Exchange Rates: Application of Supply and Demand to Currencies

ECO 120: Global Macroeconomics

Goals

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

Textbook: Module 47

Canvas Quiz due Wednesday 11:59 PM.
Multiple-choice, 10 questions, unlimited attempts allowed, only best score counts

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Exchange Rates

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 18.80 pesos / dollar (Jan 24, 2023).
One U.S. dollar can be exchanged for 18.80 pesos.

There are two ways to express every exchange rate.

Same example:

The Mexican Peso / U.S. Dollar exchange rate is 0.053 dollars / peso (Jan 24, 2023).
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Changes in the Exchange Rate

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 18.80 pesos/dollar to 20.00 pesos/dollar.
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Converting From One Currency to Another

MXN to USD

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

How much does this cost in USD?

$$8,440\ MXN \times \left(\frac{1\ USD}{18.80\ MXN}\right)$$

$$= 448.94\ USD$$

USD to MXN

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

How much does this cost in MXN?

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$$= 178,600\ MXN$$

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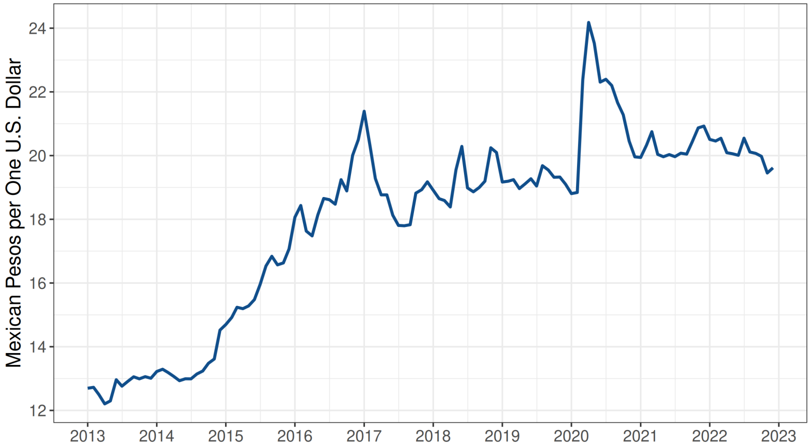
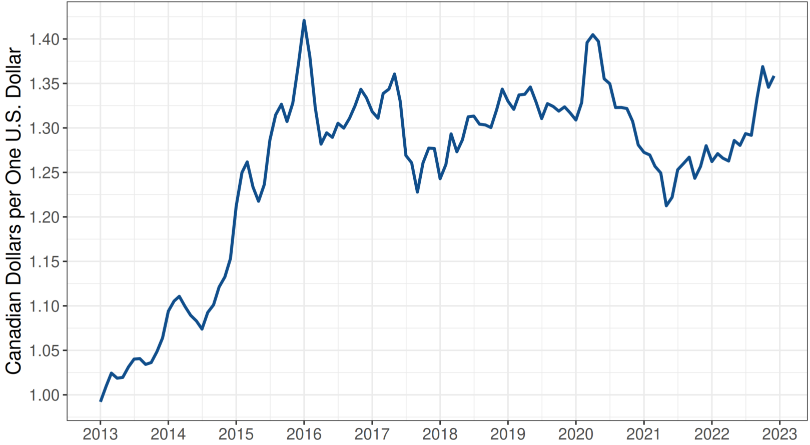
Mexican Pesos per U.S. Dollar

