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Topic 4: International Monetary Systems

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Monetary Economics

ECOS3010

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Introduction: International Monetary System

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- In the first three topics, we have examined closed economies – economies that operate entirely in isolation with a single fiat money.
- In modern world, trade and financial links between countries are increasingly important.
- We turn our focus to the role of money in economies that encompass more than one country and currency. In this chapter, we will examine

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  - how exchange rates are determined;
  - different types of international monetary system: fixed exchange rate, flexible exchange rate and etc.;
  - the rationales for the European countries to adopt a single currency – Euro;
  - when a country's currency is more likely to be subject to speculative attack: the Asian Financial Crisis.

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A Model of International Exchange

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- Based on our standard OLG model with money: suppose there are two countries, country a and country b, each with its own money/currency.
- Assume that endowments in each country consist of the same goods (a good in country a is indistinguishable from a good in country b). Individuals are indifferent to the origin of the goods they purchase. There is free international trade.

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- We use superscripts a and b to identify the parameters and variables of each country. For example
  - growth rates of population: n^a and n^b;
  - growth rates of money supply: z^a and z^b.

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- For simplicity, assume that any new money created by the government is used to finance the government's own purchases.

A Model of International Exchange

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- Let e_t denote the exchange rate: the units of country b money that can be purchased with one unit of country a money.

$$e_t = \frac{\text{country } b \text{ money}}{1 \text{ unit of country } a \text{ money}}.$$

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- For example, country a is Australia and country b is the U.S.:

$$e_t = \frac{\text{U.S. dollar}}{1 \text{ Australian dollar}}.$$

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- The inverse of e_t indicates the number of Australian dollar per U.S. dollar.
- For each pair of currencies, there are always two exchange rates, depending on which currency serves as the base currency.

A Model of International Exchange

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- Consider an old individual in period t who was born in period $t-1$.
  - If the old individual owns 1 unit of country a money, he can
    - use country a money to buy v_t^a units of goods;
    - or exchange 1 unit of country a money for e_t units of country b money and buy $e_t v_t^b$ units of country b goods.
  - If the old individual owns 1 unit of country b money, he can
    - use country b money to buy v_t^b units of goods;
    - or exchange 1 unit of country b money for $1/e_t$ units of country a money and buy v_t^a/e_t units of country a goods.
  - What shall the old individual do?

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A Model of International Exchange

- No matter which money the old individual holds, he always compares v_t^a with $e_t v_t^b$ when deciding which money to use to purchase the goods.
  - If $v_t^a > e_t v_t^b$, everyone prefers to use country a money. Country b money is not valued by anyone.
  - If $v_t^a < e_t v_t^b$, everyone prefers to use country b money. Country a money is not valued by anyone.
  - Only if $v_t^a = e_t v_t^b$, all individuals are indifferent between the two monies. For both monies to be valued in equilibrium, the exchange rate must be

$$v_t^a = e_t v_t^b \text{ or } e_t = \frac{v_t^a}{v_t^b}.$$

  - We will examine the behavior of this exchange rate under alternative international monetary arrangements.

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Foreign Currency Controls

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- The first international monetary system that we consider is called "foreign currency controls"– a policy that completely separates the monetary sectors of the two countries:
  - the citizens of each country are permitted to hold over time only the money of their own country;
  - free international trade.
- In our model, the policy of foreign currency controls implies that
  - the young of each country can hold only their country's money from one period to the next;
  - the old can buy goods from any country, but if he wishes to buy goods from foreign country he needs to exchange his money for the foreign currency and then make the purchase.

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Foreign Currency Controls

- With foreign currency controls, demand for country a money comes from country a young individuals and demand for country b money comes from country b young individuals. The money market clearing conditions for country a and country b are

$$v_t^a M_t^a = N_t^a \left(y^a - c_{1,t}^a\right);$$
$$v_t^b M_t^b = N_t^b \left(y^b - c_{1,t}^b\right).$$

It follows that

$$e_t = \frac{v_t^a}{v_t^b} = \frac{\frac{N_t^a\left(y^a - c_{1,t}^a\right)}{M_t^a}}{\frac{N_t^b\left(y^b - c_{1,t}^b\right)}{M_t^b}} = \frac{N_t^a\left(y^a - c_{1,t}^a\right)}{N_t^b\left(y^b - c_{1,t}^b\right)} \frac{M_t^b}{M_t^a}$$

The exchange rate e_t depends on the relative values of the demand for money and the supply of money in the two countries.

