Introductory Macroeconomics

Lecture 20: exchange rates, part two

Bruce Preston & Daeha Cho

1st Semester 2021

Announcement

- Online multiple choice test 2: available from 9:00 May 20 (Th) to 16:00 May 21 (Fri)
- Click 'Quizzes' tab on the Canvas LMS page
- Test time: 30 minutes
- Covers Lectures 13-16 and Tutorials 7-8

This Lecture

- More on exchange rates
  - monetary policy and the exchange rate
  - fixed exchange rate
  - speculative attacks
- BOFAH chapter 17

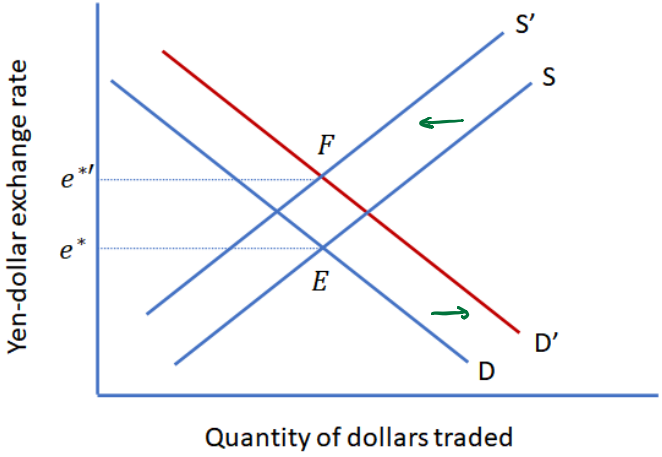
Monetary Policy and the Exchange Rate

$i = r^* + \pi_{t+1} + \alpha(\pi - \pi^*)$

- The policy that adjusts the real interest rate is monetary policy
- What is the effect of a contractionary monetary policy by the RBA (an increase in the interest rates) on exchange rates
  - increases foreigners' demand for AUD since the rate of return on Australian assets increases

shift out the demand for AUD
  - decreases the supply of AUD since purchasing Australian assets is more attractive than trading those with foreign currencies ⇒ unwilling to exchange AUD to other currency
  - the result is the appreciation of AUD (an increase in the nominal exchange rate)

Monetary Policy and the Exchange Rate



Real Effect of Monetary Policy in a Closed Economy

- In a closed economy, monetary policy affects GDP by changing consumption and investment
  - high r leads to low consumption
  - high r leads to low investment

C↓ I↓ ⇒ Y↓

- From the expenditure approach to GDP

$$Y = C + I + G + (X - M)$$

  - in a closed economy, a drop in C and I reduces Y given G
  - in an open economy, net export $X - M$ affects the response of Y

r↑ (X−M)↓ ⇒ Y↓

fall in net export

Real Effect of Monetary Policy in an Open Economy

$r\uparrow \Rightarrow e^*\uparrow \Rightarrow$ 200 yen/\$ → 400 yen/\$

X ↓

M ↑

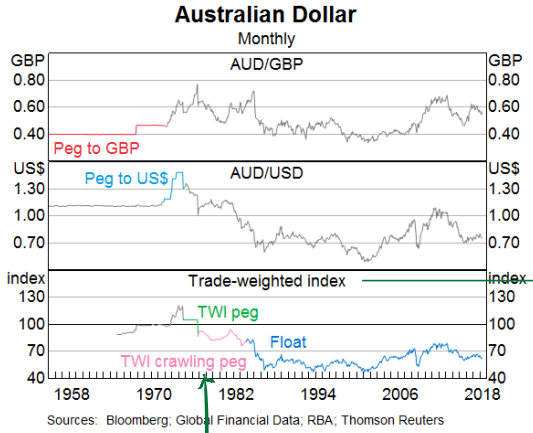
eg good 400 yen. An 2\$ → 1\$

- High r increases the nominal exchange rate, reducing net exports
- drop of GDP in a closed economy $<$ drop of GDP in an open economy
  - monetary policy is more effective in an open economy with *flexible exchange rate* than in a closed economy

Fixed Exchange Rates

- Under fixed exchange rates, an exchange rate is fixed at a certain level or is moved based on a certain rule (see the next slide)
  - peg system: currencies are fixed to the value of gold or major international currencies USD.
  - crawling peg system: exchange rate is allowed to move within a particular range
- Reasons for adopting fixed exchange rates
  - achieve stable net export
  - achieve stable inflation (Argentina in 1990s to prevent hyperinflation) ?

