Principles of Macroeconomics: Exchange Rates and Macroeconomic Policy

Class 14

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Overview

- Announcements:
  - LC 18, GH 18 due Friday at 11:59pm
  - Practice Midterm on Canvas
  - Midterm: October 16 in class!
- Topics:
  - Finish Exchange Rates
  - Macroeconomic policy of exchange rates
- Readings:
  - N/A

But What About "Real"ity?

- So far, this has been the nominal exchange rate. Now, we want to think about the real exchange rate. Divide by the relative price level:

$$q_{US/Eur} = \frac{E_{\$/€} P_{Eur}}{P_{US}}$$

- P_{Eur} is the price level in Europe (in euros)
- P_{US} is the price level in the US (in dollars)
- If $\uparrow q_{US/Eur} \longrightarrow$ European goods are relatively more expensive
  - US imports decrease: European goods get expensive for Americans
  - US exports increase: US goods are relatively cheaper for Europeans
  - As such: "weak dollar" $\longrightarrow$ good for exporters, bad for importers
- Similar logic holds for a decline in $q_{US/Eur}$

- Remember GDP?

$$Y = C + I + G + (x - im)$$

- When $\uparrow q_{US/Eur}$, $\uparrow x$, $\downarrow im$
- Then net exports increases
- Thus, GDP increases, at least temporarily

- Note that the price level enters the real exchange rate formula
- So what happens if there is a large increase in the price level in the US?
  - Suppose that the nominal exchange rate is 1 initially. Then suppose that the price level in the US increases by 50% and the dollar depreciates by 50%
  - Then the real exchange rate is:

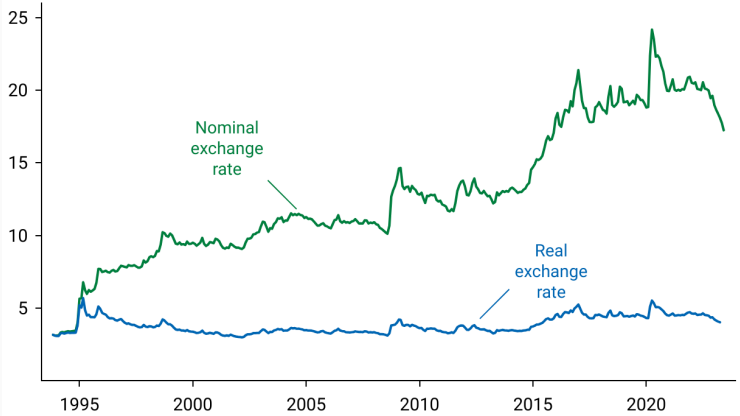
$$1.5 \times \frac{100}{150} = 1$$

  - This is the same as before the inflation and depreciation of the currency!

Real vs Nominal Exchange Rates

FIGURE 4 Real versus Nominal Exchange Rates, 1993–2023

Between November 1993 and present, the price of a dollar in Mexican pesos increased dramatically. But because Mexico had higher inflation than the United States, the real exchange rate, which measures the relative price of Mexican goods and services, ended up roughly where it started.



Determine which balance of payment account each trade fits into

(1) Boeing sells a new plane to the Chinese government

(2) Chinese investors in Beijing buy stock in a Chinese company from US residents

(3) A Chinese company buys a used Boeing 747 in America and ships it to China

(4) A Chinese investor buys a US jet for use while she is in the US

Mexico discovers huge oil reserves and starts exporting oil to the US

(1) What happens to the nominal exchange rate between pesos and dollars?

(2) What happens to Mexican exports?

(3) What happens to Mexican imports? Does this depend on US prices?

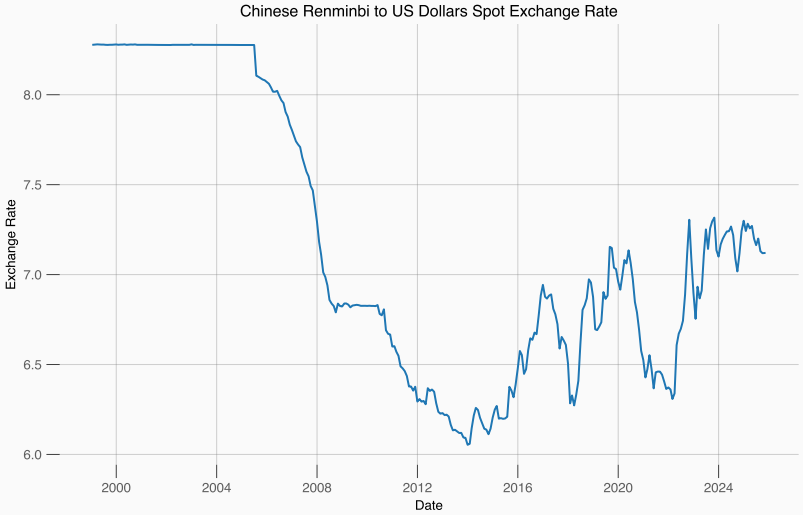
Purchasing Power Parity

- Purchasing Power Parity is the nominal exchange rate at which a given basket of goods and services would cost the same amount in each country
  - For example, suppose that in the US, we can buy our CPI basket of goods for $100
  - But if we travel to Mexico, that same CPI basket of goods costs 1,000 pesos
  - Then the purchasing power parity is 10
- In math:

$$E^{PPP}_{\text{pesos}/\$} = \frac{P_{\text{Mexico}}}{P_{\text{US}}}$$

- Note: PPP is NOT how much wealthier one country is than another – it is a measure of how valuable one currency is to another using a measure of basic goods
  - e.g. "If a Big Mac costs $1 dollar but 20 rupees, then PPP is 20"
  - If the exchange rate is over/under PPP, an argument can be made that the currency is under/over valued

What's Going On Here?



