

Unit 4: International Economics

Unit Overview

4.6 Exchange rates

- Fixed exchange rates
- Floating exchange rates
- Managed exchange rates
- Distinction between
 - >>depreciation and devaluation
 - >>appreciation and revaluation
- Effects on exchange rates of
 - >>trade flow
 - >>capital flows/interest rate changes
 - >>inflation
 - >>speculation
 - >>use of foreign currency reserves

Higher level extension topics

- *Relative advantages and disadvantages of fixed and floating rates*
- *Advantages and disadvantages of single currencies/monetary integration*
- *Purchasing power parity theory (PPP)*

Blog posts: "Exchange rates"



Blog posts: "Foreign exchange market"



Exchange Rates

Introduction

An exchange rate is the value of one currency expressed in terms of another currency.

What does an exchange rate mean?

$$1 \text{ Euro} = 1.5 \text{ CHF}$$

The "price" of one Euro is 1.5 CHF.

$$1 \text{ CHF} = 0.67 \text{ Euro}$$

The "price" of a Swiss franc is 0.67 Euro

Which currency is stronger? How do you know?

What has happened if the exchange rate changes to:

1 CHF = 0.8 Euro ●.....▶ *Franc appreciates, Euro depreciates*

or...

1 CHF = 0.5 Euro ●.....▶ *Franc depreciates, Euro appreciates*

Exchange Rates

Introduction

What is the "market for currencies"

- The foreign exchange market, or the "Forex" is where banks trade currencies between one another.
- Households and firms buy currencies from banks, which charge a commission on sale of foreign currencies.
- The "Forex" markets are centered in five cities: Zurich, New York, Frankfurt, London and Tokyo.
- Each day over \$1.5 trillion worth of currency is exchanged in Forex markets between banks in every country of the world.

What determines the exchange rate of a particular currency?

- Supply and Demand!
- Households, firms and investors all demand and supply foreign currencies from commercial banks, which in turn trade currencies in the Forex markets.

Exchange Rates

Currency Markets

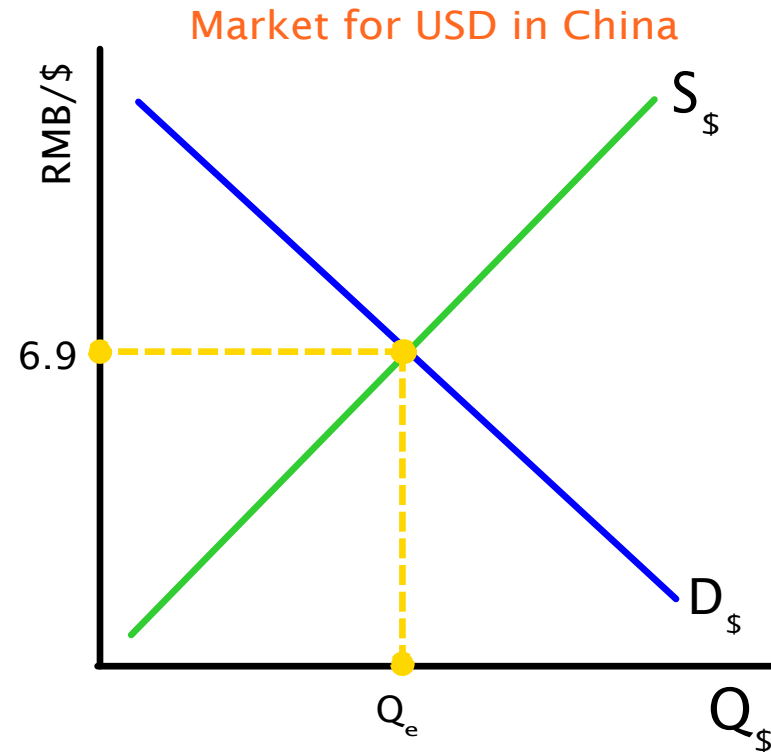
Flexible Exchange Rates: Most exchange rates are determined by the forces of supply and demand, without interference from governments.

Who demands a country's currency?

- Foreign households, firms and investors to buy goods and services, capital, and assets from that country countries.

Who supplies a country's currency?

- Domestic households, firms and investors supply their currency on the Forex market to exchange for foreign currencies so they can buy goods and services, capital and assets in foreign countries.



