

Inflation – Will recent policy support change long-term trends?

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What is the current status of US inflation?

What are the current US inflation expectations, and are they reasonable?

What scenarios could cause inflation to be above expectations?

Inflation risk is an important consideration for most investors for two principal reasons; first, high inflation can erode an investor's purchasing power, second, unexpected inflation and high inflation during periods of slow economic growth have historically produced sharp declines in risk assets.

Most recently, inflation risk has been a key concern of investors since fiscal and monetary policy authorities unleashed record levels of liquidity and stimulus on the global economy in an effort to combat the economic shutdowns stemming from the onset of the COVID-19 virus.

While this is a reasonable concern considering the unique nature of this crisis and the aggressive response by policymakers, for the US inflation experience going forward, we expect that factors heavily influencing prices over the last few decades are still deeply entrenched in the economy. Also, these factors will ultimately overshadow the stimulus policies and continue to drive the benign inflation environment in the future.

In this newsletter, we will support this expectation by first highlighting the current state of inflation and then by reviewing several forward looking measures.

We conclude by considering the degree to which all of these expectations are reasonable and by highlighting a few recent developments that could potentially result in our expectation being wrong.

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What is the current state of US Inflation?

Deflationary risks are still a concern. Despite the US economy gradually reopening, economic data improving, and the development of a COVID-19 vaccine, overall economic activity remains below pre-COVID-19 levels. This reflects a fragile economy where demand and supply pressures are strained, and deflationary risks remain elevated.

As Figure 1 highlights, recent unemployment spikes to modern-day record highs and a subsequent slowing in the pace of the employment recovery, suggests demand-side weakness from elevated unemployment levels is a current risk and likely to persist over the near-term.

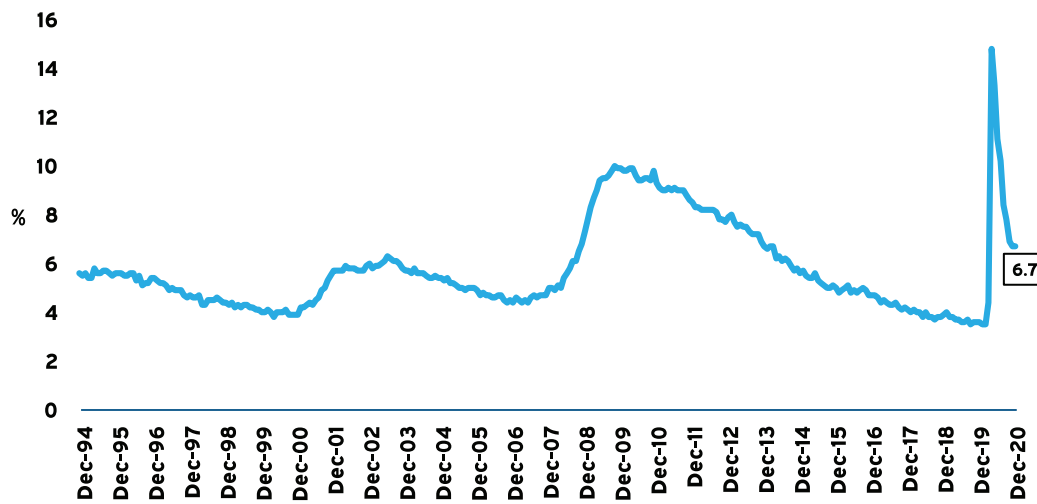


FIGURE 1
Unemployment Rate (U-3)
Source: Bureau of Labor Statistics.
Data as of December 31, 2020.

Figure 2, which shows US personal savings as a percent of disposable income currently at elevated levels, also supports the case for downside risk to demand and ultimately prices. Specifically, while spending is likely to pick-up as consumers are vaccinated and potentially return to prior spending patterns, with virus cases still spiking, the re-imposition of activity restrictions in certain areas, and continued uncertainty related to additional rounds of fiscal stimulus, risks to spending may continue.

