18.6: Overvaluation and Undervaluation

learning goal

1. Recognize how the terms *overvalued* and *undervalued* exchange rates are defined, applied, and interpreted.

It is quite common to hear people claim that a country's exchange rate is overvalued or undervalued. The first question one should ask when someone claims the exchange rate is overvalued is "overvalued with respect to what?" There are two common reference exchange rates often considered. The person may mean the exchange rate is overvalued with respect to purchasing power parity (PPP), or he may mean the exchange rate is overvalued relative to the rate presumed Needed to balance the current account (CA).

The mere use of these terms suggests immediately that there is some "proper" value for the exchange rate. However, one should refrain from accepting this implication. As was previously discussed, PPP is unlikely to hold, even over very long periods, for a variety of very good reasons. Also, there is no reason to think that current account balance represents some equilibrium or goal for an economy: countries can run trade deficits or surpluses for an extended period and suffer no ill effects. Thus overvaluation or undervaluation of an exchange rate, for either reason (PPP or current account balance) should be thought of simply as something that happens. Of more interest is what it means when it happens.

Over- and Undervaluation with Respect to PPP

First let's consider over- and undervaluation with respect to PPP. The PPP exchange rate is defined as the rate that equalizes the cost of a market basket of goods between two countries. The PPP exchange rate between the Mexican peso and the U.S. dollar would be written as

which represents the PPP value of the U.S. dollar in terms of pesos.

If the U.S. dollar is overvalued with respect to the Mexican peso, then the spot exchange rate exceeds the PPP exchange rate:

This will also mean the exchange rate exceeds the ratio of market basket costs:

therefore, the following will hold:

The left side (LS) of this expression represents the cost of a U.S. market basket converted to pesos at the current spot exchange rate. The right side (RS) is the cost of the basket in Mexico also evaluated in pesos. Since $LS > RS$, goods and services cost more on average in the United States than in Mexico at the current exchange rate. Thus for the U.S. dollar to be overvalued with respect to the peso means that goods and services are relatively more expensive in the United States than in Mexico. Of course, it also implies that goods and services are relatively cheaper in Mexico.

A simple guide to judge whether a currency is overvalued is to consider it from the perspective of a tourist. When the U.S. dollar is overvalued, a U.S. tourist traveling to Mexico will find that many products seem cheaper than in the United States, after converting at the spot exchange rate. Thus an overvalued currency will buy more in other countries.

An undervalued currency works in the opposite direction. When the U.S. dollar is undervalued, the cost of a basket of goods in the United States is lower than the cost in Mexico when evaluated at the current exchange rate. To a U.S. tourist, Mexican goods and services would seem more expensive on average. Thus an undervalued currency will buy less in other countries.

Finally, if the U.S. dollar is overvalued with respect to the Mexican peso, it follows that the peso is undervalued with respect to the dollar. In this case, since the U.S. tourists would find Mexican goods comparatively cheap, Mexican tourists would find U.S. goods to be comparatively expensive. If the U.S. dollar were undervalued, then the peso would be overvalued.

Is overvaluation or undervaluation good or bad? That depends on what a person is trying to achieve. For example, if the U.S. dollar is overvalued with respect to the peso, then a U.S. tourist traveling to Mexico will be very happy. In fact, the more overvalued the dollar is, the better. However, for an exporter of U.S. goods to Mexico, its price in peso terms will be higher the more overvalued is the dollar. Thus an overvalued dollar will likely reduce sales and profits for these U.S. firms.

Over- and Undervaluation with Respect to Current Account Balance

The second way over- and undervaluation is sometimes applied is in comparison to an exchange rate presumed necessary to induce trade balance, or balance on the current account. If one imagines that a trade deficit, for example, arises primarily because a country imports too much or exports too little (rather than being driven by financial decisions tending to cause a financial account

surplus), then one may also look for ways to either reduce imports or raise exports. A change in the exchange rate offers one viable method to affect trade flows.

Suppose the United States has a trade deficit (which it indeed has had for more than thirty years prior to 2010). If the U.S. dollar value were to fall—a dollar depreciation—then foreign goods would all become relatively more expensive to U.S. residents, tending to reduce U.S. imports. At the same time, a dollar depreciation would also cause U.S. goods to become relatively cheaper to foreign residents tending to raise U.S. exports.

