CHAPTER 15

# Inflation

Were you a little frustrated a few years back when gas prices suddenly rose? The increase in gas prices probably created some hardship as you altered your spending in order to accommodate its higher cost. Now imagine that not just gas prices but the price of almost everything you buy suddenly and unexpectedly increases. If you are on a fixed income, then there is only so much altering you can do to a budget before you realize that high prices are killing your finances. Inflation is a phenomenon that you need to understand if you want to comprehend how the economy works.

## What Is Inflation?

No word strikes more fear into the hearts of central bankers than inflation. Defined as a general increase in prices or as a decrease in money's purchasing power, inflation creates problems for more than central bankers. Inflation affects everyone in the economy. Governments, businesses, and households are subject to inflation's influence. Inflation is either created by excessive demand or increases in producers' per unit costs, but it is sustained by too much money in circulation. Left unchecked, inflation can have cataclysmic results for a society.

During the 1920s, the Weimar Republic of Germany suffered from extreme inflation. Instead of taxing or borrowing to raise revenue, the government began to print money for the purpose of making its purchases. The result was runaway inflation. Some historians credit the period of inflation and the resulting loss of confidence in the Weimar Republic for sowing the seeds of Hitler's eventual rise to power.

Hungarian inflation was so severe in 1945 and 1946 that prices were measured in not tens or hundreds but billions, trillions, and even octillions. By the end of the period of Hungarian hyperinflation, the total supply of pengos in circulation had less value than a single pengo did at the beginning.

If you were around in the 1970s, then you might remember the time period known as the great inflation. The Vietnam War, OPEC, the collapse of the adjustable peg system (where world currencies were pegged to the dollar), and poorly managed monetary policy created conditions of rising prices and uncertainty. Although American inflation did not even come close to approaching the levels of the Weimar Republic and modern-day Zimbabwe, it was enough to cause political turmoil and bring lasting change to the way policymakers manage the price level.

## Measuring Inflation

Inflation is the rate of increase in the average price level of the economy. To measure inflation first requires that the price level be measured. Economists have come up with different ways to measure the general price level in the economy, and therefore, inflation. The most often cited measure of inflation is the change in the **consumer price index** (CPI). In addition, economists and policymakers also pay attention to changes in the **producer price index** (PPI) and the **personal consumption expenditure deflator** (PCE deflator).

Economists and policymakers pay careful attention to inflation. In order to make appropriate policy though, they must choose to ignore certain types of inflation. The BLS and BEA both publish headline and core inflation measures. Headline CPI includes the entire market basket, while core CPI excludes more volatile food and energy prices. The Fed pays attention to core PCE when making its policy decisions. You do not want to raise interest rates just because corn and gas prices increased.

The CPI is a market basket approach to measuring the price level and inflation published by the BLS. The CPI measures the average cost of food, clothing, shelter, energy, transportation, and health care that the average urban consumer buys. To understand CPI, imagine that you are given a shopping list of thousands of different items. You are then told to research and write down the price of each specific item, and afterward add them all together. The total cost of the list would represent an average price level. Further assume that a year later you took the same list and repeated the process. Increases in the shopping list's total would represent inflation.

The PPI is similar to CPI, but instead of consumer prices, PPI looks at producer prices. The PPI includes all domestic production of goods and services. Unlike CPI, the PPI also includes the prices of goods sold by

one producer to another. Changes in PPI can be used as a predictor of future changes in CPI. Before consumer prices change, the producer price changes. Because it predicts changes in CPI, the government and central bank use the PPI to create fiscal and monetary policy in anticipation of possible consumer inflation.

In order to remove the effects of inflation from nominal GDP to arrive at real GDP, the BEA also computes the GDP deflator. This price index is inclusive of all final domestic prices. Where the CPI measures groceries, the GDP deflator measures the price of groceries and the price of armored personnel carriers. This broad measure is not of much use to individual consumers, but it is important for understanding the whole economy.

