Written Preliminary PhD Examination

Department of Applied Economics

June 2015

Policy Analysis

Instructions

• Identify yourself by your code letter, not your name, on each questions.
• Start each question’s answer on the top of a new page.
• Answer four out of the six questions.
• You have four hours to complete this examination.
Question 1

Please read the press release attached from the U.S. Department of Housing and Urban Development.

a. Identify three different economic theories of discrimination and indicate to what extent these theories are helpful in understanding the case described in the press release. (5%)

b. The HUD Assistant Secretary for Fair Housing and Equal Opportunity has received notice that there is a broad pattern of housing discrimination based on limited English proficiency, much of which has never reached the federal courts. He is worried that the emphasis on cases like the one in the press release might divert attention away from a broader pattern and practice of housing discrimination based on language ability. Explain how this case reflects the difference between the average discriminator and the marginal discriminator. (5%)

c. Provide an illustration using a model of housing demand and supply and rental prices based on modern applications of the Becker Model to show whether firms like the one mentioned in the press release would charge higher or lower rental prices than non-discriminatory firms. (15%) Provide citations to the relevant literature supporting your results about the marginal discriminator vs the average discriminator. (5%)

d. Staff members at HUD’s fair housing enforcement division want to use retrospective administrative records and rental contract information to test the hypothesis that there is systemic discrimination based on language ability in housing markets across the United States. Write out in detail the model needed to test this hypothesis. (10%) Discuss the strengths and weaknesses of this approach. (5%)

e. Advocates and HUD advisory board members are unpersuaded by the value of using the retrospective administrative records and rental contracts and propose that HUD initiate rental audits in 10 of the largest metropolitan areas with significant non-English speaking populations. Describe the methodology for conducting the audits and sketch out the test required to determine whether there is discrimination. (10%) Discuss the strengths and weaknesses of this approach. Explain why focusing the audits on these areas might produce paradoxical results within a) a statistical discrimination framework and b) a Becker framework. (15%)

f. Given the high cost of conducting audits and collecting administrative records and rental contracts, economists at HUD have proposed to use the American Community Survey (ACS) to predict which markets are the markets that ought to be targeted for audits and collection of administrative data. Write out a model that could be useful for this purpose, providing alternative empirical measures of discrimination (10%) and explain why the measures of discrimination obtained in this model are or are not useful in fair housing litigation. (20%)
HUD CHARGES MINNESOTA LANDLORD WITH HOUSING DISCRIMINATION

Hmong family denied housing due to mother’s alleged language skills

WASHINGTON – The U.S. Department of Housing and Urban Development (HUD) announced today that it is charging the owner and manager of a Minnesota property with housing discrimination for refusing to rent a home to an Asian family of Hmong descent. HUD’s charge alleges that Page Edmunds and his company, Renter’s Avenue, located in Champlin, Minnesota, refused to rent to the family, attempted to charge them to have the lease translated, made discriminatory statements to them because of their national origin, and retaliated against them for exercising their fair housing rights.

The Fair Housing Act makes it unlawful to discriminate in the rental or sale of housing or to impose different rental terms and conditions based on national origin, race, color, religion, sex, familial status or disability.

“Refusing to lease a home to a family or imposing additional fees because of their national origin violates the Fair Housing Act,” said Gustavo Velasquez, HUD Assistant Secretary for Fair Housing and Equal Opportunity. “Our charge reaffirms HUD’s commitment to taking action against housing providers that discriminate against individuals or families because they have limited English proficiency.”

HUD’s charge is the result of a fair housing complaint that the family filed after they tried to rent a three-bedroom townhouse in Champlin that is owned by Edmunds. The family, which includes a mother, her adult son and two minors, attempted to rent the townhome in March 2014, after viewing the house in person and paying an $80 application fee. The family’s application triggered an exchange of emails with Edmunds that lasted for 10 days in which he requested that they provide their own
credit information from a free on-line credit reporting service.

In one email to the adult son, Edmunds asked: “Are you willing to pay $500 for the translation?” He went on to state: “I’m not required to enter into a legal contract with a party that may later claim they didn’t understand it.”