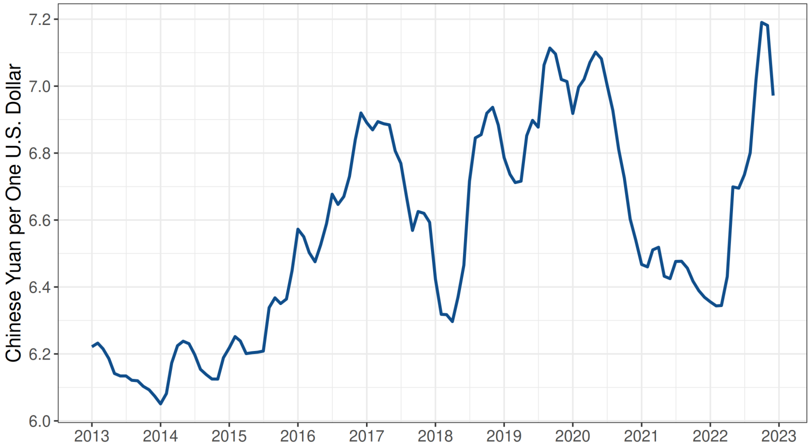


Australia: U.S. Dollars per Australian Dollar

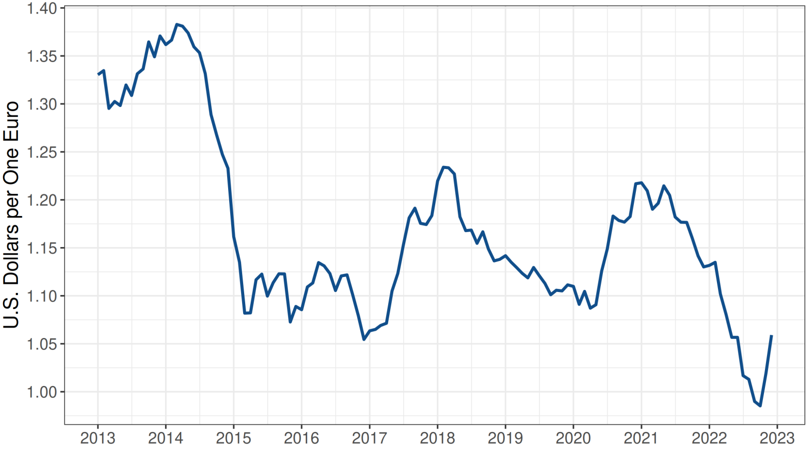
Canada: Canadian Dollars per U.S. Dollar



China: Chinese Yuan per U.S. Dollar



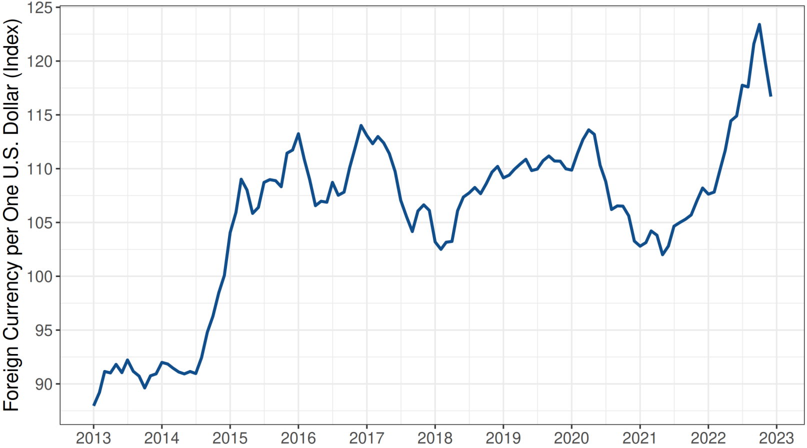
Europe: U.S. Dollar per Euro



Japan: Japanese Yen per U.S. Dollars

South Korea: Korean Won per U.S. Dollars

Trade-Weighted Index



Weighted average of many currencies, based on level of trade.
Includes: Euro Area, Canada, Japan, United Kingdom, Switzerland, Australia, and Sweden.

Demand for Currency

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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Shifts in Demand

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:

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

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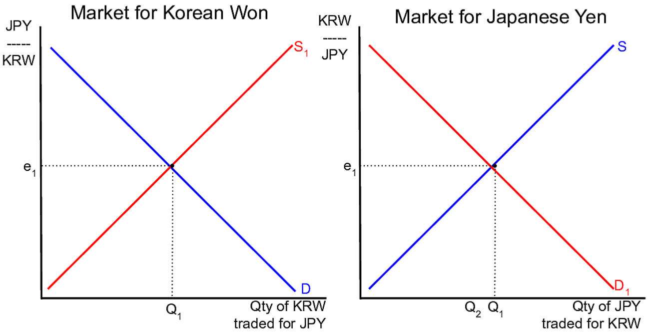
Example 1: Decrease in Income in Korea

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=JPY/KRW) and Market for Japanese Yen (Price=KRW/JPY)

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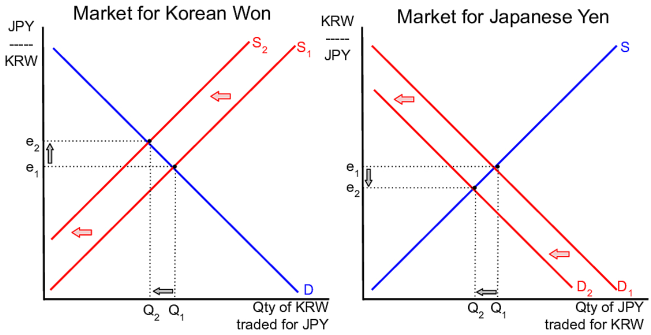

Decrease in Koreans' demand for Japanese Yen
→ Decrease in Supply of Korean Won.

