

UNIVERSITY COLLEGE LONDON

EXAMINATION FOR INTERNAL STUDENTS

MODULE CODE : ECON3031

ASSESSMENT : ECON3031A
PATTERN

MODULE NAME : Economics of Migration and Job Search

DATE : 16 May 2016

TIME : 2:30 pm

TIME ALLOWED : 2 hours

This paper is suitable for candidates who attended classes for this module in the following academic year(s):

2015/16

SUMMER TERM 2016

ECON3031: Economics of Migration and Job Search

Time Allowance: Two hours

In cases where a student answers more questions than requested by the examination rubric, the policy of the Economics Department is that the student's first set of answers up to the required number will be the ones that count (not the best answers). All remaining answers will be ignored.

Part 1: Compulsory Questions. Please answer each question. This part counts for 40 percent of the final mark.

1) Roy model

Let σ_{US}^2 denote the variance of income distribution in the US, σ_{MX}^2 denote the variance of the income distribution in Mexico, and $\sigma_{MX,US}$ denote the covariance.

(a) Suppose $\sigma_{MX}^2 > \sigma_{MX,US} > \sigma_{US}^2$, what does the Roy model predict about the selection of immigrants from Mexico to the US? Provide the economic intuition.

(b) Suppose $\sigma_{MX}^2 > \sigma_{MX,US} > \sigma_{US}^2$ and the cost of moving becomes higher. Would the average quality of Mexican immigrants increase or decrease and why? Suppose the moving cost and the mean of the Mexico's income distribution increase, can we conclude what would happen to the average quality of Mexican immigrants in the US?

(c) Now suppose $\sigma_{US}^2 > \sigma_{MX,US} > \sigma_{MX}^2$ and the mean of the Mexico's income distribution increases while the moving cost reduces. Would the average quality of Mexican immigrants increase or decrease and why?

2) Natural Experiments

(a) Explain how Card (1990) evaluates the impact of Cuban immigrants on wages and employment in Miami. Recall that 125,000 Cuban immigrants arrived in Miami between May and September 1980. Card's analysis is based on the 1985 CPS data and the 1980 Census which draws a picture of the Miami and other major cities' labour markets just before the immigration.

(b) What is the key assumption on Miami and other major cities in Card's study? What is the main finding?

(c) Angrist and Krueger (1999) perform a study like Card using a non-event, i.e. the Clinton administration interceded and diverted the 2nd Mariel boatlift to Guantanamo Bay. What did they find? Relate their finding to the key assumption in part b).

3) Wage Impact: Skill-Cell/Regional Approach

Suppose you have three waves of census data and want to estimate the effect of immigration on wages using the following regression

$$\ln w_{it} = \alpha_0 + \alpha_i + \alpha_r + \alpha_t + \alpha_{rt} + \alpha_{it} + \alpha_{it} + \gamma \ln X_{it} + \varepsilon_{it}$$

where w_{irt} is the average earnings of group i in region r year t , X_{irt} is the corresponding labour supply, and all the n terms are dummy variables where n_0 is a constant.

(a) What are the potential problems if you estimate γ by taking first differences across the three census waves and using OLS?

(b) Propose an IV strategy for the regression of interest.

4) McCall Model of Job Search

Consider a worker who lives forever, discounting the future at rate r . While unemployed, this worker enjoys flow utility b and receives job offers, which are iid draws from a known exogenous wage offer distribution $F(w)$, at Poisson rate α . Jobs end at exogenous Poisson rate λ .

(a) Explain intuitively, what would be the sign of the change in the reservation wage with respect to the job destruction rate, i.e. $dR/d\lambda$?

(b) Let u denote the steady state unemployment rate which can be derived using the following condition

$$\alpha(1 - F(R))u = \lambda(1 - u)$$

which gives

$$u = \frac{\lambda}{\alpha(1 - F(R)) + \lambda}$$

Derive the comparative statics of the unemployment rate with respect to the job destruction rate, i.e. find $du/d\lambda$. Explain the intuition of the sign of $du/d\lambda$.

Part 2: Please answer two of the following three questions. The two questions in this part count for 60 percent of the final mark.

1) Local Labour Markets

Assume that workers are perfectly mobile as in the Roback model. Each city has an amenity value s where s can affect both workers' utilities and firms' costs. Each worker supplies a single unit of labour. Taking s in his location as given, the representative worker solves

$$\max_{x, \ell^c} U(x, \ell^c, s)$$

subject to

$$w = x + \ell^c r$$

where w is the wage, r is the rental payment, x is the national good, and ℓ^c is the residential land consumption. Let V denote the indirect utility.

