

Exchange Rates: Application of Supply and Demand

ECO 120: Global Macroeconomics

Goals

- Specific goals:
 - Learn how interpret exchange rates.
 - Learn how to use supply and demand to interpret exchange rates.
 - Learn how countries can choose to control exchange rates.
- Learning objectives:
 - LO2: Apply the supply and demand model to predict quantity and price outcomes of a number of different markets, including markets for currencies, labor, and loanable funds.
 - GELO2: Students will be able to construct and use models to analyze, explain, or predict phenomena.

Relevant Reading

2 / 19

- Module 42

Exchange Rates

3 / 19

- **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 13.222 pesos / dollar (Jan 1 2014).
 - One U.S. dollar can be exchanged for 13.22 pesos.
- There are two ways to express every exchange rate.
- Same example:
 - The Mexican Peso / U.S. Dollar exchange rate is 0.0756 dollars / peso (Jan 1 2014).
 - One Mexican Peso can be exchange for 0.0756 dollars (or between 7-8 U.S. cents).

Exchange Rates

3 / 19

- **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 13.222 pesos / dollar (Jan 1 2014).
 - One U.S. dollar can be exchanged for 13.22 pesos.
- There are two ways to express every exchange rate.
- Same example:
 - The Mexican Peso / U.S. Dollar exchange rate is 0.0756 dollars / peso (Jan 1 2014).
 - One Mexican Peso can be exchange for 0.0756 dollars (or between 7-8 U.S. cents).

Exchange Rates

3 / 19

- **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 13.222 pesos / dollar (Jan 1 2014).
 - One U.S. dollar can be exchanged for 13.22 pesos.
- There are two ways to express every exchange rate.
- Same example:
 - The Mexican Peso / U.S. Dollar exchange rate is 0.0756 dollars / peso (Jan 1 2014).
 - One Mexican Peso can be exchange for 0.0756 dollars (or between 7-8 U.S. cents).

Exchange Rates

3 / 19

- **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 13.222 pesos / dollar (Jan 1 2014).
 - One U.S. dollar can be exchanged for 13.22 pesos.
- There are two ways to express every exchange rate.
- Same example:
 - The Mexican Peso / U.S. Dollar exchange rate is 0.0756 dollars / peso (Jan 1 2014).
 - One Mexican Peso can be exchange for 0.0756 dollars (or between 7-8 U.S. cents).

Exchange Rates

3 / 19

- **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 13.222 pesos / dollar (Jan 1 2014).
 - One U.S. dollar can be exchanged for 13.22 pesos.
- There are two ways to express every exchange rate.
- Same example:
 - The Mexican Peso / U.S. Dollar exchange rate is 0.0756 dollars / peso (Jan 1 2014).
 - One Mexican Peso can be exchange for 0.0756 dollars (or between 7-8 U.S. cents).

Exchange Rates

3 / 19

- **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 13.222 pesos / dollar (Jan 1 2014).
 - One U.S. dollar can be exchanged for 13.22 pesos.
- There are two ways to express every exchange rate.
- Same example:
 - The Mexican Peso / U.S. Dollar exchange rate is 0.0756 dollars / peso (Jan 1 2014).
 - One Mexican Peso can be exchange for 0.0756 dollars (or between 7-8 U.S. cents).

Exchange Rates

3 / 19

- **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 13.222 pesos / dollar (Jan 1 2014).
 - One U.S. dollar can be exchanged for 13.22 pesos.
- There are two ways to express every exchange rate.
- Same example:
 - The Mexican Peso / U.S. Dollar exchange rate is 0.0756 dollars / peso (Jan 1 2014).
 - One Mexican Peso can be exchange for 0.0756 dollars (or between 7-8 U.S. cents).

Exchange Rates

3 / 19

- **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 13.222 pesos / dollar (Jan 1 2014).
 - One U.S. dollar can be exchanged for 13.22 pesos.
- There are two ways to express every exchange rate.
- Same example:
 - The Mexican Peso / U.S. Dollar exchange rate is 0.0756 dollars / peso (Jan 1 2014).
 - One Mexican Peso can be exchange for 0.0756 dollars (or between 7-8 U.S. cents).

Changes in the Exchange Rate

4 / 19

- **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 13.222 pesos/dollar to 15.4 pesos/dollar.
 - Exchange rate decreases from 0.0756 dollars/peso to 0.065 dollars/peso.

