



Introduction to U.S. Economy: Inflation

What is Inflation?

Inflation is defined as a general increase in the price of goods and services across the economy; in other words, a general decrease in the value of money. Conversely, deflation is a general decrease in the price of goods and services across the economy, or a general increase in the value of money.

As inflation occurs, individuals can purchase fewer goods and services with the same amount of money. For this reason, an individual would need about \$287 in 2015 to purchase the same amount of goods and services as \$100 could have purchased in 1980. Measures of inflation are used to adjust money figures to keep purchasing power constant over time, allowing for more accurate comparisons across disparate time periods. Monetary figures adjusted for inflation are referred to as *real*, and non-inflation adjusted figures are referred to as *nominal*.

Causes of Inflation

Inflation is largely the result of two different phenomena, which are often referred to as *demand-pull* and *cost-push* inflation. Demand-pull inflation occurs when demand for goods and services within the economy exceeds the economy's capacity to produce goods and services. As demand exceeds supply within the economy, "too much money chasing too few goods," there is upward pressure placed on prices resulting in rising inflation.

Cost-push inflation occurs when the price of input goods and services increases. The classic example of cost-push inflation is the result of an oil shock, which sharply decreases the supply of oil and other petroleum products. The decrease in oil supplies increases the price of oil and petroleum products. Petroleum products are an input good for a significant portion of goods and services across the economy, and as the price of this important input good increases so does the price of the final goods and services resulting in inflation. Cost-push inflation only results in a temporary increase in inflation, unless accommodated by monetary policy.

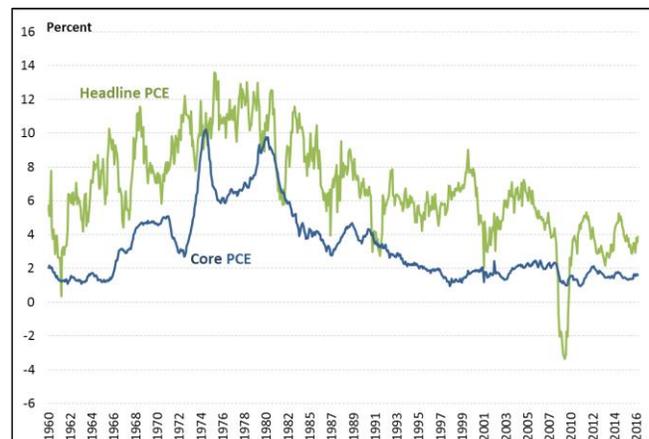
In addition, changes in inflation expectations can also cause changes in actual inflation. Individuals form expectations around the future rate of inflation and incorporate those expectations, when setting prices at the firm level or when bargaining for wages as a worker. For example, if a worker expects the inflation rate to increase over the next year, he or she may demand higher nominal wages to offset a decrease in real wages. Wages are a significant production cost for many products, and the overall price of goods and services will rise to reflect the increase in the cost of labor. An increase in inflation expectations will cause actual inflation to increase, and vice versa, all else equal.

Inflation's Impact on the Economy

Inflation tends to interfere with pricing mechanisms in the economy, resulting in individuals and businesses making less than optimal spending, saving, and investment decisions. Additionally, in the presence of inflation, economic actors often engage in actions to protect themselves from the negative impacts of inflation, diverting resources from other more productive activities.

Ultimately, these inefficient decisions reduce incomes, economic growth, and living standards. For this reason, it is generally accepted that inflation should be kept low to minimize these distortions in the economy. Some would argue that an inflation rate of zero is optimal; however, a target of zero inflation makes a period of accidental deflation more likely, and deflation is thought to be even more costly than inflation. In an effort to balance these two risks, policy makers, including the Federal Reserve, often target a positive, but low, inflation rate, generally around 2%, which reduces inefficiencies within the economy while protecting against deflation.

Figure 1 Annual Inflation Rate 1960-2016



Source: Bureau of Economic Analysis.

Note: 12-month percentage change as measured by Personal Consumption Expenditures Index.

The Federal Reserve and Inflation

The Federal Reserve has been charged with promoting stable prices by statute since the late 1970s, largely as a result of the volatile and exceptionally high inflation experienced during the 1970s, as shown in **Figure 1**. Beginning in 2012, the Federal Reserve began explicitly targeting a long-run inflation rate of 2%. The Federal Reserve generally uses its ability to impact short-term interest rates to combat demand-pull and cost-push inflation, in an effort to decrease the volatility of inflation and keep inflation close to its target rate.