Example: The market for US dollars in China. Chinese demand dollars to buy American goods, services, capital and assets (real and financial). Americans supply dollars because they are happy to exchange it for RMB which they can use to buy Chinese goods, services, and assets

Exchange Rates

Currency Markets

The demand for a currency is downward sloping

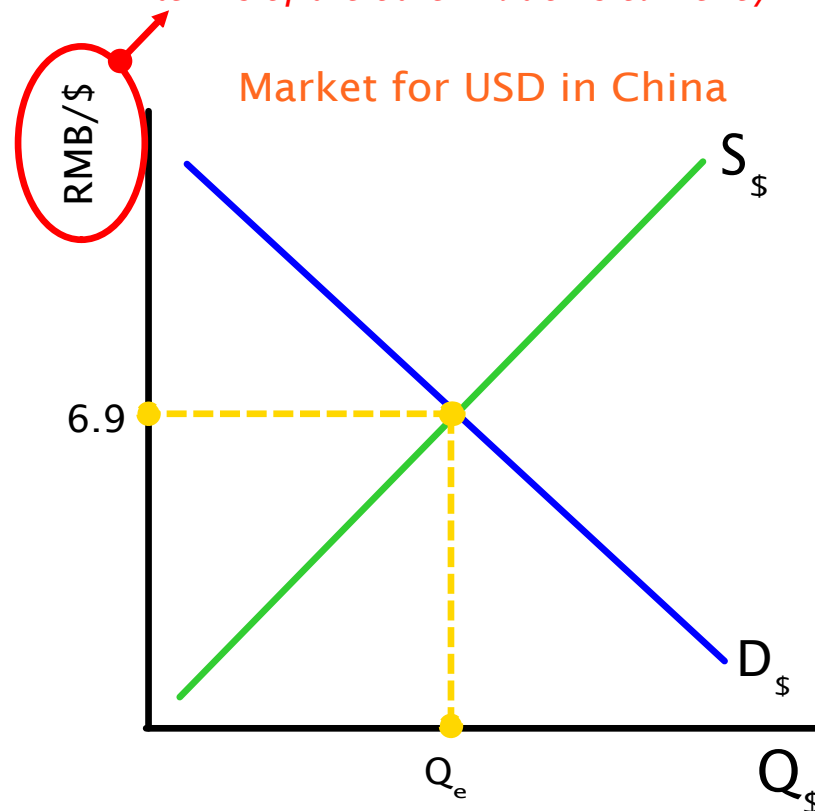
- Why? because as a currency becomes less expensive, so do the products made by that country, people will want to buy more of its goods and services, therefore, foreigners demand larger quantities of the currency as it depreciates.

The supply of a currency is upward sloping

- Why? Because as its price rises, holders of that currency can obtain other currencies more cheaply and will want to buy more imported goods and, therefore, will give up more of their currency to obtain other currencies.

- As with all markets, the intersection of the supply and demand curves for a currency will determine the equilibrium price or **exchange rate**.

Notice the Y-axis in a currency graph: It is always the *price of the currency that's being demanded and supplied in terms of the other nation's currency*.



Exchange Rates

Currency Markets

Draw the diagrams for two Forex markets:

- The market for US\$ in Europe
- The market for Euros in the United States

Indicate the effect that each of the following will have in the two markets.
Assume *ceteris paribus* in each scenario:

- Rising real incomes in the United States
- Removal of a tariff on American software in Europe
- A increase in the rate of inflation in Europe
- Speculation that the European stock markets are about to rally
- A major recession in France and Germany
- An extremely popular new model of BMW
- Contractionary monetary policy undertaken by the US Federal Reserve