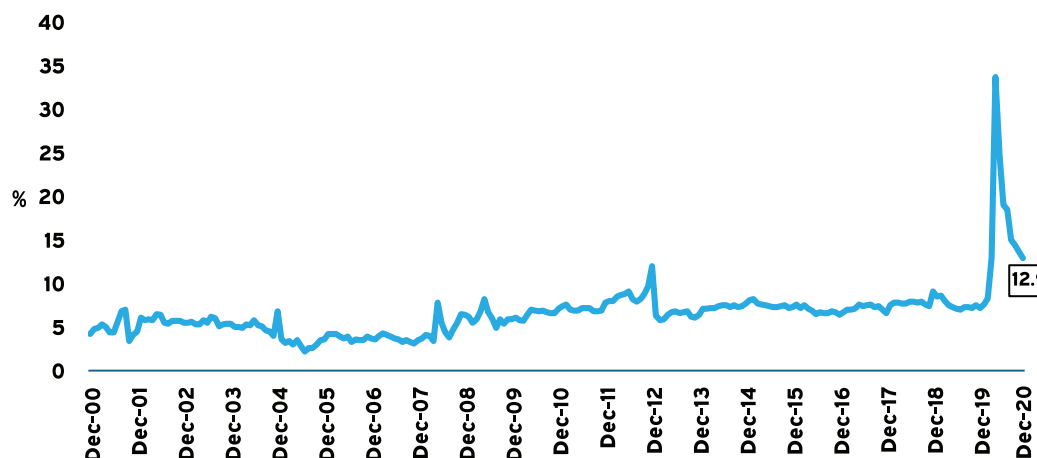


FIGURE 2
US Personal Savings as a % of Disposable Income
Source: Bureau of Economic Analysis.
Data as of 12/31/2020.

Deflationary risks are also evident when reviewing the current and expected US output gap (Figure 3). As the difference between actual and potential output collapsed to record low levels earlier in the year, and expectations that the economic fallout from the virus could last for years to come, deflationary risks will likely remain an issue.

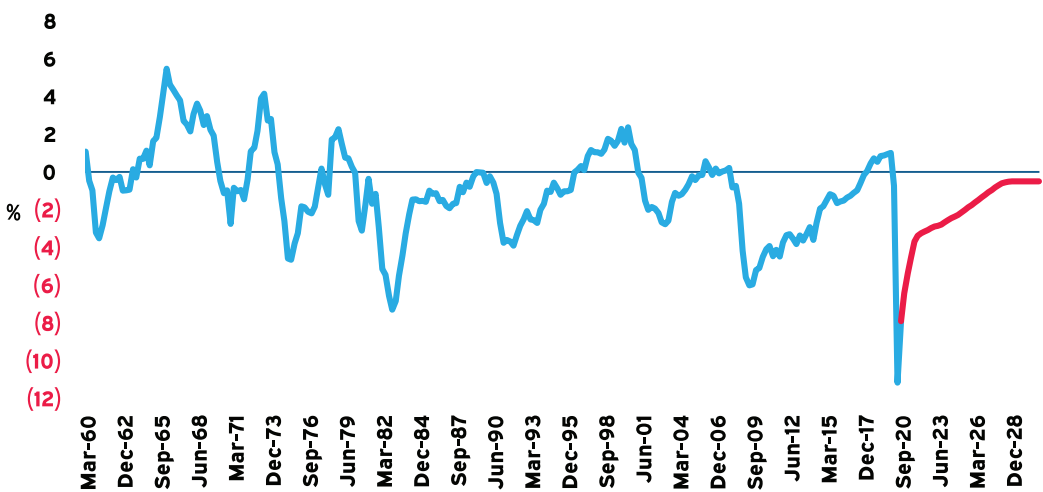


FIGURE 3
US Output Gap (% of GDP, Actual & Expected)
 Source: Congressional Budget Office
 Note: Quarterly data, forecasts in red.

What are current US Inflation Expectations?

Research suggests that companies and households base their current economic decisions on their expectations for the future economic landscape. It has been shown that a strong relationship between inflation expectations and realized inflation exists.