As shown in **Figure 1**, beginning in the 1980s, the rate of core inflation, which excludes energy and food prices, begins to decrease, as does the volatility seen in the measure. Beginning in the late 1990s, the inflation rate remains relatively close to 2%, and the large swings in inflation, such as those seen during the 1970s, mostly disappear. The moderation of inflation seen since the 1970s, save for the brief period of deflation during the 2007-2009 global financial crisis, has largely been attributed to the actions undertaken by the Federal Reserve as part of their mandate to promote stable prices.

Measuring Inflation

The rate of inflation is measured by observing changes in the average price of a consistent set of goods and services, often referred to as a market basket. Inflation is generally measured using a price index, such as the Consumer Price Index (CPI). A price index is constructed by dividing the price of a market basket in a given year and by the price of the same basket of goods in a base year. The rate of inflation is then measured by calculating the percentage change in the price index across different periods. For example, the CPI in January 2015 was about 235, and about 238 in January 2016, which amounts to an inflation rate of about 1.3% over this period.

Alternative Measures of Inflation

Alternative price indices will use different goods within their market basket, and they are generally used for different purposes. For example, the CPI includes consumer goods and services typically purchased by households, which is often used to adjust household incomes for inflation over time. By contrast, the Gross Domestic Product Deflator, which is generally used to adjust GDP for inflation over time, measures inflation for all of the final goods and services produced in the United States. A number of additional measures of inflation include the Producer Price Index, Employment Cost Index, Personal Consumption Expenditures Index, and Import/Export Price Index. Different inflation measures are calculated differently. For example, the CPI uses a (mostly) fixed basket of goods and services, whereas the GDP deflator allows the composition of its market basket to change with spending patterns from period to period.

In addition, within a specific price index, researchers often make separate calculations for so-called *headline inflation* and *core inflation*, as seen in **Figure 1**. Headline inflation includes the full set of goods and services included within the basket of goods, whereas core inflation excludes energy and food prices from the basket of goods. Core inflation is often used by researchers in place of headline inflation due to the volatile nature of the price of food and energy. However, headline inflation can provide a more accurate sense of the price changes actually faced by individuals.

Complications in Measuring Inflation

The fundamental concept behind measuring inflation is that the price of a consistent basket of goods and services is

observed over time. However, in reality, this is nearly impossible for two reasons. First, the quality of goods and services change over time. As such, some portion of increasing prices over time is due to improvements in quality rather than inflation. For example, a television may cost more today than one in the 1950s, but a television today is in color and offers much better resolution. It would be incorrect to say all of the increase in the television prices is due to inflation; only the portion that is unexplained by quality improvements would be attributed to inflation. Second, new products are introduced into the marketplace over time that are fundamentally different than any historical products and are only slowly incorporated into price indices with fixed baskets. For example, television ownership spread rapidly in the 1950s, and are now being partly supplanted by personal electronic devices that did not exist in the 1950s. Statistical agencies try to adjust data to account for these factors, because, if these complications are not correctly accounted for, measured inflation would be inaccurate and most likely overstated.

Adjusting for Inflation

Comparing real figures is often beneficial to observe actual changes in purchasing power over time, rather than changes in the number of dollars.

To adjust nominal figures for inflation, multiply the nominal figure by the ratio of the price index value in the target year to the price index value in the base year, as shown below:

$$\text{Real Figure} = \text{Nominal Figure} \times (\text{CPI Target Year} / \text{CPI Base Year})$$

For example, median household income in 1990 (the base year) was \$29,943 in nominal terms. To determine the equivalent income in terms of purchasing power for 2015 (the target year) using CPI, multiply \$29,943 by the ratio of CPI in 2015 (237) to the CPI in 1990 (131), which comes out to about \$54,312.

As discussed previously, there are a number of different price indices, and within those indices more specific deflators are available to make inflation adjustments. It is important to use the most relevant index for the subject being researched. For example, when looking at corporate revenues in the United States, it would be advisable to use the Producer Price Index, which uses a market basket consisting of the price of goods and services sold by domestic producers, as opposed to the CPI, which is designed to reflect the goods and services purchased by the typical household.

Resources

The Bureau of Labor Statistics creates various price indices, available at <http://www.bls.gov/bls/inflation.htm>.

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