In a subsequent email to the woman’s son, Edmunds wrote: “During your visit to the address, you prompted your mom to say something to me. She appears to know some simple phrases, but understanding lease legal terms is very unlikely.”

After the family met all of the requirements for rental, Edmunds told them that they would have to pay $500 to have the lease translated and then denied their application, stating: “I regret that the rental application has been denied. Both adults would have to sign the contract. [Your mother] appears to have limited English skills. ... [T]he contract must be translated to her native language. If not, she could easily break the lease. Such translations are very costly.”

When the woman’s son challenged Edmunds’ reason for denying their application as unlawful discrimination, Edmunds threatened to report the son, who holds a real estate license, to the Minnesota department that governs real-estate licensing.

HUD’s charge will be heard by a United States Administrative Law Judge unless any party to the charge elects to have the case heard in federal district court. If an administrative law judge finds after a hearing that discrimination has occurred, he may award damages to the complainants for the harm caused them by the discrimination. The judge may also order injunctive relief and other equitable relief, as well as payment of attorney fees. In addition, the judge may impose fines to vindicate the public interest. If the matter is decided in federal court, the judge may also award punitive damages.
Question 2

a. Numerous innovative strategies have been offered for reducing the black-white gap in test scores. Some of these innovations or interventions are informed by results such as those found in Fryer and Levitt, “Understanding the Black-White Test Score Gap in the First Two Years of School,” The Review of Economics and Statistics, May 2004, 86(2): 447–464. One innovation is earlier admission to kindergarten for talented students and/or for all students via alterations in existing cut-off dates for persons with summer/fall birthdates. Write out a model that would provide a specific test for whether early admissions to kindergarten helps to narrow the black-white test score gap. (15%) Explain what threats to validity you would need to overcome to produce a persuasive result. (5%)

b. Table 2 (attached) from the Fryer-Levitt paper reports results of the estimation of an equation where the dependent variable is a normalized score on mathematics and reading examinations. The coefficients on the race variables denote the racial gaps in test scores relative to non-Hispanic whites. Various specifications are considered for both the estimation of the mathematics score and the estimation of the reading scores. Columns 4 and 9 control for such factors as gender, age, birth weight, mother’s age at time of birth, and WIC participation in addition to socio-economic status and numbers of books in the home (which the authors state measures home environment). Columns 5 and 10 present still another specification. The key differences between columns 4 and 5 for mathematics and columns 9 and 10 for reading arise from the inclusion of more than 98 other covariates in the specifications reported in columns 5 and 10 as compared to columns 4 and 9. These additional covariates capture: city size, neighborhood characteristics, region of the country, parental education, parental income, parental occupational status, family size and structure, whether the mother worked, type of preschool program participation, whether English is spoken at home, and the extent of parental involvement in a child’s life and school. What can be said from these results about the advantages of entering school early? (20%)

c. Detail the strengths and weaknesses of using nearest neighbor propensity score matching vs Heckman’s differences-in-differences matching to address the problem that the data are not drawn from a randomized experiment. (20%)

d. Discuss the nature of selection that might be involved in early admissions. Detail how one might control for selection effects when measuring the impacts of early admission on test scores and distinguish between Instrumental Variables (IV) and Heckman Selection Correction methods for controlling for such selection. (20%)

e. From the table, what can be said about discrimination? How would you distinguish between discrimination and differences in early school admission?
### TABLE 2.—THE ESTIMATED BLACK-WHITE TEST SCORE GAP IN FALL OF KINDERGARTEN

<table>
<thead>
<tr>
<th>Variables</th>
<th>Math</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Black</td>
<td>2.638</td>
<td>2.368</td>
</tr>
<tr>
<td>Hispanic</td>
<td>2.722</td>
<td>2.429</td>
</tr>
<tr>
<td>Asian</td>
<td>.150</td>
<td>.070</td>
</tr>
<tr>
<td>Other race</td>
<td>.056</td>
<td>.051</td>
</tr>
<tr>
<td>Socioeconomic status composite measure</td>
<td>—</td>
<td>.456</td>
</tr>
<tr>
<td>Number of children’s books</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>(Number of children’s books)² (31,000)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Female</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Age at kindergarten fall (in months)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Birth weight (ounces) (3 10)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Teenage mother at time of first birth</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Mother at least 30 at time of first birth</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>WIC participant</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>R²</td>
<td>0.108</td>
<td>0.223</td>
</tr>
</tbody>
</table>

