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, 15 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

- **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 17.22 pesos / dollar (Feb 5, 2024).
  - One U.S. dollar can be exchanged for 17.22 pesos.
- There are two ways to express every exchange rate.
- Same example:
  - The Mexican Peso / U.S. Dollar exchange rate is 0.058 dollars / peso (Feb 5, 2024).
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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:
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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?

$$8,440\ MXN \times \left(\frac{1\ USD}{17.22\ MXN}\right)$$

$$= 490.13\ USD$$

USD to MXN

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

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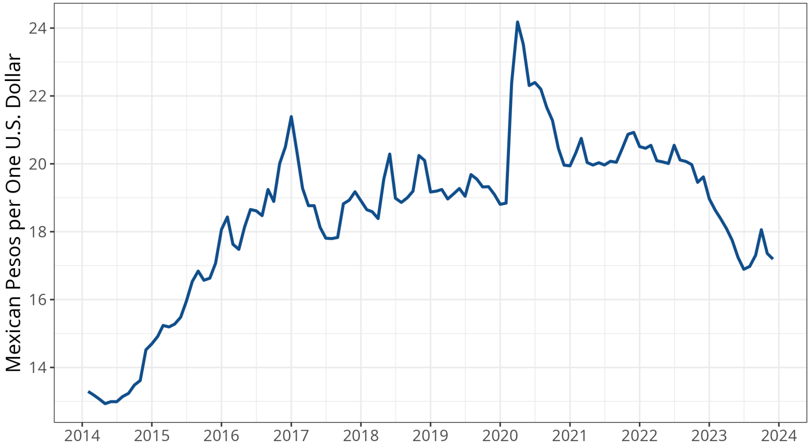
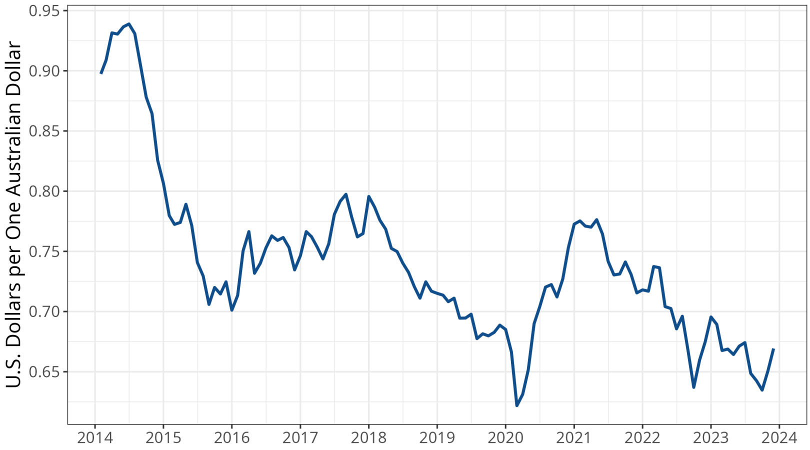
Mexican Pesos per U.S. Dollar

