Science, Tech, Math › Social Sciences

A Guide to Purchasing Power Parity Theory

by Mike Moffatt
Updated November 03, 2017

Purchasing-power parity (PPP) is an economic concept that states that the real exchange rate between domestic and foreign goods is equal to one, though it does not mean that the nominal exchange rates are constant or equal to one.

Put another way, PPP supports the idea that identical items in different countries should have the same real prices in another, that a person who purchases an item domestically should be able to sell it in another country and have no money left over.

This means that the amount of purchasing power that a consumer has does not depend on what currency with which he or she is making purchases. The "Dictionary of Economics" defines the PPP theory as one that "states that the exchange rate between one currency and another is in equilibrium when their domestic purchasing powers at that rate of exchange are equivalent."

Understanding Purchasing-Power Parity in Practice

In order to better understand how this concept would apply to real-world economies, look at the United States dollar versus the Japanese yen. Say, for example, that one U.S. dollar (USD) can buy about 80 Japanese yen (JPY). While that would make it appear that United States citizens have less purchasing power, the PPP theory implies that there is an interaction between nominal prices and nominal exchange rates so that, for example, items in the United States that sell for one dollar would sell for 80 yen in Japan, which is a concept known as the real exchange rate.

Take a look at another example. First, suppose that one USD is currently selling for 10 Mexican pesos (MXN) on the exchange rate market. In the United States, wooden baseball bats sell for $40 while in Mexico they sell for 150 pesos. Since the exchange rate is one to 10, then the $40 USD bat would only cost $15 USD if bought in Mexico. Clearly, there's an advantage to buying the bat in Mexico, so consumers are much better off going to Mexico to buy their bats. If consumers decide to do this, we should expect to see three things happen:

1. American consumers desire Mexican Pesos in order to buy baseball bats in Mexico. So they go to an exchange rate office and sell their American Dollars and buy Mexican Pesos, and this will cause the Mexican Peso to become more valuable relative to the U.S. Dollar.
2. The demand for baseball bats sold in the United States decreases, so the price American retailers charge goes down.
3. The demand for baseball bats sold in Mexico increases, so the price Mexican retailers charge goes up.

Eventually, these three factors should cause the exchange rates and the prices in the two countries to change such that we have purchasing power parity. If the U.S. Dollar declines in value to a one to eight ratio to Mexican pesos, the price of baseball bats in the United States goes

down to $30 each, and the price of baseball bats in Mexico goes up to 240 pesos each, we will have purchasing power parity. This is because a consumer can spend $30 in the United States for a baseball bat, or he can take his $30, exchange it for 240 pesos and buy a baseball bat in Mexico and be no better off.

Purchasing Power Parity and the Long Run

Purchasing-power parity theory tells us that price differentials between countries are not sustainable in the long run as market forces will equalize prices between countries and change exchange rates in doing so. You might think that my example of consumers crossing the border to buy baseball bats is unrealistic as the expense of the longer trip would wipe out any savings you get from buying the bat for a lower price.

However, it is not unrealistic to imagine an individual or company buying hundreds or thousands of the bats in Mexico then shipping them to the United States for sale. It is also not unrealistic to imagine a store like Walmart purchasing bats from the lower cost manufacturer in Mexico instead of the higher cost manufacturer in Mexico.

In the long run, having different prices in the United States and Mexico is not sustainable because an individual or company will be able to gain an arbitrage profit by buying the good cheaply in one market and selling it for a higher price in the other market. Since the price for any one good should be equal across markets, the price for any combination or basket of goods should be equalized. That's the theory, but it doesn't always work in practice.

How Purchasing-Power Parity is Flawed in Real Economies

Despite its intuitive appeal, purchasing-power parity does not generally hold in practice because PPP relies on the presence of arbitrage opportunities — opportunities to buy items at a low price in one place and sell them at a higher price in another — to bring prices together in different countries.

Ideally, as a result, prices would converge because the buying activity would push prices in one country up and the selling activity would push prices in the other country down. In reality, there are various transaction costs and barriers to trade that limit the ability to make prices converge via market forces. For example, it's unclear how one would exploit arbitrage opportunities for services across different geographies, since it's often difficult, if not impossible, to transport services without additional costs from one place to another.

Nevertheless, purchasing-power parity is an important concept to consider as a baseline theoretical scenario, and, even though purchasing-power parity might not hold perfectly in practice, the intuition behind it does, in fact, place practical limits on how much real prices can diverge across countries.

