EC 380: Lecture 16

Global Finance: Exchange Rates LR

Philip Economides
Winter 2024

Prologue

Recap

Previously

- National accounts and CA balance interconnected
- Deficit is not a sign of economic/geopolitical weakness
- A deficit implies borrowing from abroad, but investments can be very fruitful

Recap

Previously

- National accounts and CA balance interconnected
- Deficit is not a sign of economic/geopolitical weakness
- A deficit implies borrowing from abroad, but investments can be very fruitful

Today

- Exchange Rate Adjustments (SR + LR)

Topics

- **Reasons for holding foreign reserves, main institutions**

Topics

- **Reasons for holding foreign reserves, main institutions**
- Effect of $\Delta S, \Delta D$ of foreign currency on home currency

Topics

- **Reasons for holding foreign reserves, main institutions**
- Effect of $\Delta S, \Delta D$ of foreign currency on home currency
- Identify short, medium and long term forces that affect currency value

Topics

- **Reasons for holding foreign reserves, main institutions**
- Effect of $\Delta S, \Delta D$ of foreign currency on home currency
- Identify short, medium and long term forces that affect currency value
- Three rules of gold standard

Topics

- **Reasons for holding foreign reserves, main institutions**
- Effect of $\Delta S, \Delta D$ of foreign currency on home currency
- Identify short, medium and long term forces that affect currency value
- Three rules of gold standard
- Compare and contrast various exchange rate systems

Topics

- **Reasons for holding foreign reserves, main institutions**
- Effect of $\Delta S, \Delta D$ of foreign currency on home currency
- Identify short, medium and long term forces that affect currency value
- Three rules of gold standard
- Compare and contrast various exchange rate systems
- Price changes and real exchange rate interactions

Topics

- **Reasons for holding foreign reserves, main institutions**
- Effect of $\Delta S, \Delta D$ of foreign currency on home currency
- Identify short, medium and long term forces that affect currency value
- Three rules of gold standard
- Compare and contrast various exchange rate systems
- Price changes and real exchange rate interactions
- List conditions necessary to form single currency area

The Basics

What is an exchange rate?

The Basics

What is an exchange rate?

The is the exact amount of one currency received in exchange for a single unit of an alternative currency.

The Basics

What is an exchange rate?

The is the exact amount of one currency received in exchange for a single unit of an alternative currency.

The US-Ireland exchange rate can be expressed as either

- How many US dollars do I get for each euro exchanged?
- How many euros do I get for each US dollar exchanged?

The Basics

What is an exchange rate?

The is the exact amount of one currency received in exchange for a single unit of an alternative currency.

The US-Ireland exchange rate can be expressed as either

- How many US dollars do I get for each euro exchanged?
- How many euros do I get for each US dollar exchanged?

Normally we see the rates that do not account for transaction fees.

The Basics

Always remember to **invert your ratio** if given one exchange rate but asked for an exchange in the opposite direction.

The Basics

Always remember to **invert your ratio** if given one exchange rate but asked for an exchange in the opposite direction.

For example, suppose one dollar can be exchanged for 20.04 pesos.

The Basics

Always remember to **invert your ratio** if given one exchange rate but asked for an exchange in the opposite direction.

For example, suppose one dollar can be exchanged for $\mathbf{20.04}$ pesos.

$$\textbf{USD to Peso, Nominal Exchange Rate} = \frac{\text{Units of Money after exchange}}{\text{Units of Money before exchange}} = \frac{20.04}{1}$$

The Basics

One dollar can purchase 20.04 pesos. How many dollars can one peso be exchanged for at the exchange rate?