$D_{\$}$

$S_{\$}$

$D_{\text{€}}$

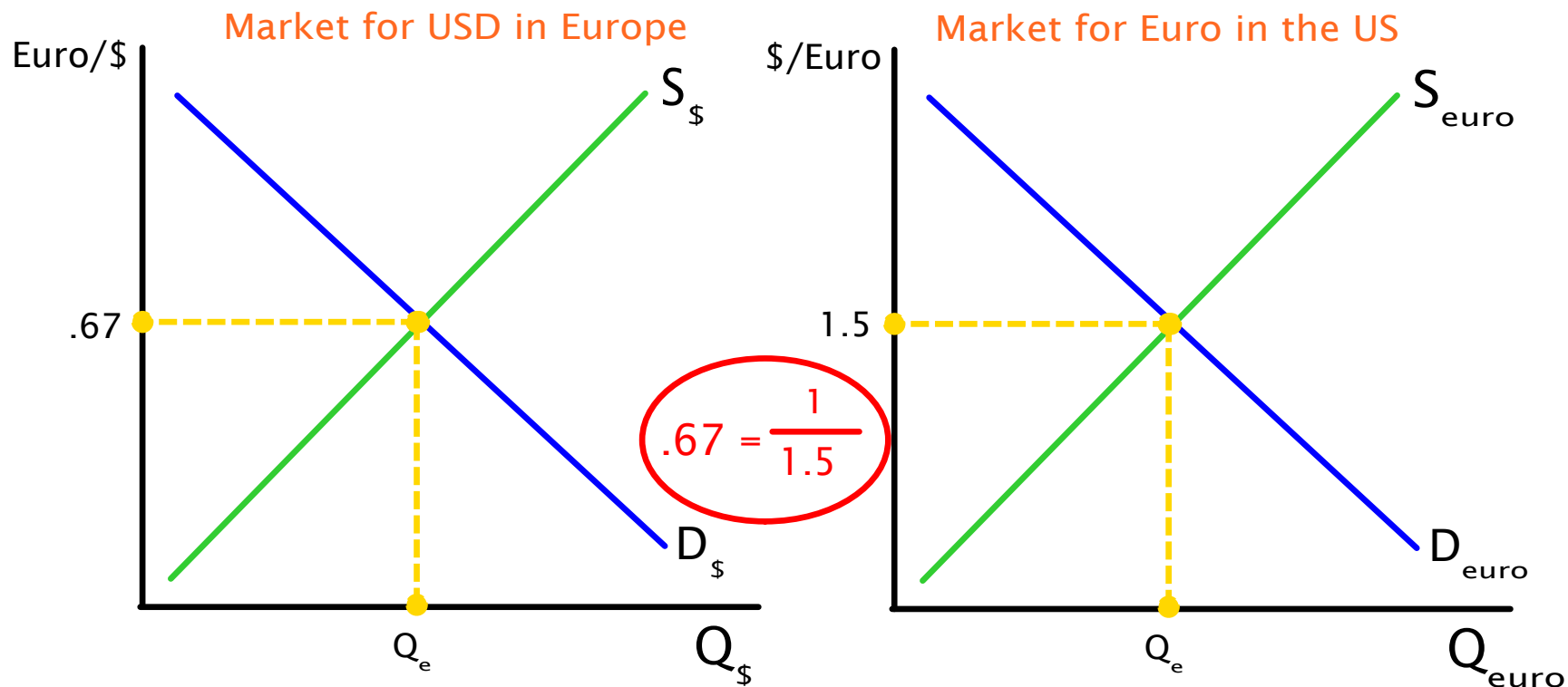
$S_{\text{€}}$

Dollar _____

Euro _____

Exchange Rates

Currency Markets

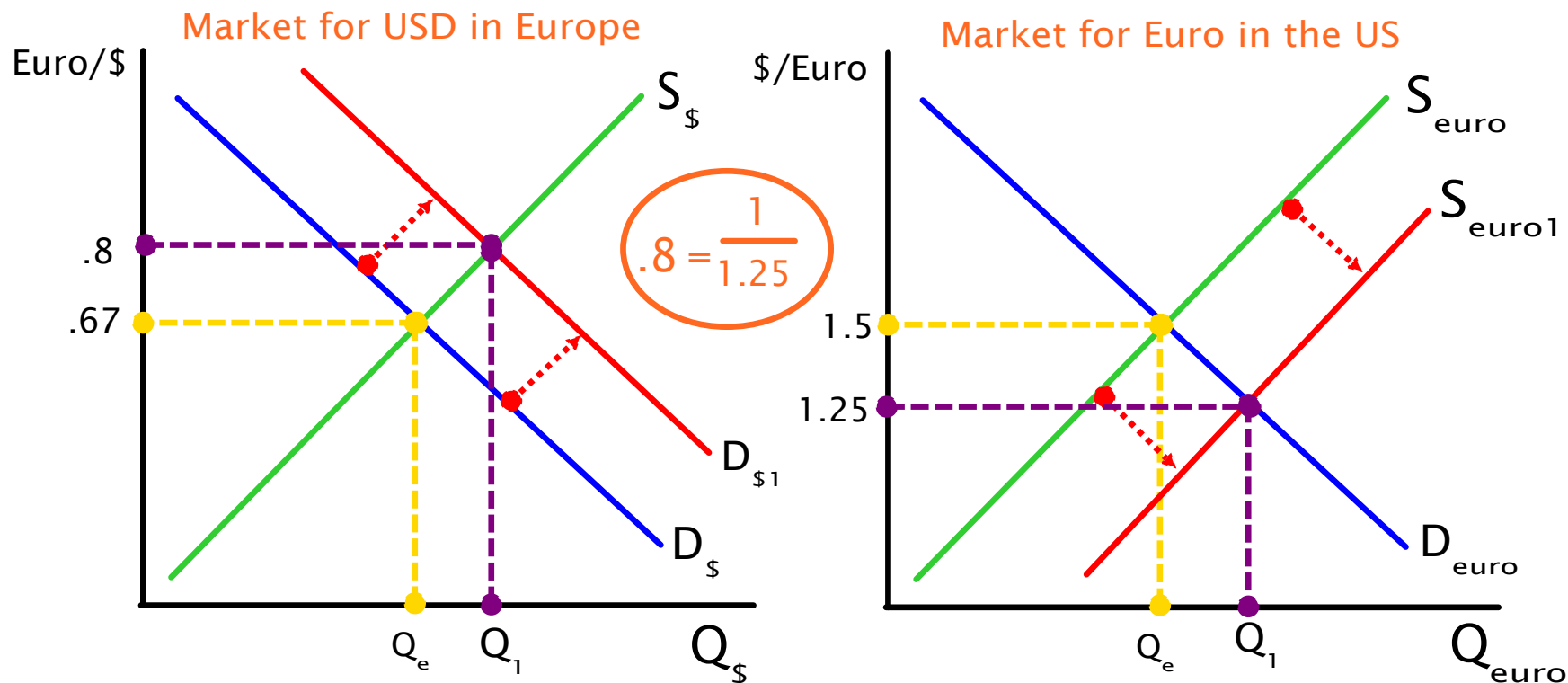


Forex markets work in tandem with one another.

- While \$ are demanded by Europeans, Euros are demanded by Americans
- While \$ are supplied by Americans, Euros are supplied by Europeans
- The Euro exchange rate is always the reciprocal of the \$ exchange rate

Exchange Rates

Currency Markets