Fixed Exchange Rates: Example



weighted average of major trade partner to AU

not volatile

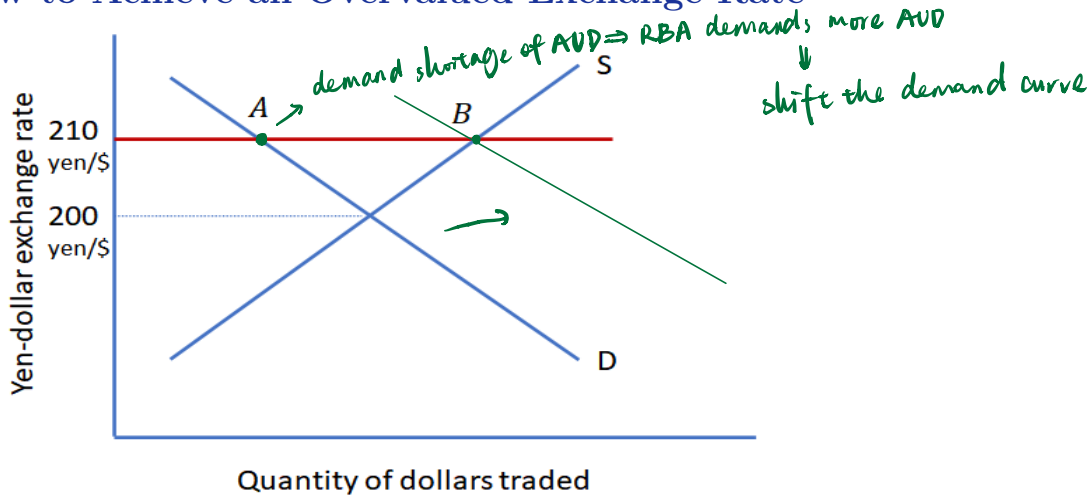
Fixed Exchange Rates

- *Overvalued exchange rate* is an exchange rate that has a fixed value higher than its equilibrium value

- *Undervalued exchange rate* is an exchange rate that has a fixed value less than its equilibrium value

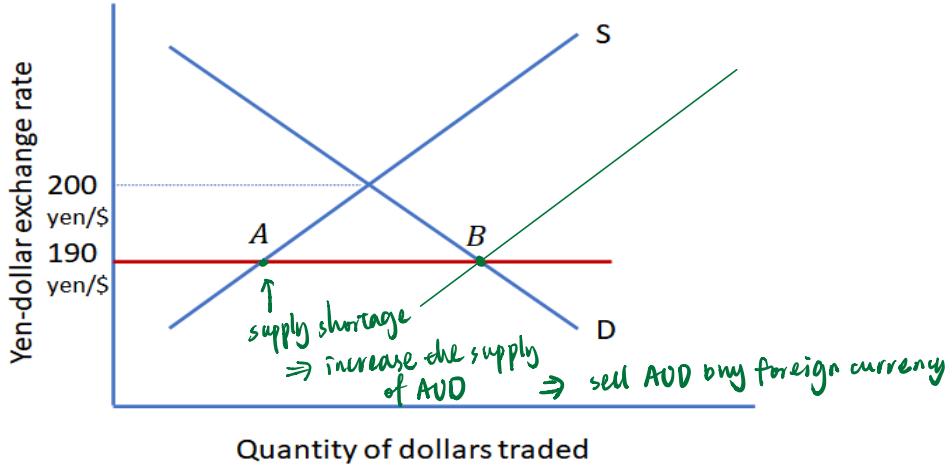
- To maintain an overvalued or undervalued exchange rate, a central bank holds *international reserves*, that is a stock of foreign currencies
  - if the equilibrium exchange rate goes below the overvalued exchange rate, the central bank purchases the domestic currency and sells foreign currencies (depletion of international reserves)
  - if the equilibrium exchange rate goes above the undervalued exchange rate, the central bank sells the domestic currency and purchases foreign currencies (build-up of international reserves)

How to Achieve an Overvalued Exchange Rate



- AB is the amount of dollars that RBA purchases in the foreign exchange market to maintain the exchange rate of 210 yen/$

How to Achieve an Undervalued Exchange Rate



- AB is the amount of dollars that RBA sells in the foreign exchange market to maintain the exchange rate of 190 yen/$

Is Overvalued Exchange Rate Sustainable?