For central banks and other policymakers, with mandates typically directed at managing price stability, they too pay special attention to inflation expectations to guide their immediate policy actions.

To this end, a significant number of ways to monitor inflation expectations have developed over time. The measures we provide are the most traditional, and are typically followed by both market participants and policymakers.

Breakeven Rates. Breakeven inflation expectation rates, as measured by the difference in yields between a nominal Treasury and a Treasury Inflation Protection Security (TIPS) across the same maturity points, is a typical method by which market participants assess inflation expectations.

As a fairly simple measure, the argument is that if investors are concerned about protecting their assets from future inflation, they would purchase inflation protected securities (like TIPS) and sell securities that do not provide inflation protection (like nominal Treasuries). If the yield difference (aka the breakeven rate) was ultimately achieved over the given period, an investor should be indifferent to which securities they held (nominal Treasuries or TIPS).

Highlighted in Figure 4 on the next page, despite recent increases from their lows, breakeven rates remained slightly below long-run averages at year-end.

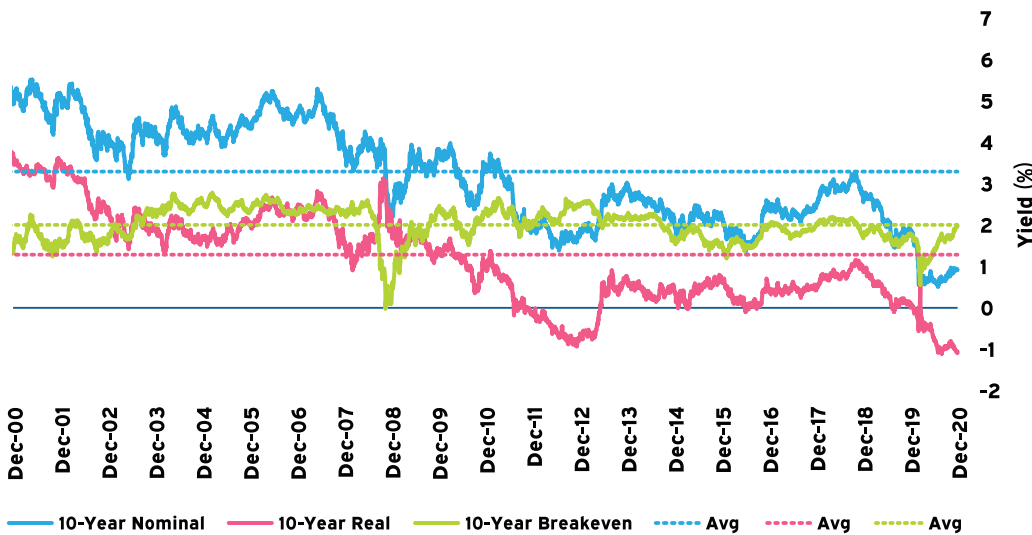


FIGURE 4
10-Year Treasury Yields & 10-Year Inflation Expectations

Source: Bloomberg. Data as of December 31, 2020.

Forward Breakevens Consistent with outright breakeven rates, implied inflation expectations based on forward rates are also used to assess inflation expectations. Reviewing the most recent 5yr/5yr breakeven, at 1.9% it currently suggests inflation is expected to remain below the 20-year average of roughly 2.3%.