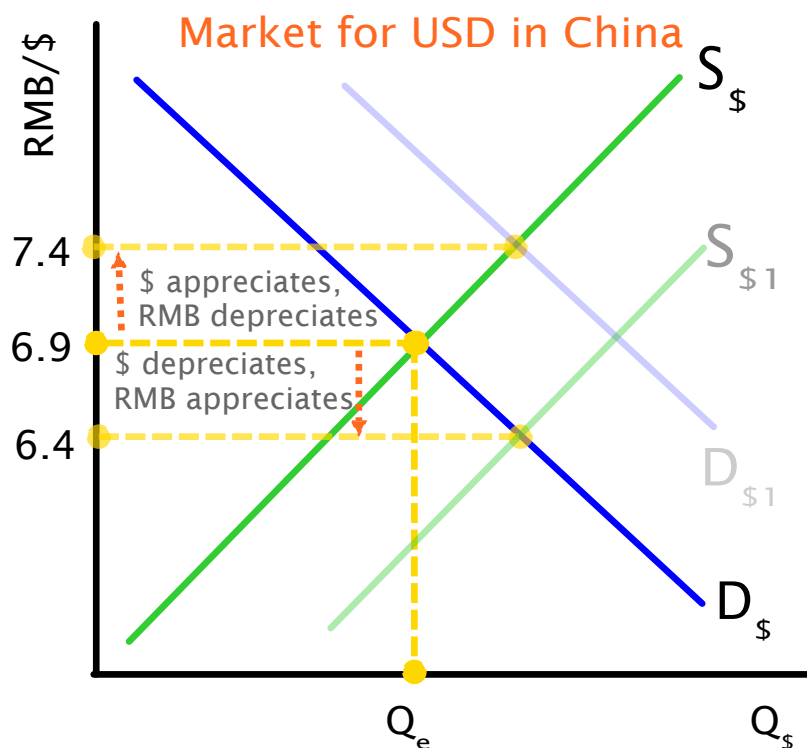
A change in the \$ market coincides with a change in the Euro market.

- An increase in $D_{\$}$ by Europeans causes S_{euro} to increase since Europeans must supply more Euros in exchange for \$
- Increase in $D_{\$}$ causes the \$ to appreciate
- Increase in S_{euro} causes the Euro to depreciate
- New exchange rates are reciprocals of one another

Exchange Rates

Currency Markets

When the exchange rate changes, there is either *appreciation* or *depreciation* of the currency.



