Economic Fluctuations: Unemployment and Inflation

Inflation

Inflation and Purchasing Power

When prices are rising, you can buy less with a given amount of money. When hotdogs are expensive, a given amount of money will buy a small number of hotdogs. But when hotdogs are inexpensive, that is the price is low, your given hotdog allowance will purchase a lot more satisfaction. There is a relationship between prices and purchasing power that is a reciprocal relationship and that's the relationship that we're going to be studying in this lesson. When prices are going from low prices to high prices, that is when there is inflation in the economy, the value of the dollar is shrinking, that is your purchasing power is going from being able to buy a lot to being able to buy a little. In this lesson, I'm going to begin by giving a simple numerical example, and then we'll talk about how you can use the GDP deflator to show the relationship between the inflation rate and purchasing power.

Let's start by assuming that we are in a period of inflation and let's let hotdogs be a representative good, that is the price of all goods and services across the economy is increasing at some general rate and we're going to look at the price of hotdogs in order to infer what is happening to purchasing power as prices are rising. We're going to be focusing now on the reciprocal relationship between the price level and the purchasing power of the dollar, that is, what will a dollar buy as the price level is changing. And I've written out here as clearly as I can the formula that shows this reciprocal relationship, that is, one over the price level equals the purchasing power of a dollar. Let me make this very clear. Let's suppose that the price of a hotdog is five cents. Well, what's the purchasing power of your dollar? Five cents is the same thing as one twentieth of a dollar. Therefore the reciprocal of one twentieth is twenty. Your dollar will buy twenty hotdogs. That's its purchasing power.

Now suppose we're in a period of inflation, so that prices are rising, and the price of a hotdog goes up to two dollars. What's happened to your purchasing power? Well, your dollar will no longer buy even a whole hotdog. Two dollars, or 2, has a reciprocal of one half, that is, you can now only afford half a hotdog. Your purchasing power has shrunk from twenty hotdogs at a price of five cents a piece, to one half a hotdog whenever the price is two dollars per hotdog. This simple example makes clear that the price level and the purchasing power of the dollar are reciprocals.

Now, let's look at some examples using the GDP deflator. Suppose that we're in the year 2000, which is our base year for calculating the GDP deflator and we calculate the price of a market basket of goods and services- that is, a little bit of housing, and a little bit of transportation, a little bit of medical care, a little bit of clothing, etc. And we're going to call the price level in the year 2000 one hundred because it's our base year.

We look at those prices again in 2002, and we find that the price of the goods and services, as a ratio of the same prices in 2000 is equal to 104. That is, prices have increased by about 4 percent between the year 2000 and 2002. So if we write the GDP deflator, not in the form we usually write it, that is multiplied by 100 to get 104, but let's write it now as in hundredths, 1.04, to show the 4 percent increase in prices between the year 2000 and 2002. Well, what's happened to the purchasing power of a dollar between the year 2000 and 2002? That is, how much can we afford to buy in 2002 with a dollar if we measure it in the prices of the year 2000? Prices are higher in 2002, therefore the dollar won't buy as much. Well if you take the reciprocal of the GDP deflator 1.04, you get 0.96. What's that saying? It's saying that what you could have bought for 96 cents back in the year 2000, now it costs you a dollar to buy in 2002. That is a dollar in 2002, is only worth what 96 cents was worth back in the year 2000. You can afford to buy less. Your purchasing power has shrunk by about 4 percent. Your purchasing power shrinks at the same rate that the price level increases, because the price level and your purchasing power are reciprocals of each other.

Well, let's take another example, during a period of deflation. If we look at the years between 1929 and 1933, we'll see falling prices. If we choose 1929 as the base year, and if we call the price level in that 200000, or 1.00, if we look at prices in 1933 during the great depression, we see that the price level has fallen by about 24 percent. That is we've gone from 1.00 down to 0.76. So we now have lower prices in 1933 than we had in 1929.

Now what does that mean? What is going to happen to the purchasing power of your dollar when prices are lower? It's clearly going to increase. You're going to go from a small purchasing power to a bigger purchasing power. And if you take the reciprocal of 76 percent, you get 1.32. That is, the purchasing power of the dollar has increased by about 32 percent in this example. Now the reason the numbers don't add up exactly, the reason I can't say a 24 percent decrease in prices is equal to a 24 percent increase in purchasing power is because once your percentages start getting large, you run into this problem that a fifty percent increase is, sorry, that a 100 percent increase is the reciprocal of a 50 percent decrease you
wind up with this problem that we've discussed earlier about the calculation of percentage changes but you can still use this formula any time, it always works. One over the price level gives you the purchasing power of the dollar and when the price level is only 76 percent what it was before, your purchasing power is going to be 132 percent of what it was before. Falling prices give us an increase in the purchasing power of the dollar.

So, in some cases, whenever prices are changing very rapidly people may become afraid to use money. We've discussed that in periods of hyper inflation people are afraid of rapid changes in the purchasing power of money and therefore just won't accept it, and revert to barter instead. But typically people are looking at the rate of inflation to make decisions about how to behave in an inflationary environment. When prices are rising rapidly people are less inclined to save money because they are afraid that the interest they earn won't compensate them for the loss in purchasing power. Therefore they spend more today, and in spending more they may actually exacerbate the inflation, but we'll get to that later. Also, when prices are falling, people are less inclined to buy things today and more inclined to save because the falling prices are an extra return for their delaying their consumption.

So, the point of this discussion is that the price level is the reciprocal of the purchasing power of money. That is, when prices are going up, you're going to find that the purchasing power of the dollar is shrinking, and this simple formula allows you to calculate that relationship.