Graduate Labor Economics
ECN 250A, Spring 2019

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This is a closed-book exam. Answer all questions briefly but clearly. The exam is graded out of 75 points; each subquestion is worth 5 points.

I Short-answer questions (30 points)

(a) In contrast to the classical intuition that there should be a "law of one wage" for skill, there is substantial empirical evidence that equally skilled workers may be paid different (hourly) wages depending on which firm happens to employ them. Give two possible explanations for why such wage differences may occur.

(b) Consider a simple model in which aggregate output depends on a combination of routine and non-routine tasks (as in Autor, Levy, and Murnane 2003). How would you expect a decline in the price of computing power to affect *employment* in routine-intensive occupations? How would you expect it to affect *wages* in routine-intensive occupations, relative to wages in non-routine occupations?

(c) Retail pharmacies like CVS rely on a mixture of human cashiers and automated self-checkout kiosks. Suppose that the price of an automated kiosk falls by 50% in the next 5 years. In a two-factor model, how will this price change affect (i) cashier employment and (ii) the number of kiosks used?

(d) Whereas many studies based on changes in state-level minimum wages have tended to find at most modest disemployment effects from minimum-wage increases, the Jardim et al. (2018) study of Seattle's $13 minimum wage found substantial negative employment effects. Provide a possible explanation for why this study found larger effects than most prior work.

(e) Commuting zones are constructed by merging adjacent counties linked by dense commuting flows. Explain why researchers are increasingly using CZs, rather than counties, to define local labor markets.

(f) Describe a method for identifying seasonal workers in high-frequency panel data.

II Job-finding (10 points)

If we examine the hazard rate of reemployment among a group of new job-losers, we often see that this hazard rate initially rises with duration since job loss, peaks a few months later, and then steadily declines.

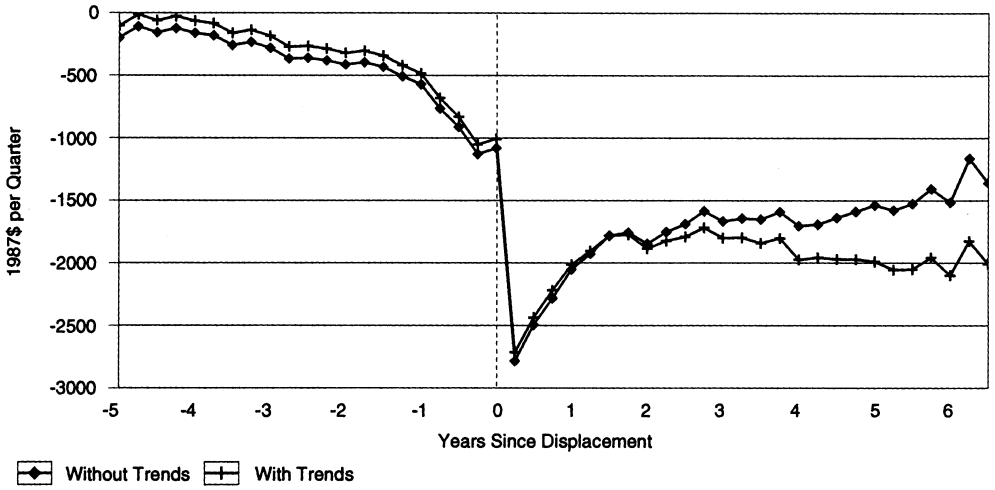
(a) Provide an explanation for why the job-finding hazard tends to rise in the initial months after job loss.

(b) Offer <u>two</u> possible explanations for why job-finding hazards tend to decline after the first few months.

(c) Job-finding hazards sometimes exhibit a "spike" at a particular duration after job loss. Why?

III Displaced workers (15 points)

The figure below, taken from Jacobson, Lalonde, and Sullivan (1993, hereafter "JLS"), plots estimated differences in earnings between Pennsylvania workers displaced in mass layoffs during 1980–1986 and a comparison group of non-separators, partialing out worker and time fixed effects. (Differences between the "without trends" and "with trends" series are not important for answering this question.)



(a) Why do JLS focus primarily on workers who lose their jobs during mass layoffs, rather than looking at all job-separators?