The Basics

One dollar can purchase 20.04 pesos. How many dollars can one peso be exchanged for at the exchange rate?

$$\textbf{Peso to USD, Nominal Exchange Rate} = \left(\frac{20.04}{1}\right)^{-1} = \frac{1}{20.04} \approx \mathbf{0.05c}$$

The Basics

One dollar can purchase 20.04 pesos. How many dollars can one peso be exchanged for at the exchange rate?

$$\textbf{Peso to USD, Nominal Exchange Rate} = \left(\frac{20.04}{1}\right)^{-1} = \frac{1}{20.04} \approx \mathbf{0.05c}$$

Individual units of pesos are not worth very much, nominally, in terms of dollars.

The Basics

One dollar can purchase 20.04 pesos. How many dollars can one peso be exchanged for at the exchange rate?

$$\textbf{Peso to USD, Nominal Exchange Rate} = \left(\tfrac{20.04}{1}\right)^{-1} = \tfrac{1}{20.04} \approx \mathbf{0.05c}$$

Individual units of pesos are not worth very much, nominally, in terms of dollars.

We cannot comment pesos being worth little though, since nominal wages in pesos may be high.

The Basics

Key economic events can adjust the value of a currency relative to other items it trades against.

The Basics

Key economic events can adjust the value of a currency relative to other items it trades against.

When a home currency is able to purchase more units of a foreign currency, the home currency is said to have **appreciated in value**.

The Basics

Key economic events can adjust the value of a currency relative to other items it trades against.

When a home currency is able to purchase more units of a foreign currency, the home currency is said to have **appreciated in value**.

When instead the amount of foreign currency that one can buy with a single unit of home currency declines, the home currency is said to have **depreciated in value**.

The Basics

For example, if the USD:GBP exchange rate changed from $\mathbf{0.87}$ to $\mathbf{0.85}$, the units of GBP that each USD can be exchanged for has fallen.

The Basics

For example, if the USD:GBP exchange rate changed from 0.87 to 0.85, the units of GBP that each USD can be exchanged for has fallen.

This implies that...

The Basics

For example, if the USD:GBP exchange rate changed from 0.87 to 0.85, the units of GBP that each USD can be exchanged for has fallen.

This implies that...

USD depreciated in value, relative to the GBP $\implies USD \downarrow$

GBP appreciated in value, relative to the USD $\implies GBP \uparrow$

The Basics

For example, if the USD:GBP exchange rate changed from 0.87 to 0.85, the units of GBP that each USD can be exchanged for has fallen.

This implies that...

USD depreciated in value, relative to the GBP $\implies USD \downarrow$

GBP appreciated in value, relative to the USD $\implies GBP \uparrow$

Check how you would calculate GBP:USD exchange rate

Currency Exchanges

Why hold other currencies?

Three Reasons

1) Enable trade and investment purposes.

> Traders (importers and exporters) and investors routinely transact in foreign currencies, either receiving or making payments in another country's money. Tourists are included in this category because they hold foreign exchange in order to buy foreign goods and services.

Currency Exchanges

Why hold other currencies?

Three Reasons

2) Interest Rate Arbitrage.

> Arbitrage conveys the idea of buying something where it is relatively cheap and selling it where it is relatively expensive. Arbitrageurs borrow money where interest rates are relatively low and lend it where rates are relatively high.

Keeps interest rates from diverging too far and also constitutes one of the primary linkages between national economies.

Currency Exchanges

Why hold other currencies?

Three Reasons

3) Speculative Action.

> Speculators are businesses that buy or sell a currency because they expect its price to rise or fall. They have no need for foreign exchange to buy goods or services or financial assets; rather, they hope to realize profits or avoid losses through correctly anticipating changes in a currency's market value.

If speculators view a currency as overvalued, they will sell it and drive down its value. If they guess wrong, however, they can lose a lot of money.

Currency Exchanges

This third point is a point of contention. Not everyone agrees that currencies should be traded speculatively, due to the panics these actions can trigger en-masse.

Currency Exchanges

This third point is a point of contention. Not everyone agrees that currencies should be traded speculatively, due to the panics these actions can trigger en-masse.

