The Supply and Demand for Foreign Exchange

Since the exchange rate is simply a price, it can be analyzed using a model of supply and demand. The exchange market will be analyzed as the supply and demand to exchange dollars for foreign currency (euros, pesos, yen, etc). The intersection of supply and demand will determine the exchange rate, defined as dollars per foreign currency. The framework is no different than analyzing the market for a good or service, say apples. The demand curve represents buyers, i.e. people who want to exchange dollars for apples and the supply curve represent sellers, i.e. people who want to exchange apples for dollars. The equilibrium price is dollars per apples.

The Demand for Foreign Currency

The demand curve represents the demand for foreign currency on the part of Americans. Americans need foreign currency if they wish to purchase something in a foreign country. Most Americans exposure to currency markets is through travel and tourism. When traveling to a foreign country, Americans swap dollars for a foreign currency, so they can buy services in the country that they are traveling to, such as hotels, meals and tours. U.S. businesses will also need foreign currency if they are buying a foreign product, such as Brazilian coffee, French wine or Italian shoes. U.S. imports therefore generate a a demand for foreign currency. Finally, financial institutions such as mutual funds and hedge funds need foreign currency if they are buying foreign assets, such as Japanese stocks, German bonds or London real estate. The two major sources of demand for foreign currency are

1) U.S. imports (i.e. U.S. purchases of foreign goods and services. This includes tourism)

2) U.S. foreign investment (i.e. U.S. purchases of foreign assets)

Why the Demand Curve Slopes Downwards

The price of foreign currency is $E_{\$/Foreign}$. As the exchange rate falls, the price of foreign goods in the U.S. falls. This increases the quantity demanded of these goods and therefore the demand for foreign currency to buy these goods.

The Supply of Foreign Exchange

The supply of foreign exchange represents the demand for dollars on the part of foreigners. To obtain dollars, foreigners are exchanging (hence supplying) their currency. Foreigners demand dollars for the same reasons that Americans demand foreign currency:

1) They wish to buy American products. For example, Germans who wish to purchase U.S. software need dollars to pay for their purchase. U.S. exports therefore generate a supply of foreign currency.

2) They wish to purchase American assets. A foreigner who wishes to buy a U.S. treasury bond or stock in a U.S. company needs dollars to pay for the purchase. Foreign investment in the U.S. therefore also generates a supply of foreign currency.

Note that the supply curve is simply the foreign counterpart of the demand curve: the demand curve represents U.S. purchases of foreign goods, services and assets while the supply curve represents foreign purchases of U.S. goods, services and assets.

Why the Supply Curve Slopes Upwards

A rise in the exchange rate means that the dollar is depreciating. The price of U.S. goods, when converted into foreign currency is falling. This will increase foreign purchases of U.S. goods, generating an additional supply of foreign currency (more foreigners are trying to convert their currency into dollars).

Shifts in the Demand Curve

Factors affecting U.S. imports. All of the following will shift the demand curve for foreign currency rightwards.

1. An increase in U.S. GDP

   Higher U.S. income results in greater overall consumption, including consumption of foreign products.

2. U.S. relative price level (U.S. price/foreign price)

   Higher U.S. prices relative to foreign prices decreases the attractiveness of U.S. goods, leading to increased purchases of foreign goods.

3. U.S. tastes for foreign goods

   Increased demand for foreign goods due to changes in tastes will shift the demand curve rightwards.

4. Foreign innovation and marketing

   A new foreign product or successful marketing campaign will increase U.S. demand for foreign products.

5. U.S. tariffs or trade restrictions on foreign products

   U.S. tariffs will increase the price of foreign products causing a decline in demand and a consequent decline in the demand for foreign currency.

Shifts in the Demand Curve Continued

Factors affecting U.S. foreign investment. All of the following will shift the demand curve rightwards.

1. Interest rate differentials, i.e. the U.S. interest rate minus the foreign interest rate.
   If the U.S. interest rate falls, more U.S. saving will flow to foreign countries.

2. Political risk, such as the risk of a coup, civil war or appropriation of assets.
   Decreased foreign political risk will increase U.S. foreign investment, shifting the demand curve rightwards.

3. Business profitability
   A favorable foreign business climate, such as low taxes and low corruption, will attract U.S. investment.

4. Expectations of the exchange rate
   If $E_{\$/Foreign}$ (the price of foreign currency) is expected to increase in the future, the demand for foreign currency will increase today.

Shifts in the Supply Curve

Factors affecting U.S. exports. All of the following will shift the demand curve for foreign currency rightwards.

1. An increase in Foreign GDP
   Higher foreign income results in greater overall consumption, including consumption of U.S. products.

2. U.S. relative price level (U.S. price/foreign price)
   Lower U.S. prices relative to foreign prices increases the attractiveness of U.S. goods, leading to increased purchases of U.S. goods.

3. Foreign tastes for U.S. goods
   Increased demand for U.S. goods due to changes in tastes will shift the supply curve rightwards.

4. U.S. innovation and marketing
   A new U.S. product or successful marketing campaign will increase foreign demand for foreign products.

5. Foreign tariffs or trade restrictions on U.S. products
   Foreign tariffs will increase the price of U.S. products causing a decline in foreign demand and a consequent decline in the demand for foreign currency.

Shifts in the Supply Curve Continued

Factors affecting foreign investment in the U.S.. All of the following will shift the supply curve rightwards.

1. Interest rate differentials, i.e. the U.S. interest rate minus the foreign interest rate.

If the U.S. interest rate increases, more foreign saving will flow into the U.S.

2. Political risk, such as the risk of a coup, civil war or appropriation of assets.

Increased foreign political risk will increase foreign investment in the U.S., shifting the supply curve rightwards.

3. Business profitability

An unfavorable foreign business climate, such as high taxes and high corruption, will attract foreign investment into the U.S.

4. Expectations of the exchange rate

If $E_{\$/Foreign}$ (the price of foreign currency) is expected to decrease in the future, the supply of foreign currency will increase today.

Factors which Affect both the Supply and Demand for Foreign Currency

1. Price differentials
2. Interest rate differentials
3. Expectations of the exchange rate

In these cases, the supply and demand curves shift in opposite directions. For example, an increase in U.S. prices, shifts the demand for foreign currency rightwards and the supply of foreign currency leftwards. Both shifts lead to an increase in $E_{\$/Foreign}$, i.e. a depreciation of the dollar.

In addition, business profitability and political risk are relative: investors in both countries will compare the political risk and business profitability in two countries when deciding where to invest. This means that each factor will also shift both the supply and demand curves. For example, greater political risk in a foreign country will decrease U.S. foreign investment but also increase foreign investment in the U.S. The demand for foreign currency will shift left and the supply shifts right. A more favorable U.S. business climate will attract both foreign and U.S. investment. The supply of foreign currency will shift right while the demand shifts left (since some U.S. investment will stay in the U.S. rather than going to a foreign country).