

Labor Economics
MIT Department of Economics
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Midterm Exam
March 23rd, 2006

You have 90 minutes for this exam. There are three parts and each part is worth 30 points. Point totals are provided after each question. Some questions are worth more than others - be sure to plan your time accordingly. Partial credit will be awarded for incomplete answers.

Please answer each part in a separate blue book.

Good luck!

Part I: True/False/Uncertain. Briefly defend your answers (in one paragraph). (30 points, 6 points for each)

- a) The theory of labor supply clearly suggests the introduction of an EITC-like wage subsidy will increase both overall labor force participation and total hours worked in the economy.
- b) The finding of a negative relationship between an individual's daily hours worked and daily wage violates the implications of the standard labor supply model.
- c) Angrist and Evans (1988) estimate the amount by which having a third child reduces parents' labor supply. But you cannot use their findings to say that having a third child *causes* parental labor supply to fall – because parents who choose to have a third child are very different from those who don't.
- d) The theory of labor demand predicts that monopolies hire less labor than would be hired if the product market were competitive, unless the monopolist is a price-taker in the factor market.
- e) Suppose Trang (an economic consultant) can earn \$60 for every hour of market work, and the marginal value of her time at home is constant at \$30. Her husband, Duc (a plumber), can earn \$30 for every hour of market work, and the marginal value of his time at home is constant at \$25. Due to an increase in the demand for plumbers, Duc's market wage increases to \$35 per hour. Even though Duc's market wage has risen, he should continue to specialize in home production.

PART II: Immigration (30 points)

1. This question asks you to analyze the effects of immigration in a simple graphical model where immigrants and natives are perfect substitutes (as in Johnson, 1980).
 - a) (2 pts) Assume that the labor supply of natives is perfectly inelastic. Demonstrate graphically (i.e. by plotting supply and demand) how an influx of immigrants affects the native employment and wages. Provide some intuition for why the employment of natives and their wages respond as they do.
 - b) (2 pts) Suppose that instead of the assumption in (a), the demand for labor is perfectly elastic. Again, demonstrate graphically how an influx of immigrants affects native employment and wages. Describe intuitively why this should be so.
 - c) (4 pts) Now generalize these results: discuss how the elasticity of labor demand and elasticity of native labor supply affect the magnitude of wage and employment changes from immigration.
 - d) (6 pts) The implications of the basic model turn on a number of important simplifying assumptions. Describe two of these assumptions, and discuss how the wage and employment effects from immigration would be different if these assumptions were relaxed.

2. Card (1990) examined the immigration effects of the 1980 Mariel Boatlift on native wages and employment in Miami.
 - a) (6 pts) Explain Card's empirical method and the assumptions that lie behind it.
 - b) (4 pts) What were Card's findings regarding the effects of immigration on native employment and wages in Miami?
 - e) (6 pts) Provide two possible reasons for these somewhat surprising results (for example: discuss characteristics of the Miami labor market, or elaborate on his estimation methodology)

PART III: Home Production (30 points)

Emmett's utility is defined over leisure (l) and food (F): $U = \ln(F) + \ln(l)$. Since he needs 15 hours each day for sleep, meals, and other necessities, there are 9 hours remaining to divide between work and leisure. He can choose to work either at home on his farm, in the market, or some combination of the two. Let h_0 be the time spent on the farm, and h_1 represent the time spent working not at the farm (call it "market work" - where he will earn a *real* wage of \$10) - so $T = 9 = h_0 + h_1 + l$. The total daily amount of food he produces on the farm is defined by: $F = 20\sqrt{h_0}$. Emmett has no unearned income.

- a) (6 points) Sketch the budget constraint for Emmett's decision problem. Label the slope of the linear portion and the non-linear portion. What determines the h_0 at which he stops home production and moves to market production (be as specific as possible: what determines this h_0 , and what is its exact value)?
- b) (8 points) Find Emmett's optimal choice of leisure and food consumption. How much time does he spend working on the farm? How much time is spent in non-farm work? (Hint: you may safely assume that he will spend some time working in the market).

Now, suppose a negative income tax system is introduced such that Emmett receives a guaranteed *real* income of \$20 per day, but benefits are reduced by \$.50 for every \$1 earned in *market work* (benefits are not reduced for time spent working on the farm, because he earns no official wage from this work).

- c) (7 points) Draw Emmett's new budget constraint. Label your graph as precisely as possible (label the slopes of the new budget constraint - both linear and non-linear portions - and note any kink points that exist).
- d) (3 points) What is the new h_0 at which Emmett switches to market work? Explain intuitively why this is or is not different than your answer from (a).
- e) (6 points) How will the introduction of this NIT affect Emmett's *total* labor supply, and why? Will it increase or decrease market work, and will it increase or decrease the total amount of time spent in home production (or is the answer ambiguous) - and why? How do you expect the ratio of time spent in the market to time spent on the farm to change? (there no need to calculate exact answers to any of these - just describe intuitively what should happen, and how you know this)