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Foreign Currency Controls

- Recall: growth rates of population: $\left(n^a, n^b\right)$; and growth rates of money supply: $\left(z^a, z^b\right)$ – we consider **constant growth rates of money supply** in this chapter. Suppose that we focus on stationary allocations. We have

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$$\frac{v_{t+1}^a}{v_t^a} = \frac{\frac{N_{t+1}^a\left(y^a - c_1^a\right)}{M_{t+1}^a}}{\frac{N_t^a\left(y^a - c_1^a\right)}{M_t^a}} = \frac{N_{t+1}^a}{N_t^a}\frac{M_t^a}{M_{t+1}^a} = \frac{n^a}{z^a},$$

$$\frac{v_{t+1}^b}{v_t^b} = \frac{\frac{N_{t+1}^b\left(y^b - c_1^b\right)}{M_{t+1}^b}}{\frac{N_t^b\left(y^b - c_1^b\right)}{M_t^b}} = \frac{N_{t+1}^b}{N_t^b}\frac{M_t^b}{M_{t+1}^b} = \frac{n^b}{z^b}.$$

The path of the exchange rate can be expressed as

$$\frac{e_{t+1}}{e_t} = \frac{\frac{v_{t+1}^a}{v_{t+1}^b}}{\frac{v_t^a}{v_t^b}} = \frac{v_{t+1}^a}{v_t^a}\frac{v_t^b}{v_{t+1}^b} = \frac{n^a}{z^a}\frac{z^b}{n^b} = \frac{n^a}{n^b}\frac{z^b}{z^a}.$$

Foreign Currency Controls

- What are the factors that determine how the exchange rate changes over time? From

$$\frac{e_{t+1}}{e_t} = \frac{n^a}{n^b}\frac{z^b}{z^a},$$

growth rates of population and growth rates of money supply affect the path of the exchange rate.

- Population growth: the greater the growth rate of country a's population relative to country b's, the greater the growth rate of the exchange rate.
  - Greater growth of population in one country $\rightarrow$ higher demand for the country's money $\rightarrow$ the value of the country's money increases $\rightarrow$ the country's money appreciates over time.
  - In general, any factor that contributes to increase in the *demand* for a country's money will drive up the value of the country's money.

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Foreign Currency Controls

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- Money growth: the greater the growth rate of country a's money supply relative to country b's, the lower the growth rate of the exchange rate.
  - Greater growth of money supply in one country → higher supply for the country's money → the value of the country's money decreases → the country's money depreciates over time.
  - In general, any factor that contributes to increase in the *supply* of a country's money will lower the value of the country's money.

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- A special case is $e_{t+1} = e_t$ – fixed exchange rate.

Foreign Currency Controls

Fixed Exchange Rates

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- A special case: $e_t = e_{t+1}$, it requires that

$$z^a = \frac{n^a}{n^b} z^b. \tag{1}$$

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If country a choose to keep a fixed exchange rate with country b, it needs to set its growth rate of money supply according to (1).
Country a loses its independence in monetary policy.

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- Country a money and country b money have the same rate of return.
- If country b increases its growth rate of money supply z^b, country a will be forced to increase z^a to keep the fixed exchange rate.
- Country a government cannot acquire its preferred level of seigniorage revenue.

Foreign Currency Controls

Fixed Exchange Rates

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- With foreign currency controls, a country can choose the growth rate of money supply either to fix the exchange rate or to acquire its preferred level of seigniorage, it cannot meet both objectives.
- Example: Tutorial 3 Q6 – optimal z^* that maximizes G?

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- Now, suppose that the (gross) rate of return on money in Australia (country a) is 1.0 and that of the U.S. is 2.0. The (gross) growth rate of the Australia population (n^a) is 1. Foreign currency controls are in effect.

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  - What is the time path of the exchange rate (e_{t+1}/e_t)?
  - Suppose Australia wishes to maintain a fixed exchange rate with the U.S.. To accomplish this goal, Australia must set its gross rate of money supply z^a to what value? Is $z^a = z^*$?

The Indeterminacy of the Exchange Rate

- Suppose now that people are free to hold and use the money of any country. We can no longer have two separate money market clearing conditions. Instead,
  - the world's supply of money

$$v_t^a M_t^a + v_t^b M_t^b;$$

  - the world's demand for money

$$N_t^a \left(y^a - c_{1,t}^a\right) + N_t^b \left(y^b - c_{1,t}^b\right);$$

  - the world's money market clearing condition

$$v_t^a M_t^a + v_t^b M_t^b = N_t^a \left(y^a - c_{1,t}^a\right) + N_t^b \left(y^b - c_{1,t}^b\right). \tag{2}$$

- How can we determine the exchange rate?

$$e_t = \frac{v_t^a}{v_t^b}$$

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The Indeterminacy of the Exchange Rate

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- To find e_t, we need to know v_t^a and v_t^b. However, with one money market clearing condition, how can we solve for two unknowns $\left(v_t^a, v_t^b\right)$?
  - One cannot solve for two unknowns with one equation.
  - There exists an infinite combinations of $\left(v_t^a, v_t^b\right)$ that satisfy (2).
  - In other words, for any positive exchange rate e_t, we can find an equilibrium in which (2) is satisfied.
  - The exchange rate is indeterminate!