Changes in the Exchange Rate

4 / 19

- **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 13.222 pesos/dollar to 15.4 pesos/dollar.
 - Exchange rate decreases from 0.0756 dollars/peso to 0.065 dollars/peso.

Changes in the Exchange Rate

4 / 19

- **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 13.222 pesos/dollar to 15.4 pesos/dollar.
 - Exchange rate decreases from 0.0756 dollars/peso to 0.065 dollars/peso.

Changes in the Exchange Rate

4 / 19

- **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 13.222 pesos/dollar to 15.4 pesos/dollar.
 - Exchange rate decreases from 0.0756 dollars/peso to 0.065 dollars/peso.

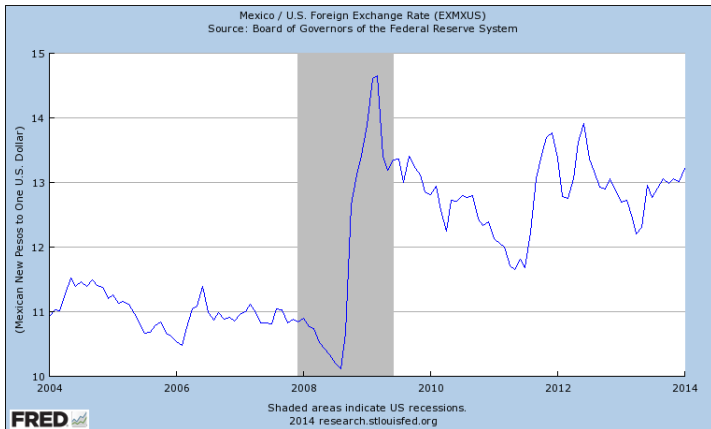
Changes in the Exchange Rate

4 / 19

- **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 13.222 pesos/dollar to 15.4 pesos/dollar.
 - Exchange rate decreases from 0.0756 dollars/peso to 0.065 dollars/peso.

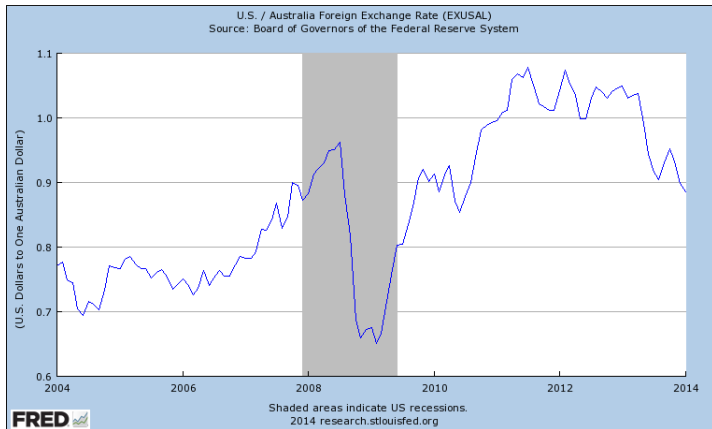
Mexico: Mexican Pesos per U.S. Dollars

5 / 19



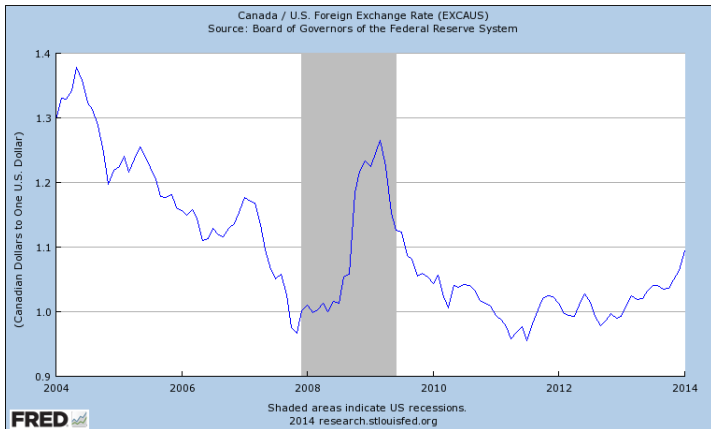
Australia: U.S. Dollars per Australian Dollar

