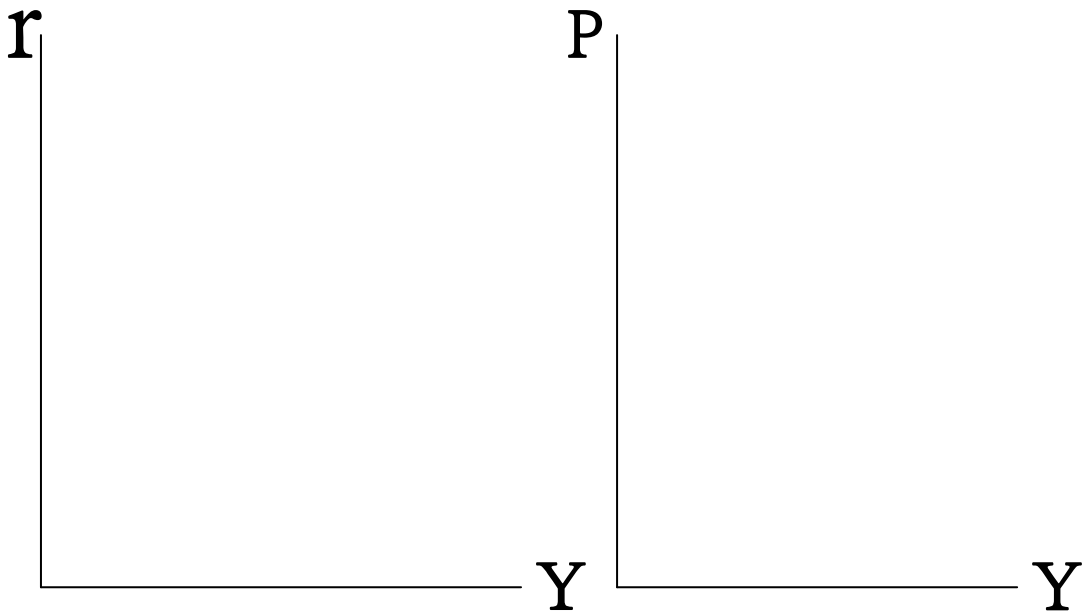


University of Macau
Faculty of Social Sciences and Humanities
Department of Economics
Admission Test on Master Programme

Part A – Macroeconomics

1. Please use an IS-LM model to derive the aggregate demand curve graphically. Explain your answer briefly.



Part B – Mathematics and Econometrics

1. For function $z = f(x_1, x_2)$, what is the partial derivative of z with respect to x_2 ? (Write down the math formula and give an intuitive interpretation).

Suppose that $z = \ln(x_1^\alpha + x_2^\alpha)$, calculate $\frac{\partial z}{\partial x_1}$.

2. In a simple regression about the sales y and advertise spending x for 87 companies, we get:

$$\hat{y} = 1.33 + 1.11x \quad R^2 = 0.25$$

(0.85)

(Number in the parenthesis is the standard error)

From the regression, is there evidence that advertise spending can increase the sale? Why?

Part C – Microeconomics

Section A. Multiple-Choices Questions

1. Colette consumes goods x and y . Her indifference curves are described by the formula $y = k / (x+7)$. Higher values of k correspond to better indifference curves.
 - A. Colette likes good y and hates good x .
 - B. Colette prefers bundle (12, 16) to bundle (16, 12).
 - C. Colette prefers bundle (8, 5) to bundle (5, 8).
 - D. Colette likes good x and hates good y .
 - E. More than one of the above statements are true.

2. Georgina consumes only grapefruits and pineapples. Her utility function is $U(x, y) = x^2y^8$, where x is the number of grapefruits consumed and y is the number of pineapples consumed. Georgina's income is \$105, and the prices of grapefruits and pineapples are \$1 and \$3, respectively. How many grapefruits will she consume?
 - A. 10.5
 - B. 7
 - C. 63
 - D. 21
 - E. None of the above.

3. Cindy consumes goods x and y . Her demand for x is given by $x(p_x, m) = 0.05m - 5.15p_x$. Now her income is \$419, the price of x is \$3, and the price of y is \$1. If the price of x rises to \$4 and if we denote the income effect on her demand for x by DI and the substitution effect on her demand for x by DS , then
 - A. $DI = -0.28$ and $DS = -0.52$.
 - B. $DI = -0.28$ and $DS = -4.88$.
 - C. $DI = -0.52$ and $DS = -0.52$.
 - D. $DI = 0$ and $DS = -2.00$.
 - E. None of the above.

Section B. Short Questions

Write your answers on the space below.

1. Let $f : \mathfrak{R}_+^2 \rightarrow \mathfrak{R}, (x_1, x_2) \mapsto f(x_1, x_2)$ be a continuous and differentiable production function. Suppose that $\partial f / \partial x_2 \neq 0$. Derive the following formula for the technical rate of substitution (TRS) (or marginal rate of technical substitution (MRTS)):

$$TRS \equiv \frac{dx_2}{dx_1} = - \frac{\partial f(x_1, x_2) / \partial x_1}{\partial f(x_1, x_2) / \partial x_2}$$

Applicants are required to have a written test on microeconomics, macroeconomics, mathematics and econometrics. The following book titles are provided as references:

Microeconomics

Applicants are expected to have preliminary knowledge on intermediate microeconomics. More preparation on an advanced undergraduate level will also be helpful.

Intermediate Microeconomics:

- Varian, Hal R., *Intermediate Microeconomics: A Modern Approach*, 7th Ed., New York: Norton, 2006 (including the mathematical appendices).

Advanced undergraduate Microeconomics:

- Jehle, Geoffrey A., and Philip J. Reny, *Advanced Microeconomic Theory*, 2nd Ed., Boston: Addison Wesley, 2001.

Macroeconomics

- Mankiw, Gregory. *Macroeconomics*, 6th ed., Worth Publisher, 2006.
- Dornbusch, Rudiger. *Macroeconomics*, 9th ed., McGraw-Hill, 2004.

Mathematics

- Chiang, Alpha, and Wainwright, Kevin. *Fundamental methods of mathematical economics*, 4th ed., McGraw-Hill, 2005.

Econometrics

- Wooldridge, Jeffrey M. *Introductory econometrics: a modern approach*, 3rd ed., Thomson, 2006.