

# Exchange Rates: Application of Supply and Demand to Currencies

ECO 120: Global Macroeconomics

# Goals

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## Unit Goals

Interpret meaning of exchange rates

Use exchange rates to convert prices and values from one currency to another

Interpret changes in exchange rates in terms of currency's value against others

Use a supply and demand model of currencies to predict changes in exchange rates.

## Learning objectives

LO3: Use the supply and demand model for currencies to predict changes in exchange rates.

# Reading and Exercises

2/ 21

Textbook: Module 47

Canvas Quiz due Wednesday 11:59 PM.

Multiple-choice, 10 questions, unlimited attempts allowed, only best score counts

Homework/In-class Exercise due Friday 11:59 PM. We will work together in class on Thursday.

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# Exchange Rates

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**Nominal Exchange Rate:** how much of one currency can be traded for one unit of another currency.

Example:

The Mexican Peso / U.S. Dollar exchange rate is 20.67 pesos / dollar (Feb 6, 2022).

One U.S. dollar can be exchanged for 20.67 pesos.

There are two ways to express every exchange rate.

Same example:

The Mexican Peso / U.S. Dollar exchange rate is 0.0484 dollars / peso (Feb 6, 2022).

One Mexican Peso can be exchange for 0.0484 dollars (or almost 5 U.S. cents).

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# Changes in the Exchange Rate

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**Appreciation:** A currency appreciates against a second currency when one unit of the first currency can purchase *more* of the second currency.

**Depreciation:** A domestic currency depreciates against a second currency when one unit of the first currency can purchase *less* of the second currency.

Examples of an appreciation of the dollar:

Exchange rate increases from 20.67 pesos/dollar to 22.00 pesos/dollar.

Exchange rate decreases from 0.0484 dollars/peso to 0.0454 dollars/peso.

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## Converting From One Currency to Another

5/ 21

## MXN to USD

Suppose the price of a bike in Mexico is 8,440 MXN.

How much does this cost in USD?

$$8,440 \text{ MXN} \times \left( \frac{1 \text{ USD}}{20.67 \text{ MXN}} \right) \\ = 408.32 \text{ USD}$$

## USD to MXN

Suppose the price of a car in the U.S. 9,500 USD.

How much does this cost in MXN?

$$9,500 \text{ USD} \times \left( \frac{20.67 \text{ MXN}}{1 \text{ USD}} \right) \\ = 196,365 \text{ MXN}$$

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# Mexico: Mexican Pesos per U.S. Dollars



# Australia: U.S. Dollars per Australian Dollar

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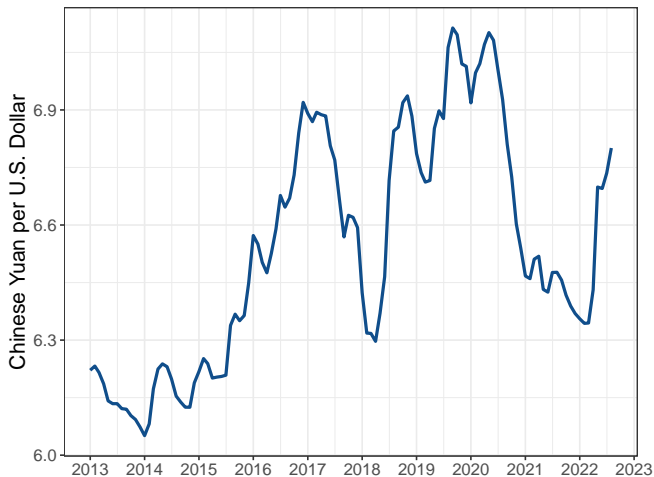
# Canada: Canadian Dollars per U.S. Dollar

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# China: Chinese Yuan per U.S. Dollar

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# Europe: U.S. Dollar per Euro