6 / 19



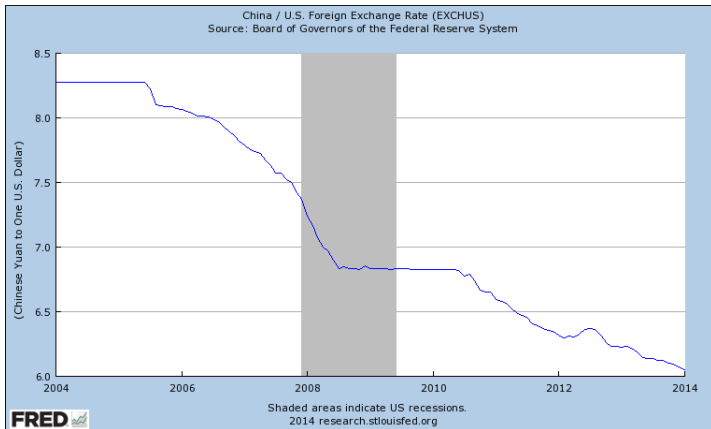
Canada: Canadian Dollars per U.S. Dollar

7 / 19



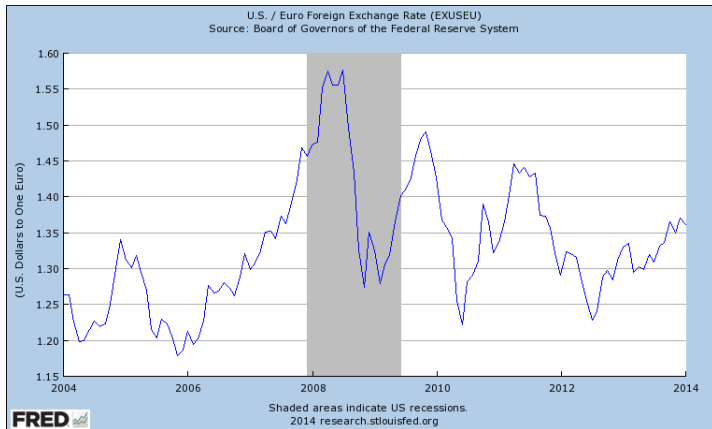
China: Chinese Yuan per U.S. Dollar

8 / 19



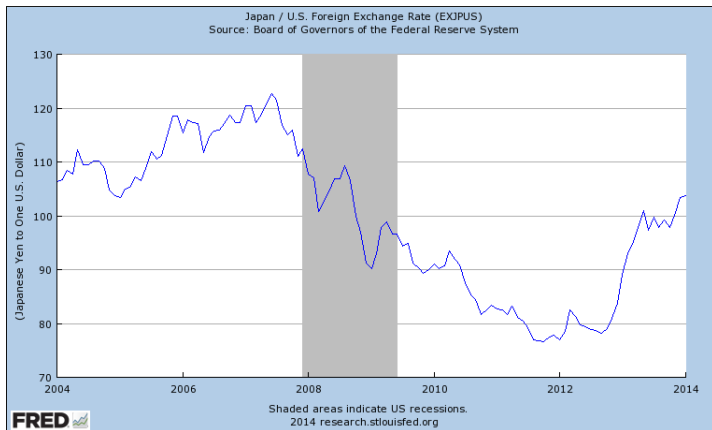
Europe: U.S. Dollar per Euro

9 / 19



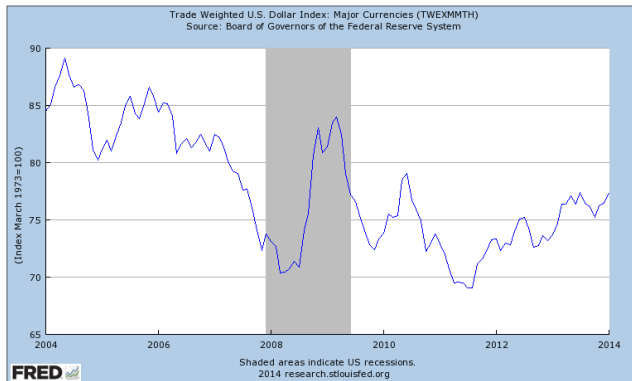
Japan: Japanese Yen per U.S. Dollars

10/ 19



Trade-Weighted Index

11/ 19



- Foreign Currency per U.S. Dollar.
- Weighted Average of many currencies, based on level of trade.
- Includes: Euro Area, Canada, Japan, United Kingdom, Switzerland, Australia, and Sweden.

Demand for Currency

12/ 19

- 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.

Demand for Currency

12/ 19

- 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.

Demand for Currency

12/ 19

- 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.

Demand for Currency

12/ 19

- 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.

Demand for Currency

12/ 19

- 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.

Demand for Currency

12/ 19

- 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.

Demand for Currency

12/ 19

- 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.

