Inflation Risks are on the Rise

Jens Hilscher, Alon Raviv, and Ricardo Reis

U.S. inflation rose sharply in 2021. Perhaps this is temporary, due to soaring energy prices and a fast recovery, or perhaps there will be a sustained increase in prices. Forward-looking market expectations show a sharply higher risk of high inflation.

The probability of inflation lying above 3% over the next five years jumped from 6.1% (November 2020) to 66.2% (November 2021).

Photo Credit: iStock.

In December 2021, U.S. inflation measured by the annual change in the all-items CPI was 7%—its highest value since March of 1982, almost forty years ago! Unsurprisingly, public interest in inflation has spiked as well, with the Google index of searches for inflation rising in May of 2021 to twice its average value during the previous five years. Price increases have been most salient in energy, with California gasoline prices experiencing a new all-time high at $4.68 in November. But, the increase in prices is broader than that; for example, December inflation for food at home was 6.5%, for electricity 6.3%, and for new vehicles 11.8%.

Temporary or Permanent?

Some inflation was, perhaps, inevitable. The most important question is whether higher inflation is temporary or persistent. The case for temporary inflation can be made by pointing towards temporary COVID-related shocks. First, at the trough of the recession, in April 2020, oil prices were negative. Since then, they have steadily increased—the average price in December was close to $70 dollars a barrel. Natural gas prices have also risen, from around $2.58 per British thermal unit (BTU) a year ago (December 2020) to $5 in November 2021. As it looks like energy prices are stabilizing at the higher level, or even coming down, their impact on inflation should disappear.

Second, the very fast recovery from the recession may have pushed prices up. Consumers, coming out of the lockdown with a high stock of savings (the savings rate out of personal disposable income in 2020 was one of the highest in decades) rushed to spend it in 2021; spending on durable goods was about one-third higher in 2021 than it had been in 2019. At the same time, firms took some time to reopen their doors, re-establish their links to suppliers, and hire back qualified workers. As soaring demand has been chasing sluggish supply in some sectors, prices have risen. As 2022 unfolds, some of the pent-up demand may slow down or disappear, and many firms should be able to expand supply in response to increased demand.

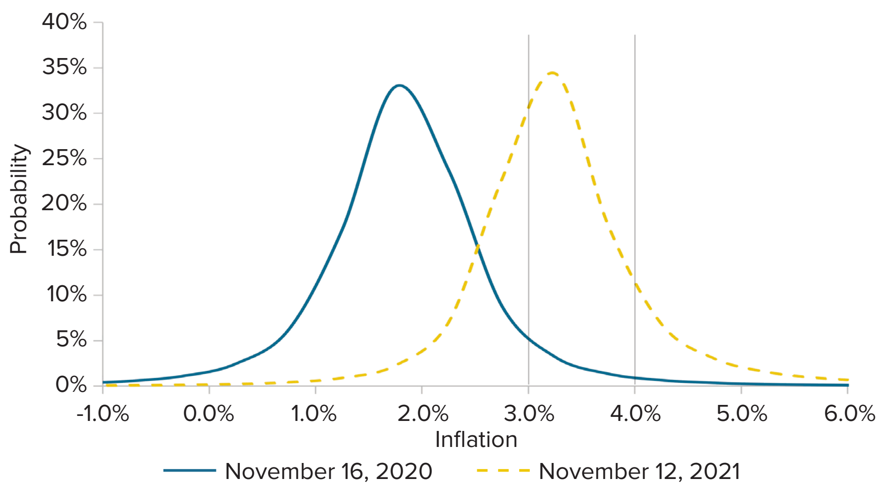
Third, global supply chains, especially in the production of semiconductors, were severely disrupted by the pandemic, leading to large increases in the price of an essential input to many sectors. Again, the semiconductor industry is already adapting and making large investments in capacity so that prices may soon fall.