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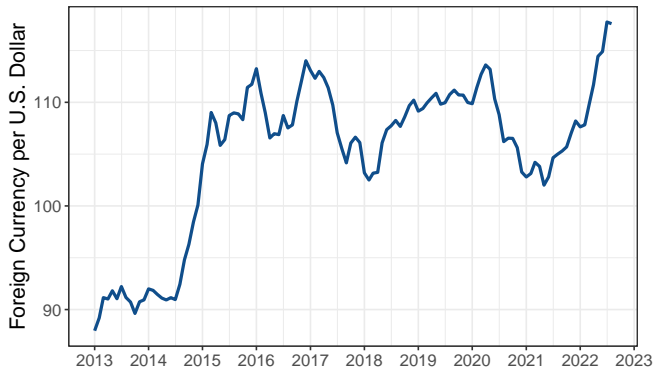
# Japan: Japanese Yen per U.S. Dollars

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# Trade-Weighted Index

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Weighted average of many currencies, based on level of trade.

Includes: Euro Area, Canada, Japan, United Kingdom, Switzerland, Australia, and Sweden.

# Demand for Currency

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Price of currency of interest (say U.S. Dollars):

Exchange rate expressed as foreign currency per one unit of currency of interest.

Example: price of dollars = Euros per U.S. dollar.

An increase in this exchange rate means an appreciation of the dollar.

Demand for currency is a *derived demand*. It depends on...

*foreign demand* for the country's goods.

*foreign demand* for the country's assets.

Financial assets could include stocks and bonds for companies in a country, government bonds from a country  
Assets may include foreign direct investment, when owners from a foreign country own significant portions of a company or a company's facilities located in a country.



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# Demand for Currency

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**Law of demand for foreign exchange:** as the value of the currency increases, the quantity of the currency demanded will fall.

**Exports effect:** if the currency is more expensive, the country's goods are more expensive.

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# Shifts in Demand

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When something *besides the exchange rate* influences the demand for a currency, then there is a *shift* in the demand.

Determinants of demand for currency:

Changes in demand for country's products.

Changes in interest rate differential.

Expectations of future exchange rate.

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# Supply of Currency

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A currency is supplied when holders of the currency try to sell it.

Supply of U.S. dollars happens when people in U.S. demand foreign currencies.

Supply of a currency is nothing more than the holders' demands for foreign currency.



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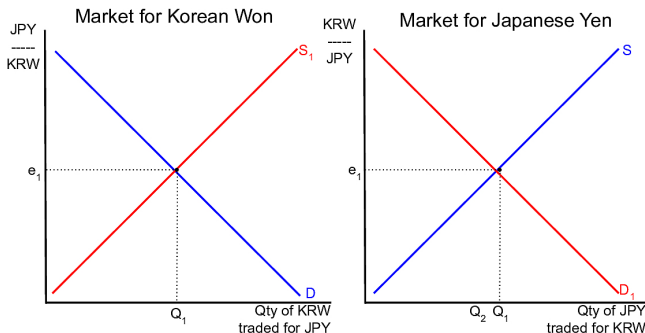
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## Example 1: Decrease in Income in Korea

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Japan and Korea are major trading partners. Suppose there is a decrease in incomes in Korea, leading to a decrease in demand for imported goods from Japan to Korea

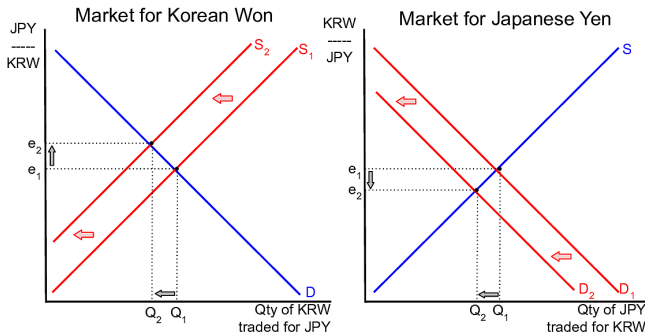


Two related markets. Market for Korean Won (Price= $\text{JPY}/\text{KRW}$ ) and Market for Japanese Yen (Price= $\text{KRW}/\text{JPY}$ )

