

ECON 202
MACROECONOMIC THEORY
 Dr. Yetkiner

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Midterm Exam

1. (15 Points) Calculate the GDP of **KingLand**, a fictitious economy whose numbers are listed below. Do so using all three methods (value added approach, income approach, and expenditure approach). Please do indicate your calculations clearly.

KingLand, year 2010

Farmer King, (private firm)

Corn Sold to Govt	\$30
Corn Sold to Singapore	\$25
Corn Sold to KingFoodCo, Inc	\$20
Bought pesticides from Egypt	\$10
Payment to workers	\$40
Tax on profit	\$15

KingFoodCo, Inc

Sold Corn Flakes to Consumers	\$100
Sold Corn Flakes to Govt	\$20
Bought corn from Farmer King	\$20
Bought salt from Egypt	\$10
Payment to workers	\$20
Tax on Profit	\$15
<u>Corn Inventory</u>	
Beginning of Year	\$10
End of Year	\$15

Govt

Taxes	\$50
Purchase of Corn	\$30
Purchase of Corn Flakes	\$20
Unemployment benefits Paid	\$15

Households

Taxes on wage income	\$10
Unemployment benefits	\$15
Corn Flakes purchased	\$100

2. (15 Points) Suppose that the following equations describe a simple Keynesian macro economy.

$$C = 45 + 0.9(Y - T); \quad T = 50 + \left(\frac{1}{9}\right)Y; \quad I = 2500; \quad G = 500 + (0.1)Y$$

Find the **multiplier** and **equilibrium GDP**, and determine whether the economy incurs budget deficit or surplus.

3. (15 Points) Suppose that a macro aggregates of an economy are given as follows:
 $C = 500 + (0,9)(Y - T)$, $T = 500 + \left(\frac{1}{9}\right) \cdot Y$, $I = 2500 - 1000 \cdot i$, $G = 2000$,
 $M^d = 3000 + (0,1) \cdot Y - (5000) \cdot i$, $\frac{M^s}{P} = 4000$ ve $P = 1$. Solving the model yields:

(a) IS equation: $i = \frac{22750}{5000} - \frac{1}{5000} Y$

(b) LM equation: $i = \frac{0,1}{5000} Y - \frac{1000}{5000}$

(c) Equilibrium interest rate and GDP are $i_0^* = 0.2318$ and $Y_0^* = 21590.9$, respectively.

Notably, there is budget surplus: $BS = T - G = 500 + \left(\frac{1}{9}\right) \cdot Y_0^* - 2000 = 898.98$.

Turkish government would like to increase the surplus but does not like the idea of a fall in GDP. Finally, they decided to follow a mixed policy. As a first step, government spending is decreased by 10 percent (that is, from 2000 to 1800).

(a) **Find and illustrate** the impact of this change in the IS-LM framework by solving the model numerically (assume that model economy was at given equilibrium initially).

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- (b) As part of mixed policy, suppose now that money supply is increased by 25% percent, from 4000 to 5000). **Find and illustrate** the impact of this mixed policy on equilibrium GDP and interest rate and illustrate changes in money market and goods market.

4. (15 Points) Suppose that Turkish government decided to decrease taxes due to forthcoming elections the next year. Using the AS-AD setup (i.e., price is variable), **discuss** and **illustrate** the effects of this change on the position of the **AD**, **AS**, **IS**, and **LM** curves and on **output**, the **interest rate**, and the **price level** in the short run and long-run. Assume that the economy was initially at the natural level of output.

5. (10 Points) Suppose that the firm's markup over costs is 5%, and the wage-setting equation is $W = P(1 - u^2 + z)$, where u is the unemployment rate and z is the catch-all variable that stands for all other variables that may affect the wage setting equation.

- (a) What is the real wage as determined by the price-setting equation?
- (b) What is the natural rate of unemployment if $z = 0.04$?
- (c) Suppose that markup increases to 10%. How does the real wage and natural rate of unemployment change? **Support your answer by a figure.**

6. (10 Points) Consider the following IS-LM model:

$$C = 400 + 0.75YD; T = 400 + (0.2) \cdot Y; I = 300 - 1500 \cdot i; G = 600; P = 0.5$$

$$M^d = 3 \cdot Y - 12000 \cdot i \text{ (real money demand); } M^s = 3000 \text{ (nominal money supply)}$$

- (a) Derive the IS equation.
- (b) Derive the LM equation.
- (c) Find the equilibrium Y and i .

7. (20 Points) Suppose the Phillips curve is

$$\pi_t - \pi_t^e = 0.05 - 2u_t$$

Where $\pi_t^e = \pi_{t-1}$.

- (i) What is the natural rate of unemployment?
- (ii) Suppose that you are given the following information:

Time (t)	Unemployment rate (u)
1	0.01
2	0.02
3	0.025
4	0.025

Graph the short-run and the long-run relationship between inflation and unemployment, if $\pi_0 = 0.05$.