Written Preliminary PhD. Examination

Department of Applied Economics

January 28, 2013

POLICY ANALYSIS

Instructions:

- IDENTIFY YOURSELF BY CODE LETTER, not name, on all answer pages.

- Start each question at the top of a new page.

- Answer FOUR (4) out of the following SEVEN (7) questions. If you answer more than four questions, only the first four will be graded.

- You have four hours to complete the examination.

This is a closed book exam. No notes, articles, books or other sources may be used.
**Question 1 (answer all three parts a, b, and c)**

At the end of 2012, U.S. policymakers faced the challenge of whether and how to prevent a combination of tax increases and spending cuts from automatically taking effect on January 1, 2013. Some of the tax provisions included in the so-called “fiscal cliff” are listed below.

1. Expiration of individual income tax cuts resulting in tax rate increases for all income brackets. The 10 percent tax bracket would be eliminated, merging it with the 15 percent bracket. The 25 percent tax rate would increase to 28 percent, the 28 percent rate to 31 percent, the 33 percent rate to 36 percent, and the 35 percent rate to 39.6 percent.
2. Increase in the long-term capital gains tax rate to 20 percent from 15 percent for the top four tax brackets. For the bottom bracket, the rate rises to 10 percent from zero.
3. Increase in the dividend tax rate from 15 percent to the ordinary income tax rate for each tax bracket, e.g., 39.6 percent for top earners.
4. Expiration of a two percent Social Security payroll tax cut.
5. Imposition of a new 3.8 percent tax on saving and investment income (interest, dividends, royalties, rents and capital gains) for taxpayers with adjusted gross incomes above $250,000 (joint) or $200,000 (single) per the Affordable Care Act (Obama's health care law).
6. Increase in the estate tax from 35 percent on the amount of an estate exceeding $5 million to 55 percent of amounts over $1 million.

Assume that the President and Congress did not strike a deal to avoid the fiscal cliff before December 31, 2012, and all of the above provisions went into effect. Explain how these changes to would affect levels of U.S.:

   a) labor supply  
   b) saving  
   c) investment  

Use relevant economic models, graphs, and empirical studies to support your answers. Write out any models you use. Your answers should reflect an advanced graduate level of economics and public finance knowledge.
Question 2

Compare, contrast and evaluate the use of audits, correspondence studies and field experiments vs. Blinder-Oaxaca type analysis of outcome data in measuring and detecting discrimination. Distinguish, in your answer, between attempts to measure market discrimination (e.g. rental housing, employment, or lending) and efforts to measure nonmarket discrimination (child maltreatment reporting, traffic stops, or school suspensions). Provide specific citations from previous studies and illustrate with clarifying examples.
**Question 3 (answer all parts a-f)**

Consider the following earnings equations for periods t and t+1:

\[
\begin{align*}
\ln y_t &= \alpha_t + \beta_t x_t + \delta_t R + \mu_t \\
\ln y_{t+1} &= \alpha_{t+1} + \beta_{t+1} x_{t+1} + \delta_{t+1} R + \mu_{t+1}
\end{align*}
\]

Where:

- \( y \) = wage and salary income for those with positive earnings
- \( x \) = a vector of determinants of wage and salary income
- \( R = 1 \), if a respondent self-identifies as minority and 0 if a respondent self-identifies as non-minority, an indicator which initially cannot be changed between time periods.
- \( u \) is an error term.

a) Explain why \( \hat{\delta} \), the estimated coefficient on \( R \), is an incorrect measure of the percentage difference in wage and salary income between minorities and non-minorities.

b) Under what circumstances would a correctly transformed value of \( \hat{\delta} \) be an appropriate measure of the portion of the difference in wage and salary incomes between minorities and non-minorities due to employer discrimination?

c) Write out at least three alternative ways of measuring employer discrimination and provide a rationale for each alternative.

d) Write out a measure of the change in discrimination between period t and period t+1.

e) Suppose that between period t and t+1 an anti-discrimination policy is introduced, resulting in a reduction in market discrimination. Using a conventional Blinder-Oaxaca decomposition, detail the conditions under which reductions in discrimination will reduce earnings inequality between period t and t+1.

f) Suppose that the government anti-discrimination policy takes the form of “affirmative action” wherein preferences are provided to minority group members. Consider the implications for the measurement of \( R \) when self-identification can change between t and t+1. Detail in your model the potential biases in measurement of the change in discrimination between the time periods.
**Question 4 (answer all parts a-e)**

Consider the following field experiment:

Six disabled and six non-disabled testers each visit six auto repair shops. Each disabled driver is matched with a non-disabled driver. The disabled driver’s body-damaged automobile is driven to the repair shop to get an estimate of repairs by the disabled driver. The non-disabled driver drives the same automobile to another repair shop.

The designers of the experiment identified 12 accessible body shops in a specific city. An accessible body shop is one that a person with a physical disability is able to enter and exit without difficulty.

The body shops are randomly split between the disabled and the non-disabled tester in each pair; both testers in any given pair approached body shops with the identical car. Two testers are sent to each body shop, using a different car.

