

Course in Macroeconomics and Global Economics
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Practice 7

Exercise 1

Assume that the average consumer in Mexico and the average consumer in the UK buy the quantities and pay the prices indicated in the following table:

	Food		Transportation Services	
	Price	Quantity	Price	Quantity
Mexico	5 Pesos	400	20 Pesos	200
UK	£1	1000	£2	2000

- Compute UK consumption per capita in pounds.
- Compute Mexican consumption per capita in pesos.
- Suppose that £1 is worth 10 pesos. Compute Mexico's consumption per capita in pounds.
- Using the purchasing power parity method and UK prices, compute Mexican consumption per capita in pounds.
- Under each method, how much lower is the standard of living in Mexico than in the UK? Does the choice of method make a difference?

Exercise 2

Consider the production function:

$$Y = N^\alpha K^{1-\alpha} \text{ with } \alpha = 0.7$$

- Compute output when $K = 49$ and $N = 81$.
- If both capital and labour double, what happens to output?
- Is this production function characterised by constant returns to scale? Explain.
- Write this production function as a relation between output per worker and capital per worker.
- Let $K/N = 4$. What is Y/N ? Now double K/N to 8. Does Y/N double as a result?
- Does the relation between output per worker and capital per worker exhibit constant returns to scale?
- Is your answer in the previous point the same as your answer in point three? Why or why not?
- Plot the relation between output per worker and capital per worker. Explain.

Exercise 3

Given the following table:

YEAR	USA		Italy	
	Real GDP*	Population**	Real GDP*	Population**
1970	4.229.032	209,463865	557.519,25	53,324772
1990	7.912.128	253,339097	1.244.747,5	56,83233
2005	12.564.300	296,820296	1.683.227,375	58,671206
2006	12.908.113	299,564470	1.728.999,875	59,0821
2007	13.161.431	302,284564	1.799.396,125	59,495243
2008	13.081.677	304,989064	1.843.256,375	59,891479
2009	12.593.888	307,686729	1.749.691,5	60,248654
2010	12.915.525	310,383948	1.757.227,5	60,550848
2011	13.194.648	313,085380	1.768.566,5	60,788694

* and **) PPPs 2005 USD and population expressed in millions.

1. Compute the average per-capita real GDP growth between periods 1970-1990 and 1990-2010.
2. Compute the annual per-capita real GDP growth rate in the following years:
 - a. 2005-2006;
 - b. 2006-2007;
 - c. 2008-2009;
 - d. 2009-2010;
 - e. 2010-2011.
3. Compute also the point 1. and 2. in logarithmic scale.