The PCE deflator is a broad measure of consumer inflation published by the BEA. Unlike the CPI, which measures a fixed market basket, PCE deflator measures all of the goods and services consumed by households and nonprofit institutions. PCE deflator is a more comprehensive measure. Because it does not deal with a fixed market basket, it better reflects consumers' tendency to substitute more-expensive items with less-expensive items and their tendency to vary consumption as time passes.

## Types of Inflation

There are two primary types of inflation: demand-pull and cost-push. Understanding which type of inflation is occurring at any given point in time is important if policymakers want to respond appropriately. The two types of inflation are not mutually exclusive, so it is possible for both to occur simultaneously. Left untreated, inflation can cause a wage-price spiral or even hyperinflation.

### Demand-Pull Inflation

**Demand-pull inflation** occurs when spending on goods and services drives up prices. Demand-pull inflation is fueled by income, so efforts to stop

it involve reducing consumer's income or giving consumers more incentive to save than to spend.

Demand-pull inflation persists if the public or foreign sector reinforces it. Low taxes and profligate government spending exacerbate demand-pull inflation. A failure of the central bank to reign in the money supply also makes the demand-pull inflation worse. Demand-pull inflation can spread across borders as well. China and India's economic growth not only puts pressure on prices in these countries but also on prices worldwide as the demand for imports increase.

If government spending is financed by printing currency or by the central bank monetizing the debt, demand-pull inflation can become hyperinflation. **Hyperinflation** is defined as annual inflation of 100% or greater. All cases of hyperinflation have been accompanied by the government or central bank issuing too much money.

**What does "monetizing the debt" mean?**
Monetizing the debt refers to the process by which the central bank buys new government debt, thus increasing the supply of money in circulation. When debt is monetized, the government is able to spend without raising taxes or borrowing from the private sector. The downside is that debt monetization is extremely inflationary.

## Cost-Push Inflation

**Cost-push inflation** occurs when the price of inputs increases. Businesses must acquire raw materials, labor, energy, and capital to operate. If the price of these were to rise, it would reduce the ability of producers to generate output because their unit cost of production had increased. If these increases in production cost are relatively large and pervasive, the effect is to simultaneously create higher inflation, reduce real GDP, and increase the unemployment rate. You might recognize this combination by another name, **stagflation**. In the 1970s, OPEC cut oil production, which led to much higher energy prices along with double-digit inflation and unemployment. Because producers faced higher operating costs, they reduced

output. Relative to the demand for their products, the supply decreased, which resulted in cost-push inflation.

If cost-push inflation has a bright side, it is the fact that it is self-limiting. Cost-push inflation is associated with decreases in GDP. The decreased GDP and resulting high unemployment helps to bring producer prices back down. The trick to combating cost-push inflation is realizing that it is not demand-pull. The policy prescription for each is different, and applying the wrong prescription can create more problems than it solves. It is the unemployment issue that usually spurs policymakers to action. If they respond to the increased unemployment by increasing spending, the inflation problem is made worse. A **wage-price spiral** can result if the policy responses create more demand for goods and services at the same time that unit costs are rising. By way of analogy, the prescription for a grease fire is different from that of a forest fire. Grease fires are put out by removing the source of oxygen, while a forest fire is extinguished with water. If you pour water on a grease fire, then things only get worse. This is what happened in the 1970s. Instead of letting cost-push inflation run its natural course, the Fed poured money on it, and inflation worsened.

## Who Gains and Who Loses from Inflation?

Inflation creates winners and losers. Knowing who wins is important for understanding why it is sometimes allowed to persist. When inflation is expected and stable, it is rather benign. People and institutions can plan for it and build it into their decision-making. If inflation is unexpected, it creates a win-lose situation in society. Who stands to gain from inflation?

### Benefiting from Inflation

First consider what inflation is: a general increase in prices and a corresponding decrease in money's purchasing power. Borrowers benefit from a general increase in prices or a reduction in purchasing power. When individuals, businesses, and governments borrow, it is usually at a fixed rate of interest that had some expected level of inflation built into it. If higher than expected inflation occurs, then the real value of the borrower's debt is reduced. Assume that banks lend billions of dollars at a fixed nominal

interest rate of 5%. If inflation were to unexpectedly increase from 2% to 4%, then borrowers' real interest rate paid would be reduced from 3% to 1%. In simpler terms, the money that was lent was more precious than the money being repaid.