However, inflation may also be here to stay. Global supply disruptions due to COVID could take longer to resolve, and higher new vehicle prices may persist, or increase further, if chip shortages persist. Perhaps most importantly, consumers may start to expect higher inflation and translate this into their wage demands. Many people are noticing that the purchasing power of their monthly paycheck has decreased significantly—at the pump, in grocery stores, when buying a new vehicle, or heating their home. If history is a guide, soon they will start demanding higher wages to restore their purchasing power. If this happens once, in 2022 alone, inflation may continue in 2022 but not beyond that. But, if companies raise prices in response to higher wage demands by workers, leading to further high expectations of inflation, further wage demands, and so on, then the United States could enter the wage-price spiral that is often at the heart of high and persistent inflation.

What Do Markets Think?

There are active financial markets in which people can trade the risk of inflation. Namely, there are financial contracts that pay off if inflation lies above a certain cutoff for a specific period. Such an inflation option pays off only if, for example, inflation lies above 3%. Another option, with a different cutoff price (the strike or exercise price), pays off if inflation lies above 4%.

Figure 1. Average Inflation Distribution Over the Next Five Years



Source: Based on inflation derivatives data from Bloomberg.

The fact that both contracts are trading in the market allows us to calculate the probability that inflation lies between 3% and 4%. If inflation is lower than 3%, neither contract pays anything, and if inflation is above 4%, both contracts pay off. The reason they are different is because sometimes inflation lies between 3% and 4%. If both options have a price that is similar, market participants view the probability of inflation lying between 3% and 4% as small, but if the prices are very different from each other, then the probability of lying in between is large. This classic insight allows us to construct the whole distribution and get a sense of how likely it is that inflation will lie above or below certain cutoffs.

Figure 1 shows one such distribution, for the average value of inflation over the next five years, measured in November of 2020 and 2021. Because of the long horizon, these forecasts focus on the inflation that is expected to persist. The striking rightward shift of these distributions is clear. According to these markets, there are signs that the risks of sustained higher inflation are increasing. Specifically, the probability of average inflation lying above 3% or above 4% over the next five years has increased substantially over the last few months.

In November 2020, the probability of average inflation lying above 3% over the next five years was equal to 6.1%; in November 2021, it was equal to 66.2%, a remarkable increase. To see this in Figure 1, note that in November 2020, only 6.1% of the total distribution lies below the curve to the right of the left vertical line (3% cutoff line), while 66.2% lies beyond the cutoff in November 2021. The probability of lying above 4% (to the right of the second vertical line), meanwhile, increased from 1.6% to 14.1%.

Figure 2 shows the probability of sustained high inflation over the next five or ten years. We plot the probability of average inflation lying above 3% or above 4% over the next five and ten years. It is apparent that market participants view sustained high inflation as much more likely now, compared to late 2020 and earlier in 2021. The probability of average inflation over the next five years lying above 3% is now significantly larger than 50%. In fact, even the probability of average inflation over the next ten years lying above 3% is almost equal to 40%. The probability of average inflation above 4% is much lower—14% over the next five years—but that probability has also risen sharply over the last several months. Also noticeable is that the risk of high inflation over the next five years has become higher than the risk of high inflation over the next ten years.

This difference supports the view that some of the inflation drivers are temporary. At the same time, it reflects the natural tendency of inflation not to be the same every year. If we think that it is likely that inflation will move around, it is also more likely that it may not be high and stay high. The other probable reason is that market participants may assume that inflation expectations are stable. If everyone thinks that inflation is close to, for example, 2% (close to the average over the last twenty years) then prices and wages will be set accordingly. The risk is that these expectations shift, and if that happens, it is likely that inflation may be here to stay for a while.

What Does It Matter if Inflation Is High?

There are several reasons why high inflation matters. First, high inflation is often also variable inflation. This makes planning by everyone more difficult. When writing a contract, deciding how much to save, or whether to purchase new equipment, people must figure out the value of alternatives at different points in time. The dollar is the unit of account to measure these values. When inflation, which is the change in what a dollar is worth, is variable, making these decisions becomes more difficult and prone to errors. A firm may plan for higher prices and perhaps higher profit margins of agricultural products or food items in grocery stores. If these do not materialize, costs will become a burden.

