

30054 International and Monetary Economics (Spring 2023)

Individual Assignment 2

Instructions

- When?** The deadline to submit your solution is **April 5, 2023 (23:59 Milan time)**.
- Where?** Upload your solution to the **bboard** webpage of our class.
- What?** You can submit your solution in either **PDF or DOC** format. When drawing diagrams or writing formulas, you can either use build-in word processing tools or you can draw diagrams and write formulas by hand, take pictures, and insert them in your solution.
- Who?** This is an **individual** assignment. You must submit an individual solution.
- How much?** All problems have equal weight of **5 points each**. This problem set has a **10% weight** of your final grade.
- Be clear.** If you make additional assumptions in your solution, state them clearly. Also when drawing diagrams, clearly label all axes, lines, curves, and equilibrium points.

Problem 1 (Real exchange rate)

1. Suppose the expected real interest rate in Hong Kong is 5 percent per year while that in Singapore it is 2 percent per year. What do you expect to happen to the real HK\$/SNG exchange rate over the next year?
2. Suppose the expected real interest rate in the United States is 9 percent per year while that in Europe is 3 percent per year. What do you expect to happen to the real dollar/euro exchange rate over the next year?

Problem 2 (Debt financed government spending)

Suppose interest parity does not hold exactly, but the true relationship is $R = R^* + (E^e - E)/E + \rho(B)$, where $\rho(B)$ is a risk premium on domestic government bonds that positively depends on B . Suppose a temporary rise in domestic government spending is financed by issuing additional government debt (an increase in B) and makes domestic public bonds risk premium higher. Evaluate the policy's output effects in this situation.

Problem 3 (Shifting curves)

1. Write a mathematical expression for the DD curve introduced in class. Explain intuitively what the DD curve is.
2. Graphically illustrate what happens to the DD curve in each of the following cases
 - (a) government spending \bar{G} goes down;
 - (b) nominal exchange rate E goes up;
 - (c) private investment \bar{I} goes up;
 - (d) aggregate output Y goes up.
3. Write a mathematical expression for the AA curve introduced in class. Explain intuitively what the AA curve is.
4. Graphically illustrate what happens to the AA curve in each of the following cases
 - (a) nominal price level \bar{P} goes down;
 - (b) money supply \bar{M} goes up;
 - (c) nominal exchange rate E goes up;
 - (d) aggregate output Y goes up.
5. Intuitively explain how you decide on whether a change leads to a shift in a curve or a movement along the curve.

Problem 4 (The Big Mac Index)

The goal of this exercise is to analyze the extent to which the purchasing power of various currencies against the U.S. dollar implied by Big Mac prices are representative of larger consumption baskets. To this end, you are asked to compare the real exchange rate implied by Big Mac prices, which is based on just one good, with the one implied by the World Bank's International Comparison Program (ICP), which considers baskets with hundreds of goods. Data for the Big Mac Index for 2017 can be downloaded from [the Economist](#). Price Level data from the 2017 round of the ICP can be found in the [ICP Report](#), see in particular Table E.3 entitled 'Individual Consumption Expenditure By Households,' column 'Price Level Index (World=100.0).'

1. Let P^* denote the foreign price level, P^{US} the U.S. price level, and E the nominal exchange rate in dollars per unit of foreign currency. Let the real exchange rate be defined as $q = EP^*/P$. Construct two versions of q in 2017, one based on Big Mac prices, which we denote $q^{\text{Big Mac}}$, and one based on ICP prices, which we denote q^{ICP} . When computing the two real exchange rate scale the data so that both $q^{\text{Big Mac}}$ and q^{ICP} equal 100 for the United States. Your dataset should have as many observations as countries that are both in the Big Mac Index table and the ICP table.
2. Make a graph displaying $q^{\text{Big Mac}}$ on the horizontal axis and q^{ICP} on the vertical axis.
3. Present an insightful discussion of your findings.
4. Then run a cross-country regression of q_i^{ICP} onto $q_i^{\text{Big Mac}}$, that is, estimate

$$q_i^{\text{ICP}} = \alpha + \beta q_i^{\text{Big Mac}} + \epsilon_i$$

using ordinary least squares, where the subscript i denotes country i , so each observation is one country. Report your estimate for β and the R^2 of your regression. Provide a verbal discussion of your findings.

5. Include a printout of the data that went into the construction of your graph.

Problem 5 (Net exports)

1. Intuitively explain the following formula that describes trade balance between the Euro area and the UK and that was discussed in class

$$NX = Ex \left(\frac{P^*}{p_{\text{Imports from EA in Pounds}}} \right) - \frac{p_{\text{Imports from UK in Euros}}}{P} \cdot Ex^* \left(\frac{P}{p_{\text{Imports from UK in Euros}}} \right).$$

2. What is the producer-currency pricing (PCP) assumption? How do changes in Euro-pound nominal exchange rate E affect NX , Ex , Im in this case?

3. What is the local-currency pricing (**LCP**) assumption? How do changes in Euro-pound nominal exchange rate E affect NX, Ex, Im in this case?
4. What is the dominant currency pricing (**DCP**) assumption? How do changes in Euro-pound nominal exchange rate E affect NX, Ex, Im in this case?

Problem 6 (Krugman's article)

Read the article by Paul Krugman titled "[A country is not a company](#)". Write a twitter-length (280 characters max) summary of its main message.