

13.2: Fixed Exchange Rate Systems

Learning Objective

1. Recognize the varieties of ways that exchange rates can be fixed to a particular value.
2. Understand the basic operation and the adjustment mechanism of a gold standard.

There are two basic systems that can be used to determine the exchange rate between one country's currency and another's: a floating exchange rate system and a fixed exchange rate system.

Under a floating exchange rate system, the value of a country's currency is determined by the supply and demand for that currency in exchange for another in a private market operated by major international banks.

In contrast, in a fixed exchange rate system, a country's government announces (or decrees) what its currency will be worth in terms of *something else* and also sets up the *rules of exchange*. The "something else" to which a currency value is set and the "rules of exchange" determine the type of fixed exchange rate system, of which there are many. For example, if the government sets its currency value in terms of a fixed weight of gold, then we have a gold standard. If the currency value is set to a fixed amount of another country's currency, then it is a reserve currency standard.

As we review several ways in which a fixed exchange rate system can work, we will highlight some of the advantages and disadvantages of the system. In anticipation, it is worth noting that one key advantage of fixed exchange rates is the intention to eliminate exchange rate risk, which can greatly enhance international trade and investment. A second key advantage is the discipline a fixed exchange rate system imposes on a country's monetary authority, with the intention of inducing a much lower inflation rate.

The Gold Standard

Most people are aware that at one time the world operated under something called a gold standard. Some people today, reflecting back on the periods of rapid growth and prosperity that occurred when the world was on a gold standard, have suggested that the world abandon its current mixture of fixed and floating exchange rate systems and return to this system. (For a discussion of some pros and cons see [Alan Greenspan's remarks](#) on this from the early 1980s. See Alan Greenspan's remarks in "Can the US Return to a Gold Standard," *Wall Street Journal*, September 1, 1981; reprinted online at www.gold-eagle.com/greenspan011098.html[0]. See [Murray Rothbard's article](#) for an argument in favor of a return to the gold standard. See Murray Rothbard, "The Case for a Genuine Gold Dollar," in *The Gold Standard: An Austrian Perspective* (Lexington, MA: D. C. Heath, 1985), 1–17; also available online at <http://www.mises.org/rothbard/genuine.asp>.) Whether or not countries seriously consider this in the future, it is instructive to understand the workings of a gold standard, especially since, historically, it is the first major international system of fixed exchange rates.

Most of the world maintained a pure gold standard during the late 1800s and early 1900s, with a major interruption during World War I. Before the enactment of a gold standard, countries were generally using a [Bimetallic standard](#) consisting of both gold and silver. See Angela Radish, "Bimetallism," Economic History Online at <http://www.eh.net/encyclopedia/?article=radish.bimetallism>. The earliest establishment of a gold standard was in Great Britain in 1821, followed by Australia in 1852 and Canada in 1853. The United States established its gold standard system with the Coinage Act of 1873, sometimes known as "[The Crime of '73](#)." For more info see Wikipedia, "Coinage Act of 1873," http://en.Wikipedia.org/wiki/Coinage_Act_of_1873. The gold standard was abandoned in the early days of the Great Depression. Britain dropped the standard in 1931, the United States in 1933.

The rules of a gold standard are quite simple. First, a country's government declares that its issued currency (it may be coin or paper currency) will exchange for a weight in gold. For example, in the United States during the late 1800s and early 1900s, the government set the dollar exchange rate to gold at the rate \$20.67 per troy ounce. During the same period, Great Britain set its currency at the rate £4.24 per troy ounce. Second, in a pure gold standard, a country's government declares that it will freely exchange currency for actual gold at the designated exchange rate. This "rule of exchange" means that anyone can go to the central bank with coin or currency and walk out with pure gold. Conversely, one could also walk in with pure gold and walk out with the equivalent in coin or currency.

Because the government bank must always be prepared to give out gold in exchange for coin and currency on demand, it must maintain a storehouse of gold. That store of gold is referred to as "**gold reserves**." That is, the central bank maintains a reserve of

gold so that it can always fulfill its promise of exchange. As discussed in Chapter 11, [Section 11.4](#), a well-functioning system will require that the central bank always have an adequate amount of reserves.

The two simple rules, when maintained, guarantee that the exchange rate between dollars and pounds remains constant. Here's why.

First, the dollar/pound exchange rate is defined as the ratio of the two-currency-gold exchange rates. Thus

Next, suppose an individual wants to exchange \$4.875 for one pound. Following the exchange rules, this person can enter the central bank in the United States and exchange dollars for gold to get

This person can then take the gold into the central bank in the United Kingdom, and assuming no costs of transportation, can exchange the gold into pounds as follows:

Hence, the \$4.875 converts to precisely £1 and this will remain the fixed exchange rate between the two currencies, as long as the simple exchange rules are followed. If many countries define the value of their own currency in terms of a weight of gold and agree to exchange gold freely at that rate with all who desire to exchange, then all these countries will have fixed currency exchange rates with respect to each other.