Depreciation means the value of a currency has fallen; it takes more units of that country's currency to buy another country's currency.

- Caused by a **decrease in Demand for \$**
- or,
- an **increase in Supply of \$**

Appreciation means the value of a currency or its purchasing power has risen; it takes less of that currency to buy another country's currency

- Caused by an **increase in Demand for \$**
- or,
- a **decrease in Supply of \$**

What factors cause the Demand and Supply of a currency to shift?

Exchange Rates

Determinants of Exchange Rates

For each of the scenarios below, illustrate the effect on both the Dollar market and the market for the other currency involved.

- T-** **tastes/preferences: American consumer tastes shift towards European goods**
- The latest Land Rover (British car) becomes a runaway hit in the US
 - Buicks become the best selling car in China
 -
- I-** **relative incomes: Rising income in US leads to increased demand for imports**
- the US GDP/per capita grows at 5%, while Europe's GDP per/capita growth slows to 2%
 - Productivity increases in China lead to rising incomes while a US slowdown causes incomes to stagnate
- P-** **relative price levels: If inflation is higher in the US than Europe, Americans will demand Euros to buy relatively cheap European goods**
- inflation in the US accelerates while European prices remain stable
 - A nationwide strike in France leads to cost-push inflation
- S-** **speculation: If investors expect the Euro to appreciate relative to the \$, demand for Euros will increase**
- American speculators bet on the appreciation of Canadian dollars
 - American speculators expect Thai Baht to depreciate greatly
- I-** **interest rates: Higher interest rates in Europe mean greater returns on savings, American will demand more Euros**
- The ECB raises interest rates while the Fed loosens the money supply in the US to spur investment
 - A recession in Brazil triggers an easy money policy while inflation in the US leads the Fed to raise rates

Exchange Rates

Determinants of Exchange Rates

Determinants of Supply of US dollars:

A change in demand for European goods could be caused by:

- A change in relative price levels (inflation in the US)
- A change in income in the US (higher income means more demand for imports, lower income means fall in demand for import)
- A change in tastes in the US towards EU products.

A change in EU investment prospects:

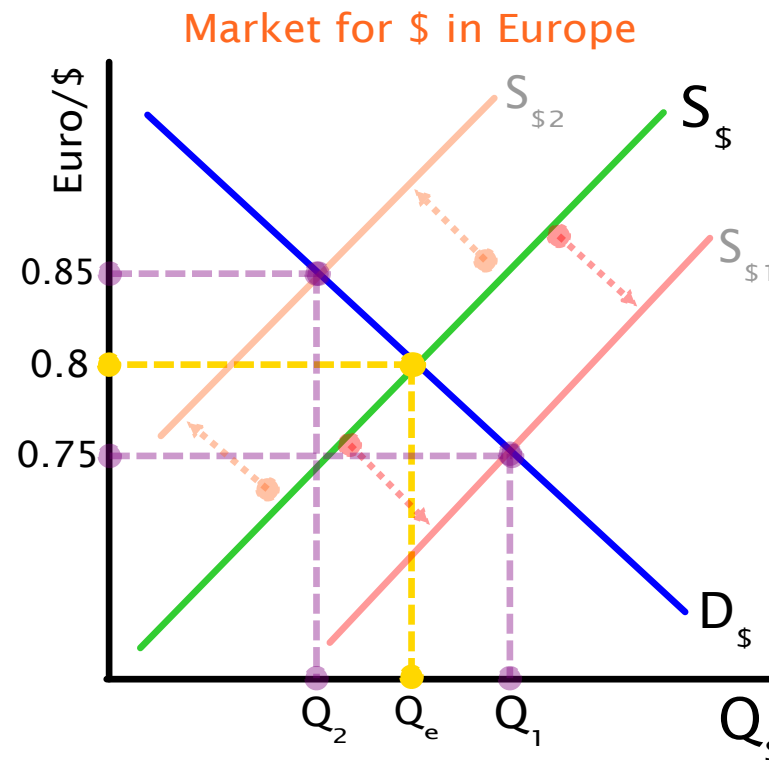
- European stock, bond, or real estate markets boom, Americans demand European assets.

