

Quiz on Unemployment Fluctuations

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Question 1

In the United States, which correlation do we observe over the business cycle?

- A) Unemployment level and labor market tightness are positively correlated.
- B) Employment level and labor market tightness are positively correlated.
- C) Unemployment level and vacancies are positively correlated.
- D) Unemployment level and employment level are positively correlated.
- E) Unemployment level and labor force participation are positively correlated.
- F) None of the above.

Question 2

In the matching model with fixed wage, which type of shocks can generate the correlation described in the previous question?

- A) Shocks to labor productivity
- B) Shocks to the size of the labor force
- C) Shocks to the disutility from unemployment
- D) Shocks to monetary policy
- E) No shocks can generate such correlation

Question 3

Consider a matching model with surplus sharing and a linear production function. Assume that the value of unemployment is $z > 0$ and that the bargaining power of firms is 1. Then an increase in labor productivity a leads to:

- A) Higher tightness and lower unemployment
- B) Lower tightness and higher unemployment
- C) Higher tightness and higher unemployment
- D) Lower tightness and lower unemployment
- E) No effect on tightness and unemployment

Question 4

Let $c(x) = a(x) \times b(x)/d(x)$. Let ϵ_x^a , ϵ_x^b , ϵ_x^c , and ϵ_x^d be the elasticities of the functions a , b , c , and d with respect to x . Then:

- A) $\epsilon_x^c = \epsilon_x^a \times \frac{\epsilon_x^b}{\epsilon_x^d}$
- B) $\epsilon_x^c = \frac{a(x)}{d(x)}\epsilon_x^a + \frac{b(x)}{d(x)}\epsilon_x^b$
- C) $\epsilon_x^c = \ln(a(x)) + \ln(b(x)) - \ln(d(x))$
- D) $\epsilon_x^c = \epsilon_x^a + \epsilon_x^b - \epsilon_x^d$
- E) None of the above

Question 5

Let $f(x, y)$ be a function of x and y . Let $\partial f/\partial x$ and $\partial f/\partial y$ be the partial derivatives of the function f with respect to x and y . Let $\epsilon_x^f = \partial \ln(f)/\partial \ln(x)$ and $\epsilon_y^f = \partial \ln(f)/\partial \ln(y)$ be the partial elasticities of the function f with respect to x and y . Then the infinitesimal change in f generated by infinitesimal changes in x and y satisfies:

- A) $df = \epsilon_x^f \cdot dx + \epsilon_y^f \cdot dy$
- B) $d \ln f = \epsilon_x^f \cdot dx + \epsilon_y^f \cdot dy$
- C) $d \ln f = [\partial f/\partial x]dx + [\partial f/\partial y]dy$
- D) $df = \epsilon_x^f \cdot d \ln x + \epsilon_y^f \cdot d \ln y$
- E) $d \ln f = \epsilon_x^f \cdot d \ln x + \epsilon_y^f \cdot d \ln y$
- F) None of the above

Question 6

Let $c(x) = [b \cdot a(x)]^d$, where $a(x) > 0$ and $b > 0$ and $d < 0$. Let ϵ_x^c and ϵ_x^a be the elasticities of the functions c and a with respect to x . Then:

- A) $\epsilon_x^c = [b \cdot \epsilon_x^a]^d$
- B) $\epsilon_x^c = d \cdot [\epsilon_x^a + b]$

- C) $\epsilon_x^c = [b + d] \cdot \epsilon_x^a$
- D) $\epsilon_x^c = d \cdot \epsilon_x^a$
- E) $\epsilon_x^c = b \cdot \epsilon_x^a$
- F) $\epsilon_x^c = d \cdot [b \cdot a(x)]^{d-1}$
- G) None of the above

Question 7

Let $c(x) = a(x) + b$, where $a(x) > 0$ and $b > 0$. Let ϵ_x^c and ϵ_x^a be the elasticities of the functions c and a with respect to x . Then

- A) $\epsilon_x^c = \epsilon_x^a$
- B) $\epsilon_x^c = \epsilon_x^a + b$
- C) $\epsilon_x^c = \frac{a(x)}{c(x)} \epsilon_x^a$
- D) $\epsilon_x^c = \frac{b}{c(x)} \epsilon_x^a$
- E) $\epsilon_x^c = \frac{a(x)}{b} \epsilon_x^a$
- F) $\epsilon_x^c = \frac{a(x)}{c(x)} \epsilon_x^a + \frac{b}{c(x)}$
- G) None of the above

Question 8

Consider a one-period matching model with a labor force of size 1. All workers are initially unemployed; firms post vacancies and match with workers; then production occurs. The matching function is $m = \sqrt{V}$. Firms incur a recruiting cost of $r > 0$ recruiters per vacancy. Firms have a production function $y = 2 \times a \times \sqrt{N}$, where a governs labor productivity and N denotes the number of producers in the firm. Firms pay a rigid wage: $w = a^\gamma$ with $\gamma < 1$. What is the elasticity of vacancies V with respect to productivity a in the model?

- A) $\epsilon_a^V = (1 - \gamma) \cdot (1 + \tau)$
- B) $\epsilon_a^V = 4 \cdot \frac{1-\gamma}{1+\tau}$

- C) $\epsilon_a^V = 2 \cdot \frac{1+\tau}{1-\gamma}$
- D) $\epsilon_a^V = 4 \cdot (1-\gamma) - \tau$
- E) $\epsilon_a^V = 2 \cdot \gamma - r$
- F) $\epsilon_a^V = 0$
- G) None of the above

Question 9

Under a standard US calibration, what is the value of the elasticity computed in the previous question?

- A) $\epsilon_a^V < 0$
- B) $\epsilon_a^V \in [0, 1]$
- C) $\epsilon_a^V \in (1, 2]$
- D) $\epsilon_a^V \in (2, 3]$
- E) $\epsilon_a^V \in (3, 4]$
- F) $\epsilon_a^V \in (4, 5]$
- G) $\epsilon_a^V > 5$

Question 10

Consider a matching model with rigid wage. Then after a negative labor demand shock:

- A) The unemployment rate is lower.
- B) The probability of losing a job in a given month is higher.
- C) The probability of losing a job in a given month is lower.
- D) The probability of finding a job in a given month is lower.
- E) The probability of finding a job in a given month is higher.
- F) The probability of filling a vacancy in a given month is higher.

G) The probability of filling a vacancy in a given month is lower.

H) None of the above.