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The Indeterminacy of the Exchange Rate

Exchange Rate Fluctuations

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- **In the absence of the government determination of the exchange rate**, the exchange rate in a unified world economy can be whatever people believe it to be. The exchange rate could fluctuate because these beliefs fluctuate.
  Exchange rate fluctuations need not be tied to changes in real economic conditions.

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- Before 1971, the U.S. dollar is pegged to gold at 35 dollars per ounce of gold (the Bretton Woods System). In 1971, the U.S. abandoned the effort to control exchange rates. Afterwards, the world has seen tremendous volatility in exchange rates.
  See following figures for an example of the U.S. dollar against four major currencies.
  See Table 1 for an illustration of the extreme movements in exchange rates.

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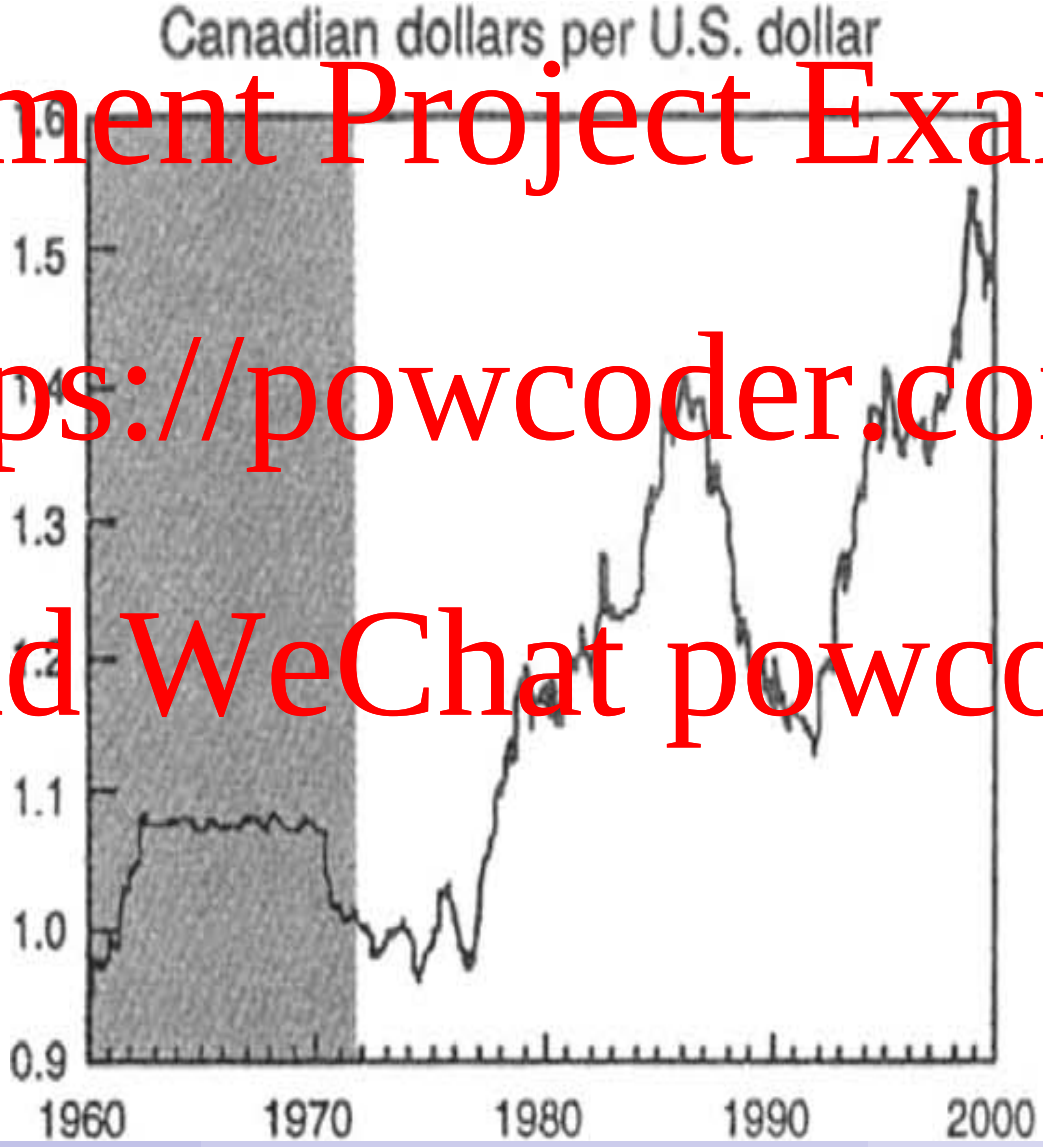
The Indeterminacy of the Exchange Rate