Speculation against currency can be **destabilizing**, sometimes leads to grossly over- or undervalued currency, major problem for that country.

Currency Exchanges

Four main participants in foreign currency markets

Currency Exchanges

Four main participants in foreign currency markets

- Retail customers
- Commercial banks
- Foreign exchange brokers
- Central banks

Currency Exchanges

Retail customers: Includes any firms/individuals that hold foreign exchange to engage in purchases, to adjust their portfolios, or to profit from expected future currency movements.

Usually buy and sell through a commercial bank.

Currency Exchanges

Retail customers: Includes any firms/individuals that hold foreign exchange to engage in purchases, to adjust their portfolios, or to profit from expected future currency movements.

Usually buy and sell through a commercial bank.

Commercial banks: Hold inventories of foreign currencies as part of services offered to customers. Usually have relationship with several foreign banks where they hold their balances of foreign currencies.

When a surplus accumulates or a shortage develops, the banks trade with each other to adjust their holdings.

Currency Exchanges

Not very common for US banks to trade currency with foreign banks.

Currency Exchanges

Not very common for US banks to trade currency with foreign banks.

US banks tend use **foreign exchange brokers**, middlemen between buyers and sellers that do not usually hold foreign exchange. Brokers can also serve as agents for **central banks**.

Currency Exchanges

Not very common for US banks to trade currency with foreign banks.

US banks tend use **foreign exchange brokers**, middlemen between buyers and sellers that do not usually hold foreign exchange. Brokers can also serve as agents for **central banks**.

> An individual or firm that needs foreign exchange calls its bank. The bank quotes a price at which it will sell the currency. The price is based on either (i) bank having account with bank in the country where currency used, or (ii) rate from foreign exchange broker. Broker keeps track of buyers and sellers of currencies and acts as deal maker.

Exchange Rate Risk

Multinational firms face risks in terms of market performance and value of revenue, given any degree of exchange rate volatility.

Exchange Rate Risk

Multinational firms face risks in terms of market performance and value of revenue, given any degree of exchange rate volatility.

Contracts defined in nominal foreign currency amounts face an **uncertainty** regarding how much these costs will scale or deflate upon reaching a payment date.

Exchange Rate Risk

Market answer: **forward exchange rates**

> The forward exchange rate sets the price of a currency that will be delivered in the future and these transactions take place on the forward market. Spot market represents any buying and selling taking place in the present.

Topics

- Reasons for holding foreign reserves, main institutions
- **Effect of $\Delta S, \Delta D$ of foreign currency on home currency**
- Identify short, medium and long term forces that affect currency value
- Three rules of gold standard
- Compare and contrast various exchange rate systems
- Price changes and real exchange rate interactions
- List conditions necessary to form single currency area

Foreign Exchange Market

Increased demand for USD raises its price (appreciation), while **increased supply** of USD will lower its price (depreciation).

Foreign Exchange Market

Increased demand for USD raises its price (appreciation), while **increased supply** of USD will lower its price (depreciation).

Under **fixed exchange rate system**, value of USD held constant through actions of Central bank that counteract the market forces.

Foreign Exchange Market

Increased demand for USD raises its price (appreciation), while **increased supply** of USD will lower its price (depreciation).

Under **fixed exchange rate system**, value of USD held constant through actions of Central bank that counteract the market forces.

Supply and demand analysis is useful tool for understanding the pressures on a currency regardless of the type of exchange rate system adopted.