Another group that benefits from an increase in consumer prices in the short run is producers. When unexpected inflation occurs, consumer prices rise while wages paid to employees remain relatively stable. This allows producers to experience higher profits for a time until wages adjust to reflect the higher prices consumers are paying.

In the past, many governments in the developing world tried erasing their foreign debts by overprinting their currency. Faced with much external debt, governments would devalue their currency in order to satisfy the debt. Given the current size of the United States debt, some fear that the American government might be tempted to do something similar. Most developed nations have independent central banks to act as a check on government's incentive to overprint currency. In the United States, the Federal Reserve is somewhat insulated from political pressure and can constrain the money supply when government's incentives are to expand it.

## Losing with Inflation

Inflation harms more than helps. Lenders and savers both lose when inflation exceeds expectations. Both earn interest rates that assume some rate of inflation, and when the actual rate exceeds the expected rate, savers and lenders are harmed. Maybe you save money in a bank CD. Assume you purchase a $1,000 one-year simple CD that pays 4% nominal interest. If inflation increases unexpectedly from 2% to 5%, then the real interest rate you earn is approximately -1%. You are worse off than when you started. In nominal terms you still made $40.00 of interest. The problem is that the $1040 that you now have has less purchasing power than the $1000 you started with.

Inflation is thought to be harder on those with lower incomes. People with low incomes tend to have more of their wealth in the form of cash than do those with higher incomes. High-income earners have cash to be sure, but they also are more likely to have much of their wealth in other real and financial assets. For the poor, inflation exacts a heavier toll because it destroys the value of their chief asset, which is cash. The higher-income

earners are able to offset some of inflation's effect by holding assets that actually appreciate with inflation.

Those living on fixed incomes are also harmed by inflation. During periods of unanticipated inflation, fixed-income earners see their real incomes decline. Professionals on a fixed salary or retirees living on a fixed pension lose purchasing power as long as the rate of inflation exceeds the rate at which their pay increases. To mitigate some of these effects, employers, or in the case of social security recipients, the government, will adjust pay to inflation through the use of **cost of living adjustments** (COLA). Even with COLA, fixed-income earners are still harmed by inflation as the cost adjustment lags inflation. During periods of higher than expected inflation, fixed-income earners are forever playing a game where their pay increases are too little and come too late.

Next time you sit down at a restaurant with laminated menus, consider what that says about inflation. When restaurants laminate their menus they are not only protecting them from spills, but they are also testifying that prices are relatively stable. When inflation is out of control, restaurants must continually update their prices, so they do not want to fix prices on the menu. Unlike most restaurant prices, seafood prices are highly volatile; that is why they are usually priced on a chalkboard.

Inflation creates practical problems for individuals and businesses in an economy. Because money is quickly losing value, consumers must engage in transactions more frequently as they rush to spend whatever money they have. The increase in transactions creates what is called **shoe-leather costs**. You wear out your shoes quicker when inflation is present because of the increase in your transactions. Inflation also poses a problem for producers who constantly have to reprice their goods as inflation continues. Remember that there is no such thing as a free lunch. Placing prices on goods is not free. If inflation is high, then significant costs are created as businesses pay employees to reprice their items. Persistent inflation results in forgone output as labor resources are put to the task of keeping up with ever-changing prices.

## Disinflation

One of the triumphs of Fed policy came in the early 1980s when the central bank under the direction of then chairman Paul Volcker raised interest rates and helped bring inflation down from double digits to a more modest 4%, thus ending the period known as the Great Inflation. If you were around at the time, then you will recall that the Fed action also resulted in the worst recession in decades. In retrospect, many economists agree that the reduction in inflation or disinflation that resulted was worth the cost of recession. From the 1980s onward, inflation remained relatively low and stable and ushered in an economic era known as the Great Moderation.