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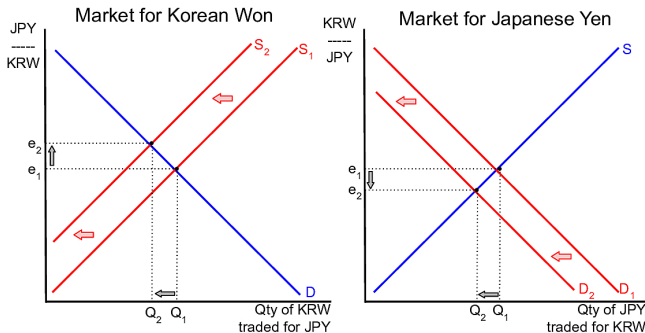


Decrease in Koreans' demand for Japanese Yen  
→ Decrease in Supply of Korean Won.

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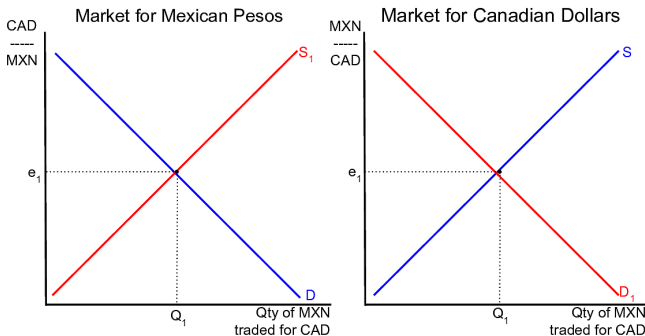


Korean Won appreciates against the Japanese Yen  
Equivalently, Japanese Yen depreciates against Korean Won

# Example: Reduction in Trade Restrictions

18/ 21

Suppose a trade agreement between Mexico and Canada results in a significant reduction in legal restrictions in Mexico, allowing more imports from Canada.

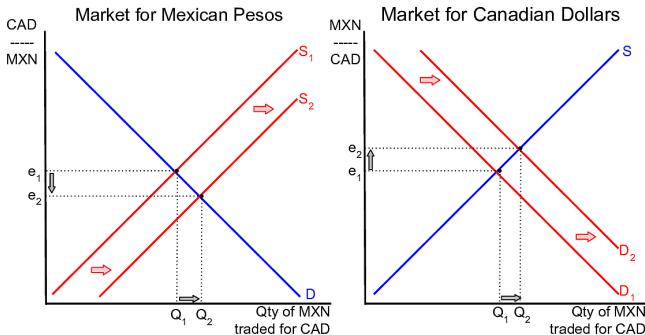


Two related markets. Market for Mexican Pesos (Price= $\text{CAD}/\text{MXN}$ )  
and Market for Canadian Dollars (Price= $\text{MXN}/\text{CAD}$ )

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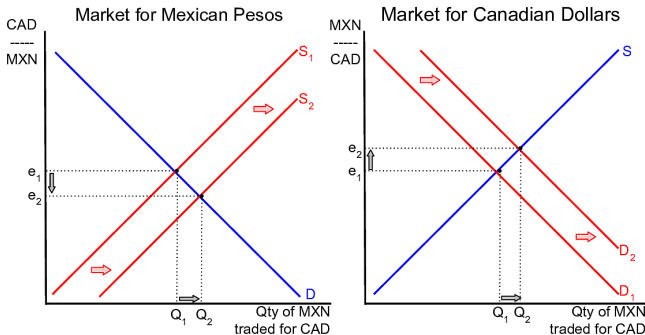
Increase in Mexican consumers' demand for Canadian Dollars

→ Increase in Supply of Mexican Pesos.