Foreign Exchange Market

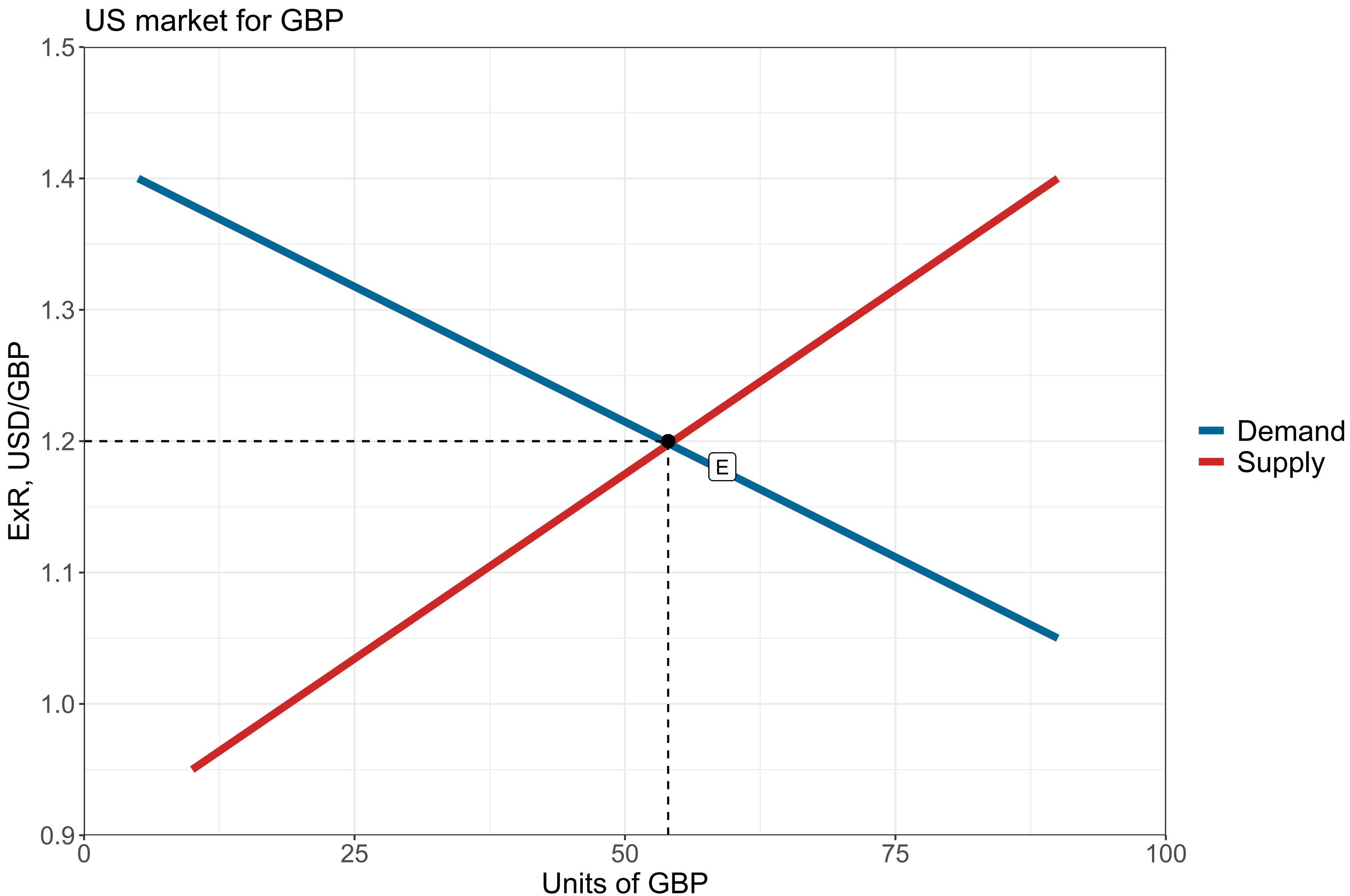
Increased demand for USD raises its price (appreciation), while **increased supply** of USD will lower its price (depreciation).

Under **fixed exchange rate system**, value of USD held constant through actions of Central bank that counteract the market forces.

Supply and demand analysis is useful tool for understanding the pressures on a currency regardless of the type of exchange rate system adopted.