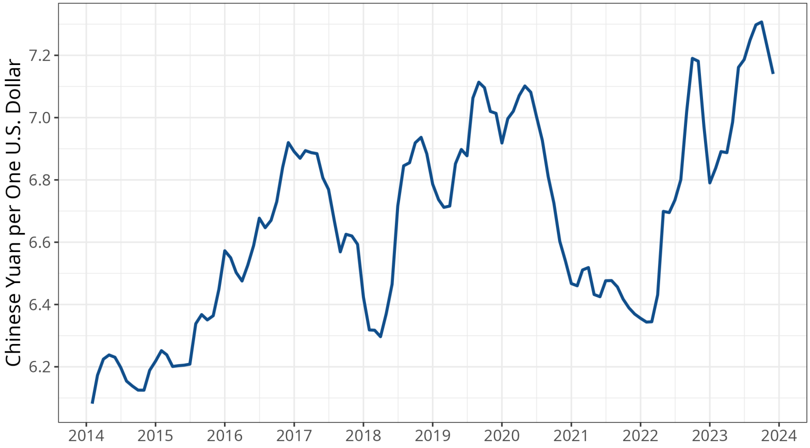


Australia: U.S. Dollars per Australian Dollar



Canada: Canadian Dollars per U.S. Dollar

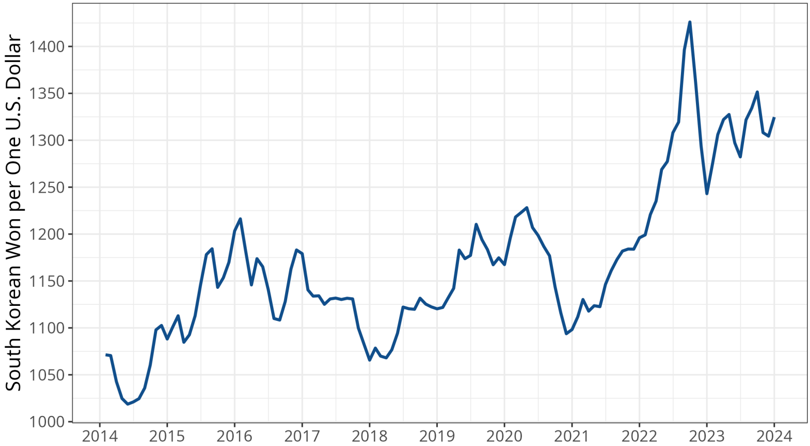
China: Chinese Yuan per U.S. Dollar



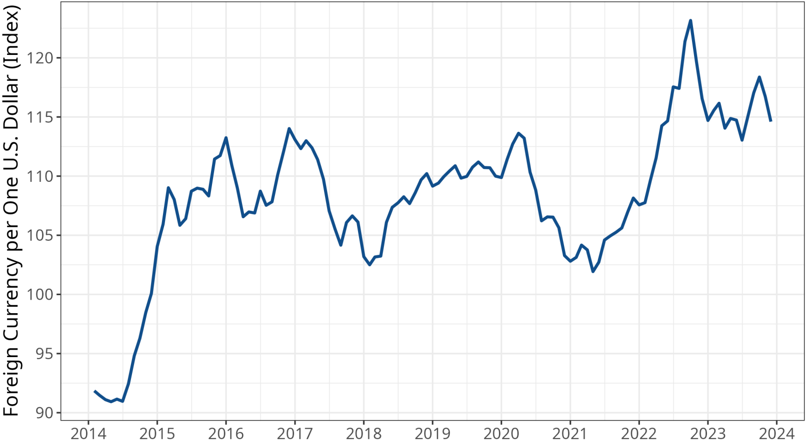
Europe: U.S. Dollar per Euro

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

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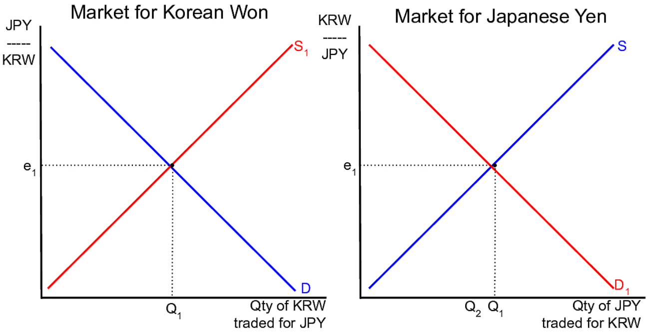
Japan and Korea are major trading partners. Suppose there is a decrease in incomes in Korea, leading to a decrease in demand for imported goods from Japan to Korea



Two related markets. Market for Korean Won (Price=JPY/KRW) and Market for Japanese Yen (Price=KRW/JPY)

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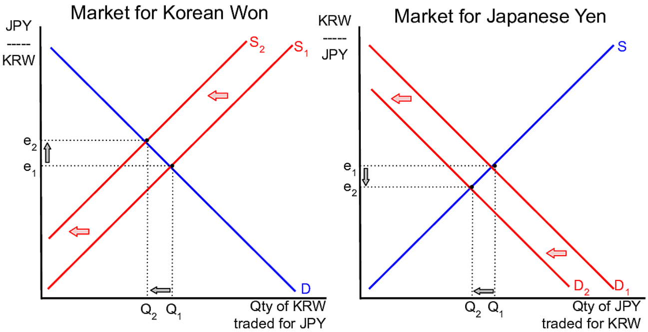

Decrease in Koreans' demand for Japanese Yen
$\rightarrow$ Decrease in Supply of Korean Won.

