Instructions

• Answer a total of **FOUR** out of the six questions.

• Identify yourself by code letter, not name, on all pages.

• Start each answer at the top of a new page.

• Number the pages of your answers.

• You have four hours to complete the examination.

• This is a closed book exam. No notes, articles, books or other sources may be used other than the copy of the article that is provided with this exam.

• Always identify your assumptions and define any notation used. Some questions intentionally do not fully specify assumptions or methods. You should make appropriate choices to complete your answers. Explain your choices carefully.

• Citing specific *relevant* literature is beneficial.
1. Directly or indirectly, parts (a) - (d) concern the paper by Hedegaard and Tyran (HT), distributed in advance.

a. There are various conceptual forms of discrimination in the economics literature. In the context of ethnic discrimination, like that studied in the paper, carefully explain the distinctions between prejudice (Becker’s taste for discrimination), statistical discrimination, and stereotypes as the term is used by Bordalo et al.¹

b. Explain and critique HT’s empirical strategy for distinguishing among prejudice, statistical discrimination, and stereotypes. (You do not need to discuss their measurement of the Price variable.)

c. Explain what Figure 2 says with respect to the main research question in the paper. (In other words, don’t just interpret it literally.) Be sure to address the roles of both lines for HT’s conclusions.

d. Write down a complete (but simple) theoretical model of the labor market using assumptions consistent with HT’s results about ethnic prejudice. Assume that there are two ethnicities and that employers do not discriminate. Characterize the equilibrium of the model with respect to wage differences and segregation. Explicitly state additional assumptions needed to complete your model.

2. The baseline model of labor markets is the competitive model used by, for example, Becker in studying the consequences of taste-based discrimination. However, modern labor economics incorporates several important departures from the competitive paradigm—ways in which labor markets are “special” relative to standard supply-and-demand models. Three of these are monopsony, search, and agency problems.

a. Describe the key way(s) in which each of these differs from the competitive model and give one example each of how they make different predictions about equilibria in labor markets. For monopsony, your example may not be the effect of minimum wages.

b. Search models involve a “matching function,” while Rosen describes models of compensating differentials as performing a “matching function.” What does Rosen mean? How does his meaning differ from the term as used in search models? Can the two meanings merge?
3. “A Mincer equation provides estimates of the shadow prices of the different characteristics in the labor market.”

   a. Evaluate the extent to which this statement is a useful understanding of an estimated earnings equation.

   b. Additional variables can be added to the basic Mincer equation. Consider employer-sponsored health insurance. Describe at least three problems raised by trying to estimate the shadow price of employer-sponsored health insurance, including at least one conceptual problem and one econometric problem.

   Part (b) is asking for problems specific to this employee benefit; do not recycle any problems you might have raised in (a).

   Additional information: Assume the same health insurance package is offered to all full-time employees within a firm, but that it may differ among firms. Employers pay at least part of the premiums.
4. Suppose that a government is considering a wage insurance program. Under this program, workers who are laid off and become reemployed at a lower wage rate would be eligible for the wage insurance. The wage insurance would pay 50 percent of the difference between the new job’s wage rate and the prior job’s wage rate. For example, workers laid off from a $15 per hour job and who are reemployed at $10 per hour would collect $2.50 per hour in insurance. For this question and the next, suppose that the wage insurance is based on hourly rates, not on total earnings.

Using the logic of search theory and standard microeconomics, what would be the effect of the program on unemployment duration, job match quality, the unemployment rate and the standard wage paid to workers covered by the program. The standard wage is the wage paid by the employer and does not include the subsidy. You do not have to formulate a model, but you should explicitly state any assumptions you make.

5. Citing search theory, theory of labor supply, and/or theory of labor demand, explain how wage insurance, as described in the previous question, could affect the following outcomes. Please be specific about the mechanisms at play, the direction(s) they would push, and integrate relevant empirical evidence into your response.

   a. Human capital investments among eligible unemployed workers.

   b. The number of working hours among workers reemployed at jobs paying less than their previous wage.
6. This question is about the literature connecting income and fertility.

a. Consider Becker’s model of fertility, as outlined in Chapter 5 of Treatise on the Family. This model contains a nonlinearity in the budget constraint that is responsible for an interaction between quantity and quality of children. That interaction works through the costs of quantity and quality of children. Explain the nature of this interaction and how it operates.

b. Becker says that this interaction helps explain why black women’s fertility has fallen as labor market opportunities for blacks have improved. Suggest two separate routes though which this works. Limit your description of each route to two or three sentences.

c. In an article written about the same time as Becker developed his model, Robert Willis also talks about an interaction model, and he also focuses on the relationship between income and children. He estimated the following empirical model (Table 2, model 3):

\[ F = 4.833 - 0.248H - 0.176W + 0.020(H \times W) \\
- 0.072(SMSA) + 0.060T + 0.001T^2 \]

Willis tells us that every coefficient is highly statistically significant. (The variables are number of children \((F)\), woman’s year of birth \((T)\), husband’s annual income in thousand dollar units \((H)\), wife’s level of education in years \((W)\), and whether or not the couple lives in a large city \((SMSA)\).) According to this empirical model, describe the relationship between husband’s income and number of children. (Just describe; defer interpretation to parts (d) and (e).)

d. Willis calls this an interaction model, although it is not at all similar to Becker’s interaction model. In Willis’ case he says his “interaction model helps explain the U-shaped relationship between fertility and . . . husband’s lifetime income.” What is the logic behind there being an interaction here?

e. Now, consider both the Becker and Willis “interaction models.” The underlying reasons for the complexity of the relationship between income and fertility are quite different in the two models. Assume the salary of the husband rises in a young family with a husband and a wife: explain how that rise in his salary affects their decision about the number of children they will have, first in the Becker model and then, separately, in the Willis model. Are the two explanations consistent, complementary, or contradictory?