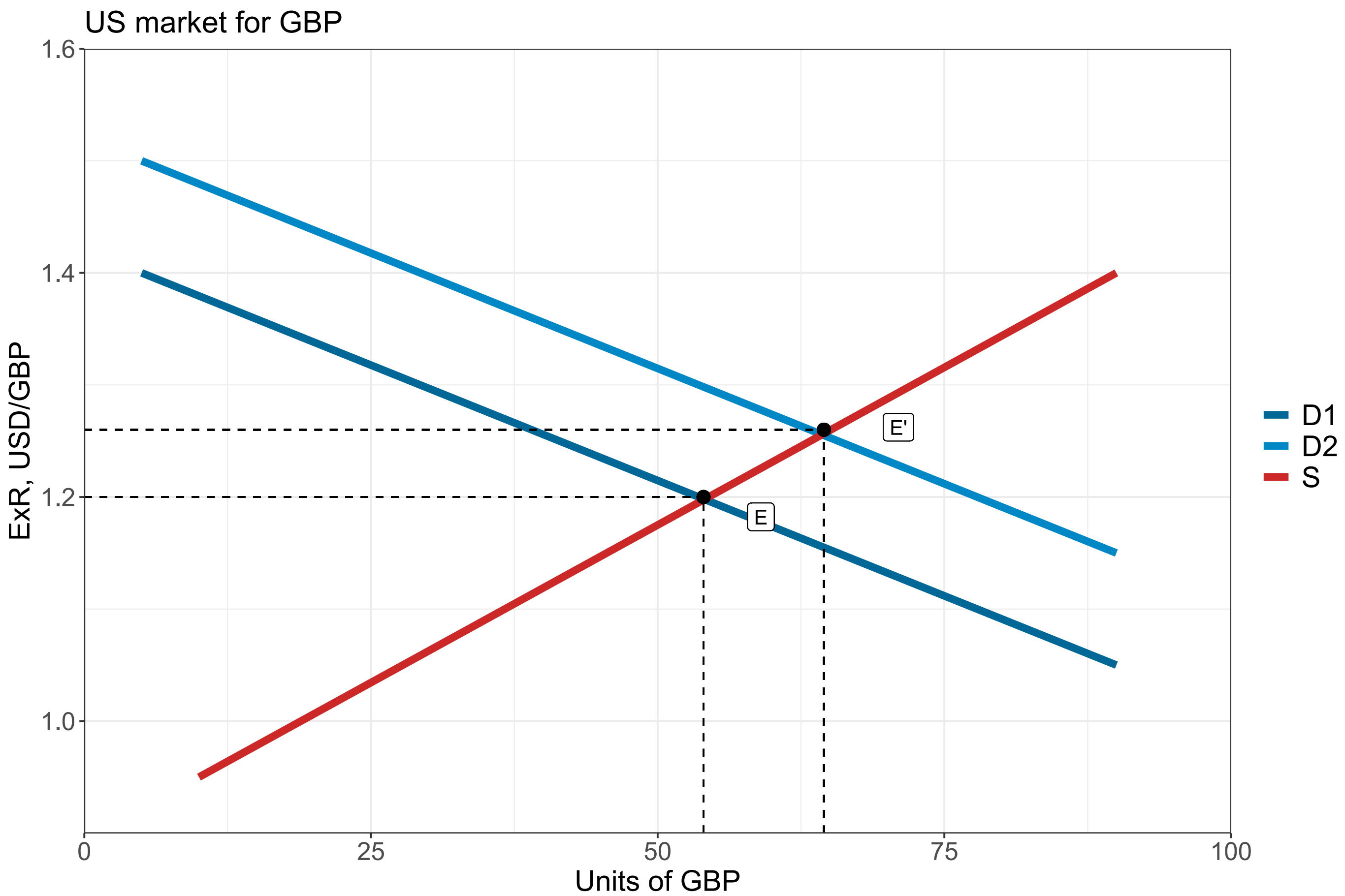
We begin with assumption that exchange rates are **completely flexible**.

