

## Bond Basics

June 2006

### Inflation and Its Impact on Investments

*Understanding inflation is crucial to investing because inflation can reduce the value of investment returns. Inflation affects all aspects of the economy, from consumer spending, business investment and employment rates, to government programs, tax policies, and interest rates.*

*The following article explains the basics: What is Inflation? What Causes Inflation? How Is Inflation Measured? How Does Inflation Affect Investment Returns? How Can I Protect My Fixed-Income Portfolio From Inflation? and How Can Inflation Be Controlled?*

#### What is Inflation?

Inflation is a sustained rise in overall price levels. Moderate inflation is associated with economic growth, while high inflation can signal an overheated economy.

As an economy grows, businesses and consumers spend more money on goods and services. In the growth stage of an economic cycle, demand typically outstrips the supply of goods, and producers can raise their prices. As a result, the rate of inflation increases. If economic growth accelerates very rapidly, demand grows even faster and producers raise prices continually. An upward price spiral, sometimes called “runaway inflation” or “hyperinflation,” can result.

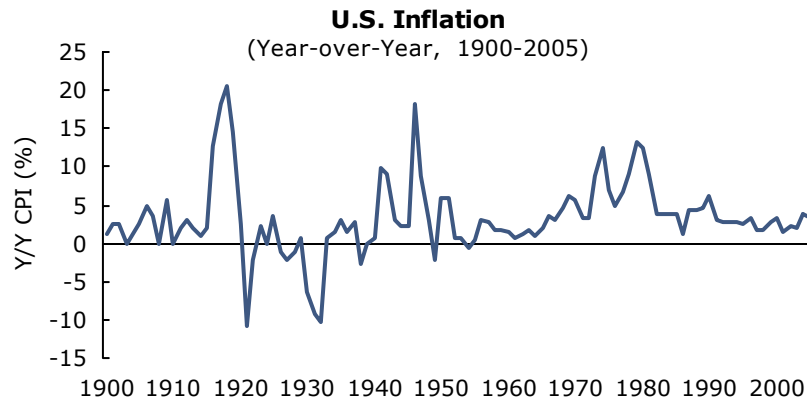
In the U.S., the inflation syndrome is often described as “too many dollars chasing too few goods;” in other words, as spending outpaces the production of goods and services, the supply of dollars in an economy exceeds the amount needed for financial transactions. The result is the purchasing power of a dollar declines.

In general, when economic growth begins to slow, demand eases and the supply of goods increases relative to demand. At this point, the rate of inflation usually drops. Such a period of *falling inflation* is known as *disinflation*. Disinflation can also result from a concerted effort by government and policy makers to control inflation; for example, for much of the 1990s, the U.S. enjoyed a long period of disinflation even as economic growth remained resilient. The chart below shows that inflation in the U.S. has fallen significantly since the 1980s.

When prices actually fall, *deflation* has taken root. Often the result of prolonged weak demand, deflation can lead to recession and even depression. The chart shows that the longest and most severe period of deflation over the past century occurred in the 1920s and in the 1930s during the Great Depression.

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### How Is Inflation Measured?

When economists try to discern the rate of inflation, they generally focus on “core inflation.” Unlike the “headline,” or reported inflation, core inflation excludes food and energy prices, which are subject to sharp, short-term price swings.

There are several regularly reported measures of inflation that investors can use to track inflation. In the U.S., the two most widely monitored indicators are the Producer Price Index (PPI) and the Consumer Price Index (CPI).

- The PPI, previously called the wholesale price index, measures prices paid to producers, usually by retailers. Reported monthly, some three-quarters of the index measures prices of consumer goods, while capital goods prices account for the rest. The PPI picks up price trends relatively early in the inflation cycle.
- The more widely followed CPI reflects retail prices of goods and services, including housing costs, transportation, and healthcare. Many private and government contracts, such as social security payments or labour contracts, are explicitly linked to changes in the CPI. The value of Treasury Inflation Protection Securities (TIPS), a type of bond, is also contractually linked to the CPI, as discussed below.

