

Problem Set 4

Due in Lecture on Monday, December 5th. "Box-in" your answers to the algebraic questions.

1. Flexible price monetary model of exchange rates. Assume $\lambda=5$.

- 1.1 If the money supply increases by 5% today, and stays 5% higher than it was expected to be, in all future periods, what happens to the nominal exchange rate and nominal interest rate today, and into the future?
- 1.2 Suppose the fundamentals are initially expected to grow by 0% per annum. Suppose the expected growth rate increases to 5%. What happens to the exchange rate, if anything, the instant the expected growth rate changes?

2. Sticky price monetary model of exchange rates.

- 2.1 Explain what happens if the monetary authority in US decreases the money supply by 5 percent. In your answer, indicate the time paths of M , P , M/P , $r-r^*$, s . Use graphs.
- 2.2 Suppose θ equals infinity. Redo 2.1.

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

Download the file: http://www.ssc.wisc.edu/~mchinn/bigmacdata_jul16.xlsx

Data on Big Mac prices from July 2016 are contained in the file; Column 2 is price in local currency, column 3 is the exchange rate expressed as local currency per USD, and column 4 is the local currency price expressed in USD. Column 5 is per capita GDP in PPP terms.

- 3.1 Calculate the percent misalignment (in log terms) for China, Venezuela, Switzerland, Argentina, using Purchasing Power Parity, using the US as benchmark.
- 3.2 Calculate the percent misalignment (in log terms) for China, Venezuela, Switzerland, Argentina, 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 PPP). The misalignments are then the residuals from the regression.

4. Emerging market policy challenges.

Consider a small open economy with a fixed exchange rate, and imperfect capital mobility.

- 4.1 Suppose the US interest rate rises. Interpret the impact on the small open economy using an IS-LM-BP=0 graph; assume the central bank sterilizes.

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

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

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