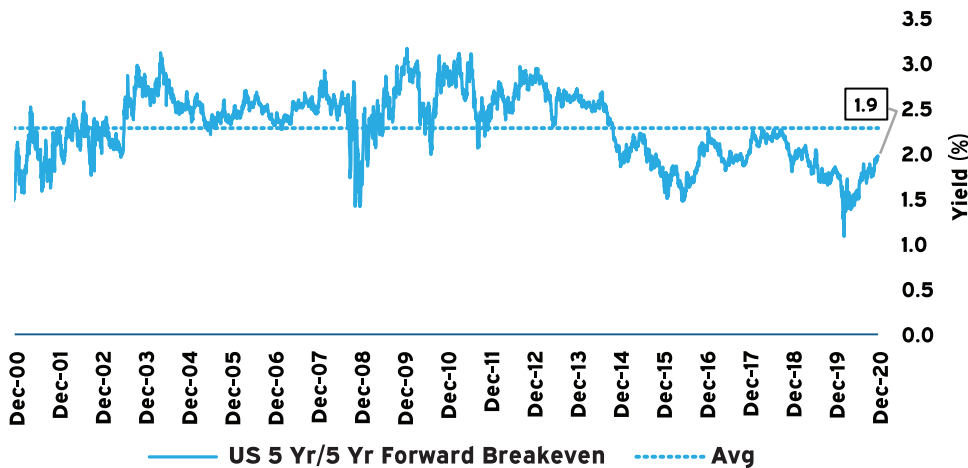


FIGURE 5
5-Year/5-Year Forward Inflation Breakeven Yield

Source: Bloomberg. Data as of December 31, 2020.

Inflation Surveys. Survey-based measures of inflation seek to incorporate the views of market participants, economists, professional forecasters, and consumers. Some of the most prominent inflation surveys include the University of Michigan Survey of Consumers, the Survey of Professional Forecasters, the Survey of Consumer Expectations, and the European Central Bank’s Survey of Professional Forecasters.

Reviewing two of the most recent survey results (included in the following tables), the consensus is that inflation over the longer-term is expected to return to recent averages, or just slightly below.

Survey Question: “By about what percent per year do you expect prices to go up or down, on the average, during the next 5 to 10 years?”

Prices Up By...	1-2%	3-4%	5%	6-9%	10-14%	15%+	Don't Know	Mean	Median
November Count	39	27	11	2	4	0	8	2.9	2.5
20-Year Avg.	31	28	13	3	5	1	9	3.2	2.8

TABLE 1
University of Michigan Survey of Consumers

Source: <https://data.sca.isr.umich.edu/data-archive/mine.php>

	Headline CPI		Core CPI		Headline PCE		Core PCE	
	Previous	Current	Previous	Current	Previous	Current	Previous	Current
Q4/Q4 Annual Averages								
2020	0.4	1.2	0.9	1.7	0.6	1.3	0.8	1.5
2021	1.8	2.0	1.8	1.9	1.6	1.9	1.5	1.8
2022	2.0	1.9	1.9	2.0	1.7	1.8	1.7	1.7
Long-Term Annual Averages								
2020-2024	1.90	2.00	NA	NA	1.70	1.79	NA	NA
2020-2029	2.03	2.12	NA	NA	1.85	1.90	NA	NA

TABLE 2
Survey of Professional Forecasters: Fourth Quarter 2020
Median Short-Run and Long-Run Projections for Inflation (Annualized Percentage Points)

Source: <https://www.philadelphiafed.org/research-and-data/real-time-center/survey-of-professional-forecasters/2020/survq420>

The Fed's UIG Inflation Model.¹ The Federal Reserve Bank of New York's Underlying Inflation Gauge (UIG) is a model that seeks to provide a more frequent and robust measure of trend inflation. The measure is based on a larger set of data that extends beyond price variables to include data like asset prices and real variables such as the unemployment rate. It attempts to better distinguish between transitory and persistent inflation differences. The output of the model provides a current estimate of trend inflation from 1995 through the latest monthly CPI data release.

¹ <https://www.newyorkfed.org/research/policy/underlying-inflation-gauge>

As shown in the following chart, the most recent update suggests both the full-data-set and the prices-only measures started declining as the economy began shutting down late in the first quarter, which was ultimately consistent with the realized CPI data.

However, if the models are correct and accurately capture the degree of persistence in the broader inflation process, the market should experience a rebound in inflation back to levels seen prior to the crisis, albeit at a slightly lower level.

