Economics 4351: Labor Economics

Southern Methodist University

Department of Economics

Midterm I

The exam is worth 100 points. Each question (six questions on two pages) is of equal value. There will be no communication with the exam proctors; if you believe a question contains an error or ambiguity, say so on your written examination, make an assumption to correct the alleged error or to resolve the ambiguity, and answer the question as well as you can.

1. Use the standard labor/leisure model from class to analyze the effects of a wage *increase* on time allocation.

   (a) Graph the old and new budget constraints, carefully labelling the axes and the slopes.

   (b) Show graphically and/or explain intuitively the income and substitution effects. Can we say what happens to the individual's labor supply?

   (c) If the individual works less as a result of the wage increase, is he/she on the upward- or backward-bending portion of the labor supply curve? Why?

2. The "supply-side" economics under Reagan presumed that income tax cuts would stimulate incentives to work and thereby increase economic growth.

   (a) Demonstrate this outcome in a labor/leisure diagram. Clearly label *all* aspects of your graph.

   (b) Explain the income and substitution effects from the tax cut. What assumption does this policy make about the relative magnitudes of the income and substitution effects?

3. Consider the model of welfare discussed in class, where individuals are guaranteed at least a minimum income of G and there is an implicit tax, t, applied to earnings.

   (a) Graph an individual's budget constraint under the welfare program, assuming the individual has no other non-labor income and could potentially earn a wage, w, if he/she chooses to work. Be sure to label all aspects of the graph, including the slopes of the budget line segments, the axes, and the levels of consumption at the various 'kink' point(s) on the budget line.

   (b) If the lump sum component of welfare is reduced (from $G \longrightarrow G'$) and the implicit tax is also reduced (from $t \longrightarrow t'$) such that the breakeven level of consumption remains unchanged, what is the effect on the time allocation of an individual initially working only a few hours? Be sure to discuss the income and substitution effects.

4. A firm purchases capital and labor in competitive markets at prices of $r = 3$ and $w = 6$, respectively. With the firm's current input mix, the marginal product of capital is 18 and the marginal product of labor is 12. Is this firm minimizing its costs? If so, explain how you know. If not, explain what the firm ought to do. Use a graph.

5. Use the marginal productivity theory of labor demand to predict the change in a firm's (short-run) employment level after the following events. Explain (graphs can be used, but are not necessary).

   (a) an increase in the demand for the firm's product, resulting in a higher price

   (b) the firm's competitors go out of business, leaving the firm as a monopolist

   (c) a decline in the productivity of labor

6. Suppose a wave a patriotism causes all workers to work extra hard on the job during wartime. As a result, the production function changes in the short-run from $q = q(\overline{K}, L)$ to $q = q'(\overline{K}, L)$, where the new production function q' yields greater output for each value of L.

   (a) Graph the old and new production functions for a fixed level of capital, $\overline{K}$. Be sure to label all relevant parts of the graph.

   (b) What happens to the MP_L at any value of L?

   (c) What happens, if anything, to the demand for labor in the short-run (assuming the wage rate, w, the price of capital, r, and all else remains the same except the change in production function)?