Price-Specie Flow Mechanism

The price-specie flow mechanism is a description about how adjustments to shocks or changes are handled within a pure gold standard system. Although there is some disagreement whether the gold standard functioned as described by this mechanism, the mechanism does fix the basic principles of how a gold standard is supposed to work.

Consider the United States and United Kingdom operating under a pure gold standard. Suppose there is a gold discovery in the United States. This will represent a shock to the system. Under a gold standard, a gold discovery is like digging up money, which is precisely what inspired so many people to *rush* to California after 1848 to strike it rich.

Once the gold is unearthed, the prospectors bring it into town and proceed to the national bank where it can be exchanged for coin and currency at the prevailing dollar/gold exchange rate. The new currency in circulation represents an increase in the domestic money supply.

Indeed, it is this very transaction that explains the origins of the gold and silver standards in the first place. The original purpose of banks was to store individuals' precious metal wealth and to provide exchangeable notes that were backed by the gold holdings in the vault. Thus rather than carrying around heavy gold, one could carry lightweight paper money. Before national or central banks were founded, individual commercial banks issued their own currencies, which circulated together with many other bank currencies. However, it was also common for governments to issue coins that were made directly from gold or silver.

Now, once the money supply increases following the gold discovery, it can have two effects: operating through the goods market and financial market. The price-specie flow mechanism describes the adjustment through goods markets.

First, let's assume that the money increase occurs in an economy that is not growing—that is, with a fixed level of GDP. Also assume that both purchasing power parity (PPP) and interest rate parity (IRP) holds. PPP implies an equalization of the cost of a market basket of goods between the United States and the United Kingdom at the current fixed exchange rate. IRP implies an equalization of the rates of return on comparable assets in the two countries.

As discussed in Chapter 7, [Section 7.14](#), when the U.S. money supply increases, and when there is no subsequent increase in output, the prices of goods and services will begin to rise. This inflationary effect occurs because more money is chasing (i.e., demanding) the same amount of goods and services. As the price level rises in an economy open to international trade, domestic goods become more expensive relative to foreign goods. This will induce domestic residents to increase demand for foreign goods; hence import demand will rise. Foreign consumers will also find domestic goods more expensive, so export supply will fall. The result is a demand for a current account deficit. To make these transactions possible in a gold standard, currency exchange will take place as follows.

U.S. residents wishing to buy cheaper British goods will first exchange dollars for gold at the U.S. central bank. Then they will ship that gold to the United Kingdom to exchange for the pounds that can be used to buy UK goods. As gold moves from the United States to the United Kingdom, the money supply in the United States falls while the money supply in the United Kingdom rises. Less money in the United States will eventually reduce prices, while more money in the United Kingdom will raise prices. This means that the prices of goods will move together until purchasing power parity holds again. Once PPP holds, there is no further

incentive for money to move between countries. There will continue to be demand for UK goods by U.S. residents, but this will balance with the United Kingdom demands for similarly priced U.S. goods. Hence, the trade balance reverts to zero.

The adjustment process in the financial market under a gold standard will work through changes in interest rates. When the U.S. money supply rises after the gold discovery, average interest rates will begin to fall. Lower U.S. interest rates will make British assets temporarily more attractive, and U.S. investors will seek to move investments to the United Kingdom. The adjustment under a gold standard is the same as with goods. Investors trade dollars for gold in the United States and move that gold to the United Kingdom where it is exchanged for pounds and used to purchase UK assets. Thus the U.S. money supply will begin to fall, causing an increase in U.S. interest rates, while the UK money supply rises, leading to a decrease in UK interest rates. The interest rates will move together until interest rate parity again holds.

In summary, *adjustment under a gold standard involves the flow of gold between countries, resulting in equalization of prices satisfying purchasing power parity (PPP) and/or equalization of rates of return on assets satisfying interest rate parity (IRP) at the current fixed exchange rate.* The only requirement for the government to maintain this type of fixed exchange rate system is to maintain the fixed price of its currency in terms of gold *and* to freely and readily exchange currency for gold on demand.