Exchange Rate Fluctuations



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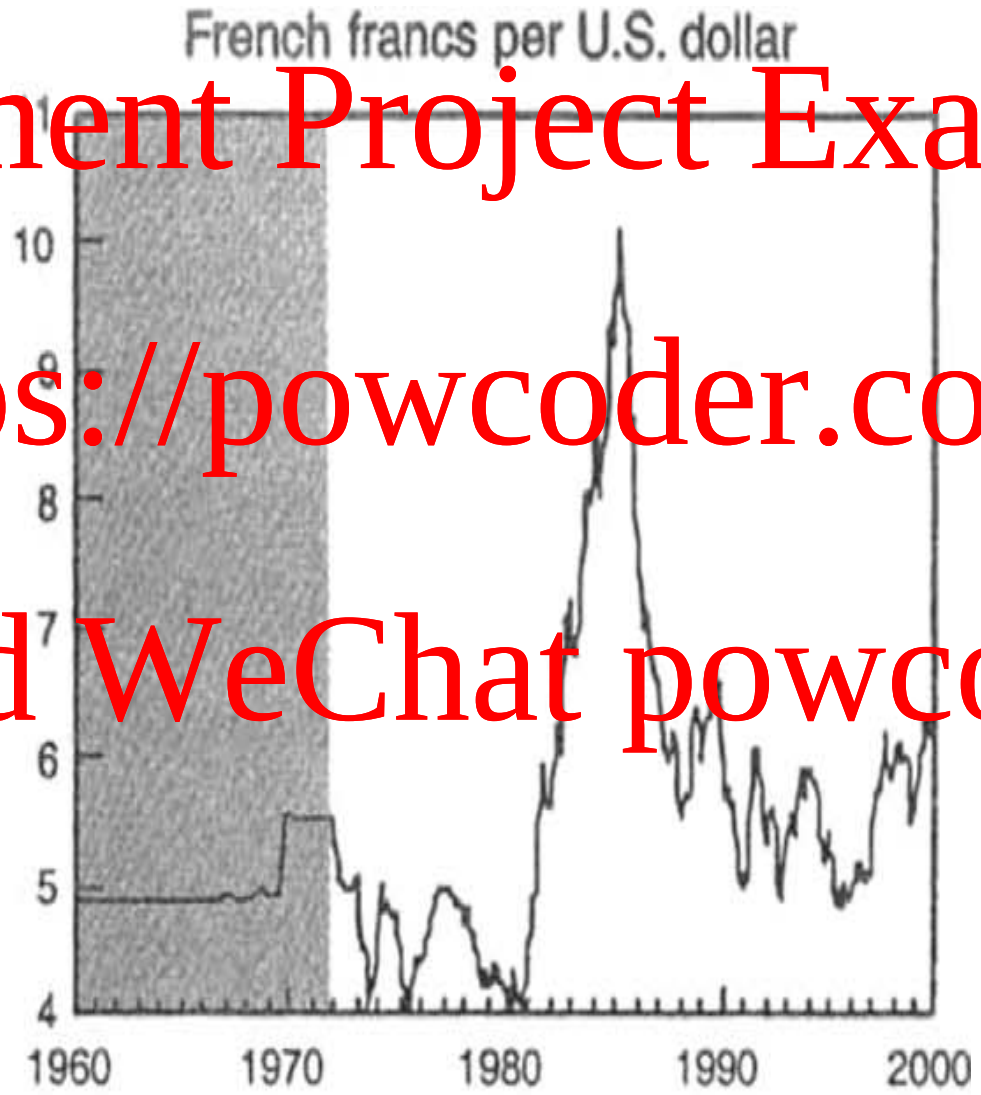
The Indeterminacy of the Exchange Rate

Exchange Rate Fluctuations



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The Indeterminacy of the Exchange Rate

Exchange Rate Fluctuations

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Country	Months	Exchange Rate Movements
France	Dec 1973 - Jan 1974	9.4% depreciation of the franc
Germany	Jun 1973 - Jul 1973	9.4% appreciation of the mark
Italy	Sep 1992 - Oct 1992	11.3% depreciation of the lira
Japan	Sep 1998 - Oct 1998	10.0% appreciation of the yen
U.K.	Sep 1992 - Oct 1992	11.7% depreciation of the pound

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The Indeterminacy of the Exchange Rate

Exchange Rate Fluctuations

- Exchange rate between U.S. dollar and Australian dollar.

