( L^* > 0 \)?)

4. In the above labor supply function, how does the labor supply respond to changes in nonearned income \( V \), wage \( w \), price of consumption good, \( P \) and the time endowment \( T \).

5. Consider the following utility function

\[ U(C, l) = C^{\alpha}l^{\beta}L^\gamma \]

Solve this problem and obtain the demand functions for consumption and leisure. Use the same budget and time constraints, but set \( V = 0 \) to keep things simple. Because the time constraint is binding, start by reducing the problem to two choice variables by substituting \( L = T - l \) in both the utility function and the constraint (Note: this is easier than the longer method done in class). You can further simplify the calculus by maximizing the log-transform of the utility function. Find expressions for the demand for consumer goods and the labor supply. What happens to consumption and labor supply when \( \gamma \) increases. Do people who like to work always consume more goods than those who dislike work?

6. Using Becker’s framework for time allocation, set up a constrained maximization problem to analyze the allocation of time between two activities, reading books and watching TV. Using this framework, can you explain why people spend
more time watching TV than reading books compared to thirty years ago (Hint: consider changes in incomes, relative prices and consumption technologies).