FX Market: Flexible



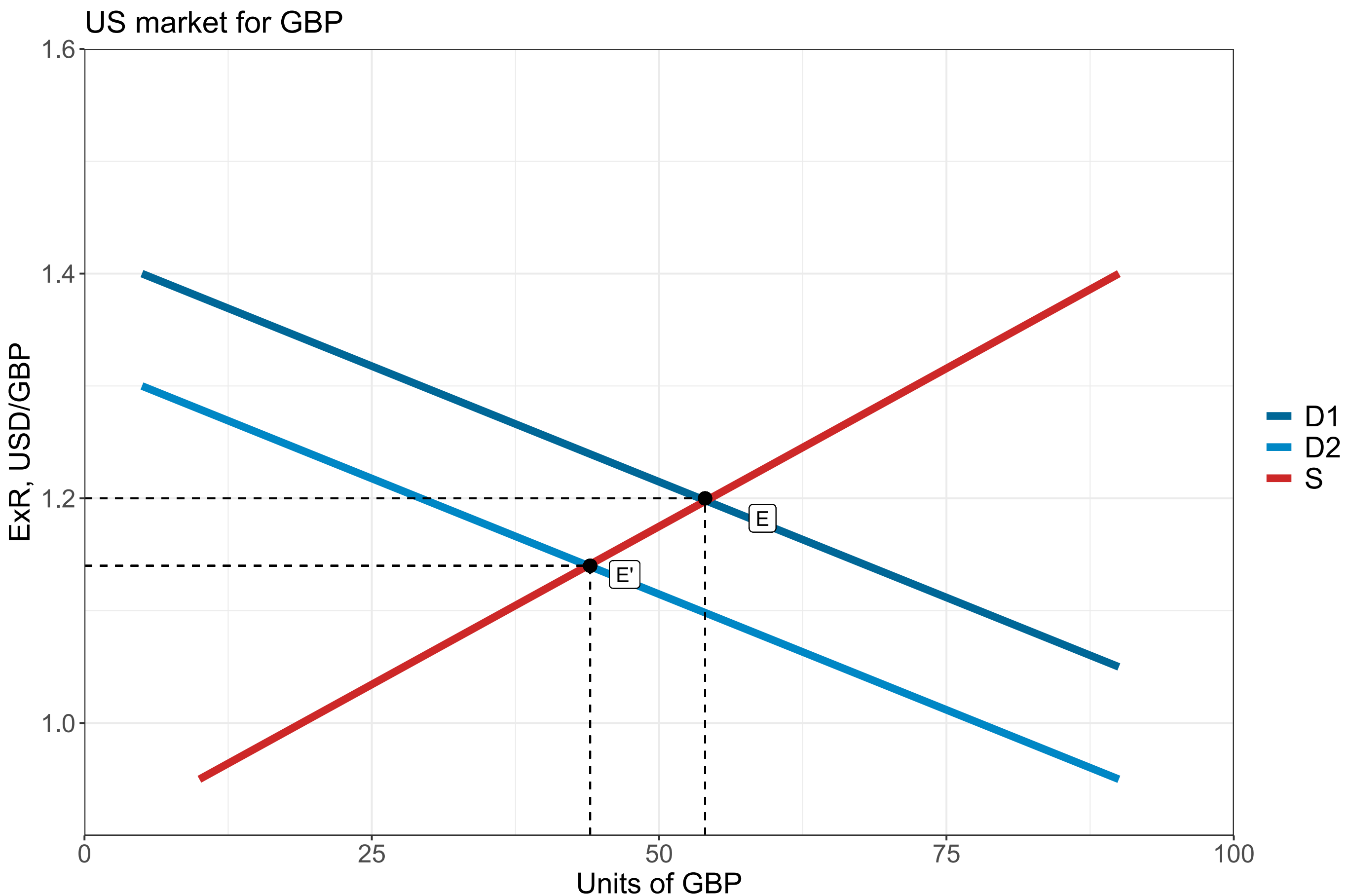
FX Market: Flexible

Increased demand for GBP in USA (D1 $\rightarrow$ D2)



FX Market: Flexible

Decreased demand for GBP in USA (D2 $\leftarrow$ D1)



FX Market: Long Run

FX Market: Long Run

In the extreme case, long run exchange rates should see all arbitrage opportunities eliminated.

