Midterm Examination

IFMR GSB, Krea University (Batch: 2019-21)
Macroeconomics (Course Code: **ECON502**)
24 October 2019

Maximum Points: 60 **Duration**: 150 minutes

Instructions and Advice:

- This exam accounts for **30 percent** of your final grade.
- The question paper is divided in two sections- Part A and Part B.
- You need to answer 7 questions in all. [2 from Part A, and 5 from Part B]
- You can choose between Question 1 and Question 2, and between Question 3 and Question 4.
- All other questions are compulsory.
- Please be brief and precise in your answers. Unnecessarily lengthy answers will attract penalty.
- Please label your graphs correctly.
- At no point of this examination you are allowed to ask clarificatory questions. Make reasonable assumption if you have doubts and proceed to answer the question.
- You are **not allowed** to use calculator in the exam.
- There is plenty of time. Use it wisely, do not rush.
- All the best!

Part A

1. (4 points) Suppose that money demand is given by

$$M_d = Y \cdot (0.25 - i)$$

   (a) (2 points) If $Y = 80$, what is the smallest value of the money supply at which the interest rate is zero?

   (b) (2 points) Once the interest rate is zero, can the central bank continue to increase the money supply?

   Or

2. (4 points) *Suppose that you are measuring the annual GDP of India for 2019*.
   Determine the effect on GDP of each of the following transactions that happened during 2019.

   a A seafood restaurant in Chennai buying ₹1,000 worth of fish from a fisherman.

   b A family spends ₹1000 on dinner at that seafood restaurant.

   c Air India buying a new Boeing aircraft for ₹100 million.

   d Air India sells that aircraft to Indigo for ₹60 million.

3. (6 points) Suppose that the production function takes the form

$$Y = K^{\alpha} \cdot (AN)^{(1-\alpha)}$$

   where $\alpha = \frac{2}{3}$.
   Assume that the saving rate, $s = 0.15$, and the rate of depreciation, $\delta = 0.05$. Further, let $A = 3$, and $N = 2$. Derive the steady-state levels of output per worker and capital per worker in terms of the saving rate, s, and the depreciation rate, δ.

   Or

4. (6 points) What happens to the **unemployment rate** and the **labour force participation rate** (increase/decrease/does not change/ambiguous effect) if each of the following scenarios occurs? Explain briefly.

   a Ramadhir loses his job since he had a fight with a customer.

   b Faizal finds a job with Barclays after a month-long job-search.

   c The working-age population is reclassified to 21-65, from 15-60.

Part B

5. (10 points) On September 20th, the Indian Finance Minister announced corporate tax-rate cut, and the RBI is anticipated to announce another round of interest rate cut in October this year.
   (a) (6 points) Using the $IS - LM$ model, explain what is going to happen to the Indian economy in the short run.
   (b) (4 points) Explain why using a policy-mix of this sort may be problematic.

6. (10 points) *Suppose that before ATMs and credit cards, a person goes to the bank once and withdraws from her account all the money that she needs for four days. Assume that she needs ₹10 per day.*
   Compute the following statistics: **money withdrawn**, and **amount of money that the person holds** given that:
   (a) (2 points) When there are no ATMs or credit cards.
   (b) (2 points) When the bank issues debit card to the person.
   (c) (2 points) When the bank also issues a credit card to the person.
   (d) (4 points) Based on your answers to previous parts, what do you think is the impact of credit cards and ATMs on money demand?

7. (10 points) *Suppose the economy is characterized by the following behavioural equations:*

$$\begin{aligned} C &= 10 + 0.6 \cdot Y_D \\ I &= 10 + 0.2 \cdot Y \\ G &= 10 + 0.1 \cdot Y \\ T &= 0.5 \cdot Y \end{aligned}$$

   (a) (4 points) Solve for equilibrium output. What is the value of the multiplier?
   (b) (6 points) Suppose that now government increases the tax rate to 80%. Because of this tax change, there are spillovers to investments, and the business confidence declines. So, the new investment equation becomes:

$$I = 8 + 0.2 \cdot Y$$

   Compute the change in equilibrium output, the change in investment, and the change in national savings.

8. (10 points) *Suppose the economy begins with output equal to its natural level. Then, the OPEC makes an announcement such that the oil prices rise.*

   (a) (6 points) Using the $AS - AD$ model, show what happens to output and the price level in the short run and the medium run?

   (b) (4 points) What happens to the unemployment rate in the short run and the medium run?

9. (10 points) *In a country called Chintu Rashtra, there are two goods that are very popular amongst consumers- ice cream, and pizza. So, the price level- as you learnt in the lecture- in this economy is determined by these two goods' prices. The price-quantity schedule for years 2017, and 2018 is given below.*

	Ice Cream		Pizza	
	2017	2018	2017	2018
Price	p_1	p_1'	p_2	p_2'
Quantity	q_1	q_1'	q_2	q_2'

   (a) (5 points) Show that the CPI can be written as the weighted average of the prices of two goods.

$$CPI = w_1 \times \tilde{p_1} + w_2 \times \tilde{p_2}$$

   where

$$w_i = \frac{p_i \times q_i}{\sum p_i \times q_i} \qquad i = 1, 2$$

   and

$$\tilde{p_i} = \frac{p_i'}{p_i} \qquad i = 1, 2$$

   (b) (5 points) Now, assume that $w = w_1$ and the 2018 ice cream price is higher than 2017 price by α percent, and the 2018 pizza price is lower than 2017 price by β percent. Show that the CPI in 2018 would be greater than 1 if only if

$$\frac{\beta}{\alpha + \beta} < w$$