Second, because loans are written in dollars, when inflation is higher, the lender's payment is worth less in goods and services when she gets it back. On the other side, borrowers gain, paying less in real terms. Any existing long-term debt that is nominal will be easier to repay if inflation is high, and especially if inflation is high for many years. At the same time, any new debt will take this into account, so the interest rate charged will be higher to guard against the expected inflation. Worse, because high inflation tends to be variable inflation, lenders will start asking for higher interest rates beyond their expected inflation rates to get some insurance against the risk that inflation will be even higher. As a result, access to credit will suffer.

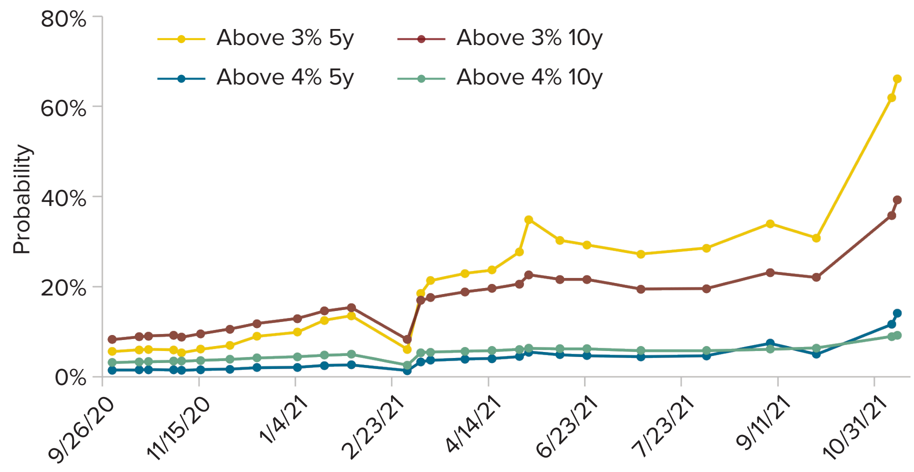
Third, and related, the largest borrower in the economy is the government. Recently, the U.S. government has been running record-high budget deficits, partly because borrowing costs have been low. Higher inflation, at first, lowers the real value of the public debt, making the U.S. government better off at the expense of those who bought its bonds. Soon after though, expected higher inflation will mean higher borrowing costs.

Where Do We Go From Here?

Over the next 6 to 12 months, the transitory effects pushing inflation up, from energy prices to supply chains, will have abated. At the same time, the higher expectations of inflation may have led to wage increases that are passed through to the prices firms set. How inflation behaves in 2022 will reveal the likely path for the next five years.

The financial markets data shows that uncertainty is high today, and that a favorable outcome is increasingly less likely. On its website, the Federal Reserve (the Fed) reports that its mandate is to conduct policy "so as to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates." Currently, however, inflation is expected to clearly exceed the target of "stable inflation at the rate of 2% per year."

Figure 2. Probability of Inflation Lying Above 3% or Above 4% Over the Next Five or Ten Years



Source: Based on inflation derivatives data from Bloomberg.

During 2022, we will see how the Federal Reserve reacts. So far, U.S. policymakers have put a greater weight on the dangers of stalling the recovery, or of creating financial instability, that might result from raising interest rates. Relative to these concerns, the risk of persistently higher inflation has been downplayed.

However, recently, the perception of the relative importance of these risks appears to have shifted. During his January confirmation hearings in the Senate, Fed Chairman Powell called inflation a "severe threat," while another voting member of the rate-setting committee indicated that four interest rate rises in 2022 "appear likely."

Importantly, what the Fed does will have a direct impact on how inflation evolves and especially on whether people expect inflation to persist. A central bank that is very committed to a stable inflation target can always bring inflation down, even if only by causing a recession. But the longer it waits, and the less people trust it to keep to that target, the higher are these costs.

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For additional information, the authors recommend:

Hilscher, Jens, Alon Raviv, and Ricardo Reis. 2021. "Inflating Away the Public Debt? An Empirical Assessment." *The Review of Financial Studies*. Available at: https://bit.ly/34xf6YK.

Reis, Ricardo. 2021. "Losing the Inflation Anchor." BPEA Conference Draft, Fall. Available at: https://www.brookings.edu/bpea-articles/losing-the-inflation-anchor/.