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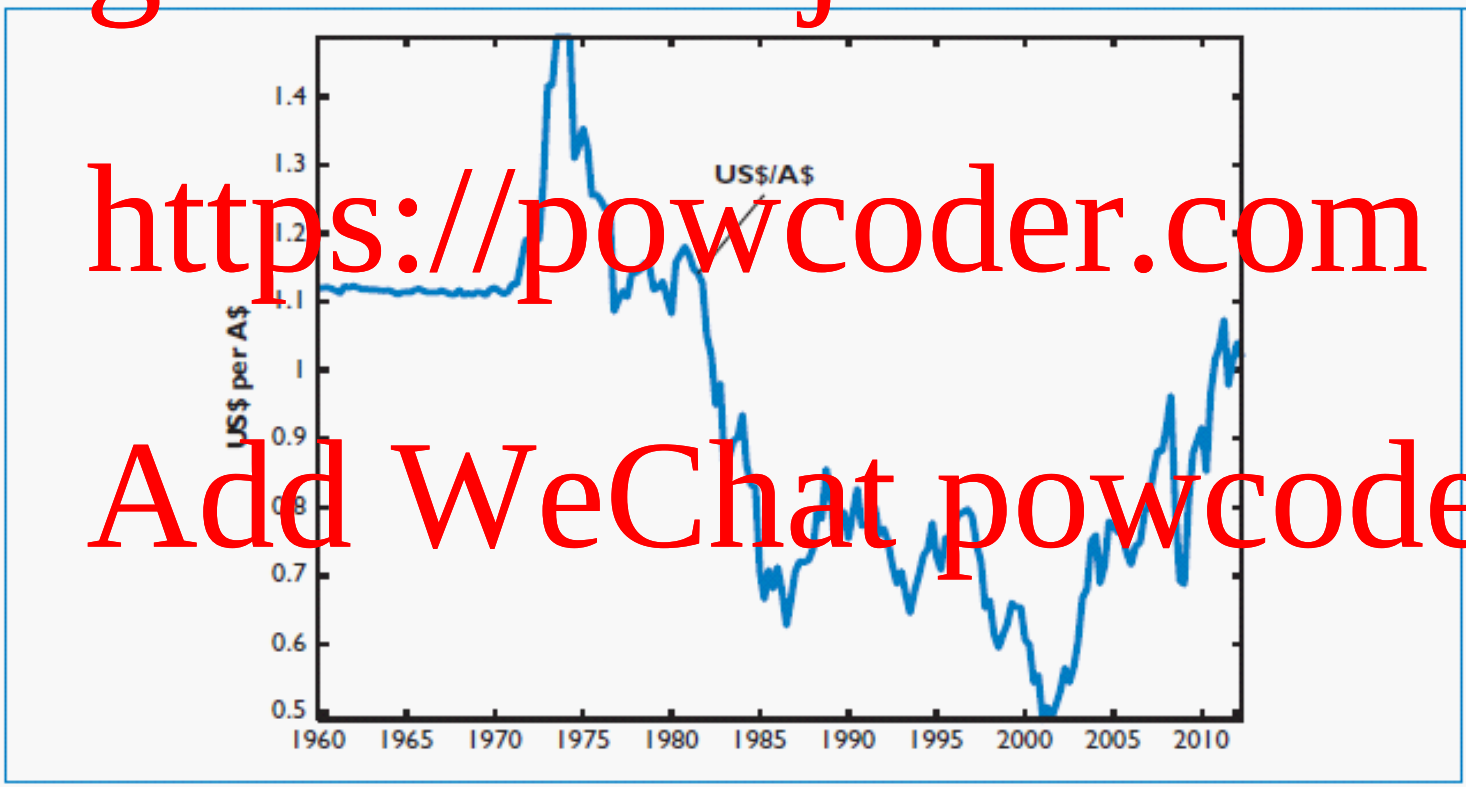

Figure 18.3 The nominal exchange rate between the Australian dollar and the US dollar since 1960

The Indeterminacy of the Exchange Rate

International Currency Traders

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- Even with foreign currency controls sometimes the exchange rate can be indeterminate.
- A model by King, Wallace and Weber (1992) about international currency traders. Three types of individuals:
  - citizens of country a, forced by law to hold only country a's money;
  - citizens of country b, forced by law to hold only country b's money;
  - multinational people, free to hold either currency.
- The numbers of each type individuals born in period t are denoted as N_t^a, N_t^b and N_t^c.
- Each country's money is held by its own citizens and perhaps by multinational people as well. Let λ_t be the fraction of country a money in the multinational people's real money balances.

