PPI/CPI/Deflator

by Sophia

WHAT'S COVERED

This tutorial will cover the difference between the CPI and the PPI, discussing how they are calculated, as well as how these measures are used to assess the macroeconomy.

Our discussion breaks down as follows:

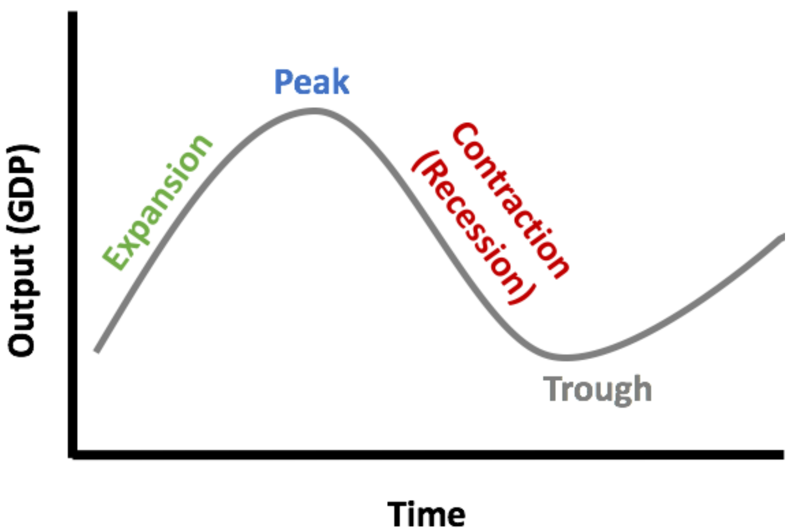
1. Measuring Inflation
2. Consumer Price Index (CPI)
3. Producer Price Index (PPI)
4. Calculating the Rate of Inflation
5. CPI and PPI as Economic Indicators

---

1. Measuring Inflation

You have seen a business cycle before, and we know that it is common for the economy to go through periods of growth and contraction.

Along this business cycle, most people are generally concerned about things like the unemployment rate and inflation--two of the most common concerns for consumers.



In this tutorial, we will focus on inflation.

The Bureau of Labor Statistics, or BLS, measures the rate of inflation in our economy. Inflation refers to an increase in the overall price level.

This happens when many prices increase at the same time. Note, this is not just the price of gas going up or down this week; it is an increase in the overall price level.

Inflation is measured from two different perspectives:

- Consumers (CPI)
- Producers (PPI)

---

2. Consumer Price Index (CPI)

The **CPI** is the consumer price index, and this reflects a changing price for a fixed bucket of goods and services.

Economists use these price indexes, or measurements, that show how the average price of a standard group of goods changes over time. The most common one is the CPI.

So, it would be impossible to literally measure, in a timely manner, the price of absolutely everything in the economy. Therefore, CPI uses a bundle of goods to represent the "market basket" purchased monthly by the typical urban consumer.

Here is an example of some of the categories in this market basket.

Category	Examples
Food and drinks	Cereals, coffee, chicken, milk, restaurant meals
Housing	Rent, homeowners' costs, fuel oil
Apparel and upkeep	Men's shirts, women's dresses, jewelry
Transportation	Airfares, new and used cars, gasoline, auto insurance
Medical care	Prescription medicines, eye care, physicians' services
Entertainment	Newspapers, toys, musical instruments
Education and communication	Tuition, postage, telephone services, computers
Other goods and services	Haircuts, cosmetics, bank fees

The goods and quantity consumed in this basket are held constant from one period to another.

The prices, though, are allowed to vary, and we use prices that are currently seen in the market, known as nominal prices.

BIG IDEA

The CPI captures price changes for a standard group of goods.

TRY IT

You can access the Bureau of Labor Statistic's most current released CPI report here: http://www.bls.gov/cpi/

Here is a sample of this report, from the January 2014 report. Keep in mind, this is reporting on what happened in December 2013.

