Public Affairs 854
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Problem Set 4

Due ***in lecture*** on Wednesday, December 6th. Be sure to put your name on your problem set. Put "boxes" around your answers to the algebraic questions.

1. Exchange rate misalignment, purchasing power parity and the Penn Effect

Download the file: http://www.ssc.wisc.edu/~mchinn/bigmacdata_jul17.xlsx

Data on Big Mac prices from July 2017 are contained in the file; Column C is price in local currency, column D is the exchange rate expressed as local currency per USD, and column B is is per capita GDP in 2011 International Dollars, so figures are directly comparable across countries.

1.1 Calculate the percent misalignment (in log terms) for China, Venezuela, Switzerland, Taiwan, using Purchasing Power Parity, using the US as benchmark.

1.2 Calculate the percent misalignment (in log terms) for China, Venezuela, Switzerland, Taiwan, using the Penn effect, using the US as benchmark. In order to estimate this, run a regression:

$$p_i = \alpha + \beta y_i + u_i$$

Where p_i is the log of the dollar price of a Big Mac in country i divided the dollar price of a Big Mac in the US, and y_i is the log of country i per capita income divided by US per capita income (both expressed in 2011 International Dollars). The misalignments are then the residuals from the regression.

2. Consider a small open economy with a fixed exchange rate, and imperfect capital mobility. Suppose the financial capital account behaves as follows.

$$FA = \overline{FA} + \kappa(i - i^* - \Delta s^e_{+1})$$

2.1 To begin with everyone believes the peg is perfectly credible, so expected depreciation is zero. Then, with an election of a new government, people believe that there is a 50-50 chance of a 20% depreciation. Interpret the impact on the economy using an IS-LM-BP=0 graph; assume the central bank sterilizes.

2.2 Should the government devalue the currency or raise interest rates? Explain your answer using IS-LM-BP=0 graphs.

2.3 How does your answer change if the country (firms, the government) has a big outstanding debt borrowed in US dollars?