The Indeterminacy of the Exchange Rate

International Currency Traders

- Money market clearing conditions for country a money and country b money:

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$$v_t^a M_t^a = N_t^a \left(y^a - c_{1,t}^a\right) + \lambda_t N_t^c \left(y^c - c_{1,t}^c\right),$$

$$v_t^b M_t^b = N_t^b \left(y^b - c_{1,t}^b\right) + (1-\lambda_t) N_t^c \left(y^c - c_{1,t}^c\right).$$

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The value of country a money is

$$v_t^a = \frac{N_t^a \left(y^a - c_{1,t}^a\right) + \lambda_t N_t^c \left(y^c - c_{1,t}^c\right)}{M_t^a}.$$

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The value of country b money is

$$v_t^b = \frac{N_t^b \left(y^b - c_{1,t}^b\right) + (1-\lambda_t) N_t^c \left(y^c - c_{1,t}^c\right)}{M_t^b}.$$

The Indeterminacy of the Exchange Rate

International Currency Traders

- The exchange rate in the world economy is

$$e_t = \frac{v_t^a}{v_t^b} = \frac{\frac{N_t^a\left(y^a - c_{1,t}^a\right) + \lambda_t N_t^a\left(y^c - c_{1,t}^c\right)}{M_t^a}}{\frac{N_t^b\left(y^b - c_{1,t}^b\right) + (1-\lambda_t) N_t^c\left(y^c - c_{1,t}^c\right)}{M_t^b}}.$$

- A simple case: suppose that preferences are such that the total real demand for money is identical across the different types of people. That is, $N_t^a\left(y^a - c_{1,t}^a\right) = N_t^b\left(y^b - c_{1,t}^b\right) = N_t^c\left(y^c - c_{1,t}^c\right)$. The exchange rate can be simplified to

$$e_t = \frac{\frac{1+\lambda_t}{M_t^a}}{\frac{1+(1-\lambda_t)}{M_t^b}} = \frac{\frac{1+\lambda_t}{M_t^a}}{\frac{2-\lambda_t}{M_t^b}}.$$

  - When λ_t increases, e_t increases. When λ_t decreases, e_t decreases.
  - The change in λ_t will cause change in e_t.
  - Example: if $M_t^a = M_t^b$, $e_t = (1+\lambda_t) / (2-\lambda_t)$. What is the range of values for e_t?

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The Indeterminacy of the Exchange Rate

International Currency Traders

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- With international currency traders, the exchange rate is still indeterminate. There exist multiple exchange rates that satisfy the money market clearing conditions. Exchange rates may fluctuate dramatically as multinationals change the composition of their money balances.

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- The fluctuations in exchange rates make each country's money a risky asset.
  - Multinationals may be able to free themselves from this risk if they hold a balanced portfolio of both monies.

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  - Citizens of each country suffer the risk associated with exchange rate fluctuations.
- Maybe monetary authorities would like to stabilize the exchange rate to reduce the risk associated with exchange rate fluctuations. How?

Fixing the Exchange Rate

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- Monetary authorities may want to stabilize the exchange rate to reduce exchange rate fluctuations.
- How shall we organize the world to maintain a stable exchange rate?
  - Cooperative stabilization: countries coordinate to fix the exchange rate.
  - Unilateral defense: unilateral commitment to a fixed exchange rate.

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Fixing the Exchange Rate

Cooperative Stabilization

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- If we take a cue from the monetary organization of national economies, what determines the exchange rate between two different bills in a **single** national economy?
  - The government tells us the exchange rate by printing the denomination on each bill.
  - The government also stands ready to exchange the bills at that rate.
- For the **world** economy, if the two governments stand ready to exchange their currencies at some given rate, can they determine the exchange rate?
  - A recent example: during reunification of Germany, the German central bank announced that it would accept East German marks at a one-for-one rate of exchange with West German marks.

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- We rarely see countries cooperatively fix the exchange rate.
  - European Economic Community (now the European Union) had tremendous difficulties in maintaining fixed exchange rates.
- One major impediment:
  - the strong incentive to inflate when exchange rate is fixed.

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Fixing the Exchange Rate

Unilateral Defense

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- For the world economy, fixing the exchange rates requires cooperation of foreign central banks. In the absence of such cooperation, the government can keep a fixed exchange rate through unilateral defense of the exchange rate.

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- When a government commits to a fixed exchange rate unilaterally, the government needs to tax its citizens to acquire enough resources to defend the exchange rate.

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  - If such a commitment is believed, there will be little incentive for anyone to turn in one form of money for the other.
  - Is it believable that the government can defend the fixed exchange rate by taxing its citizens?

