Quiz on Matching Function

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Available at https://pascalmichaillat.org/c1/

Question 1

Which of these matching functions does not have constant returns to scale?

A) $m(U, V) = a \times U + b \times V$

B) $m(U, V) = U^a \times V^{1-a}$

C) $m(U, V) = [b \times U^a + (1 - b) \times V^a]^{1/a}$

D) $m(U, V) = U \times V$

E) $m(U, V) = \sqrt{U} \times \sqrt{V}$

F) None of the above

Question 2

A Cobb-Douglas matching function gives the flow of new worker-firm matches created when they are U unemployment workers and V vacancies: $m = \omega \times U^{\eta} \times V^{1-\eta}$. We define labor market tightness as $\theta = V/U$. What is the expression for the rate q at which a vacancy is filled?

A) $q(\theta) = \omega \times \theta^{\eta}$

B) $q(\theta) = \omega \times \theta^{1-\eta}$

C) $q(\theta) = \omega \times \theta^{-\eta}$

D) $q(\theta) = \omega \times \eta^{\theta}$

E) $q(\theta) = \theta^{-\eta}$

F) None of the above

Question 3

A Cobb-Douglas matching function gives the flow of new worker-firm matches created when they are U unemployment workers and V vacancies: $m = \omega \times U^{\eta} \times V^{1-\eta}$. We define labor market tightness as $\theta = V/U$. What is the expression for the rate f at which a worker finds a job?

A) $f(\theta) = \omega \times \theta^{\eta}$

B) $f(\theta) = \omega \times \theta^{1-\eta}$

C) $f(\theta) = \omega \times \theta^{-\eta}$

D) $f(\theta) = \omega \times \eta^{\theta}$

E) $f(\theta) = \omega \times \theta^{1+\eta}$

F) None of the above

Question 4

Consider a labor market with U unemployment workers and V vacancies. What is a realistic specification for the matching function?

A) $m(U, V) = \omega \times U^{0.2} \times V^{0.8}$

B) $m(U, V) = \omega \times U^{0.5} \times V^{0.5}$

C) $m(U, V) = \omega \times U^{0.5} \times V^{0.8}$

D) $m(U, V) = \omega \times U^{0.3} \times V^{0.4}$

E) $m(U, V) = 0.5 \times U + 0.5 \times V$

F) None of the above

Question 5

For any matching function, what is a key relationship between the job-finding rate f, vacancy-filling rate q, and labor market tightness θ?

A) $f + q = \theta$

B) $f \times q = \theta$

C) $f/q = \theta$

D) $f - q = \theta$

E) $q/f = \theta$

F) None of the above

Question 6

We define labor market tightness as $\theta = V/U$. What is the rate at which unemployed workers find a job when the matching function is $m(U, V) = (U^{-\gamma} + V^{-\gamma})^{-\frac{1}{\gamma}}$ with $\gamma > 0$?

A) $f(\theta) = (1 + \theta^{\gamma})^{-\frac{1}{\gamma}}$

B) $f(\theta) = (1 + \theta^{-\gamma})^{\gamma}$

C) $f(\theta) = (1 + \theta^{-\gamma})^{-\frac{1}{\gamma}}$

D) $f(\theta) = (1 + \theta^{\gamma})^{\gamma}$

E) $f(\theta) = (1 - \theta^{\gamma})^{-\frac{1}{\gamma}}$

F) None of the above

Question 7

We define labor market tightness as $\theta = V/U$. What is the are at which vacancies are filled when the the matching function is $m(U, V) = (U^{-\gamma} + V^{-\gamma})^{-\frac{1}{\gamma}}$ with $\gamma > 0$?

A) $q(\theta) = (1 + \theta^{-\gamma})^{-\frac{1}{\gamma}}$

B) $q(\theta) = (1 + \theta^{\gamma})^{\gamma}$

C) $q(\theta) = (1 + \theta^{\gamma})^{-\frac{1}{\gamma}}$

D) $q(\theta) = (1 + \theta^{-\gamma})^{\gamma}$

E) $q(\theta) = (1 - \theta^{-\gamma})^{-\frac{1}{\gamma}}$

F) None of the above

Question 8

Consider the matching function $m(U, V) = (U^{-\gamma} + V^{-\gamma})^{-\frac{1}{\gamma}}$ with $\gamma > 0$. How do the the job-finding rate $f(\theta)$ and vacancy-filling rate $q(\theta)$ behave at the limit?

A) $f(0) = 0$, $q(0) = 0$, $\lim_{\theta \to \infty} f(\theta) = 1$, $\lim_{\theta \to \infty} q(\theta) = 1$.

B) $f(0) = 1$, $q(0) = 1$, $\lim_{\theta \to \infty} f(\theta) = 0$, $\lim_{\theta \to \infty} q(\theta) = 0$.

C) $f(0) = 0$, $q(0) = 1$, $\lim_{\theta\to\infty} f(\theta) = 1$, $\lim_{\theta\to\infty} q(\theta) = 0$.

D) $f(0) = 1$, $q(0) = 0$, $\lim_{\theta\to\infty} f(\theta) = 0$, $\lim_{\theta\to\infty} q(\theta) = 1$.

E) $f(0) = 0$, $q(0) = \infty$, $\lim_{\theta\to\infty} f(\theta) = \infty$, $\lim_{\theta\to\infty} q(\theta) = 0$.

F) $f(0) = \infty$, $q(0) = 0$, $\lim_{\theta\to\infty} f(\theta) = 0$, $\lim_{\theta\to\infty} q(\theta) = \infty$.

G) None of the above.

Question 9

Consider a matching function $m(U, V)$ that has constant returns to scale and is increasing in U and V. What is the most you can say about the job-finding and vacancy-filling rates?

A) The rates are functions of labor market tightness.

B) Both rates are increasing in tightness.

C) Both rates are decreasing in tightness.

D) The job-finding rate is decreasing in tightness and the vacancy-filling rate is increasing in tightness.

E) The job-finding rate is increasing in tightness and the vacancy-filling rate is decreasing in tightness.

F) The matching function is too general to say anything.