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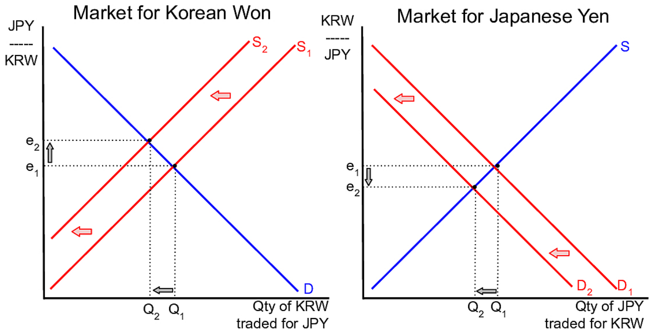
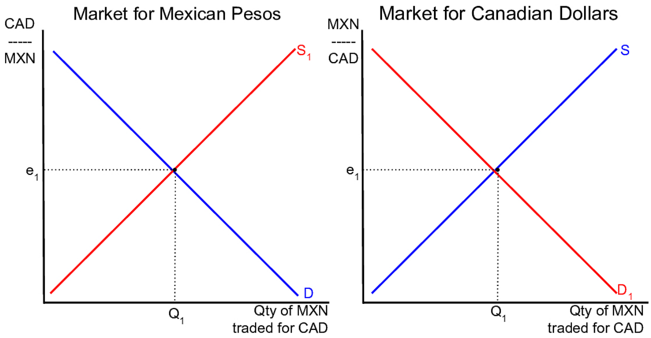


Korean Won appreciates against the Japanese Yen
Equivalently, Japanese Yen depreciates against Korean Won

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.



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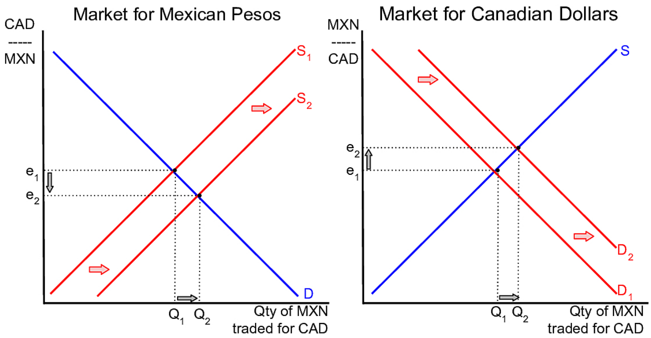

Increase in Mexican consumers' demand for Canadian Dollars

→ Increase in Supply of Mexican Pesos.

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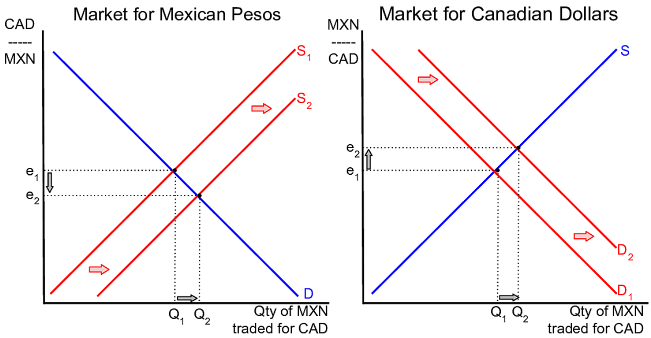
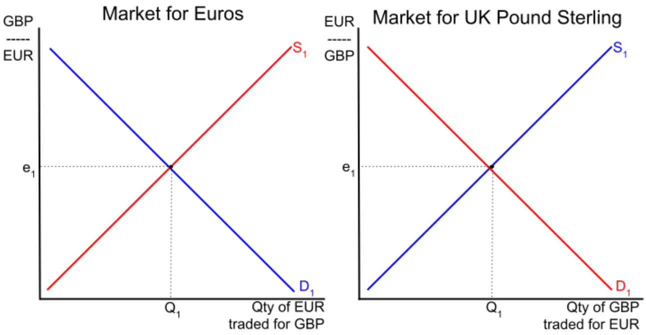