Fixing the Exchange Rate

Unilateral Defense of the Exchange Rate

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- Consider an OLG model with two countries. No foreign currency controls is in effect. The government of country a pledges to tax the old in order to defend a fixed exchange rate. The world money market clearing condition is

$$v_t^a M_t^a + v_t^b M_t^b = N_t^a \left(y^a - c_{1,t}^a\right) + N_t^b \left(y^b - c_{1,t}^b\right).$$

Or with a fixed exchange rate $\bar{e}$,

$$\bar{e} v_t^b M_t^a + v_t^b M_t^b = N_t^a \left(y^a - c_{1,t}^a\right) + N_t^b \left(y^b - c_{1,t}^b\right).$$

Fixing the Exchange Rate

Unilateral Defense of the Exchange Rate

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- We consider a specific example to have a better understanding of the differences between cooperative stabilization versus unilateral defense of the exchange rate.
  - Suppose country a (Australia) and country b (the U.K.) are identical.
  - In each country, the population of every generation is 100, $N^a = N^b = 100$.

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  - Each young wants to hold real money balances worth 10 goods. It follows that the aggregate demand for money in real terms in each country is

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$$N^a \left(y_1^a - c_1^a\right) = N_t^b \left(y_1^b - c_1^b\right) = 100 \times 10 = 1{,}000.$$

  - Assume that the total money supply in country a is \$800 and in country b is £600.
  - In the first period, each initial old holds \$4 and £3, regardless of citizenship.
  - The exchange rate is fixed at $\bar{e} = 1/2$ – \$1 trades for £0.5.

Fixing the Exchange Rate

Unilateral Defense of the Exchange Rate

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We can derive the value of country b money v^b

$$v^b = \quad ? \quad ,$$

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and the value of country a money v_t^a

$$v^a = \quad ? \quad .$$

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We can also derive the consumption by each old in both countries

$$c_2^a = \quad ? \quad \text{and} \quad c_2^b = \quad ? \quad .$$

Fixing the Exchange Rate

Cooperative Stabilization

- Now suppose that every member of the initial old of both countries decides to cut their balances of country a money in half. Each member of the initial old turns in \$2 to the monetary authority of country a to acquire £1.
- **Cooperative stabilization:** if monetary authority of country b agrees to cooperate by printing the amount of its currency demanded. At the end of currency exchange, the stock of dollars is \$400 and the stock of pounds is £800.
  - The value of country b money is
    $$v^b = \ ?\ ,$$
  - The value of country a money is
    $$v^a = \ ?\ \ .$$
  - Consumption of each old is
    $$c_2^a = \ ?\ \ \text{and}\ \ c_2^b = \ ?\ \ .$$

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Fixing the Exchange Rate

Cooperative Stabilization: Inflationary Incentives

- With a fixed exchange rate, the world money market clearing condition suggests that

$$v_t^b = \frac{N_t^a\left(y^a - c_{1,t}^a\right) + N_t^b\left(y^b - c_{1,t}^b\right)}{\bar{e}M_t^a + M_t^b}.$$

  - An increase in one country's money supply reduces the value of **both** currencies.
  - This is mainly because without foreign currency controls, two currencies are perfect substitutes.
- If one country's government wants to inflate to collect seigniorage, **both** countries' citizens are taxed. If both governments wish to inflate to collect seigniorage, a large inflation of the world's money stock will result.
- This inflation can be prevented if governments are willing to agree to limit their own growth rates of money supply. This can be difficult if some countries rely on seigniorage far more than others.

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Fixing the Exchange Rate

Unilateral Defense of the Exchange Rate

- **Unilateral defense**: if country b refuses to print money to accommodate the demand for its currency, country a has to attempt a unilateral defense of the exchange rate. To do this, country a government must raise tax revenue to provide all of the country b currency demanded.
  - Total amount of pounds needed by country a government:

$$200 \times 2 \times \frac{1}{2} = 200,$$

  which implies each initial old of country a has to pay a tax of

$$\frac{200v^b}{100} = 2v^b.$$

  - Total stock of money:

$$M^a = \quad ? \quad \text{and} \quad M^b = \quad ? \quad .$$

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- Unilateral defense – continued
  - The value of country b money is

$$v^b = \ ? \ .$$

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  - The value of county a money is

$$v^a = \ ? \ .$$

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  - Consumption of each old is

$$c_t^a = \ ? \ \text{ and } \ c_t^b = \ ? \ .$$

Fixing the Exchange Rate

Unilateral Defense of the Exchange Rate

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- In general, whenever some people decide to exchange their holdings of country a money for country b money and country a government honors these requests,
  - M^a falls and M^b stays the same;
  - values of both monies increase;
  - country b old's consumption increases;
  - country a initial old's consumption decreases because of the tax payment.
  - Overall, the unilateral defense policy has resulted in a transfer of goods from each old in country a to each old in country b.

