Keeping "It" Real – Real Rates of Interest
By FedReserveEducation EconLowDown
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Question for thought: Think of your purchasing power as water in a bucket. The interest you earn on any deposits is like a faucet dripping water into the bucket, adding to what you have. But inflation is like a leak at the bottom, letting water out. Even though the number of dollars in your account might grow, the leak from inflation means that what you can *actually buy* with those dollars might stay the same — or even shrink — over time. Why is this? What role does inflation play in your life?

Thanks for tuning in to the Economic Lowdown. I'm Scott Wolla.

How many of you know the interest rate on your savings account—the money you earn on your balance? Even more important, do you know what your real interest rate is? During this program I will explain real interest rates, and then later I will talk with some callers and answer questions they may have about real interest rates.

It's time to "get real" about interest rates.

To understand real interest rates, you have to first understand inflation. Inflation is a general, sustained upward movement in the prices of goods and services in an economy. It's easy to mistake price movements for some goods and services as inflation.

For example, gasoline prices have a lot of upward and downward movement, sometimes even from day to day. But rapidly rising or falling gasoline prices, or for that matter rising or falling prices of any single item, don't necessarily mean that the rate of inflation is increasing or decreasing.

Here's why: Inflation is an increase in the average price level of many goods and services. When the inflation rate goes up, it indicates that the prices of many goods and services are going up—your dollars will then buy less than they did before. In other words, the purchasing power of your money goes down when the inflation rate goes up. If your income is not rising as quickly as inflation, that could be a real problem. But, let's not get ahead of ourselves.

Inflation matters when making decisions related to interest rates on savings accounts and other financial assets. For example, when you have a savings account, interest is at work increasing the amount deposited, while inflation is at work reducing its value.

Imagine a bucket. The bucket is holding your purchasing power, so it is actually holding all of the things you could buy. Now imagine there is a faucet above the bucket dripping purchasing power into the bucket. This drip represents interest. But the bucket also has a small hole in the bottom, allowing your purchasing power to leak out. This leak represents inflation. If the bucket has purchasing power dripping in and leaking out at the same time, what will happen to the level of your purchasing power in the bucket? Well, it depends on which is faster—the dripping or the leaking.

If the drip of interest at the top is faster than the leak of inflation at the bottom, your purchasing power will increase, and you can buy more stuff. But, if the leak is faster than the drip, your purchasing power will decrease, and the amount of stuff you can buy will be reduced.

It looks like we have some listeners calling in. Let's see if we can help answer their questions about real interest rates. Hello Caller One.

Mike: Hello! I'm Mike and I earned $1,000 mowing lawns over the summer. My parents want me to open a savings account with that money, but I kind of want to keep it in a jar under my bed where it will be safe. What would you recommend?

Scott: Well as I mentioned earlier, having a savings account will help you. If you put that money into an account that's paying a 3 percent interest rate, about this time next year you will have $1,030. That's assuming you don't withdraw any of your money.

Mike: I could totally buy more things with an additional $30!

Scott: But, remember, the prices of goods and services will likely change over a year—some increasing and some decreasing. And if most prices are increasing, the inflation rate will increase and the purchasing power of your money will decrease.

Mike: What does that mean?

Scott: So, let's say that in that year prices, on average, rise 3 percent—that is, the inflation rate is 3 percent. Then you would need the entire $1,030 to buy what $1,000 purchased one year earlier.

Mike: What?!

Scott: After taking inflation into account, your 3 percent interest rate wouldn't allow you to buy any more goods and services than you could a year earlier. Put differently, the 3 percent you earned in interest would offset the 3 percent reduction in purchasing power caused by inflation.

So, at the end of the year, your purchasing power would be no more; it would be no less; it would be the same. Think back to our bucket example. With a 3 percent interest rate dripping in at the

top and a 3 percent inflation rate leaking out the bottom, the level in the bucket would stay the same.

Mike: So when making economic decisions I should take inflation into account?

Scott: Correct. Inflation changes the purchasing power of money. When talking about interest rates, the terms “real” and “nominal” are used to distinguish between rates that do and don’t take inflation into account.

A “nominal interest rate” is the rate that banks and financial institutions quote or state. It does not consider inflation. It is the actual rate paid. For example, the interest rate paid to you on a savings account is a nominal interest rate.

A “real interest rate” is an interest rate that has been adjusted for inflation.

To calculate a real interest rate, you subtract the inflation rate from the nominal interest rate. In mathematical terms we would phrase it this way: The real interest rate equals the nominal interest rate minus the inflation rate.

Now let’s go back to your $1,000 deposit. Using the formula, a 3 percent nominal interest rate minus a 3 percent inflation rate equals a real interest rate of 0 percent. So in real terms, as a depositor you have not gained any purchasing power nor have you lost any purchasing power. Stated differently, any extra purchasing power you might have earned in interest was canceled out by inflation.