Demand for Currency

13/ 19

- **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.

Demand for Currency

- **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.

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:
 - Changes in demand for country's products.
 - Changes in interest rate differential.
 - Expectations of future exchange rate.

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:
 - Changes in demand for country's products.
 - Changes in interest rate differential.
 - Expectations of future exchange rate.

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:
 - Changes in demand for country's products.
 - Changes in interest rate differential.
 - Expectations of future exchange rate.

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:
 - Changes in demand for country's products.
 - Changes in interest rate differential.
 - Expectations of future exchange rate.

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:
 - Changes in demand for country's products.
 - Changes in interest rate differential.
 - Expectations of future exchange rate.

Supply of Currency

- 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.

Supply of Currency

- 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.

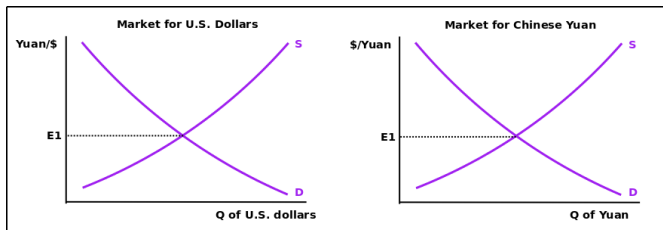
Supply of Currency

15 / 19

- 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.

Example: Trade Restrictions on Chinese Imports

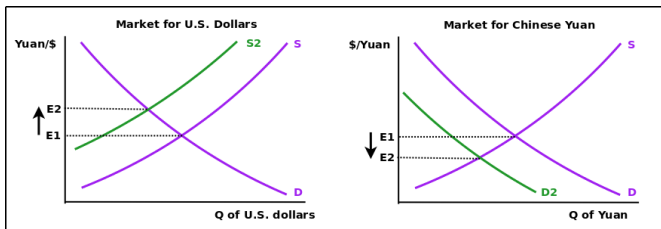
Suppose there is an increase in trade restrictions on Chinese imports that results in fewer American imports of Chinese Products.



Two related markets. Market for Dollars (Price=Yuan/\$) and Market for Yuan (Price=\$/Yuan)

Example: Trade Restrictions on Chinese Imports

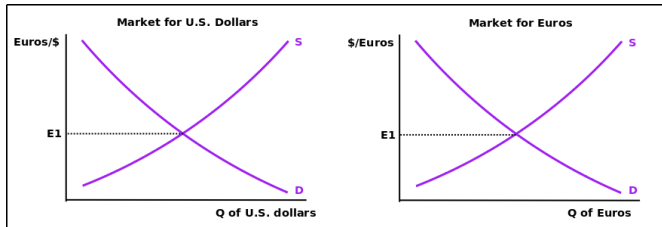
Suppose there is an increase in trade restrictions on Chinese imports that results in fewer American imports of Chinese Products.



Decrease in Americans' demand for Chinese Yuan
→ Decrease in Supply of U.S. Dollars.

Example: Decrease in U.S. Interest Rate

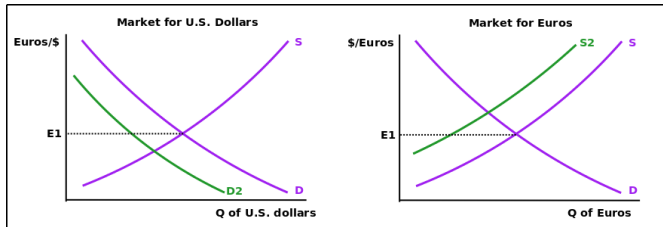
Since the onset of the recession in the U.S. the interest rate has decreased more in the United States than in Europe.



Two related markets. Market for Dollars (Price=Euros/\$) and Market for Euros (Price=\$/Euro)

Example: Decrease in U.S. Interest Rate

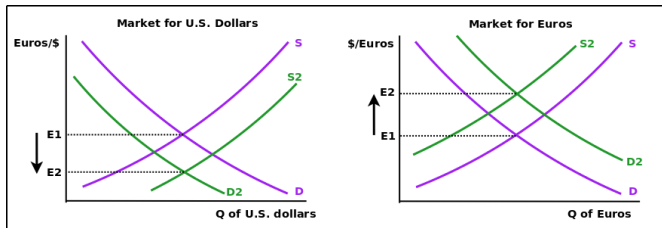
Since the onset of the recession in the U.S. the interest rate has decreased more in the United States than in Europe.