Reserve Currency Standard

In a reserve currency system, another country's currency takes the role that gold played in a gold standard. In other words a country fixes its own currency value to a unit of another country's currency. For example, suppose Britain decided to fix its currency to the dollar at the exchange rate $E_{\$/\pounds} = 1.50$. To maintain this fixed exchange rate, the Bank of England would stand ready to exchange pounds for dollars (or dollars for pounds) on demand at the specified exchange rate. To accomplish this, the Bank of England would need to hold dollars *on reserve* in case there was ever any excess demand for dollars in exchange for pounds on the Forex. In the gold standard, the central bank held gold to exchange for its own currency; with a reserve currency standard, it must hold a stock of the reserve currency. Always, the reserve currency is the currency to which the country fixes.

A reserve currency standard is the typical method for fixing a currency today. Most countries that fix its exchange rate will fix to a currency that either is prominently used in international transactions or is the currency of a major trading partner. Thus many countries fixing their exchange rate today fix to the U.S. dollar because it is the most widely traded currency internationally. Alternatively, fourteen African countries that were former French colonies had established the CFA franc zone and fixed the CFA franc (current currency used by these African countries) to the French franc. Since 1999, the CFA franc has been fixed to the euro. Namibia, Lesotho, and Swaziland are all a part of the common monetary area (CMA) and fix their currency to the South African rand.

Gold Exchange Standard

A **gold exchange standard** is a mixed system consisting of a cross between a reserve currency standard and a gold standard. In general, it includes the following two rules:

1. A reserve currency is chosen. All nonreserve countries agree to fix their exchange rates to the reserve at some announced rate. To maintain the fixity, these nonreserve countries will hold a stockpile of reserve currency assets.
2. The reserve currency country agrees to fix its currency value to a weight in gold. Finally, the reserve country agrees to exchange gold for its own currency with other central banks within the system on demand.

One key difference in this system from a gold standard is that the reserve country does not agree to exchange gold for currency with the general public, only with other central banks.

The system works exactly like a reserve currency system from the perspective of the nonreserve countries. However, if over time the nonreserve countries accumulate the reserve currency, they can demand exchange for gold from the reserve country central bank. In this case, gold reserves will flow away from the reserve currency country.

The fixed exchange rate system set up after World War II was a gold exchange standard, as was the system that prevailed between 1920 and the early 1930s. The post-World War II system was agreed to by the allied countries at a conference in Bretton Woods, New Hampshire, in the United States in June 1944. As a result, the exchange rate system after the war also became known as the **Bretton Woods system**.

Also proposed at Bretton Woods was the establishment of an international institution to help regulate the fixed exchange rate system. This institution was the **International Monetary Fund (IMF)**. The IMF's main mission was to help maintain the stability of the Bretton Woods fixed exchange rate system.

Other Fixed Exchange Rate Variations

Basket of Currencies

Countries that have several important trading partners, or who fear that one currency may be too volatile over an extended period, have chosen to fix their currency to a basket of several other currencies. This means fixing to a weighted average of several currencies. This method is best understood by considering the creation of a composite currency. Consider the following hypothetical example: a new unit of money consisting of 1 euro, 100 Japanese yen, and one U.S. dollar. Call this new unit a Eur-yen-dol. A country could now fix its currency to one Eur-yen-dol. The country would then need to maintain reserves in one or more of the three currencies to satisfy excess demand or supply of its currency on the Forex.

A better example of a composite currency is found in the SDR. SDR stands for **special drawing rights**. It is a composite currency created by the International Monetary Fund (IMF). One SDR now consists of a fixed quantity of U.S. dollars, euros, Japanese yen, and British pounds. For more info on the SDR see the [IMF factsheet](http://www.imf.org/external/np/exr/facts/sdr.htm). International Monetary Fund, About the IMF, Factsheet, "Special Drawing Rights (SDRs)," <http://www.imf.org/external/np/exr/facts/sdr.htm>[0]. Now Saudi Arabia officially fixes its currency to the SDR. Botswana fixes to a basket consisting of the SDR and the South African rand.

Crawling Pegs

A crawling peg refers to a system in which a country fixes its exchange rate but also changes the fixed rate at periodic or regular intervals. Central bank interventions in the Forex may occur to maintain the temporary fixed rate. However, central banks can avoid interventions and save reserves by adjusting the fixed rate instead. Since crawling pegs are adjusted gradually, they can help eliminate some exchange rate volatility without fully constraining the central bank with a fixed rate. In 2010 Bolivia, China, Ethiopia, and Nicaragua were among several countries maintaining a crawling peg.