> The Consumer Price Index for All Urban Consumers (CPI-U) increased 0.3 percent in December on a seasonally adjusted basis, the U.S. Bureau of Labor Statistics reported today. Over the last 12 months, the all items index increased 1.5 percent before seasonal adjustment.

TERM TO KNOW

CPI
Consumer Price Index reflects changing price for a fixed bucket of goods and services

3. Producer Price Index (PPI)

The **PPI** is the producer price index, which reflects price movement for raw materials, intermediate, and final good production. So, this is from the producer's perspective.

The idea behind measuring the PPI is to see if there is one stage of the production process that is the cause for price changes in the market.

Therefore the PPI measures wholesale price changes in three different categories:

Category	Description
Crude goods	The initial inputs in the production process of a good
Intermediate goods	Components used to make the end product
Finished goods	Goods that are produced and ready to be distributed/sold

TRY IT

Again, if you would like to see the Bureau of Labor Statistic's most current PPI report, you can visit this url: http://www.bls.gov/ppi/

Here is an excerpt from the January 2014 report. Note that we have italicized the examples of finished goods, intermediate goods, and crude goods.
The Producer Price Index for finished goods advanced 0.4 percent in December...At the earlier stages of processing, prices received by producers of intermediate goods rose 0.6 percent in December, and the crude goods index climbed 2.4 percent.

> The Producer Price Index for *finished goods* advanced 0.4 percent in December...At the earlier stages of processing, prices received by producers of *intermediate goods* rose 0.6 percent in December, and the *crude goods* index climbed 2.4 percent.

TERM TO KNOW

PPI

Producer Price Index reflects price movement for raw materials, intermediate and final good production

4. Calculating the Rate of Inflation

CPI and PPI are both are used to measure price changes or inflation, just from different perspectives.

As mentioned, CPI is from the consumers' perspective, and PPI is from that of the producers. We can calculate the inflation rate with either one, but let's use the CPI here.

To calculate the inflation rate from one period to the next, we use the CPI or PPI in two different periods. Here, we do not list actual years; we simply number each year.

So, CPI_2 minus CPI_1 divided by CPI_1 will give us a rate of inflation.

Inflation rate = $(CPI_2 - CPI_1) / CPI_1$

IN CONTEXT

Suppose the CPI in Year One was 100, and the CPI in Year Two was 103. We need to calculate the change:

(103 - 100) / 100 = .03, or 3% inflation

This shows that there was 3% inflation from CPI1 to CPI2.

5. CPI and PPI as Economic Indicators

The CPI and PPI are used as economic indicators in our economy.

Keep in mind that the PPI generally predicts what is going to happen then in the CPI, because it reflects what the producers are experiencing, and they will likely adjust prices accordingly afterwards. Because this is a good predictor of what is going to happen in the CPI, the PPI is used extensively by investors--more so than the CPI.

The CPI is considered a lagging indicator because it takes some time for prices to adjust to economic conditions:

- As businesses see a drop-off in demand for their products, they will eventually lower prices.
- As businesses see an increase in demand, they will raise prices.

Macroeconomists are concerned with inflation and deflation, so they closely monitor both of these indicators.

- Rapid inflation decreases our purchasing power and can mean that the economy is growing too quickly.
- Although some people think that deflation would be a good thing, because prices are going down, this is a misconception. Deflation can also be problematic as people hold off purchases, which is not good for

the macroeconomy, and can be a sign that we are in a recession.

SUMMARY

Today we learned that **inflation is measured** from two different perspectives: the **Consumer Price Index, or CPI** and the **Producer Price Index, or PPI**. We learned the difference between the CPI and PPI, how to use them to **calculate the rate of inflation**. Lastly, we learned how the CPI and PPI are used as **economic indicators** to assess the macroeconomy.

Source: Adapted from Sophia instructor Kate Eskra.

TERMS TO KNOW

CPI
Consumer Price Index reflects changing price for a fixed bucket of goods and services.

PPI
Producer Price Index reflects price movement for raw materials, intermediate and final good production.