(b) Provide a possible explanation for why displaced workers' earnings begin to decline several years before they are actually displaced.

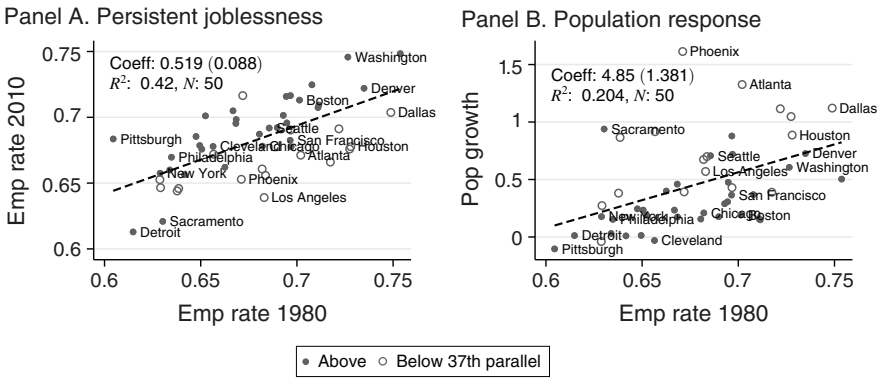
(c) Provide a possible explanation for why displaced workers experience long-term earnings losses. Explain why such losses are sometimes interpreted as evidence of imperfect competition in the labor market.

(d) JLS also report results from a specification that includes interactions between time effects and a dummy variable for each 1979 (pre-separation) firm, so that displaced workers' earnings are compared to those of non-separators from the same firm. Explain why non-separators from the same firm might be a *better* control group than non-separators in general. Explain why they may be a *worse* control group.

(e) Because workers who move out of state disappear from the dataset, JLS restrict their sample to workers who are observed with positive earnings at some point following their job loss. Given this sample restriction, are the true mean earnings losses experienced by displaced workers likely to be larger or smaller than the estimates shown above suggest? Justify your answer.

IV Regional evolutions (10 points)

The figure below (from Amior and Manning, 2018) plots 2010 emp-pop rates and 1980–2010 population growth against 1980 emp-pop rates for the 50 largest US commuting zones (as ranked in 1980).



(a) Imagine that the right panel showed a *flat* (horizontal) relationship between baseline employment rates and subsequent population growth. Under this alternative fact pattern, offer two explanations for the persistence of local employment rates between 1980 and 2010.

(b) Why is it surprising to see upward slopes in both of these relationships? What is a possible explanation for this fact pattern? (Amior and Manning offer one reconciliation, but feel free to propose another.)

(c) Amior and Manning instrument for employment growth using a classic Bartik IV. Write the formula for such an instrument (defining your notation), and describe one possible concern about using it.

V Reemployment bonuses (10 points)

Consider a continuous-time search model in which a worker enters unemployment at date $t = 0$. She can generate job offers at flow rate $s \geq 0$ by incurring search cost $\psi(s) = \frac{1}{2}cs^2$ (with $c > 0$). While unemployed, she receives flow utility b; once reemployed, she receives a flow wage $w > b$ forever. Her discount rate is δ.

In an effort to encourage job search, the government will pay this worker a one-time lump sum bonus valued at $\overline{L}$ if she is reemployed by some deadline date $T > 0$. The associated Bellman equation is

$$\delta U(t) = \max_{s \geq 0} \; b - \frac{1}{2}cs^2 + s(J + L(t) - U(t)) + \dot{U}(t)$$

where $U(t)$ is the value of unemployment at date t, J is the value of a job, $\dot{U}(t)$ is a time derivative, and

$$L(t) = \begin{cases} \overline{L} & \text{if } \; t \leq T \\ 0 & \text{if } t > T \end{cases}$$

(a) Suppose we want to study this model in discrete time. Write the associated discrete-time Bellman equation, with discount factor $\beta < 1$. State any assumptions you are making about timing conventions.

(b) Returning to continuous time, prove that $s^*(t)$ is a decreasing function of b for all values of t.

(c) The bonus policy induces a discontinuous change in search intensity at date T. Compute the quantity

$$\Delta s \equiv \lim_{t \to T^+} s^*(t) - \lim_{t \to T^-} s^*(t)$$

as a function of exogenous parameters.