Limiting Factors to Arbitrage Opportunities

Anything which limits the free trade of goods will limit the opportunities people have in taking advantage of these arbitrage opportunities. A few of the larger limits are:

1. **Import and Export Restrictions**: Restrictions such as quotas, tariffs, and laws will make it difficult to buy goods in one market and sell them in another. If there is a 300% tax on imported baseball bats, then in our second example it is no longer profitable to buy the bat in Mexico instead of the United States. The U.S. could also just pass a law making it illegal to import baseball bats. The effect of quotas and tariffs were covered in more detail in "Why Are Tariffs Preferable to Quotas?."
2. **Travel Costs**: If it is very expensive to transport goods from one market to another, we would expect to see a difference in prices in the two markets. This even happens in places that use the same currency; for instance, the price of goods is cheaper in Canadian cities such as Toronto and Edmonton than it is in more remote parts of Canada such as Nunavut.

3. **Perishable Goods**: It may be simply physically impossible to transfer goods from one market to another. There may be a place which sells cheap sandwiches in New York City, but that doesn't help me if I am living in San Francisco. Of course, this effect is mitigated by the fact that many of the ingredients used in making the sandwiches are transportable, so we would expect that sandwich makers in New York and San Francisco should have similar material costs. This is the basis of the Economist's famous Big Mac Index, which is detailed in their must-read article "McCurrencies."

4. **Location**: You cannot buy a piece of property in Des Moines and move it to Boston. Because of that real-estate prices in markets can vary wildly. Since the price of land is not the same everywhere, we would expect this to have an impact on prices, as retailers in Boston have higher expenses than retailers in Des Moines.

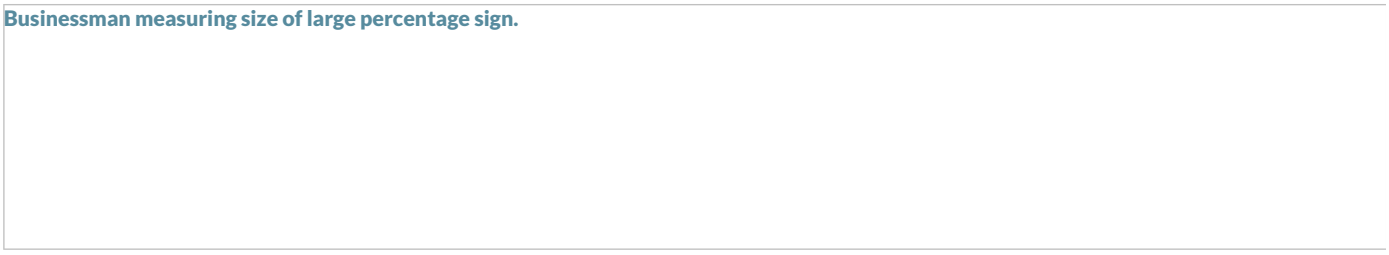
So while purchasing power parity theory helps us understand exchange rate differentials, exchange rates do not always converge in the long run the way PPP theory predicts.

Arbitrage: 3 Opportunities for Flipping a Profit

Introduction to Exchange Rates

Canadian Bills Layered and Spread out.

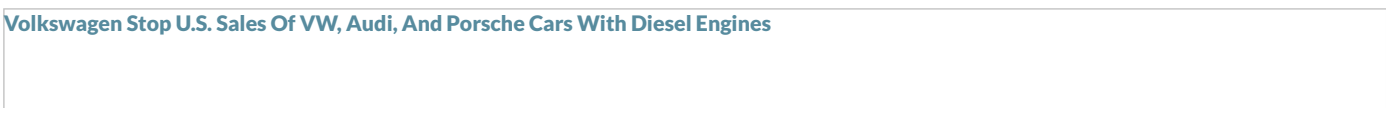
How Does the Value of the U.S. Dollar Impact Canada?



Businessman measuring size of large percentage sign.

How Do You Measure the Size of the Economy?

Why Do Trade Deficits Occur?



Volkswagen Stop U.S. Sales Of VW, Audi, And Porsche Cars With Diesel Engines

What Are Some Tips For Buying a Quality Certified Pre-owned Used Car?

Freight shipping containers

Most US Economists Favor Tariffs Over Quotas; A Few Don't Like Either

Group Portrait of UN Delegates

The Bretton Woods System: Tying World Currency to the Dollar

What Is the Difference Between Relative & Absolute PPP?

A Beginner's Guide to Sports Card Collecting

Euro and dollars with financial graph

How to Interpret Foreign Exchange Rate Charts

Gold ingots and coins close up

These Are the Benefits and Costs of a Gold Standard