Economics 103 — Spring 2018
International Monetary Relations

Problem Set 2

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Recommended completion:	around Friday, May 18
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1 The Empirics of Purchasing Power Parity and Exchange Rates

Examine the MXN/USD (peso-dollar) nominal exchange rate and the ratio of the Mexican and the US CPI for the period from February 1993 to December 2006. What do you observe? Does absolute or relative PPP seem to hold in the long term? If not, what might be reasons for failure? Repeat the exercise for the MXN/USD black-market exchange rate for the period from February 1993 to December 1998.

You may choose not to print the graphs. In that case, draw the stylized figures for your answer.

Data. Visit *https://www.globalfinancialdata.com/* and display the nominal MXN/USD exchange rate (symbol: XRN-MEXM), the MXN/USD black-market exchange rate (symbol: USDMXNBM), the consumer price index in Mexico (symbol: CPMEXM), and the consumer price in the US (symbol: CPUSAM). To view a series, enter the according symbol in the "GFD AutoSearch" box in the upper left-hand corner. You may want to download the series into four separate spreadsheets, then copy and paste the MXN/USD exchange rate and the two CPI series into one spreadsheet, and copy and paste the MXN/USD black-market exchange rate and the two CPI series into another spreadsheet. To plot the ratio between the Mexican and the US CPI, you can divide the Mexican CPI series by the US series directly (e.g. if the first Mexican CPI observation is in cell b2 in Excel and the first US CPI observation in cell c2, you could use the formula "=B2/C2" for the current cell on line 2) and then plot the resulting series by highlighting it and clicking the "Chart Wizard" button from the Excel toolbar. Select a line chart and then click the "Next" button. In the following window, select the "Series" tab and use the series of dates in the left column as the "Category (X) axis labels".

2 The QQ-DD Model

Small open economies tend to spend a larger fraction of income on imports than large economies do. Their import volumes are also more responsive to changes in their national income. Does this imply that the DD-curve in the Netherlands, a smaller and more open economy than the US, is flatter than the DD-curve in the US?

Hint: Your answer depends on what you assume regarding the current-account responsiveness to the real exchange rate in a small open economy. Use the "Keynesian cross" to derive your answer.

Would a temporary monetary expansion in the Netherlands have a stronger or weaker effect on output? Use a QQ-DD diagram to substantiate your answer.

3 Monetary and Fiscal Policy under Different Exchange Rate Regimes

Use a QQ-DD-XX diagram to show the effects of a *temporary* and a *permanent* monetary contraction on the current account, interest rates and output under a floating exchange rate and under a fixed exchange rate. Do the two policies have different effects under a fixed exchange rate? Why or why not?

Use a QQ-DD-XX diagram to show the effects of a *temporary* and a *permanent* fiscal expansion on the current account, interest rates and output under a floating exchange rate and under a fixed exchange rate. Do the two policies have different effects under a fixed exchange rate? Why or why not?

4 Import Tariffs and the Current Account

Take a commodity-trade perspective of the current account and suppose restrictions of import volumes do have an effect on values. The government imposes a tariff on all imports. Use the QQ-DD model to analyze the effects this measure would have on the economy. Consider both *temporary* and *permanent* tariffs.

In question 1 of problem set 1, you were asked to take a purely financial view of the current account with savings and investment decisions dictated by world real interest rates. Under that point of view, your answer was different. Why?

5 Macroeconomic Analysis and Intervention under the Gold Standard

Take the historic perspective of a resident in a country on the Gold standard. In particular, keep a fixed nominal exchange rate $E = \bar{E}$ at all times while Uncovered Interest Parity is satisfied under free capital markets. Consider P and P^* fully flexible. Why is $E = \bar{E}$ fixed under the gold standard? What does $E = \bar{E}$ imply for the relationship between R and R^*?

To reflect the Gold Standard's workings, draw a QQ-DD-XX diagram with a horizontal QQ schedule. The horizontal QQ schedule reflects free and flexible international goods markets that satisfy Absolute Purchasing Parity $q = EP^*/P$.

Suppose the home country suffers an incipient current account deficit because of an autonomous drop in the current account balance (CA). In the absence of any monetary intervention, how does the Price-specie Flow Mechanism restore external balance? Substantiate your answer in a QQ-DD-XX diagram. Under the "rules of the game" what was the monetary intervention prescribed to the home country with an incipient deficit? What was the monetary intervention prescribed to monetary authorities in the foreign countries with an incipient surplus? How do those prescribed monetary interventions restore external balance? Substantiate your answer in a QQ-DD-XX diagram.

6 Demise of the Bretton Woods System

Take the historic perspective of a resident in a periphery country under the the late Bretton Woods System. (Assign an asterisk "$*$" to variables for the center country United States.) In the late Bretton Woods System, all periphery countries are tasked to maintain a fixed nominal exchange rate $E = \bar{E}$ with the center country at all times while Uncovered Interest Parity is satisfied under free capital markets.

Draw four time diagrams, one each for: money supply, the nominal interest rate, the price level and the nominal exchange rate. Show both foreign (center country) and domestic (periphery country) variables in the diagrams.

Initially, every country grows money supply at the same rate $\pi = \pi^*$. Analyze an acceleration of money supply growth in the center country from π to $\pi^* > \pi$. Trace the effects through all four time diagrams. Suppose for this analysis that the periphery countries were to keep money growth π unchanged.

Under the prescription of the Bretton Woods System, all periphery countries are tasked to maintain a fixed nominal exchange rate $E = \bar{E}$. What does the prescription imply for the money growth rates that periphery countries have to implement?

7 Macroeconomic Analysis and Intervention under a Floating Exchange Rate

Take the perspective of a South Korean resident. In particular, let E denote the KRW/USD (Won-US Dollar) exchange rate so that an elevated E means a depreciated Won. You observe the following simultaneous macroeconomic developments: A fall in Korean output, an appreciation of the KRW, and a fall in the Korean current account.

Which of the following *temporary* shocks is mostly likely to explain this macroeconomic pattern: A shock to consumer tastes for Korean goods, a shock to money demand, or a shock to investment? Use the QQ-DD-XX model to explain your answer.

The Korean government wishes to restore output to its level before the shock, while retaining the current account balance as close as possible to its pre-shock level. Would you recommend monetary or fiscal intervention? What is the effect of your policy on the KRW exchange rate? Use the QQ-DD-XX model to substantiate your answer.

8 Money Supply, Imperfect Asset Substitutability and the Nominal Exchange Rate

The Adjusted Uncovered Interest Condition can be expressed as

$$R = R^* + \frac{E^e - E}{E} + \rho,$$

where ρ is the risk premium of domestic bonds over foreign bonds. How does an increased supply of domestic bonds to the private sector affect the risk premium ρ? Redraw the foreign exchange equilibrium diagram, showing the exchange rate and the expected currency returns, under the Adjusted Uncovered Interest Condition.

The Federal Reserve System increases aggregate money supply permanently, purchasing domestic bonds in the open market. Use diagrams showing the exchange rate, expected currency returns and money holdings to analyze the *short-term* and the *long-term* effects on the US interest rate, the US price level and the nominal exchange rate. Compare your answer to question 6 of problem set 1.

Hint: Effects on the risk premium are small in practice compared to the Fisher effect.