

Instructions: Read the entire exam first. The exam consists of two parts. Answer 5 out of 6 questions in Part I and 2 out of 4 questions in Part II.

Please use a separate blue book for each long question, for a total of three blue books.

This is a three hour exam. Good Luck!

Part I: Short-answer (choose 5 out of 6; 100 points)

1. “Target earners are irrational.” Discuss.
2. “An OLS regression of log hours worked on log average hourly earnings produces an estimate of the labor supply elasticity that is too low.” True or false? Give a brief sketch of the econometric reasoning behind your answer.
3. The EITC appears to have a large effect on labor supply. This is exactly what theory predicts. Discuss the validity of both of these statements.
4. In a series of articles in the New England Journal of Medicine and other outlets, Christakis and Fowler document that individuals whose friends have friends who are obese are more likely to be obese. They interpret this as the effect of “social networks” on social behavior. What other potential explanations might exist for this pattern?
5. Wage losses upon separation imply that firm specific human capital must be important. True or false?
6. The fact that “riskier” jobs have higher powered incentives is evidence against standard agency models. True or false?

Part II: Longer Questions (choose 2 out of 4; 200 points)

1. (NEW BLUE BOOK) Now for a little . . . monopsony in motion!
Suppose that N small fast food establishments produce according to $f(L) = \ln L$, with fixed capital.
The price of a meal is fixed at \$1.
The aggregate labor supply function for counter help is given by w^ϵ , for positive ϵ .
 - (a) Start by assuming establishments hire individually and are price-takers in the labor market. Derive an individual establishment’s demand curve. Use this to derive the aggregate demand curve for counter help.
 - (b) Derive the competitive equilibrium wage (w_c) and aggregate employment level ($N \cdot L_c$) as a function of the labor supply elasticity and the number of establishments.
 - (c) Now suppose that the ghost of Ray Kroc (an eternal monopsonist), buys these N establishments and operates them as one firm that hires on behalf of all. Assume that the fast food product market remains competitive in spite of this (he has to compete with Burger King and Wendy’s). However, the monopsonist now has market power in his factor market—in fact, he is the sole employer of the specific type of labor he uses. Derive the new equilibrium wage (w_m) and aggregate employment level ($N \cdot L_m$).
 - (d) Explain how we can get competitive outcomes as a special case of the monopsony equilibrium in (c).
 - (e) Finally, explain how a wise and beneficent government can generate the competitive employment level as an equilibrium outcome in spite of the Kroc’s market power. What should Kroc’s workers do if wisdom and beneficence are in short supply?

2. (NEW BLUE BOOK) Analyze a student loan crisis in the context of a Becker/Card model where the only cost of schooling is forgone wages. An individual with s years of schooling earns $y_i(s)$ forever (an increasing, concave, differentiable function). Schooling is chosen to max the PDV of earnings with interest rate r_i .

- (a) What does a student loan crisis do in the context of this model? Specifically, use the model to discuss the likely consequences of the student loan crisis on
 - i. Rates of college attendance and the demographics of college attendance
 - ii. The average return to college attendance and how this varies across demographic groups
 - iii. Long-run vs short run effects on both of the above

A complete answer to this question will include an interpretation of the equilibrium condition that determines schooling choices, an investigation of changes in average returns as conditions in the student loan market change, and a (less formal) discussion of the general equilibrium consequences of a change in the relative attractiveness of investments in human capital.

- (b) In addition to subsidized loans, many students finance their education through grants that are effectively discounts on the “sticker price” of a college education. With colleges cutting back on financial aid as their endowments shrunk, the sticker price may also go up. Analyze the effect of tuition increases on schooling choices using a model similar to the one used in part (a), above, but add tuition costs in the amount T per year. Use this model to show that if everyone pays the same tuition, then raising tuition from zero to an amount equal to one-quarter of the earnings of a college graduate is roughly equivalent to increasing the student loan interest rate by 25 percent. Conclude that the current crisis is likely to affect college attendance whether or not the government succeeds in maintaining the supply of subsidized loans. On the other hand, the net effects of the crisis are complicated and act in more than one direction. Discuss the channels through which a capital market crisis might boost college enrollment.
- (c) Briefly discuss econometric evidence that argues in favor of the importance of liquidity constraints in the market for human capital. What should we especially look for by way of evidence on this point in recent data?

3. (NEW BLUE BOOK) Consider the following economy. There are two firms and one worker. The worker has ability θ distributed uniformly over $[0, 1]$. Both worker and firm are risk neutral and do not discount between the periods. The timing of the game is as follows.

- Each firm offers a wage W to hire the worker (competing a la Bertrand) without observing ability.
- The firm that hires the worker decides whether to provide general training to the worker, denoted by $\tau \in \{0, 1\}$. The cost of training is $c(\tau)$, with $c(0) = 0$, $c(1) = c > 0$. The entire cost is borne by the firm. The training of the worker is perfectly observed by the other firm.
- The outside firm makes a wage offer $v(\tau)$ to the worker.
- The incumbent firm (initial employer) observes the ability of the worker and makes a counter wage offer $w(\tau)$.
- The worker decides whether to stay with his current employer at the wage $w(\tau)$ or take the outside wage offer $v(\tau)$.
- The worker produces

$$\alpha\theta\tau$$

for some $\alpha > 2c$. This production level is regardless of the identity of the employer (since training is general).

- (a) Define a pure strategy Perfect Bayesian Equilibrium (PBE) of this game.
- (b) Show that the unique PBE involves the worker always staying with the initial employer and the initial employer providing training. Describe the strategies that support this equilibrium outcome.
- (c) Characterize the equilibrium wage in the initial period, W .

- (d) Relate your findings in part (b) to the result that firm-sponsored general training investments are possible if and only if there are labor market imperfections and wage compression. Explain this result and show whether your finding here fits with this result (if not, explain why not; if yes, show in what sense there is wage compression here).
 - (e) How would you modify it to make it more attractive theoretically or more realistic empirically? (Please be brief.)
4. (NEW BLUE BOOK) Consider an economy consisting of a large number of workers and firms. Each worker is infinitely lived in discrete time and maximizes the expected discounted value of income, with a discount factor $\beta < 1$. There is no ex ante heterogeneity among the workers, but the quality of the match between a worker and its employer is random, and is not directly observed by either. Suppose that the worker is a good match to its employer with probability $\mu_0 \in (0, 1)$. A worker who is a good match to its employer produces output y_h with probability p and output $y_l < y_h$ with probability $1 - p$. A worker who is not a good match to its employer always produces y_l . Let μ be the posterior probability that the worker is a good match and suppose that the wage of the worker as a function of this posterior is given by

$$w(\mu) = \phi [\mu y_h + (1 - \mu) y_l],$$

where $\phi \in (0, 1]$. At any point in time, the worker can decide to quit and immediately find another job, but in the process pays a “mobility” cost equal to γ .

- (a) Determine how beliefs about worker-firm match quality evolve over time.
- (b) Write down a Bellman equation describing the value of a worker with belief μ . Specify when the worker will quit her job.
- (c) Show that workers that quit will experience a wage gain.
- (d) Show that a worker who is a good match may initially experience wage decline, but will on average experience wage growth. Show that there exists $T < \infty$ such that a worker who is a good match and remains with its employer for more than T periods will have a constant wage.
- (e) Describe what features in the data are successfully accounted for by this model. What other features about job changes and wage growth cannot be accounted for by this model?

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