

# Economics 4351: Labor Economics

Southern Methodist University

Department of Economics

Midterm II

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 dual labor market model – where one sector is Texas ( $T$ ), the other is Mexico ( $M$ ) – to answer the following:
  - (a) Depict graphically the initial equilibrium in each sector assuming labor and firms are *immobile* and  $w_T^* > w_M^*$ . Be sure to label all axes, lines, and equilibrium wages/employment. Is there any unemployment in either sector?
  - (b) If the US stops attempting to restrict the flow of illegal immigrants into Texas (and labor is *mobile*), what effect will this policy change have in both labor markets (assume the workers are perfect substitutes)? What is the direction of the migration flows? Now what is unemployment?
  - (c) If, instead of the US changing its immigration policies, Texas and Mexican firms were *mobile*, what would be the new equilibrium? What is the direction of the firm flows?
2. To decrease the number of individuals on welfare, the U.S. government agrees to subsidize the employment of either current welfare recipients or individuals who have been on welfare during the past year. Specifically, the government will pay firms  $\$s/hr$  for each worker employed meeting these requirements.
  - (a) What effect does this policy have on the level of employment and the equilibrium wage rate?
  - (b) Assuming the unemployment rate prior to the subsidy was zero, is there unemployment with the subsidy? Show this with a graph. Be sure to label all axes, line, and equilibrium wages/employment.
3. Assume there is a central city school district and a suburban school district (e.g., Dallas ISD and Plano ISD). The central city school district has a predominantly black student population. The suburban school district has a predominantly white student population. Assume that other things being equal, black teachers are *indifferent* to which school they teach at, while white teachers *prefer* to teach in the suburbs if everything else is the same across the jobs. There are plenty of jobs for all interested teachers, however, there are not enough black teachers to staff the entire central city school district.
  - (a) If state law requires that teachers salaries be identical *within* school districts, but not *across* school districts, will black teachers earn more, less, or the same wage than if white teachers were indifferent between the two school districts?
  - (b) Which school district will pay a higher wage (if either) and what will the racial composition of teachers be in the two districts?

4. Suppose a firm utilizes the following policy when determining the initial wage for new employees between the ages of 20 and 40:

$$w_m = age \quad \text{for males}$$

$$w_f = -4 + 1.1 * age \quad \text{for females}$$

- (a) What is the starting wage for a 20-year-old male and female worker? What about at age 40? At what age, if any, does the male-female wage differential disappear?
- (b) Carefully plot the starting wages for males and females against their age, being sure to label all axes/lines, the slopes of the various lines, as well as the starting wages at ages 20 and 40.
- (c) What rationale might the firm offer to justify this wage policy?
5. On average, an extra year of education raises an individual's wage by 7%. Two theories which attempt to explain this finding are the *human capital theory* and the *signalling theory*.
- (a) Briefly explain the argument/logic behind each theory. Be sure to incorporate the role of individual's innate ability and the effectiveness of education according to each theory.
- (b) We know that individuals' (real) incomes rise with age until approximately 54 and then decline. How can this fact be explained within the context of each of the two theories?
6. Suppose there are two types of persons: high-ability and low-ability. A particular diploma costs a high-ability person \$8,000 and costs a low-ability person \$20,000. Firms wish to use education as a screening device where they intend to pay \$25,000 to workers without a diploma and \$ $K$  to those with a diploma. In what range must  $K$  be to make this an effective screening device?