Mike: Well if I’m not earning any real interest why shouldn’t I just keep my money in a jar under my bed?

Scott: Well, let's figure out what the real interest rate is on a deposit in a jar. You don't receive interest at the Bank of You, so the nominal interest rate on that money is 0 percent. But let's say the inflation rate is still 3 percent. The real interest rate you would earn at the Bank of You is negative 3 percent. So, you would actually lose purchasing power.

Other reasons to keep your money in the bank are that banks are safe and deposits kept at a bank are insured by the FDIC, whereas deposits at the Bank of You are not. You are likely better off depositing your money in a bank, even if the real interest rate is 0 percent.

But, let's say you earn a 3 percent nominal interest rate and the inflation rate decreases from 3 percent to 1 percent. In this case, the real interest rate on your money would be 2 percent. Again, inflation makes a difference.

Mike: Thanks for the info. I'm definitely going to keep my money in a bank account. I'm also going to keep an eye on inflation to check the purchasing power of my money.

Scott: Take care. Remember to "keep it real."

So far we've discussed interest rates from the perspective of a depositor, but they're also important to borrowers. Do we have any borrowers on the line?

Sandra: Hey, I'm Sandra and I have a loan with a 4 percent nominal interest rate. Currently the inflation rate is 2 percent, so according to your equation, (says under her breath, "lets' see – nominal interest rate of 4 percent minus inflation rate of 2 percent") I'd be paying a real interest rate of 2 percent, correct?

Scott: Correct.

Sandra: But if inflation increases to 4 percent, I'm paying a real interest rate of 0 percent?

Scott: Yes, well done! You'll notice two things here:

First, the nominal interest rate did not change at all, but the higher inflation rate reduced the real interest rate from 2 percent to 0 percent.

Second, at the higher inflation rate, the borrower benefits from a lower real interest rate—essentially, the money would be borrowed interest-free because of inflation.

However, the bank that made the loan would receive no real return on the loan.

Sandra: Thanks for clearing that up for me.

Scott: No problem.

Unexpected inflation creates winners and losers, and borrowers definitely benefit when unexpected inflation results in them paying lower real interest rates. Lenders, on the other hand, are the losers in this case and are not satisfied with the lower real rate. This assumes that the interest rate is fixed; otherwise banks would increase the interest rate along with the inflation rate.

Understanding real interest rates is especially important when the inflation rate is high or changing rapidly. For example, during the 1970s, nominal interest rates were very high in the United States.

Consumers who weren't inflation savvy may have believed that a 9 percent nominal interest rate on their deposits would make them rich. However, during much of that time, inflation rates were

also very high—even higher than nominal interest rates—so real interest rates were negative.

In contrast, in the 1990s, although nominal interest rates were relatively low, inflation was even lower, and real interest rates were positive much of the time.

When the inflation rate is changing rapidly, people may be unsure about how to save or spend their money, especially when a long-term commitment is involved.

For example, a certificate of deposit—a CD—locks the saver into an interest rate for a set period of time, and a home mortgage may be for 15 or 30 years. A rapidly increasing or decreasing inflation rate makes the decision to save or borrow money difficult because, while the nominal interest rate might not change, the real interest rate might change dramatically.

Take, for example, a 15-year mortgage with a 6 percent nominal interest rate. With a 3 percent inflation rate, the real interest rate will be 3 percent. But if the inflation rate were to unexpectedly rise to 7 percent, the real interest rate would become negative 1 percent. In this instance, the borrower would benefit, but the bank would earn a negative real interest rate on the loan.

On the other hand, if the inflation rate dropped to 1 percent, the real interest rate would increase from 3 percent to 5 percent, making the borrower worse off and the lender better off.

You can see that a stable, predictable inflation rate can take much of the guesswork out of the decision to save, borrow, or lend.

In the United States, the Federal Reserve System has been charged by Congress to maintain price stability and maximum employment. Price stability means a low and stable inflation rate,

and the Fed uses monetary policy to achieve this goal.

More specifically, the Fed's goal is to maintain a 2 percent inflation rate over the longer run.

Savers, borrowers, and lenders all benefit when inflation remains low and stable—they can conduct their transactions without having to consider whether a high or rapidly changing inflation rate might impact their finances in real terms.

Well it looks like we're out of time, Thanks for listening, and remember to "keep it real."

Concluding question: If your savings account pays 3% interest but inflation is also 3%, your account balance will be higher next year. But, do the extra dollars mean you can buy more, less, or exactly the same amount of goods and services as before? What has happened to your real purchasing power after considering your change in real ability to buy things determined by prices?

Reference: Wolla, S. (n.d.). *Economic lowdown podcast series: Episode 10 - Real vs. nominal* [Audio podcast episode]. In Federal Reserve Bank of St. Louis, *Economic lowdown podcast series*. Federal Reserve Bank of St. Louis. https://www.federalreserveeducation.org/teaching-resources/economics/banks-interest-rates/getting-real-about-interest-rates