M firms produce output using a constant returns to scale production function

$$X = f(\ell^p, N, s)$$

where ℓ^p is land used in production, N is the total number of workers in the city, and s is amenity. Normalize the output price to one and denote the unit cost as $C(w, r, s)$. Further, let L denote the total amount of land.

(a) What are the equilibrium conditions in this model?

(b) Suppose both firms and workers prefer high s locations, what would the Roback model predict in terms of relative wages and rents between city 1 and 2 where $s_1 < s_2$? Draw diagrams and give an example of such amenities.

(c) Now suppose workers have idiosyncratic preferences for cities. In particular, the utility function is given by

$$u_{ic} = \beta_w w_c - \beta_r r_c + \beta_A A_c + e_{ic}$$

where w_c is city c 's wage, r_c is the local rent, A_c is amenities, β 's are preference parameters, and e_{ic} is a taste shock drawn from a type-1 extreme value distribution. Suppose that you observed population shares denoted by s_j where $j = 1, \dots, J$, wages and rents. Describe how you would estimate the model, i.e. $\beta_w, \beta_r, \beta_A$. If you cannot estimate or identify some of these parameters, explain why not.

2) Wage Impact

Each city c has many homogeneous firms in year t . A firm's production function takes the following form

$$Y_{ct} = A_{ct} L_{ct}^\alpha K_{ct}^{1-\alpha}$$

where A_{ct} is city-specific productivity, K_{ct} is capital, L_{ct} is a CES aggregate of different types of labour, and $\alpha \in (0, 1)$ is the income share of labour. The first-level of labour aggregate is a combination of high and low skill labour according to

$$L_{ct} = \left(\sum_e \theta_{et} L_{ect}^{\rho_E} \right)^{\frac{1}{\rho_E}},$$

where the skill levels are high and low $e \in \{H, L\}$, and $\sigma_E = \frac{1}{1-\rho_E}$ is the elasticity of substitution between skill levels. The parameters θ_{Ht}, θ_{Lt} where $\theta_{Ht} + \theta_{Lt} = 1$ represent the relative productivity levels of high and low skill labour, respectively. L_{ect} is a combination of labour supplied by natives and immigrants, and is given by

$$L_{ect} = \left(\sum_s \beta_{ect}^s S_{ect}^{\rho_M} \right)^{\frac{1}{\rho_M}},$$

where $S \in \{M, N\}$ denotes immigrant and native, respectively, $\beta_{ect}^N + \beta_{ect}^M = 1$, and $\sigma_M = \frac{1}{1-\rho_M}$ denotes the elasticity of substitution between natives and immigrants. Capital is perfectly elastically supplied at a common price κ_t . Let P_t denote the output price. Firms operate in a perfectly competitive market.

(a) Derive the city's labour demand for each type of labour.

(b) Discuss how you would estimate the substitution elasticities σ_E and σ_M . What are the problems with using OLS?

(c) Given the estimates from part b), discuss how you would estimate A_{ct} .

(d) Borjas (2003) proposes an alternative estimation strategy that uses variation in immigration across age-education cells for identifying the impact of migration on wages at the national level. What are the problems with this approach?

3) McCall Model of Job Search

Consider the continuous time McCall Model of job search. An unemployed worker with an infinite-time horizon wishes to maximise the present discounted value of wages. At a moment in time, the worker receives a wage offer w , where w is drawn from a known exogenous distribution $F(w)$. If the worker accepts employment, she ceases search and receives the offered wage. If the worker rejects employment, she continues searching for employment and receives a flow value of b . Let r denote the discount rate and α denote the job offer arrival rate.

(a) Express the Bellman Equation associated with the value of employment $N(w)$ at a wage of w for this worker and the Bellman Equation associated with the value of being unemployed U .

(b) Assume this worker follows a cut-off strategy of accepting wages above a level of R and rejecting wages below R . Derive the reservation wage R .

(c) Suppose that the worker has $b = 1$, $\alpha = r = 0.5$. Assume that the worker can search in two different labour markets. In the first labour market, the distribution of wage offers is uniform, $F(w) \sim U[0, 4]$. Similarly, in the second labour market the distribution of wage offers is $G(w) \sim U[1, 3]$. Find the worker's reservation wage in each market. *Hint: (i) $\mathbb{E} \max[w - R, 0] = \int_R^w (w - R) f(w) dw$; (ii) $\sqrt{160} \approx 12.65$ and $\sqrt{84} \approx 9.2$.*

(d) Which market would the worker prefer to search and why?