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Fixing the Exchange Rate

Speculative Attacks on Currencies

- The unilateral defense of the fixed exchange rate relies on the government's willingness to take actions (taxation) that make its citizens worse off.
  - Would the government follow such a commitment?
  - If the government lacks the will to take any of the actions to defend the exchange rate, what would people anticipate?
- More realistically, the government is prepared to take limited action to defend the exchange rate.
  - For example, the government is willing to tax its citizen a limited amount – F goods. The government is committed to defending the exchange rate until the tax bill of this policy reaches F goods.
    - If fewer than F goods worth of domestic currency are turned in for exchange, the fixed exchange rate is maintained.
    - If more than F goods worth of domestic currency are turned in for exchange, the government abandons its efforts to fix the exchange rate. Domestic currency will depreciate.

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Fixing the Exchange Rate

Speculative Attacks on Currencies

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- A limited government commitment may encourage speculative attacks in foreign currency markets in a way that does not occur when the government's commitment is total.
- Consider the two country OLG model. Suppose that country *a* keeps a fixed exchange rate with country *b* with a limited commitment to defend its exchange rate. Speculators may want to exchange country *a* currency for country *b* currency.

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  - For people who hold country *a* currency, exchanging country *a* currency for country *b* currency is a can't-lose action.

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    - If country *a* government's commitment is sufficient to defend the exchange rate, the exchange rate does not change.
    - If country *a* government's commitment is too small to defend the exchange rate, country *a* currency will depreciate. For those who have exchanged country *a* currency for country *b* currency, they benefit because country *b* currency appreciates.

Fixing the Exchange Rate

Speculative Attacks on Currencies

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- Consider the two country OLG model – continued
  - For country *a* citizens, they are in a can't-win situation.
    - If country *a* government's commitment is sufficient to defend the exchange rate, country *a* citizens need to pay the tax.
    - If country *a* government's commitment is too small to defend the exchange rate, country *a* currency will depreciate. If country *a* citizens hold most of the country *a* currency, their money's value decreases.

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- Examples of speculative attacks:
  - Mexico in 1994;
  - the Asian Financial Crisis in 1997;
  - Brazil in 1999;
  - Argentina in 2002.

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Fixing the Exchange Rate

Speculative Attacks on Currencies

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- The Asian Financial Crisis in 1997:
  - In the 1990s, Thailand, Malaysia, Indonesia and the Philippines were added to the list of Asian Tigers (Hong Kong, South Korea, Singapore and Taiwan, all of which displayed high rates of economic growth from the early 1960s to the 1990s).
  - In July 1997, the Thai baht which was fixed at 25 baht for 1 USD came under speculative attack. The Baht depreciated from 25 Baht per USD to around 65 Baht per USD in 1997.
  - The crisis spread to other southeast Asian countries, including Malaysia, Indonesia, the Philippines and South Korea.
  - The crisis brought to an end a period of extraordinary economic growth in southeast Asia.

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- The Asian Financial Crisis in 1997

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insertmap

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- The Asian Financial Crisis in 1997

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insert exchange rate chart

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Fixing the Exchange Rate

Speculative Attacks on Currencies

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- In general, a country's currency is more likely to be subject to speculative attacks when
  - the government adopts a fixed exchange rate;
  - the government lacks sufficient reserves and cannot resort to unlimited taxation of its citizens;
  - there is some change of the economic condition which causes concerns about the value of the country's currency;

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- These concerns could trigger speculative attacks on the country's currency.
  - If speculative attacks are successful, the country's currency depreciates.
  - If speculative attacks are not successful, the country defends its exchange rate.

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- Speculative attacks on currency is called currency crisis. Sometimes currency crisis can lead to financial crisis.

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- What is the optimal international monetary system?
  - Cooperative stabilization: hard to implement because of country's incentive to inflate.
  - Unilateral defenses of the exchange rate: speculative attacks on currencies

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The Optimal International Monetary System

Currency Union

- A currency union is where a group of countries share a single currency. Unlike a multilateral fixed exchange rate regime (cooperative stabilization), the control of the money supply is taken out of the hands of individual member countries and relegated to a central authority. This arrangement avoids the issue of member countries' incentives to inflate.
- The European Currency Union (ECU) adopted the Euro in 1999. The central bank is called the European Central Bank.
  - The ECB is governed by a board of directors and headed by a president.
  - Each country's central bank does not have independent influence on its domestic monetary policy.
- Having a centralized monetary authority help to
  - reduce the costs of conducting international trade;
  - mitigate the lack of coordination in domestic monetary policies.

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- Some problems associated with the ECB:
  - feeling of the ECB members that the central authority neglects the "special" concerns of their respective countries;
  - how much seigniorage to collect and distribute among member countries;
  - how should monetary policy help to solve countries' fiscal problems.
- The success of a currency union depends largely on the ability of the centralized monetary authority to deal with issues of competing political interests.

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