A change in relative interest rates:

- a rise in EU interest rates makes it more attractive to save there, D_{euro} increases, increasing $S_{\$}$

Speculation on future value of dollar or Euro:

- If speculators predict the \$ to drop or the , they'll supply more now in the hope of buying them back cheaper in the future

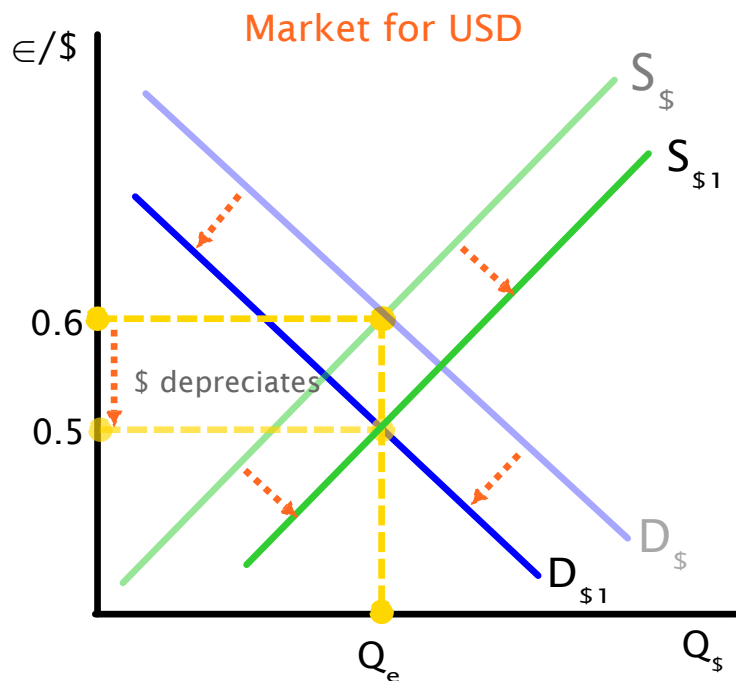


Exchange Rates

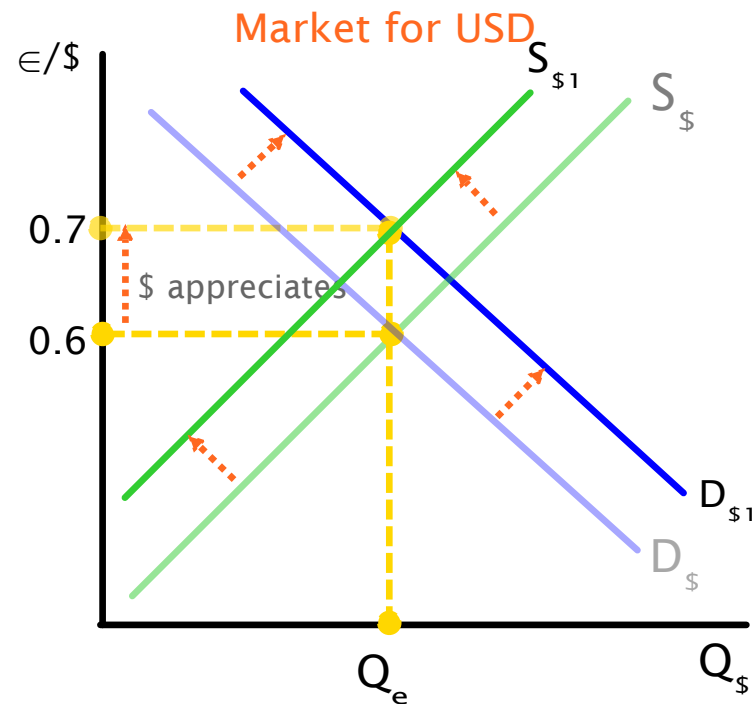
Determinants of Exchange Rates

What changes would lead to a depreciation of the USD on foreign exchange markets?

What changes would lead to an appreciation of the USD on foreign exchange markets?



I
I
P
S
I



Exchange Rates

Quick Quiz

Explain why the U.S. demand for Mexican pesos is downsloping and the **supply of pesos** to Americans is upsloping. Assuming a system of floating exchange rates between Mexico and the United States, indicate whether each of the following would cause the Mexican peso to appreciate or depreciate:

- a. The United States unilaterally reduces tariffs on Mexican products.
- b. Mexico encounters severe inflation.
- c. Deteriorating political relations reduce American tourism in Mexico.
- d. The United States' economy moves into a severe recession.
- e. The U.S. engages in a high interest rate monetary policy.
- f. Mexican products become more fashionable to U.S. consumers.
- g. The Mexican government encourages U.S. firms to invest in Mexican oil fields.
- h. The rate of productivity growth in the United States diminishes sharply.