The Gross Domestic Product Deflator (GDP Deflator) is a broad measure of inflation reflecting price changes for goods and services produced by the overall economy; it is reported quarterly in conjunction with the Gross Domestic Product.

### What Causes Inflation?

Economists do not always agree on what spurs inflation at any given time. However, certain forces clearly contribute to inflation.

Rising commodity prices are perhaps the most visible inflationary force because when commodities rise in price, the costs of basic goods and services generally increase.

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Higher oil prices, in particular, can have the most pervasive impact on an economy. Higher oil prices mean first, that gasoline prices will rise. This, in turn, means that the prices of all goods and services that are transported to their markets by truck, rail or ship will also rise. At the same time, jet fuel prices go up, raising the prices of airline tickets and air transport; heating oil prices also rise, hurting both consumers and businesses.

By causing price increases throughout an economy, rising oil prices take money out of the pockets of consumers and businesses. Economists therefore view oil price hikes as a “tax,” in effect, that can depress an already weak economy. Surges in oil prices were followed by recessions or *stagflation*--a period of inflation combined with low growth and high unemployment--in the 1970s, 1980s and early 1990s.

In addition to oil price hikes, exchange rate movements can presage inflation. As a country's currency depreciates, it becomes more expensive to purchase imported goods, which puts upward pressure on prices overall. When the dollar weakened to a record low against the euro in the first half of 2003, for example, the cost of European imports in the U.S. rose, suggesting that inflation could increase in the U.S.

Over the long term, currencies of countries with higher inflation rates tend to depreciate relative to those with lower rates. Because inflation erodes the value of investment returns over time, investors may shift their money to markets with lower inflation rates.

### How Does Inflation Affect Investment Returns?

Inflation poses a “stealth” threat to investors because it chips away at real savings and investment returns. Most investors aim to increase their long-term purchasing power. Inflation puts this goal at risk because investment returns must first keep up with the rate of inflation in order to increase real purchasing power. For example, an investment that returns 2% before inflation in an environment of 3% inflation will actually produce a negative return (-1%) when adjusted for inflation.

If investors do not protect their portfolios, inflation can be harmful to fixed-income returns, in particular. Many investors buy fixed-income securities because they want a stable income stream, which comes in the form of interest, or coupon, payments. However, because the rate of interest, or coupon, on most fixed-income securities remains the same until maturity, the purchasing power of the interest payments declines as inflation rises.

In much the same way, rising inflation erodes the value of the principal on fixed-income securities. Suppose an investor buys a five-year bond with a principal value of \$100. If the rate of inflation is 3% annually, the value of the principal *adjusted for inflation* will sink to about \$84 over the five-year term of the bond.

Because of inflation's impact, the interest rate on a fixed-income security can be expressed in two ways.

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- The *nominal, or stated, interest rate* is the rate of interest on a bond without any adjustment for inflation. The nominal interest rate reflects two factors: the rate of interest that would prevail if inflation were zero (the *real rate of interest*, below), and the expected rate of inflation, which shows that investors demand to be compensated for the loss of return due to inflation. Most economists believe that nominal interest rates reflect the market's expectations for inflation: Rising nominal interest rates indicate that inflation is expected to climb, while falling rates indicate that inflation is expected to drop.
- The *real interest rate* on an asset is the nominal rate minus the rate of inflation. Because it takes inflation into account, the real interest rate is more indicative of the growth in the investor's purchasing power. If a bond has a nominal interest rate of 5% and inflation is 2%, the real interest rate is 3%.

Inflation can adversely affect fixed-income investments in another way. When inflation rises, interest rates also tend to rise either due to market expectations of higher inflation or because the Federal Reserve has raised interest rates in an attempt to fight inflation. (See below for more information on how the Federal Reserve combats inflation). When interest rates rise, bond prices fall. Thus, inflation may lead to a fall in bond prices, potentially reducing total returns on bonds.