**Number of observations**
- Math: 13,290
- Reading: 12,601

**Full set of covariates included in regression?**
- Math: N N N N Y
- Reading: N N N N Y

**NOTES:** The dependent variable is the math or reading test score in the fall of kindergarten. Test scores are IRT scores, normalized to have a mean of 0 and a standard deviation of 1 in the full, unweighted sample. Non-Hispanic whites are the omitted race category, so all of the race coefficients are gaps relative to that group. The unit of observation is a student. Standard errors in parentheses. Estimation is done using weighted least squares, using sample weights provided in the data set. In addition to the variables included in the table, indicator variables for students with missing values on each covariate are also included in the regressions. In addition, columns 5 and 10 report only a subset of the coefficients from regressions with 98 covariates included in the specification. The full results for columns 5 and 10 are reported in appendix table A1. Note that the specifications in columns 5 and 10 include age and age squared; that is why the coefficient on age changes so dramatically relative to other columns in the table.
Question 3

After the collapse of the USSR many workers in countries that were part of the Warsaw Pact experienced prolonged periods of unemployment following the loss of their jobs in former state enterprises. Some researchers have speculated that the ability of a worker to make the transition from a centrally planned to a market oriented economy depended on her general skills including her ability to quickly acquire new skills. One study examines the relative effects of vocational training and general education on unemployment in Romania in 2002. The authors take advantage of a “natural experiment” in that country in 1973 in which students were required to complete 10 years of formal schooling prior to being allowed to acquire one year of vocational training. Before that time students completed eight years of formal schooling before they were allowed to complete up to three years of vocational training. An implication of this policy change was that Romanians born after January 1, 1959 received more formal schooling than their peers born before that date. Empirical evidence confirms this implication. Romanians born after January 1, 1959 in fact completed more general education and less vocational education than Romanians born prior to 1959.

a. Conventional studies of the impact of vocational training on labor market outcomes in the “transition” economies reports that the number of years of vocational training is negatively correlated with labor market outcomes, including wages, after the transition to a market oriented economy. Some commentators interpret this finding as indicating the higher value of general education for workers in economies making the transition from a centrally planned to a market oriented economy. They argue that the apparent negative impact of vocational training results because workers with more years of vocational training also acquired fewer years of general education. Does this explanation make sense to you? Devise an econometric strategy to test this contention about the reasons for the apparent negative impact of vocational training on labor market outcomes in the transition economies.

b. Suppose sufficient labor force data were available on workers’ employment status, wages, years of formal schooling, years of vocational training, and month, day, and year of birth for a random sample of men born between January 1, 1956 and December 31, 1961. Devise an instrumental variable strategy to estimate the impact of vocational training on wages of workers in Romania.

c. The study’s authors contend that the negative “impacts” of vocational training on labor outcomes reported for many transition economies result from the effect of “selection” not the effect of training. Explain what they mean by this assertion and how your econometric strategy in part (b) addresses this possibility.

d. The study’s authors report for their Romanian data that a simple regression of a dummy variable indicating whether an individual was unemployed when surveyed in 2002 on a dummy variable indicating whether a worker had received vocational training yields a
coefficient associated with the vocational training variable of -0.03. A simple regression of the unemployment dummy variable on a dummy variable indicating whether the worker was born after January 1, 1959 gives a value of -0.001 for the coefficient associated with being born after January 1, 1959. Can you use this information to construct an IV estimate of the effect of being “exposed” to vocational education on the probability of being unemployed? The average unemployment rate in 2002 was 11.5%.

e. Under what conditions is the IV estimate in (b) or (d) an estimate of the average treatment effect or an estimate of the local average treatment effect?
**Question 4**

Answer each part of the question. Your answers should demonstrate an advanced graduate level of economics knowledge.

