Sample exam questions
Labor economics
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1. **Difference-in differences**
   Consider the difference-in-differences approach to identification of causal effects. Describe in words:

   (a) The key assumptions driving this identification approach.

   (b) Possible reasons why these assumptions might be violated.

   (c) Possible ways you could test the plausibility of these assumptions.

2. **Testing whether there is a causal effect**
   Suppose you have the following data-set from an experiment on the effect of gender (as implied by the name on an applicant's CV) on her likelihood to be invited for a job interview:

Gender	**Invitation**
F	0
F	0
F	0
F	1
F	1
M	0
M	1
M	1
M	1

   Calculate a test for the null hypothesis that gender does not affect the likelihood to be invited for an interview.

3. **Distributional decompositions**
   Suppose you have the following data-set on education (dropout, high school, college), immigrant status (migrant, native), and wages per hour.

Education	Migrant	Wage
D	M	4
D	M	5
D	N	6
HS	M	5
HS	M	8
HS	N	6
HS	N	7
HS	N	10
C	M	14
C	N	12
C	N	18

(a) What is the mean wage of migrants, and of natives? What is the median wage of either group?

(b) Suppose migrants were to have the same educational distribution as natives. What would be their mean wage? Their median wage?

4. **Monopsony**
Suppose that the revenues of a given profit-maximizing firm when employing L workers are equal to

$$R(L) = \beta_0 + \beta_1 L + \beta_2 L^2.$$

(a) Assume first that labor supply for this firm is infinitely elastic. They can hire arbitrarily many workers at wage w, but no workers at a lower wage. What is the amount of labor demanded by this firm?

(b) Assume now instead that labor supply for this firm is upward sloping, and equal to

$$L(w) = \alpha_0 + \alpha_1 w.$$

What is the amount of labor demanded by the firm in this case?