The U.S. demand for pesos is downsloping: When the peso depreciates in value (relative to the dollar) the United States finds that Mexican goods and services are less expensive in dollar terms and purchases more of them, demanding a greater quantity of pesos in the process. The supply of pesos to the United States is upsloping: As the peso appreciates in value (relative to the dollar), U.S. goods and services become cheaper to Mexicans in peso terms. Mexicans buy more dollars to obtain more U.S. goods, supplying a larger quantity of pesos.

- The peso **appreciates in (a), (f), (g), and (h)** and **depreciates in (b), (c), (d), and (e)**.

Exchange Rates

Quick Quiz

Indicate whether each of the following creates a demand for, or a supply of, European euros in foreign exchange markets:

- a. A U.S. airline firm purchases several Airbus planes assembled in France.
- b. A German automobile firm decides to build an assembly plant in South Carolina.
- c. A U.S. college student decides to spend a year studying at the Sorbonne.
- d. An Italian manufacturer ships machinery from one Italian port to another on a Liberian freighter.
- e. The United States economy grows faster than the French economy.
- f. A United States government bond held by a Spanish citizen matures, and the loan is paid back to that person.
- g. It is widely believed that the Swiss franc will fall in the near future.

A demand for euros is created in (a),(c),(e),(f), and (g) but see note below for e and g. A supply of euros is created in (b) and (d).

Note: Answer for (e) assumes U.S. demand for French goods will grow faster than French imports of U.S. goods, (g) assumes some holders of francs will buy euros instead (Switzerland is not in the EU).

Exchange Rates

Weak vs. Strong Currencies

Possible advantages of a weak currency:

- *Greater employment in export industries:* as currency weakens, foreigners buy more of your country's exports.
- *Greater employment in domestic industries:* as imports become more expensive, domestic consumers buy more from domestic producers. Could raise employment

Possible disadvantages of a weak currency:

- *Inflation:* not only will imported final goods and services be more expensive, but raw materials and components will be as well, driving up costs of production for domestic firms!

Blog post: "The US dollar's decline in value may cause more harm than good for the US economy"



Blog post: "The true causes of and solutions to inflation in China"



Exchange Rates

Weak vs. Strong Currencies

Possible advantages of a strong currency:

- **Downward pressure on inflation:** imported goods, imported raw materials and components, increased pressure on domestic producers to keep costs and prices low.
- **More imports can be bought:** better for domestic consumers, access to wider range of products
- *Force domestic producers to improve efficiency: high exchange rate means domestic products are more expensive to foreigners, means if domestic firms want to compete on global market, they need to be super efficient!*

Possible disadvantages of a strong currency:

- *Damage to export industries:* means their exports are more expensive to foreigners, could lead to unemployment in these industries.
- *Damage to domestic industries:* stronger currency means consumers will buy more imports, so demand for domestic goods may fall, could lead to unemployment in these industries

Exchange Rates

Floating Exchange Rates

Floating exchange rate: *When a currency's value is left up to the forces of supply and demand in the foreign exchange markets.*

Advantages:

- Interest rates can be adjusted with the interests of the macroeconomy in mind, since exchange rates will adjust on their own to different interest rates.
- Exchange rate should adjust itself in order to keep the current account balanced:
- It's not necessary to keep high levels of foreign currencies in reserve, since the gov't does not have to use them to buy and sell its own currency to maintain its value.

Disadvantages:

- Could create uncertainty on international markets. May reduce levels of FDI as investors find it hard to assess the level of return and risk.
- Floating rates do not always self-adjust to eliminate current account deficits: sometimes political and social factors play a role in currency markets (i.e. 9/11)
- Could worsen existing levels of inflation: High inflation in US will reduce demand for US products abroad, reducing demand for \$, weakening the \$ and making imports more expensive for Americans, contributing to inflation!

Exchange Rates

the "Managed Float" system of exchange rates

The most common exchange rate system is really a “managed float” exchange rate system in which governments attempt to prevent rates from changing too rapidly in the short term.

- For example, in 1987, the G-7 nations-U.S., Germany, Japan, Britain, France, Italy, and Canada-agreed to stabilize the value of the dollar, which had declined rapidly in the previous two years.
- They purchased large amounts of dollars to prop up the dollar’s value. Since 1987 the G-7 has periodically intervened in foreign exchange markets to stabilize currency values.

