

mics - Wage Setting, Price Setting & Macroeconomic Equilibrium

Question 1

Wage Setting (WS) and Price Setting (PS) Equations

Wage Setting Equation:

$$W = P^e f(u, z)$$

Where,

- **W** is the nominal wage.
- **P^e** is the expected price level.
- **u** is the unemployment rate.
- **z** represents other variables that can affect wage setting (e.g., unemployment benefits, the bargaining power of workers).

Explanation: This equation illustrates the relationship between the nominal wage (**W**) and expected price level (**P^e**), adjusted for the unemployment rate (**u**) and other influencing factors (**z**).

Price Setting Equation:

$$P = (1 + \mu) W$$

Where,

- **P** is the price of goods.
- **μ** is the markup of prices over wages.
- **W** is the nominal wage.

Explanation: This equation shows that prices (**P**) are set by applying a markup (**μ**) over the nominal wage (**W**).

Graphical Illustration of WS and PS Relations

Step-by-Step Graphical Impact Explanation

Step 1: Plot the Wage Setting (WS) and Price Setting (PS) curves on a graph with real wage ($\frac{W}{P}$) on the y-axis and the unemployment rate (**u**) on the x-axis.

Explanation: The equilibriums are determined at the intersection of WS and PS curves which represent the natural rate of unemployment and equilibrium real wage.

Step 2: Increase in the minimum wage shifts the WS curve upward due to higher wages at any unemployment rate.

Explanation: Higher minimum wages increase the floor for wages across the board, shifting the wage-setting relation upward.

Step 3: Determine the new intersection point between the new WS and PS curves.

Explanation: The new equilibrium represents a higher real wage and potentially a higher natural rate of unemployment since firms might hire fewer workers at the higher wage.

Conclusion: The increase in minimum wage results in a higher real wage and an increase in the natural rate of unemployment.

Policies to Reduce the Natural Rate of Unemployment

Improving Education and Training Programs:

Explanation: By enhancing the skills and productivity of the workforce, the labor market becomes more efficient, decreasing structural unemployment and potentially lowering the natural rate.

Reducing Unemployment Benefits:

Explanation: Lower benefits can incentivize job seekers to accept jobs more quickly, reducing frictional unemployment and thus lowering the natural rate.

Increasing Labor Market Flexibility:

Explanation: Policies enhancing labor mobility and reducing barriers to entry in certain industries can help match workers to jobs more efficiently, reducing the natural rate of unemployment.

Given:

- Markup of $\mu = 0.10$
- Wage setting equation:

$$W = P^e (1-u)$$

Step a: Finding the Natural Rate of Unemployment (u_n)

Price Setting Equation:

$$P = (1 + \mu) W$$

Given $\mu = 0.10$, this transforms to:

$$P = 1.10 W$$

When expectations are correct (

$$P = P^e$$

):

$$W = P (1 - u)$$

So,

$$\begin{aligned} P &= 1.10 P (1 - u_n) \\ 1 &= 1.10 (1 - u_n) \\ \frac{1}{1.10} &= 1 - u_n \\ \frac{10}{11} &= 1 - u_n \\ u_n &= 1 - \frac{10}{11} \\ u_n &= \frac{1}{11} \\ u_n &= 0.0909 \end{aligned}$$

or approximately 9.09%

Explanation: Solving the income balance equations shows the natural rate of unemployment at which the anticipated and actual price levels are equal.

Step b: Effect of a Higher Expected Price Level in the Short Run

Explanation: If the expected price level (P^e) is higher than the actual price level (P), workers will demand higher wages based on their expectations, leading firms to reduce hiring due to higher labor costs. Consequently, the actual unemployment rate will rise in the short run.

Reason for Downward Sloping AD Curve:

Explanation using Interest Rate Effect: When the price level decreases, savings increase, leading to a decrease in interest rates. Lower interest rates stimulate investment and consumption, increasing aggregate demand (AD). This is why the AD curve slopes downward.

Graphical Derivation:

Explanation: The AD curve is plotted with the price level on the y-axis and real output on the x-axis. As the price level decreases from P1 to P2, real output increases from Y1 to Y2, explaining the downward slope.

Step a: Immediate Effects of Reduction in Income Taxes

AD Curve: Shifts to the right due to increased consumption.

AS Curve: Remains unchanged initially.

IS Curve: Shifts to the right due to higher consumption and investment.

LM Curve: Remains unchanged initially.

Explanation: Reduction in income taxes increases disposable income, leading to higher consumption and investment, which shifts the AD and IS curves right.

Step b: Movement from SR to LR Equilibrium

Explanation: In SR, output exceeds the natural level, causing upward pressure on prices. Over time (LR), higher interest rates and inflation expectations will shift the AS curve upward until a new equilibrium is reached at higher price levels and potential output.

Graph: Show initial SR equilibrium and eventual movement to a new LR equilibrium.

Step c: Long-Term Effects on Consumption and Investment

Explanation: In the long run, higher price levels raise interest rates, reducing investment even as consumption stabilizes at a higher level due to higher taxation offset.

Step a: Effect on Natural Rate of Unemployment

Explanation: Increasing unemployment benefits could increase the natural rate of unemployment as it might reduce the urgency for job search.

Step b: Immediate Effects on AD, AS, IS, and LM Curves

AD Curve: Unaffected initially.

AS Curve: Shifts upward due to increased wage setting, leading higher expected cost and prices.

IS Curve: Shifts left due to higher real wages reducing firm profitability and investment.

LM Curve: Unchanged initially.

Explanation: Higher benefits increase wage-setting power, leading to higher nominal wages and equilibrium adjustments.

Step c: Movement from SR to LR Equilibrium

Explanation: Higher unemployment benefits shift the WS curve upward. Initially, AS decrease due to higher costs. Over time, unemployment rate increases until equilibrium at a new natural rate.

Graphical Representation and Effect of Positive Demand Shock ($\epsilon_t = 1$):

Explanation: A temporary positive demand shock shifts AD curve right, increasing output and inflation in the short term. Eventually, AD shifts back, and the economy returns to its previous natural output and inflation rate in the long term.

Conclusion: Each part of the question has a self-contained explanation detailing shifts in economic curves and equilibriums in response to various shocks and policy changes.