1. The U.S. corporate income tax is criticized for creating several distortions that reduce economic efficiency. For each of the criticisms below, explain how the tax structure does or does not create the distortion.
   a. The U.S. corporate tax favors investments financed with debt, rather than equity.
   b. The U.S. corporate tax favors companies retaining earnings, rather than distributing earnings to shareholders.
   c. The U.S. system of business taxation distorts the choice of organizational form—that is, choosing to organize as a pass-through business or a C-corporation. (You will need to explain the difference between pass-through and C-corporation taxation.)
   d. The U.S. corporate tax gives corporations an incentive to shift economic activity and income from the United States to other countries.

2. Even though the United States has the highest statutory corporate tax rate in the Organization of Economic Cooperation and Development (OECD), the U.S. system generates less corporate revenue as a share of GDP than the OECD average. What can explain this apparent contradiction?

3. Propose a reform for the U.S. corporate tax system. Which criticisms of the tax do you consider most important to address? Why? How would your proposed reform improve economic efficiency or other tax policy goals? What are the limitations of your proposed reform?
Question 5

Cost-benefit analysis question

Assume that many residents of a small town work at the same out-of-town employer. Their inverse demand for transportation to work is written \( P = 5,000 - 0.4Q \), where \( Q \) represents the number of bus trips taken each year to the nearby out-of-town employer and \( P \) represents the price to the consumer of each trip including the value of time spent commuting. The state government enacts a new policy to pay for a specially-created bus lane that shortens commute times. Assuming a constant marginal cost of bus travel per trip, this policy lowers the marginal cost per trip from $12 to $8.

a. Graph and label the relevant graph and use the information in the problem to estimate the benefit in dollar terms of these bus lanes to this community. Show where the benefits of this project are shown in the graph. (50%)

b. Labor costs are one of the important components of the cost of this project. These bus lanes were constructed during the recent great recession when a number of construction workers were unemployed. Many economists believe that some of the unemployment during the recession was involuntary. Assume the workers used in this project were previously unemployed. How would the assumption of voluntary vs. involuntary unemployment affect the calculation of labor costs of the project? (25%)

c. In conducting a benefit-cost analysis, there are three main ways to report results. Analysts report the benefit/cost ratio, the net benefit, and the internal rate of return. Why do cost-benefit textbook authors argue that the net benefit is the best way to report these results? (25%)
Question 6

The appropriate role for Government in providing health care is an item of considerable debate. Some believe that the free market model with no government intervention is appropriate. Others, that a substantial government presence is necessary. And, of course, there is disagreement over the form that intervention should take and how it should be paid for.

a. What is the economic argument for the public sector intervention in the provision of medical services? What, if any, is the market failure? Compare the public sector’s role if there is a market failure to that if health care is considered to be either a merit good or a right.

b. The Affordable Care Act requires that all individuals not covered by an employer sponsored insurance plan, Medicare or Medicaid purchase a private insurance policy or pay a penalty. Is mandatory universal coverage necessary for economic efficiency? Explain.

c. A portion of the additional revenue required to pay for the Affordable Care Act will come from a 2.3 percent excise tax on medical devices. Minnesota Congressman Paulsen claims that the tax, when added to the existing corporate income tax, will cause our medical device industry to face one of the highest tax rates of any industry in the world and will cause sales of devices to fall substantially. Examine the medical device tax from an economic efficiency point of view comparing its dead-weight loss to that of an increase in the payroll tax which raises the same revenue.

d. The Affordable Care Act will also receive funding from a 40 percent excise tax on so called “Cadillac” employer based health insurance coverage whose premiums exceed $27,500 per year for a family of four. An alternative to that excise tax on premiums would be to include employer paid health insurance premiums as part of gross income, then allow an itemized deduction capped at $27,500 for health insurance premiums paid. Discuss the difference in the distributional impact of the two alternatives. Would the alternative make the tax system more progressive than the excise tax?

e. Another portion of the revenue needed to pay for the Affordable Care Act will come from a 10 percent federal excise tax on indoor tanning services. Evaluate this tax from an economic efficiency point of view.