Pegged within a Band

In this system, a country specifies a central exchange rate together with a percentage allowable deviation, expressed as plus or minus some percentage. For example, Denmark, an EU member country, does not yet use the euro but participates in the Exchange Rate Mechanism (ERM2). Under this system, Denmark sets its central exchange rate to 7.46038 krona per euro and allows fluctuations of the exchange rate within a 2.25 percent band. This means the krona can fluctuate from a low of 7.63 kr/€ to a high of 7.29 kr/€. (Recall that the krona is at a high with the smaller exchange rate value since the kr/euro rate represents the euro value.) If the market determined floating exchange rate rises above or falls below the bands, the Danish central bank must intervene in the Forex. Otherwise, the exchange rate is allowed to fluctuate freely.

As of 2010, Slovenia, Syria, and Tonga were fixing their currencies within a band.

Currency Boards

A currency board is a legislated method to provide greater assurances that an exchange rate fixed to a reserve currency will indeed remain fixed. In this system, the government requires that domestic currency is always exchangeable for the specific reserve at the fixed exchange rate. The central bank authorities are stripped of all discretion in the Forex interventions in this system. As a result, they must maintain sufficient foreign reserves to keep the system intact.

In 2010 Bulgaria, Hong Kong, Estonia, and Lithuania were among the countries using a currency board arrangement. Argentina used a currency board system from 1991 until 2002. The currency board was very effective in reducing inflation in Argentina during the 1990s. However, the collapse of the exchange rate system and the economy in 2002 demonstrated that currency boards are not a panacea.

Dollarization/Euroization

The most extreme and convincing method for a country to fix its exchange rate is to give up one's national currency and adopt the currency of another country. In creating the euro-zone among twelve of the European Union (EU) countries, these European nations have given up their own national currencies and have adopted the currency issued by the European Central Bank. This is a case of euroization. Since all twelve countries now share the euro as a common currency, their exchange rates are effectively fixed to each other at a 1:1 ratio. As other countries in the EU join the common currency, they too will be forever fixing their exchange rate to the euro. (Note, however, that although all countries that use the euro are fixed to each other, the euro itself floats with respect to external currencies such as the U.S. dollar.)

Other examples of adopting another currency as one's own are the countries of Panama, Ecuador, and El Salvador. These countries have all chosen to adopt the U.S. dollar as their national currency of circulation. Thus they have chosen the most extreme method of assuring a fixed exchange rate. These are examples of dollarization.

key takeaways

- In a gold standard, a country's government declares that its issued currency will exchange for a weight in gold and that it will freely exchange currency for actual gold at the designated exchange rate.
- Adjustment under a gold standard involves the flow of gold between countries, resulting in equalization of prices satisfying purchasing power parity (PPP) and/or equalization of rates of return on assets satisfying interest rate parity (IRP) at the current fixed exchange rate.
- In a reserve currency system, a country fixes its own currency value to a unit of another country's currency. The other country is called the reserve currency country.
- A gold exchange standard is a mixed system consisting of a cross between a reserve currency standard and a gold standard. First, a reserve currency is chosen. Second, the reserve currency country agrees to fix its currency value to a weight in gold. Finally, the reserve country agrees to exchange gold for its own currency with other central banks within the system on demand.
- The post-World War II Bretton Woods system was a gold exchange currency standard.
- Other fixed exchange rate choices include fixing to a market basket, fixing in a nonrigid way by implementing a crawling peg or an exchange rate band, implementing a currency board, or adopting another country's currency.

exercise

1. **Jeopardy Questions.** As in the popular television game show, you are given an answer to a question and you must respond with the question. For example, if the answer is "a tax on imports," then the correct question is "What is a tariff?"
 - The term used to describe the adjustment mechanism within a gold standard.
 - The term given to the currency standard using both gold and silver.
 - The term given to the currency standard in which all countries fix to one central currency, while the central currency is not fixed to anything.
 - The name of the international organization created after World War II to oversee the fixed exchange rate system.
 - In the late nineteenth century, the U.S. dollar was fixed to gold at this exchange rate.
 - In the late nineteenth century, the British pound was fixed to gold at this exchange rate.
 - In the late nineteenth century, one U.S. dollar was worth approximately this many shillings (note: a shilling is one-tenth of a pound).
 - Of *gold inflow* or *gold outflow*, this is likely to occur for a country whose interest rates rise under a gold standard with free capital mobility.
 - The term used to describe a currency system in which a country fixes its exchange rate but also changes the fixed rate at periodic or regular intervals.
 - As of 2004, Estonia and Hong Kong implemented this type of currency system.
2. Use the IMF's "De Facto Classification of Exchange Rate Regimes and Monetary Policy Frameworks" at <http://www.imf.org/external/np/mfd/er/2008/eng/0408.htm> to answer the following questions:
 - What are four countries that maintained currency board arrangements?
 - What are four countries that maintained a conventional fixed peg?
 - What are four countries that maintained a crawling peg?
 - What are four countries whose currencies were independently floating?

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