Exchange Rate Regimes

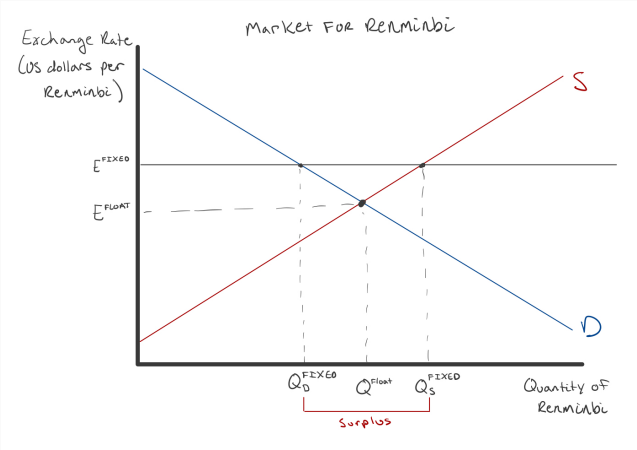
Floating Exchange Rate

- Policymakers allow the market to determine the value
- Most developed countries follow this approach: US, UK, Euro, etc.
- Monetary policy can thus pursue domestic objectives – i.e. the Fed can work to tame inflation

Fixed Exchange Rate

- Policymakers pick the value of the exchange rate
  - Emerging countries tend to do this
  - Before the Euro, European countries had fixed exchange rates
  - China fixed their exchange rate prior to 2006. Now, much more free floating (though still partially managed)
- Monetary policy is constrained – must balance between enforcing the peg and pursuing domestic objectives
- Stabilizing the exchange rate has trade/financial benefits though

Fixed Exchange Rate Graphically

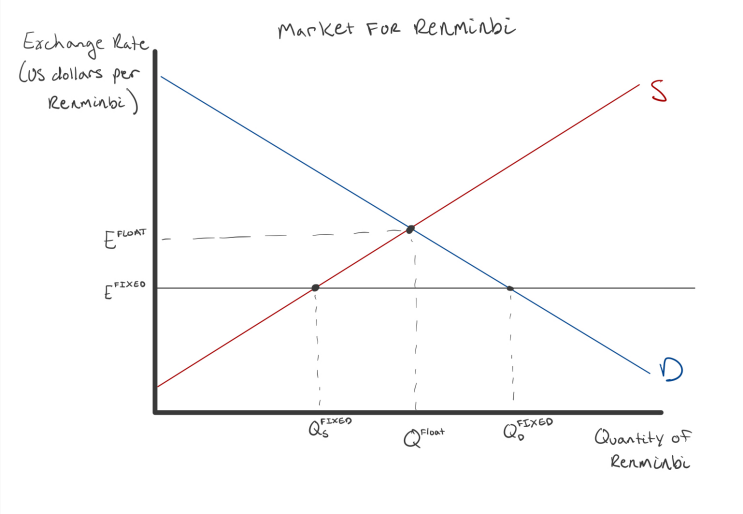


Problems

- China pins the Renminbi to the dollar at above market clearing – excess supply of Renminbi in the market
- China's government must buy Renminbi and sell dollars to cover that surplus
- How can they do this?
  - Central banks often hold "foreign exchange reserves"
    - So the Chinese central bank might hold dollars
    - They can then participate in the FX market
- China can then buy Renminbi...as long as it has dollars
  - Problem: China doesn't print dollars
  - So for a while, China can fight the market for a while, but it will eventually lose if the the exchange rate is far above market equilibrium

- Or, China can use monetary policy
  - $\uparrow$ interest rates $\longrightarrow \uparrow$ NCI $\longrightarrow \uparrow$ demand
  - At the same time, this will decrease the supply of Renminbi by incentivizing domestic saving rather than capital outflows
- Or, China can require domestic residents who want to buy foreign currencies to get a license and controlling those licenses – this is called foreign exchange controls and reduces the supply of Renminbi entering the FX market

Lowering the Exchange Rate



Managing a Lower Exchange Rate

- Same three tools: Participate in the market, use monetary policy, control who can import
  - China can sell Renminbi and buy US dollars and add these to its foreign exchange reserves
  - China can reduce interest rates, which will decrease NCI and decrease demand for Renminbi
  - China can prevent foreigners from buying Renminbi, lowering demand

Pros and Cons

Fixed Exchange Rate Pros

- By crossing borders, we know that a "dollar is a dollar... or exactly 0.9 euros, always"
- A country commits to stable prices – otherwise the exchange rate can vary wildly
- Basically: stability in information and expectations

Fixed Exchange Rate Cons

- Must have large amounts of foreign currency on hand – these do not give much return
- Large amounts of foreign currency might disappear quickly anyway when managing the exchange rate
- Monetary policy is captive to the exchange rate, and cannot freely respond to inflation or unemployment
- Price distortions create deadweight loss like in every market

Summary

- Balance of Payments
- Exchange rates
  - Why might countries want to manipulate their exchange rates?
- Remember: homework due Friday night
- Read chapters 18.1 - 18.3
- Practice Midterm