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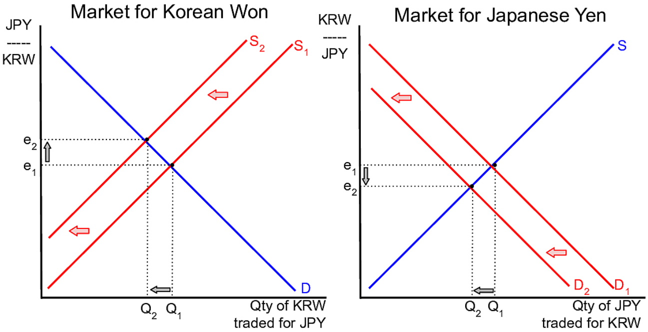
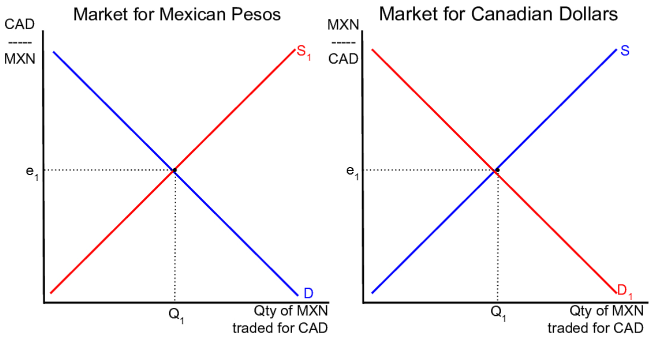


Korean Won appreciates against the Japanese Yen
Equivalently, Japanese Yen depreciates against Korean Won

Example: Reduction in Trade Restrictions

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=CAD/MXN)

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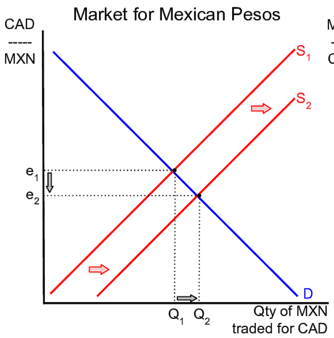

Increase in Mexican consumers' demand for Canadian Dollars

→ Increase in Supply of Mexican Pesos.

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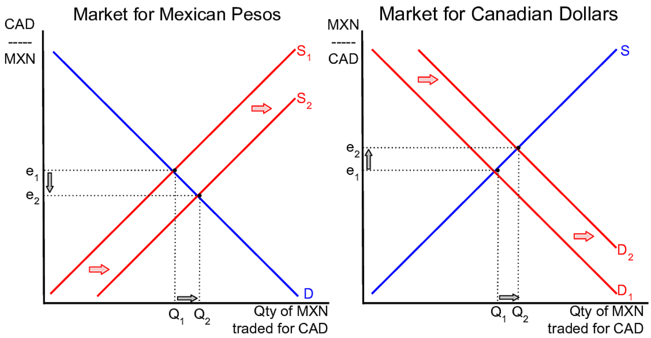
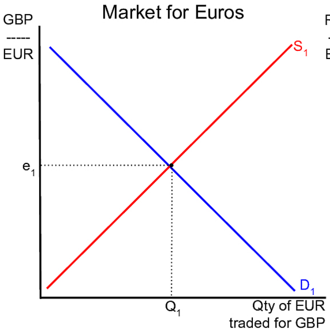


Mexican Peso depreciates against the Canadian Dollar

→ Canadian Dollar appreciates against the Mexican Peso

Example: Increase in U.K. Interest Rate

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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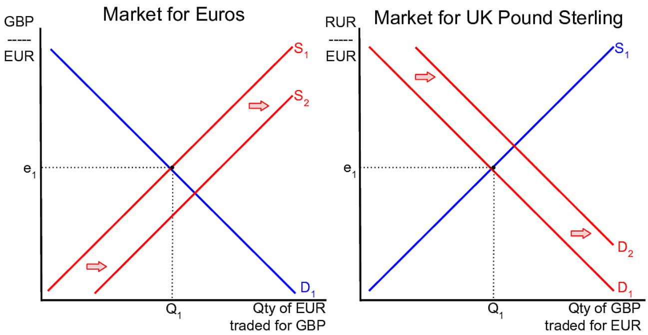

Increase in Euro-area investors' demand for U.K. Pounds

→ Increase in Supply of Euros

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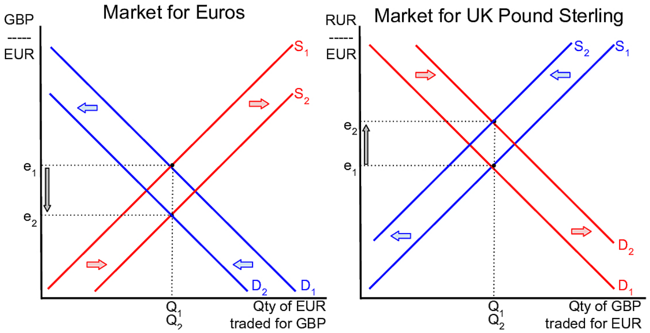

Decrease in British investor's demand for Euros

→ Decrease in Supply of U.K. Pounds.

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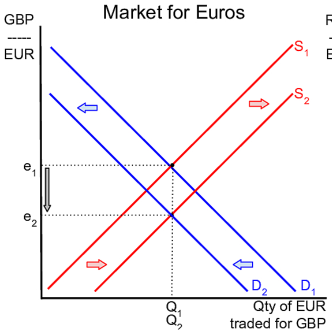

Euro depreciates against the U.K. Pound Sterling

→ 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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