The non-disabled (disabled) tester in pair i visited body shops that were previously visited by the disabled (non-disabled) tester of pair j, where i ≠ j.

The testers obtained a written estimate (without bargaining or negotiation) for the repair.

a) How many repair estimates are the result of the experiment (assuming no rejections or refusals?)

b) Explain how unobserved heterogeneity among repair shops is accounted for in this experiment.

c) Discuss wherein you agree or disagree with the experimental design that requires testers to seek a repair estimate without bargaining or negotiation.

The summary results of the main test are the following:

<table>
<thead>
<tr>
<th></th>
<th>Overall</th>
<th>$1212</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Disabled</td>
<td></td>
<td>se=$214</td>
</tr>
<tr>
<td>Disabled</td>
<td></td>
<td>$1425</td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td>se=$212</td>
</tr>
</tbody>
</table>

where the information in the last column denotes the mean estimate and the standard error of the estimates across body shops and testers.

d) Are these differences statistically significant?

e) Discuss how one might determine whether there is discrimination against disabled price seekers in this experiment.
Question 5 (answer both a and b)

Part a. In an attempt to limit the number of accidents caused by motorists running red traffic lights, Baltimore County began installing red light cameras (RLCs) at intersections throughout the County. RLCs were first installed in June of 2001. The County installed RLCs intermittently since then, and there are now 192 intersections with RLCs in the County (out of 441 intersections with traffic lights).

You have been hired by the County to evaluate the effectiveness of RLCs in reducing traffic accidents. The County Department of Transportation has provided you with monthly data on each of the 441 lighted intersections in the County beginning in January 1995 and ending in July 2007. These data include the number of accidents, traffic volume, total number of lanes leading into the intersection, speed limits, and whether and when RLC was installed at each intersection.

Describe how you would evaluate the effect of RLCs on traffic accidents. In doing so, lay out the empirical model you would employ, and the estimation technique(s) you would use. Make a case for why the approach you describe is the best available for evaluating the effect of RLCs on accidents in the County. Suggest other possible methods for estimating policy effects.

Part b: Consider the following proposed research designs for an evaluation of a publicly-funded job training program that is scheduled to be offered later this spring.

Design 1 uses random assignment of eligible individuals to treatment and control groups and requires collection of post-training outcome data.

Design 2 uses random assignment of eligible individuals to treatment and control groups and involves collecting pre-training baseline data on individual characteristics and earnings and post-training outcomes.

Design 3 focuses on the job training participants only and requires that data on participant characteristics and earnings be collected both before and after the intervention is offered.

Discuss the benefits and limitations of each approach for obtaining estimates of the effects of the job training program.
Question 6 (Answer all three parts – a, b and c)

a) Assume that the initial cost of constructing a permanent dam is $425 million. There are no maintenance costs and the dam never deteriorates.

The annual benefits will depend on the amount of rainfall: $18 million in a dry year, $29 million in a wet year, and $52 million in a flood year. Over the last 100 years, meteorological evidence indicates that there have been 86 dry years, 12 wet years, and 2 flood years.

Using the past weather information as the basis for prediction, what is the present value of the net benefit of the dam if the real discount rate is 5 percent? Show your work. Assume that the benefits start to accrue at the end of the first year.

b) Explain why a decision rule requiring the existence of positive net benefits in a CBA is consistent with the Kaldor-Hicks criterion.

c) University President Kaler frequently cites an economic impact study that he says shows that the University of Minnesota generates a return on investment equal to $13 to $1. However, like most multiplier analyses, the main outcome in this study is the additional spending assumed to be generated within the state due to the existence of the university. How might a true CBA approach differ?
Question 7 (Answer all parts a-e)

In his classic treatise, *The Theory of Public Finance*, Richard Musgrave suggests that, for conceptual purposes, the functions of government can be separated into three functions or "branches"--macroeconomic stabilization, income redistribution, and resource allocation. The goal for the stabilization branch is to assure the achievement of high employment and price stability, that for the distribution branch is to achieve an equitable distribution of income, and the objective for the allocation branch is to see that resources are used efficiently. Economists typically focus their analysis on allocations branch and stabilization branch topics. In recent months, however, there has been increased public attention given to policy proposals that affect the income distribution. Discuss income distribution and the public sector from an economist’s point of view. Structure your answer as follows.

a) Explain how the income distribution is treated under the pareto criteria.

b) Describe the conclusions that Mill and the utilitarians reach with regard to the optimal distribution of income. What assumptions are necessary to reach their conclusion?

c) Describe Rawls’ solution to the problem of determining the optimal distribution of income. What assumptions are necessary for Rawls version of distributive justice to hold?

d) One way of redistributing income is through the tax and expenditure system. Explain carefully the difference between a progressive and a regressive tax system. Will a tax system with a single rate always be proportional? Explain.

e) One way of measuring the progressivity or regressivity of a tax system is through the index devised by Daniel Suits. Describe the construction of the Suits Index. Discuss how it would be constructed in a system containing a property tax, sales tax, and individual income tax.