Exam 2 Main Concepts

Contents

1 Lesson 4

1.1 Job Finding Rate

Probability of find a job

$$f = \frac{H(U,V)}{U}$$

$$f = \gamma\sqrt{\theta}$$

$\frac{1}{f}$ - average length of unemployment

1.2 Vacancy Filling Rate

Probability of filling a vacancy

$$q = \frac{H(U,V)}{V}$$

$$q = \gamma(\theta)^{-1/2}$$

$\frac{1}{q}$ - average length of vacancy (time to fill)

1.3 Steady-State Unemployment

Natural rate of unemployment when $f * U = s * E$:

$$u* = \frac{s}{(s + f(\theta))}$$

This is known as the Beveridge curve.

1.4 Vacancy-Supply Curve

$$\theta(w) = (\frac{\gamma * (y - w)}{s * k})^2$$

1.5 Wage-Setting Curve

Will be given as $w(\theta)$

2 Lesson 5

2.1 IBL

Find equation of consumption values from preferences and plug into $PVLC = PVLR$

$$C_1 + \frac{C_2}{(1 + r)} = (Y_1 + W_1) + \frac{(Y_2 + W_2)}{(1 + r)}$$

- Y-intercept = Only Future consumption (C_2)
- X-intercept = Only Current consumption (C_1)
- intserction of IBL and y = x is $C_1 = C_2$ (Consumption Smoothing)
- No-Lending/No-Borrowing Point
  - $C_1 = Y_1 + W_1$
  - $C_2 = Y_2 + W_2$
- Slope = -(1 + r)
  - r = real interest rate

3 Lesson 6

3.1 UC = MPK

Firms will choose a level of capital (K) that maximizes profit by reaching the condition $MB = MC$

MB = Expected marginal product of capital (MPK^e)

MC = User-cost of capital (UC)

π_{max} when UC = MPK^e

User Cost depends on:

- Real Price of capital (P_k)
- The depreciation rate (δ)
- The real interest rate (r)
- The business tax on revenue (τ)
- Investment Tax Credit (ITC)

$$UC = \frac{(r+\delta)(1-ITC)P_k}{(1-\tau)}$$

3.2 Savings and Investment

I_t = Gross investment in year t K_t = capital stock at beginning of year t K_{t+1} = capital stock at beginning of year t + 1

- Net investment = ΔK during year t
  - $K_{t+1} - K_t$
- Net investment = gross investment - depreciation

3.2.1 Goods Market Equlibrium

- We are in a closed economy so NX = 0
- Savings = Investment

$$I = Y - C - G$$

3.2.2 Savings Function

$$S = Y - C - G$$

- Y +
- Y_2 -
- W_1 -
- W_2 -
- T +
- Autonomous Consumption -
- Consumer confidence -
- G -

3.2.3 Investment Function

$$I = K^* - K_t + \delta K_t$$

- A +
- AS +
- τ -
- δ -
- P_k -
- ITC +

4 Lesson 7

4.1 Notation

- L_t - Number of workers
- n - growth rate of work force
  - population growth rate
- K_t - capital stock
- δ - depreciation rate
- Y_t - output (GDP)
- C_t - consumption
- I_t - gross investment
  - $C_t = Y_t - I_t$
- $y_t = \frac{Y_t}{L_t}$ - ouput per worker
- $c_t = \frac{C_t}{L_t}$ - consumption per worker
- $k_t = \frac{K_t}{L_t}$ - capital per worker (capital-labor ratio)
- $i_t = \frac{I_t}{L_t}$ - investment per worker

4.2 Steady-State

$$i = (n + \delta)k$$

$$y_t = Af(k_t)$$

$$c = Af(k) - (n + \delta)k$$

STEADY STATE CONDITION

$$sf(k) = (n + \delta)k$$

There are three main factors that change the solow model

1. Changes in TFP (A) change $sf(k)$
2. Cahnges in savings rate (s) change $sf(k)$
3. Changes in the population growth rate (n) change $(n + \delta)k$