Mexican Peso depreciates against the Canadian Dollar

→ 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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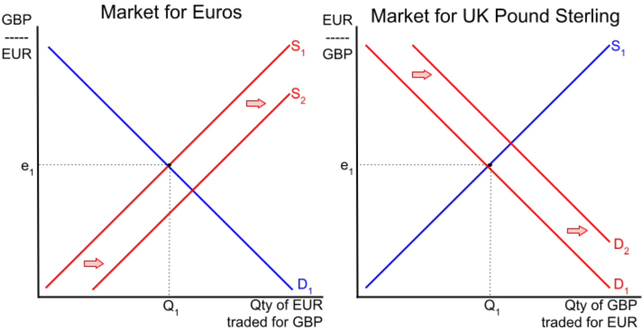

Increase in Euro-area investors' demand for U.K. Pounds

→ Increase in Supply of Euros

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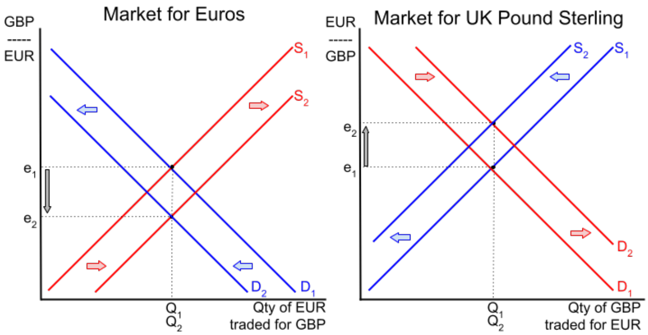

Decrease in British investor's demand for Euros

→ Decrease in Supply of U.K. Pounds.

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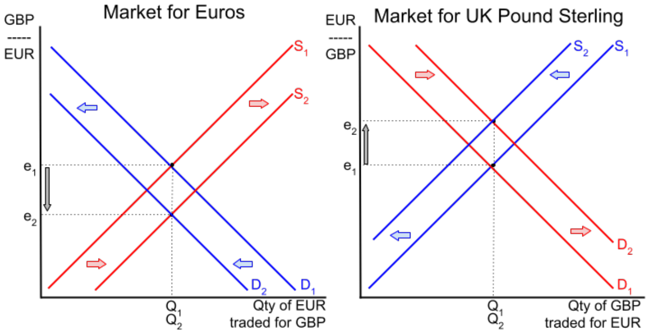


Euro depreciates against the U.K. Pound Sterling

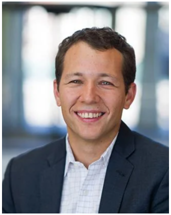
→ U.K. Pound Sterling appreciates against Euro

Spotlight: Oleg Itskhoki & Dmitry Mukhin

Sanctions and the Exchange Rate, *Intereconomics: Review of European Economic Policy*, 2022.

Impact of Sanctions Depends

- Sanctions that prevent financial investment in the country cause the country's currency to depreciate
- Sanctions that limit availability of imports into a country cause the country's currency to appreciate
- Explains both upward and downward movements in USD / RUB exchange rate following Russia's February 2022 invasion of Ukraine




Dr. Oleg Itskhoki (left)
Professor of Economics
University of California-Los Angeles

Dr. Dmitry Mukhin (right)
Asst Professor of Economics
London School of Economics

Russia: Russia Ruble per U.S. Dollars

Scholar Spotlight: Markéta Arltová

The Impact of Economic Sanctions on Russian Economy and RUB/USD Exchange Rate, *Journal of International Studies*, 2018.
(with Ladislav Tyll and Karel Pernica)

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

Reading and Exercises

- Textbook: Module 47
- **Canvas Quiz due Wednesday 11:59 PM**. Multiple-choice, 15 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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