Decrease in Europeans' demand for U.S. dollars
→ Decrease in Supply of Euros.

Example: Decrease in U.S. Interest Rate

Since the onset of the recession in the U.S. the interest rate has decreased more in the United States than in Europe.



Increase in Americans' demand for Euros
→ Decrease in Supply of U.S. Dollars.

Central Banks

18 / 19

- Each country's central bank may also be interested in influencing the exchange rate.
- **Central Bank:** (Semi-) government institution that attempts to regulate the health of the macro-economy by influencing the country's money supply and banking rules.
- **Federal Reserve (aka Fed):** United States central bank.
- Central banks across the world hold reserves of their own currency, foreign currency, and foreign and domestic assets.

Central Banks

18 / 19

- Each country's central bank may also be interested in influencing the exchange rate.
- **Central Bank:** (Semi-) government institution that attempts to regulate the health of the macro-economy by influencing the country's money supply and banking rules.
- **Federal Reserve (aka Fed):** United States central bank.
- Central banks across the world hold reserves of their own currency, foreign currency, and foreign and domestic assets.

Central Banks

18 / 19

- Each country's central bank may also be interested in influencing the exchange rate.
- **Central Bank:** (Semi-) government institution that attempts to regulate the health of the macro-economy by influencing the country's money supply and banking rules.
- **Federal Reserve (aka Fed):** United States central bank.
- Central banks across the world hold reserves of their own currency, foreign currency, and foreign and domestic assets.

Central Banks

18 / 19

- Each country's central bank may also be interested in influencing the exchange rate.
- **Central Bank:** (Semi-) government institution that attempts to regulate the health of the macro-economy by influencing the country's money supply and banking rules.
- **Federal Reserve (aka Fed):** United States central bank.
- Central banks across the world hold reserves of their own currency, foreign currency, and foreign and domestic assets.

Central Bank Exchange Rate Policy

- The Fed can increase the supply of dollars by...
 - printing more money.
 - buying assets like Treasury Bills.
 - buying foreign currency.
 - buying foreign government bonds.
- What would be the effect on the U.S./Euro exchange rate if the government bought Treasury Bills?
- What would be the effect on the U.S./Euro exchange rate if the government sold Euros it owned?

Central Bank Exchange Rate Policy

- The Fed can increase the supply of dollars by...
 - printing more money.
 - buying assets like Treasury Bills.
 - buying foreign currency.
 - buying foreign government bonds.
- What would be the effect on the U.S./Euro exchange rate if the government bought Treasury Bills?
- What would be the effect on the U.S./Euro exchange rate if the government sold Euros it owned?

Central Bank Exchange Rate Policy

- The Fed can increase the supply of dollars by...
 - printing more money.
 - buying assets like Treasury Bills.
 - buying foreign currency.
 - buying foreign government bonds.
- What would be the effect on the U.S./Euro exchange rate if the government bought Treasury Bills?
- What would be the effect on the U.S./Euro exchange rate if the government sold Euros it owned?

Central Bank Exchange Rate Policy

- The Fed can increase the supply of dollars by...
 - printing more money.
 - buying assets like Treasury Bills.
 - buying foreign currency.
 - buying foreign government bonds.
- What would be the effect on the U.S./Euro exchange rate if the government bought Treasury Bills?
- What would be the effect on the U.S./Euro exchange rate if the government sold Euros it owned?

Central Bank Exchange Rate Policy

- The Fed can increase the supply of dollars by...
 - printing more money.
 - buying assets like Treasury Bills.
 - buying foreign currency.
 - buying foreign government bonds.
- What would be the effect on the U.S./Euro exchange rate if the government bought Treasury Bills?
- What would be the effect on the U.S./Euro exchange rate if the government sold Euros it owned?

Central Bank Exchange Rate Policy

- The Fed can increase the supply of dollars by...
 - printing more money.
 - buying assets like Treasury Bills.
 - buying foreign currency.
 - buying foreign government bonds.
- What would be the effect on the U.S./Euro exchange rate if the government bought Treasury Bills?
- What would be the effect on the U.S./Euro exchange rate if the government sold Euros it owned?

Central Bank Exchange Rate Policy

- The Fed can increase the supply of dollars by...
 - printing more money.
 - buying assets like Treasury Bills.
 - buying foreign currency.
 - buying foreign government bonds.
- What would be the effect on the U.S./Euro exchange rate if the government bought Treasury Bills?
- What would be the effect on the U.S./Euro exchange rate if the government sold Euros it owned?