

EC216 INTERMEDIATE MACROECONOMICS

COURSEWORK SUMMARY

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1 Summary

1. Uncovered Interest Parity
 2. Fisher's Real Interest Rate Hypothesis
 3. Nature of Inflation Expectations
 4. Okun's Law
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1. Output/GDP
 2. IS-LM Model (Short-Run)
 - *Open & Closed Economies*
 - Derivation of IS (Investment & Saving Demand)
 - Derivation of LM (Money Supplied & Demanded)
 3. IS-LM-PC (Medium-Run)
 - *Open & Closed Economies*
 - Aggregate Supply
 - Original Phillips Curve
 - Expectations Augmented Phillips Curve
 - NAIRU / Change in Unemployment Phillips Curve
 - Change in Output Phillips Curve
 4. Labour Model (Medium-Run)
 - *Relative Wage & Price Setting*
 - Expected Prices
 - Given Prices
 - Given Wages

Author's Note: In Short-Run, output is determined by demand. In the Medium-Run, output is determined by supply. In Medium-Run, all output, unemployment and real interest rate remain at their natural rates due to Central Bank Monetary Policy. Seen where change in inflation is equal to zero.

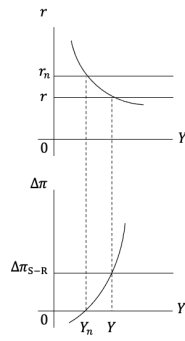


Figure 1: Natural Rates

2 Relationships

2.1 Uncovered Interest Parity

$$(1 + i) = (1 + i^*) \frac{E}{E^e}$$

2.2 Fisher's Real Interest Rate Hypothesis

$$r_t = i_t - \pi_{t+1}^e$$

In the medium-run, the real interest rate must account for the expected inflation to give a true idea of the purchasing power.

2.3 Nature of Inflation Expectations

$$\pi_{t+1}^e = \theta \pi_{t-1}$$

Where:

If $\theta = 0$: No Expectations (NAIRU)

If $\theta = 1$: Expectations Augmented

If $\theta > 1$: Expectations Greater Than Before

2.4 Okun's Law

$$(u_t - u_{t-1}) = -\beta(g_{Y_t} - \bar{g}_Y)$$

Relating change in unemployment to the change in output growth rate.

3 Models

3.1 Output/GDP

$$Y = C + I + G + (X - IM)$$

Where:

$$C = f(Y - T)$$

$$I = f(Y, i)$$

$$X = f(Y^*, E)$$

$$IM = f(Y, E)$$

Where:

Y = Domestic Output

Y^* = Foreign Output

T = Tax Rate

$(Y - T) = Y_D$ = Disposable Output ‘Income’

i = Interest Rate

E = Nominal Domestic Exchange Rate

C = Consumption (+ Corr. w/ Disposable Income)

I = Investment (+ Corr. w/ Output; – Corr. w/ Interest Rate)

G = Government Spending

X = Domestic Exports (+ Corr. w/ Foreign Income; – Corr. w/ Nominal Domestic Exchange Rate)

IM = Domestic Imports (+ Corr. w/ Domestic Output; + Corr. w/ Nominal Domestic Exchange Rate)

Where:

Output is a direct positive indicator of GDP

“Output” and “Production” can be used interchangeably

3.2 IS-LM Model (Short-Run)

3.2.1 Monetary Expansion/Contraction (LM)

- CB changing the *money supply* therefore, *interest rate*
- **Expansion:** $M_S \uparrow$, money less valuable $\therefore i \downarrow, I \uparrow, C \uparrow, Z \uparrow, Y \uparrow$
- **Contraction:** $M_S \uparrow$, money less valuable $\therefore i \uparrow, I \downarrow, C \downarrow, Z \downarrow, Y \downarrow$

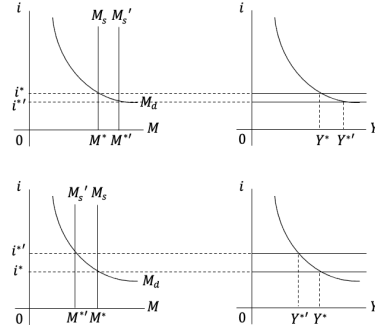


Figure 2: Monetary Expansion/Contraction (LM)

3.2.2 Fiscal Expansion/Contraction (IS)

- Government changing the *budget deficit*
- **Expansion:** $(G - T) \uparrow$, increase in budget deficit, $G \uparrow$ and/or $T \downarrow, \therefore Y_D \uparrow, C \uparrow, I \uparrow, Y \uparrow$
- **Contraction:** $(G - T) \downarrow$, decrease in budget deficit, $G \downarrow$ and/or $T \uparrow, \therefore Y_D \downarrow, C \downarrow, I \downarrow, Y \downarrow$

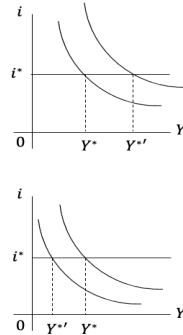


Figure 3: Fiscal Expansion/Contraction (IS)

3.3 IS-LM-PC (Medium-Run) Phillips Curve Derivation

$$W_t = P^e(1 - \alpha u_t + z)$$

$$P_t = W_t(1 + \mu)$$

Original PC

$$P_t = P^e(1 + \mu)(1 - \alpha u_t + z)$$

Expectations Augmented PC

$$\pi_t = \pi_{t+1}^e + (\mu + z) - \alpha u_t \quad [\theta = 1; \pi_{t+1}^e = \theta \pi_{t-1}]$$

$$\pi_t - \pi_{t-1} = (\mu + z) - \alpha u_t$$

NAIRU / Change in Unemployment

$$\pi_t - \pi_{t-1} = -\alpha(u_t - u_n) \quad [MR : \Delta u = 0; \Delta \pi = 0]$$

Change in Output PC

$$\pi_t - \pi_{t-1} = -\frac{\alpha}{L}(Y_t - Y_n) \quad [MR : \Delta Y = 0; \Delta u = 0; \Delta \pi = 0]$$

As t approaches n , everything returns to its *natural rate*

3.4 Labour Model (Medium-Run)

$$\frac{W}{P^e} = (1 - u)$$

Where:

$$\frac{W}{P^e} = (1 - u) = \text{Real Expected Wage}$$

$$\frac{W}{P} = \frac{1}{(1+\mu)}$$

W = Nominal Expected Wage

P^e = Expected Price of Goods Purchased

u = Unemployment (+ Corr. w/ Nominal Expected Wage; – Corr. w/ Expected Price of Goods Purchased)

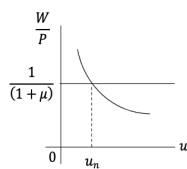


Figure 4: Labour Model (Medium-Run)