Unlike bonds, some assets rise in price as inflation rises. Price rises can sometimes offset the negative impact of inflation:

- *Common stocks* have often been a good investment relative to inflation over the very long term, because companies can raise prices for their products when their costs increase in an inflationary environment. Higher prices may translate into higher earnings. However, over shorter time periods, stocks have often shown a negative correlation to inflation and can be especially hurt by unexpected inflation. When inflation rises suddenly or unexpectedly, it can heighten uncertainty about the economy, leading to lower earnings forecasts for companies and lower equity prices.
- Prices for *commodities* generally rise with inflation. Commodity futures, which reflect expected prices in the future, might therefore react positively to an upward change in expected inflation.

### How Can I Protect My Fixed-Income Portfolio from Inflation?

To combat the negative impact of inflation, returns on some types of fixed-income securities are linked to changes in inflation:

- Floating-rate notes offer coupons that rise and fall with key interest rates. The interest rate on a floating-rate security is reset periodically to reflect changes in a base interest rate index, such as Treasury bills or the London Interbank Offered Rate (LIBOR). Floating-rate notes have therefore been positively, though imperfectly, correlated with inflation.

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- Inflation-linked bonds issued by many federal governments are explicitly tied to changes in inflation. In 1997, the U.S. introduced Treasury Inflation Protection Securities (TIPS). TIPS protect investors from inflation because both their principal and their interest payments adjust as the CPI changes.

Many commodity-based assets, such as commodity indices, can help cushion a portfolio against the impact of inflation because their total returns usually rise in an inflationary environment. However, some commodity-based investments are influenced by factors other than commodity prices. Oil stocks, for example, can fluctuate based on company-specific issues and therefore oil stock prices and oil prices are not always aligned.

### How Can Inflation Be Controlled?

Central banks, including the U.S. Federal Reserve (the Fed), attempt to control inflation by regulating the pace of economic activity. They usually try to affect economic activity by raising and lowering short-term interest rates.

Lowering short-term rates encourages banks to borrow from the Fed and from each other, effectively *increasing the money supply* within the economy. Banks, in turn, make more loans to businesses and consumers, which stimulates spending and overall economic activity. As economic growth picks up, inflation generally increases. Raising short-term rates has the opposite effect: it discourages borrowing, *decreases the money supply*, dampens economic activity and subdues inflation.

Management of the money supply by the Fed, and by other central banks in their home regions, is known as *monetary policy*. Raising and lowering interest rates is the most common way of implementing monetary policy. However, the Fed can also tighten or relax banks' reserve requirements. Banks must hold a percentage of their deposits with the Fed or as cash on hand. Raising the reserve requirements restricts banks' lending capacity, thus slowing economic activity, while easing reserve requirements generally stimulates economic activity.

The Fed is often credited with engineering, through monetary policy, the long period of disinflation in the U.S. that helped lead to the stock market gains of the 1990s. Starting in 1979, then-Fed Chairman Paul Volcker allowed short-term interest rates to rise continuously to break an inflationary spiral that had driven the CPI to almost 15%. In the following years, the Fed responded to economic conditions with great care, causing rates to rise and fall as needed, and brought inflation down to less than 2% by mid-2002.

The federal government at times will attempt to fight inflation through *fiscal policy*. Although not all economists agree on the efficacy of fiscal policy, the government can attempt to fight inflation by raising taxes or reducing spending, thereby putting a damper on economic activity; conversely, it can combat deflation with tax cuts and increased spending designed to stimulate economic activity.

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### London

PIMCO Europe Ltd  
Nations House  
103 Wigmore Street  
London W1U 1QS  
England  
44-20-78721300

### Munich

PIMCO Europe Ltd Munich Branch  
Nymphenburger Straße 112-116  
80636 Munich  
Germany  
49-89-1221-90

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