**Disinflation** is beneficial to an economy for several reasons. Disinflation reduces pressure to increase wages, as prices are more stable. Disinflation also results in lower, more stable interest rates, which makes capital investment less costly and easier to plan. Arguably the most important outcome of disinflation is that producers' and consumers' inflationary expectations are lowered, which results in a profoundly more stable economic environment.

## The Role of Expectations

One of the interesting features of economics is the possibility for self-fulfilling prophecies. In the realm of inflation, fear or hubris is often realized with changes in the rate of inflation. The fear of inflation or the general expectation that inflation will occur is often enough to spark an inflationary period. Consumers fearful of inflation will spend more and save less, which results in demand-pull inflation. The resulting demand-pull inflation reinforces the expectation of future inflation, and wage earners demand higher nominal wages to offset the effects. This of course results in cost-push inflation. If policymakers fail to manage the expectations of inflation, a higher expected inflation rate embeds itself into the economic consciousness. With this higher expected rate of inflation, the economy is not able to produce as much output as it otherwise would and faces higher prices than it otherwise should.

Central bank authorities try to manage not only actual inflation but, more importantly, the expectation of future inflation. Because the fear of

inflation is often enough to create it, policymakers are in the business of acting as a psychologist to the economy.

Managing inflation expectations means that the Fed chairman must be very careful about what he says. Former chairman Alan Greenspan was famous for his cryptic quotes, often referred to as Fed speak. According to Greenspan, "I guess I should warn you, if I turn out to be particularly clear, you've probably misunderstood what I've said."

It is not enough to talk the talk when it comes to managing expectations, however; the Fed must walk the walk. If you have ever dealt with children, you know that words without action are meaningless. A parent may respond to a teenager's rude behavior by threatening, "If you don't stop behaving this way, I will confiscate your cell phone for the weekend." If the rude behavior continues and the parent doesn't act on the threat, the parent's credibility is undermined. A parent who consistently follows through, however, is much more credible. Likewise, the Federal Reserve bolsters its credibility when it raises interest rates in response to inflation fears, but it loses credibility when it fails to respond forcibly to the possibility of inflation. The Fed's credibility as an inflation fighter was greatly reinforced by Paul Volcker's chairmanship because he said what he meant and meant what he said.

## Deflation

If inflation is bad, disinflation is better, then deflation must be best, right? Wrong. **Deflation** occurs when the average price level is declining and money's purchasing power is increasing. What could be wrong with that? The problem with deflation is that it creates a perverse set of incentives in the economy. If prices are steadily declining, then consumers delay their purchase of durable goods as the deals just keep getting better as time passes. If this behavior continues, manufacturing grinds to a halt and widespread unemployment results. The unemployment would then reinforce the deflation, as fewer and fewer consumers would be willing and able to purchase

goods and services. Producers respond similarly to deflation by delaying investment and compounding the effects of the delayed consumption.

Deflation poses a policy dilemma for central banks that primarily use interest rates to influence economic activity. In response to increased inflation, central banks raise interest rates to reduce the flow of credit and cool inflation pressure. There is no upper limit to how high an interest rate can go, but the opposite is not true. Given deflation, central banks will lower interest rates to encourage investment and consumption. If the lower interest rates do not have the desired effect, central banks will continue to lower until they hit what economists refer to as the **zero bound**. Once interest rates are at zero, they cannot go lower.

**What is a good rate of inflation?**
The magic number seems to be 2%. At a 2% annual rate of inflation, prices are relatively stable and slow growing. A 2% inflation rate results in prices doubling about every 36 years. A 2% rate is also high enough that should policymakers make mistakes, there is some cushion before deflation is a problem.

John Maynard Keynes referred to this weakness in monetary policy as **liquidity trap**. If consumers and investors will not borrow at 0% interest, then you are out of options. The solution for deflation is to create inflation. Milton Friedman suggested that in economies with an inconvertible fiat money standard, deflation should never be a problem. All the monetary authorities would need to do is print money, or in the case of economies with independent central banks, monetize the debt, and the deflation would end. It's been said that this policy is like a government ending deflation by dropping cash from helicopters over the landscape. This policy solution was reiterated in 2002 by Benjamin Bernanke, which earned the Fed chairman the nickname "Helicopter Ben."