Sometimes economists make numerical estimations as to how much the dollar value would have to fall to bring trade into balance. These estimations are enormously difficult to make for several reasons and should be interpreted and used with great caution, if at all. The primary reason is that many different factors on both the trade side and the financial side influence a country's trade imbalance besides just the exchange rate. The exchange rate that balances trade would depend on the values taken by all the other factors that also influence the trade balance. Different values for all the other variables would mean a different exchange rate needed to balance trade. Thus there isn't *one* exchange rate value that will balance trade. Instead, there is a different exchange rate value that will balance trade in each and every alternative circumstance. Indeed, even the current exchange rate—whatever that is—can balance trade if other factors change appropriately.

Despite these cautions, many observers will still contend that a country's currency needs to depreciate by some percentage to eliminate a trade deficit, or needs to appreciate to eliminate a trade surplus. When it is believed a depreciation of the currency is needed to balance trade, they will say the currency is overvalued. When it is believed an appreciation of the currency is needed to balance trade, they will say the currency is undervalued. However, in a floating exchange rate system, it is hard to argue that the exchange rate is at the "wrong" value since—with competition in the market—it will always be at the rate that equalizes supply and demand. In other words, the "proper" value for the exchange rate can be said to be *not* the one that will satisfy PPP or not the one that will generate trade balance but rather whatever rate currently prevails. Under this notion, a currency can never be over- or undervalued in a floating exchange rate system. Instead, the spot exchange rate is always at the "proper" value.

In a fixed exchange rate system, a government can sometimes intervene to maintain an exchange rate that is very different from what would arise if allowed to float. In these cases, large trade surpluses can arise because the government maintains an artificially low value for its currency. Calls for a revaluation (appreciation) of the currency, to promote a reduction in a trade surplus, are somewhat more appropriate in these cases since the market does not determine the exchange rate. Similarly, large deficits could be reduced with a devaluation (depreciation) of the currency.

Key takeaways

- A currency can be overvalued or undervalued with respect to two reference values: (1) the value that would satisfy purchasing power parity (PPP) or (2) the value that would generate current account balance.
- Use of the terms *overvaluation* and *undervaluation* suggests that there is a "proper" value for the exchange rate. However, there are often valid reasons why exchange rates will not conform to PPP or why trade imbalances will persist.
- In a floating exchange rate system, the "proper" exchange rate can be said to be the rate that equalizes supply and demand for currencies in exchange. Under this notion, there can never be an over- or undervalued exchange rate.

Exercises

1. Use the information in the table below to answer the question, "Is the U.S. dollar overvalued or undervalued with respect to the Canadian dollar and the Japanese yen in terms of purchases of the *Economist*?" State why it is overvalued or undervalued. Show your work.

	The *Economist* Price per Issue	Exchange Rate (December 2, 1999)
United States	$3.95	–
Canada	C$4.95	1.47C/$
Japan	¥920	102 ¥/$

2. Use the information in the table below to answer the following questions:

	Big Mac Price	Exchange Rate (June 4, 1998)

	Big Mac Price	Exchange Rate (June 4, 1998)
United States (dollar)	$2.53	–
South Korea (won)	W 2,600	1,475 $W/\$$
Israel (shekel)	sh 12.50	3.70 $sh/\$$
Poland (zloty)	zl 5.30	3.46 $zl/\$$

1. Calculate whether the won, shekel, and zloty are overvalued or undervalued with respect to the U.S. dollar in terms of Big Mac purchases. Explain what it means to be overvalued or undervalued.
2. What would the exchange rates have to be in order to equalize Big Mac prices between South Korea and the United States, Israel and the United States, and Poland and the United States?
3. If in the long run the exchange rate moves to satisfy Big Mac purchasing power parity (PPP), will the won, shekel, and zloty appreciate or depreciate in terms of dollars? Explain the logic.

3. Use the information about the hourly wage for a high school principal and exchange rates to answer the following questions:

	Wage	Actual Exchange Rate	PPP Exchange Rate
United States	$25/hour	–	–
Mexico	P220/hour	10.9 $p/\$$	7.5 $p/\$$
Japan	¥3,000/hour	110 ¥/$	132 ¥/$

1. Calculate the hourly wage rate in dollars in Mexico and Japan using the actual exchange rates.
2. Calculate the hourly wage rate in dollars in Mexico and Japan using the PPP exchange rates.
3. Based on the information above, in which country is it best to be a high school principal? Which country is second best? Which is third best?
4. In terms of PPP, is the U.S. dollar overvalued or undervalued with respect to the peso and with respect to the yen?
5. According to the PPP theory, given the conditions above, would the dollar be expected to appreciate or depreciate with respect to the peso and with respect to the yen?