WHY would government intervene in currency markets?

- lower exchange rate to increase employment
- raise exchange rate to fight inflation
- maintain a fixed rate to maintain stability
- avoid large fluctuations in a floating exchange rate
(these last two should help improve business confidence and encourage investment)
- improve a current account deficit

Exchange Rates

the "Managed Float" system of exchange rates

HOW does a government manage its currency's exchange rate?

- **Using foreign exchange reserves to buy or sell foreign currencies:** If a gov't wants to increase the value of its own currency, it can buy its own currency on the Forex. If it wants to lower the value of its own currency, it can buy foreign currencies, increasing the supply of its own, lowering its value.
- **By changing interest rates:** If the gov't wants to increase the value of its currency, it will raise its interest rates. If it wants to lower the value of its currency, it can lower interest rates.

In support of the managed float:

- Trade has expanded and not diminished under this system as some predicted it might
- Flexible rates have allowed international adjustments to take place without domestic upheaval when there has been economic turbulence in some areas of the world.

Concerns with the managed float:

- Much volatility occurs without the predicted balance of payments adjustments
- There is no real system in the current system.
- It is too unpredictable

Exchange Rates

Fixed exchange rates

Fixed rates of Exchange: to avoid the disadvantages of a flexible exchange rate, nations have fixed or pegged their exchange rates, for example China until 2005

Fixed or managed exchange rates are only made possible through government intervention in foreign exchange markets

- The problem is that the government cannot completely control the demand and supply of other currencies in the world where it is conducting trade.
- Any shift in the demand and supply of dollars (if we are talking about a fixed RMB to dollar rate) will threaten the fixed exchange rate and a government must intervene to ensure that the rate they established is maintained.

Ways a government can maintain a fixed exchange rate:

- One way to maintain a fixed rate is to manipulate the market through the use of **official reserves**. A central bank can buy its own currency using its reserves of foreign currencies.
- This increases demand for the domestic currency and the supply of foreign currencies keeps the domestic currency strong relative to others. This is called **currency intervention**.
- Central banks can also adjust interest rates to influence demand for its currency, thus its exchange rate. To keep the RMB cheap, China must keep interest rates in China relatively low to avoid a dramatic increase in Demand for the RMB, which would cause it to appreciate greatly.

Exchange Rates

Fixed exchange rates

Fixed exchange rate - Advantages

- Reduces uncertainty for foreign investors and trading partners
- Inflation must be kept low: if inflation accelerates, and exchange rates are not allowed to adjust, then demand for exports will fall drastically, harming the economy. Gov't must pay close attention to domestic price levels.
- Reduce speculation in foreign exchange markets

Fixed rate - Disadvantages

- Gov't must always adjust interest rates to keep exchange rate fixed. Constantly raising and lowering interest rates will cause fluctuations in investment and growth, jeopardizing the macroeconomic goal of full, stable employment.
- Gov't must maintain high levels of foreign reserves in order to buy and sell its own currency when to maintain its value. Foreign reserves earn no interest and lose value due to inflation; there is an opportunity cost of maintaining foreign reserves.
- Possibility that the rate may be set at the "wrong" level: Could make export firms uncompetitive in global market.
- Could cause international disagreement: If country fixes its exchange rate too low, other countries may complain that it's creating an unfair trade advantage (*think US complaints with China's currency controls!*)

Exchange Rates

Purchasing Power Parity

Purchasing power parity (PPP): *a theory which states that exchange rates between currencies are in equilibrium when their purchasing power is the same in each of the two countries.*

Big Mac Index

Burgernomics is based on the theory of purchasing-power parity, **the notion that a dollar should buy the same amount in all countries.** Thus in the long run, the exchange rate between two countries should move towards the rate that equalises the prices of an identical basket of goods and services in each country. Our "basket" is a McDonald's Big Mac, which is produced in about 120 countries. The Big Mac PPP is the exchange rate that would mean hamburgers cost the same in America as abroad. Comparing actual exchange rates with PPPs indicates whether a currency is under- or overvalued.

PPP and Exchange Rates blog posts to read and comment:

"Burgernomics and the PPP"



"The true causes of and solutions to inflation in China"



"The US dollar's decline in value may cause more harm than good for the US economy"



Purchasing Power Parity - "for the inebriated masses"



"How do changing interest rates affect exchange rates? The example of the RMB"

