

# 28 P.S.

LABOR COMPREHENSIVE EXAM  
JANUARY 20, 2005

Polachek/Wong  
Part I

There are three questions in this part of the examination. Answer all.

1. Skill-biased technical change raises the returns for high-skill workers but it is not immediately clear how it affects wages for low-skill workers, which has been declining in the past few decades in the U.S.. Suggest a reason and illustrate your argument with a simple model.
2. Consider a neo-classical marriage market in which individuals of each sex are identical. Suppose  $Z_{mf}$  is the full-income of a man  $m$  matching with a woman  $f$ ,  $Z_m$  is the share of the full-income obtained by  $m$  and  $Z_f$  is the share of the full-income obtained by  $f$ . Suppose further that the singlehood income of a man and a woman is respectively  $Z_{m0}$  and  $Z_{f0}$ . The marriage institution is monogamy and there are more women than men,  $F > M$ .
  - (i) Illustrate the demand and supply schedule for brides?
  - (ii) What is the equilibrium bride price? How is it obtained?
  - (iii) Suppose there is an onset of male immigrants so that  $M > F$ . How does the equilibrium change?
  - (iv) If we consider the market for grooms, do we get a different set of answers in (i) - (iii)?
3. Consider a nontransferable utility marriage model where there are two types of agents, good  $x_g$  and bad  $x_b$ . Suppose there are equal number of men and women. The fraction of good agents is  $\lambda$ . For simplicity, singlehood utility is zero. The payoff to marrying a good is  $x_g/r$ , whereas the payoff to marrying a bad is  $x_b/r$ , where  $x_g > x_b > 0$  and  $r$  is the interest rate. There is no divorce and no bargaining.

Suppose partner arrives according to a Poisson process, at rate  $\alpha$ . With probability  $\lambda$  a given agent meets a good partner, and with  $(1 - \lambda)$  the agent meets a bad partner. If a single man and a single woman meet, they observe each others' type. If both agree, they marry and leave the market forever. If one of them does not agree, they continue to look. Meeting is random. Let the value of singlehood for good and bad agents be  $V_g$  and  $V_b$  respectively.

- (i) What is the good and bad agents' value of singlehood,  $V_g$  and  $V_b$ . Explain.
- (ii) Derive the incentive constraints for good agents to marry other good agents, and for good agents to marry bad agents.

Suppose now the exogenous inflow of single agents is  $g$ , and the proportion of those singles who are good is  $\pi$ . In a steady state, the exit rate of each type must equal the entry rate of new singles of that type.

- (iii) What are the requirements for a mixing market equilibrium? Those for an elistist equilibrium?
- (iv) Multiple equilibria may exist. What is the source of it? Explain.

Part II. Answer each question.

1. Assume a world with equal male and female abilities, but a world in which discrimination manifests itself in a way such that female wages ( $w_f$ ) are lower than male wages ( $w_m$ ) such that  $w_f = \alpha w_m$  where  $0 < \alpha < 1$ .

- (a) Use a very basic lifecycle human capital model where all investment costs are opportunity costs, show whether men purchase more schooling than women.
- (b) Would your answer change if there were direct costs for school such as for tuition and books?

2. Assume individuals decide their occupation at the beginning of their working life. Associated with each occupation is a unique "atrophy" rate ( $\delta$ ). Assume that one's wage rate is positively related to  $\delta$  such that  $w = w(\delta)$  and  $w'(\delta) > 0$  and  $w''(\delta) < 0$ .  $H$  represents the expected number of years a particular individual expects to drop out of the labor force during his/her life (perhaps due to personal family considerations).  $T$  is the individual's potential years of work.

- (a) Assuming  $(T - H)w(\delta) - H\delta w(\delta)$  represents expected lifetime wages, prove analytically that those individuals with the greatest hometime ( $H$ ) choose occupations with the least atrophy ( $\delta$ ).
- (b) Cite empirical evidence that supports your conclusion.

Part II. As succinctly as you can, answer five of the following eight questions.

1. What is Mincer's overtaking point? Are the implications of Mincer's overtaking age borne out in the data? Cite evidence.

2. What innovation do Isaac Ehrlich and Chuma Hiroyuki ("A Model of Longevity and Value of Life Extension," JPE, 1990) introduce to the basic human capital model?

3. How does Polachek ("Earnings Over the Lifecycle: What Do Human Capital Models Explain?" *Scottish Journal of Political Economy* (August 1995) suggest one might modify the basic human capital model in which an individual maximizes:

$$\int_0^T (1 - s(t))wK(t)dt \text{ subject to } \dot{K} = [s(t)K(t)]^\beta \text{ so as to account for worker effort?}$$

4. Why has the rate of return to education been rising in recent years? Cite examples from the literature.

5. How does using cross-sectional data to fit an earnings function inhibit getting at cohort effects? (That is, what data requirements would be necessary to distinguish between the effects of getting older and the effects of being in an older generation?)

6. Some argue that rates of return to schooling are biased upward because the more schooled are more able (have higher ability). What evidence is there that this is the case? How does one go about getting estimates of the rate of return to education free of this potential “ability” bias? Cite examples in the literature.

7. What aspects of asymmetric information do Robert Gibbons and Larry Katz (Layoffs and Lemons,” JOLE, 1991) explain?

8. What is a “natural experiment” in economics? Cite at least two examples of how “natural experiments” are used.