FX Market: Long Run

In the extreme case, long run exchange rates should see all arbitrage opportunities eliminated.

> This will lead to bids for currencies playing out until the purchasing power of a specific amount of a given Home Currency will be equal to the purchasing power of its foreign currency exchanged amount when spent abroad.

FX Market: Long Run

In the extreme case, long run exchange rates should see all arbitrage opportunities eliminated.

> This will lead to bids for currencies playing out until the purchasing power of a specific amount of a given Home Currency will be equal to the purchasing power of its foreign currency exchanged amount when spent abroad.

This concept of equal purchasing power internationally for the same basket of goods is called **purchasing power parity (PPP)**.

FX Market: Long Run

In the extreme case, long run exchange rates should see all arbitrage opportunities eliminated.

> This will lead to bids for currencies playing out until the purchasing power of a specific amount of a given Home Currency will be equal to the purchasing power of its foreign currency exchanged amount when spent abroad.

This concept of equal purchasing power internationally for the same basket of goods is called **purchasing power parity (PPP)**.

In the short run, differences in purchasing power for the same bundle of goods exists.

PPP Example

Suppose basket of goods costs 1000 USD and 800 GBP.

PPP Example

Suppose basket of goods costs 1000 USD and 800 GBP.

According to PPP the exchange rate is \$1.25 dollars to the pound.

PPP Example

Suppose basket of goods costs 1000 USD and 800 GBP.

According to PPP the exchange rate is $1.25 dollars to the pound.

Imagine GBP:USD is $2. Goods priced at 800 GBP in UK sell for 500 GBP if imported from US and paid for in USD. **Arbitrage opportunity**.

PPP Example

Suppose basket of goods costs 1000 USD and 800 GBP.

According to PPP the exchange rate is $1.25 dollars to the pound.

Imagine GBP:USD is $2. Goods priced at 800 GBP in UK sell for 500 GBP if imported from US and paid for in USD. **Arbitrage opportunity**.

Brits begin exchanging GBP for USD, demand increases for USD **(appreciation)** until purchasing power parity is achieved.

PPP Example

A few unrealistic assumptions, consider these caveats.

- Requires that goods flow costlessly across international borders and that all goods and services can be traded.

In reality, there are transportation costs involved with moving goods and some goods and services are not traded.

- Bank fees for a currency broker when buying the needed pounds.
- Some of the goods and services are non-tradable, arbitrage is not possible.

PPP Example

Also, few nations have eliminated all their **barriers to the entry** of foreign goods and services.

> The merchant may face a tariff, import license fees, inspection fees, or some other barrier at the border that adds to his or her cost. In the limit, imports of the goods in question may be prohibited and goods arbitrage may be impossible at any price differential.

PPP Example

Also, few nations have eliminated all their **barriers to the entry** of foreign goods and services.

> The merchant may face a tariff, import license fees, inspection fees, or some other barrier at the border that adds to his or her cost. In the limit, imports of the goods in question may be prohibited and goods arbitrage may be impossible at any price differential.

Evidence shows PPP exerts its influence over exchange rates **only in the long run**.

Over time, lower transport costs, minimized import rules and regulations.

Summary

Recap

- Exchange rates determine price of foreign goods
- Numerous reasons to hold foreign reserves
- Shifts in exchange rates often mirror changes in demand and supply of currencies
- PPP holds only in LR

Next Time

- SR, Medium exchange rates and parity relationships