- Maintaining an overvalued exchange rate *for a long time* requires a persistent run-down of international reserves, which are not infinite
  - eventually, once the RBA's international reserves are depleted, the fixed exchange rate will collapse
  - foreign investors' belief that the RBA's international reserves will run down eventually triggers a motive for a speculative attack, leading to a quicker collapse the fixed exchange rate

Speculative Attacks

- *Speculative attack* is a massive selling of domestic financial assets by foreign investors → Japanese

  Australia asset

  - foreign investors sell domestic assets if they expect that an overvalued domestic currency will soon be devalued

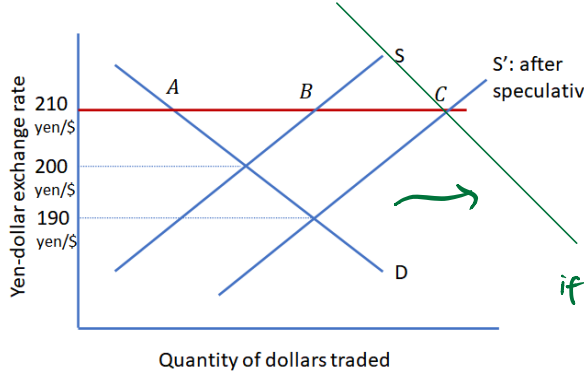
  - such an expectation turns out to be the *cause* of a quick depletion of international reserves, leading to a devaluation of the domestic currency

  - even if the government has sufficient international reserves, foreign investors' expectation of currency devaluation turns out to be the reality

  - in this case, the currency devaluation is a result *self-fulfilling prophecy*

expect fall from 100 yen/$ → 200 yen/$ ⇒ sell domestic asset

Speculative Attack and Currency Devaluation



sell AU asset
⇓
increase in AU supply

if AU want to restore 210/$
⇒ increase AU demand a lot

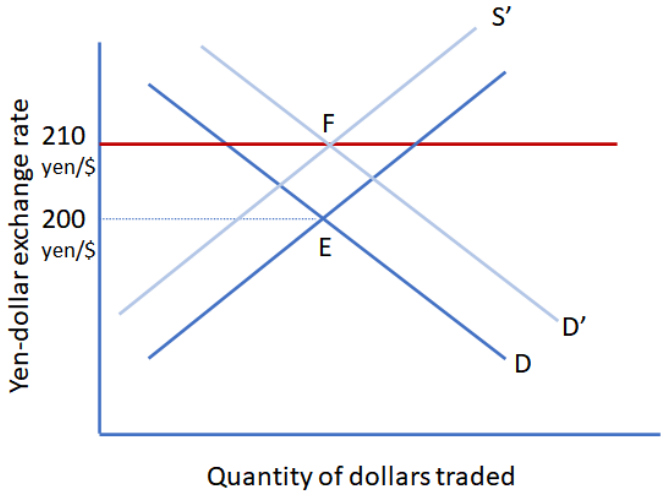
- When yens are depleted, the exchange rate falls to 190 yen/$

Monetary Policy and Fixed Exchange Rates

$r \uparrow \quad e^* \uparrow$

- Alternatively, one can increase the equilibrium exchange rate to reach the target exchange rate using monetary policy
  - an increase in the real interest rates reduces the supply of the domestic currency and increases the demand for the domestic currency (see the next slide)
  - however, monetary policy is no longer available for stabilising the domestic economy (inflation, output, and unemployment)
  - monetary policy trade-off between stabilising the exchange rate and the domestic economy

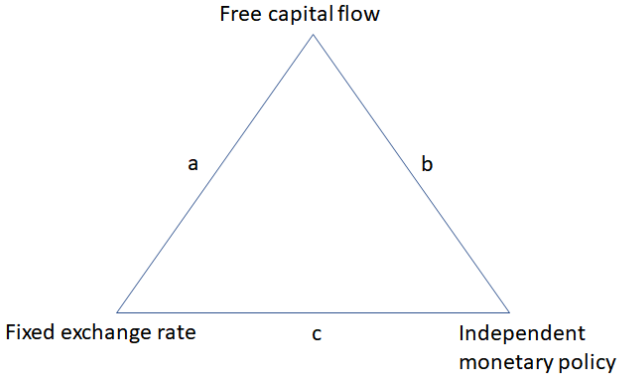
Monetary Policy and Fixed Exchange Rates



Policy Trilemma

- *The policy trilemma* states that a central bank can only pursue two of the following three goals simultaneously
  - independent monetary policy : stabilising infl & output
  - free capital flows
  - fixed exchange rate

Policy Trilemma: Diagram



- Monetary policy can choose a, b, or c

Policy Trilemma

- Option (a): fixed exchange rate and free capital flows (but not an independent monetary policy)
  - for example, raising the real interest rate to achieve the overvalued fixed exchange rate makes the stabilisation of the domestic economy difficult
  - Eurozone adopts this option
- Option (b): an independent monetary policy and free capital flows (but not the fixed exchange rate)
  - for example, lowing the real interest rate to stabilise the domestic economy undermines the fixed exchange rate
- Option (c): fixed exchange rate and independent monetary policy (but no free capital flows)
  - for example, under autarky, supply and demand for the domestic currency do not change

Next Lecture

- Balance of Payments
  - current account
  - capital account
  - relation between current account and capital account