# Example: Reduction in Trade Restrictions

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Mexican Peso depreciates against the Canadian Dollar

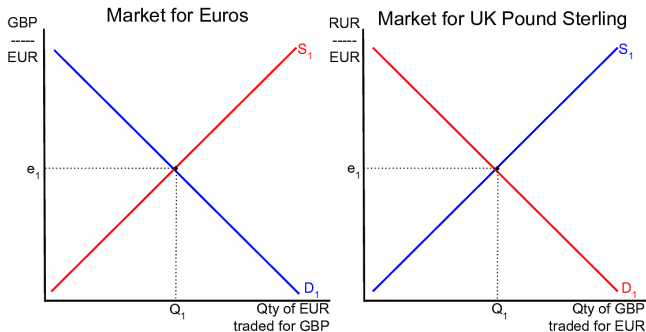
→ Canadian Dollar appreciates against the Mexican Peso



## Example: Increase in U.K. Interest Rate

19/ 21

Suppose interest rates in the United Kingdom increase, but stay the same in the Euro area.

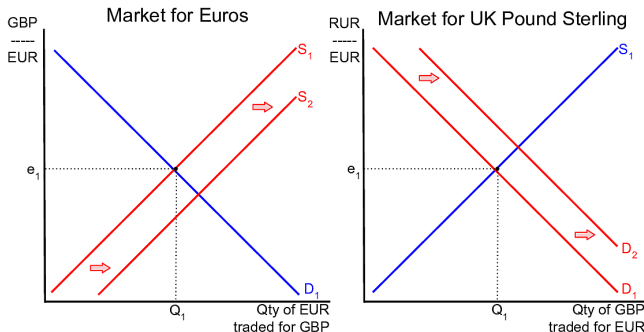


Two related markets. Market for Euro (Price=GBP/EUR)  
and Market for U.K. Pound Sterling (Price=EUR/GBP)

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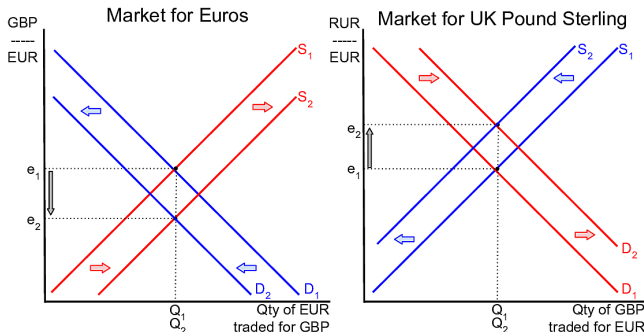
Increase in Euro-area investors' demand for U.K. Pounds

→ Increase in Supply of Euros

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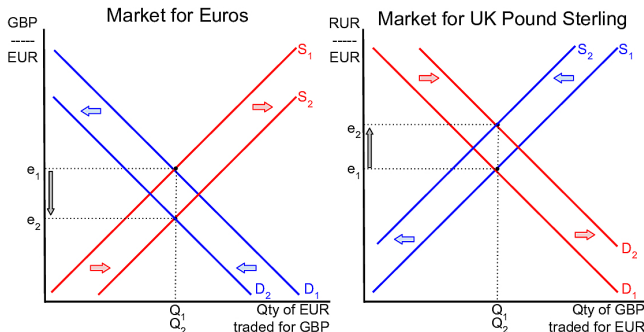
Decrease in British investor's demand for Euros

→ Decrease in Supply of U.K. Pounds.

## Example: Increase in U.K. Interest Rate

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Suppose interest rates in the United Kingdom increase, but stay the same in the Euro area.



Euro depreciates against the U.K. Pound Sterling

→ U.K. Pound Sterling appreciates against Euro

## Scholar Spotlight: Dr. Markéta Arltová

**The Impact of Economic Sanctions on Russian Economy and RUB/USD Exchange Rate**, *Journal of International Studies*, January 2018.

### Economic Sanctions, Exchange Rates, and Food Prices

International price of oil positively affects USD/RUB exchange rate

International sanctions following Crimea annexation decreased USD/RUB 2014-2016

Depreciation of RUB increased imported food prices

Russia counteracted exchange rate impact with import restrictions, including on food



**Dr. Markéta Arltová**

Associate Professor  
Department of Statistics and  
Probability  
University of Economics  
Prague, Czech Republic

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