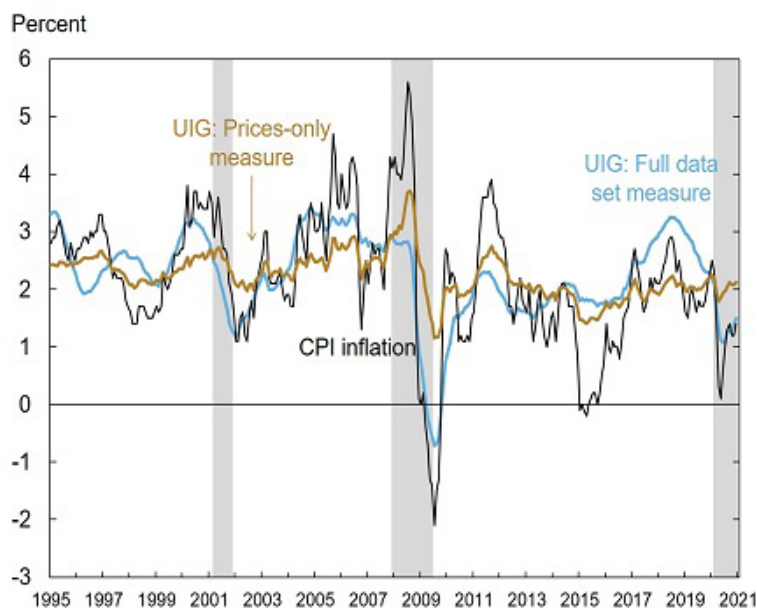


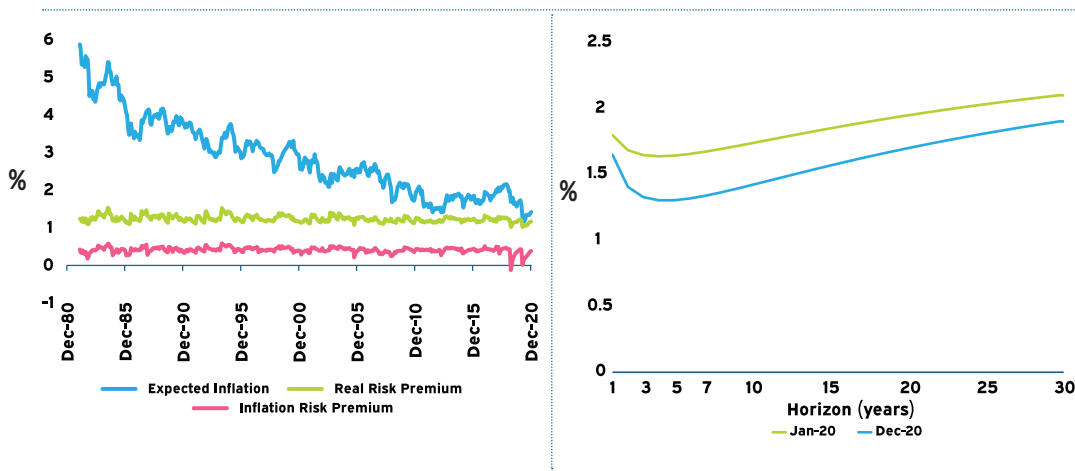
FIGURE 6
UIG Measures and 12-Month Change in the CPI

Source: Federal Reserve Bank of New York, Underlying Inflation Gauge, <https://www.newyorkfed.org/research/policy/underlying-inflation-gauge>, Authors' calculation, based on data provided by Haver Analytics.

Note: Shaded areas indicate periods designated recessions by the National Bureau of Economic Research.

The Fed's Inflation Expectation Model.² Designed and reported by the Federal Reserve Bank of Cleveland, this inflation expectation model is based on Treasury yields, inflation data, inflation swap yields, and survey-based measures. It uses these inputs to derive ten-year expected inflation and supporting risk measures.

The output of the model (left chart) highlights that inflation expectations have been declining since the 1980s. Over the same time period real risk premium and inflation risk premium estimates have remained quite stable, but also at levels that suggests risks for higher inflation have been quite muted. The model also provides a term structure of inflation expectations (right chart), which further highlights that current expectations out to the 30-year maturity point are still quite low.



² Source: Federal Reserve Bank of Cleveland calculations based on data from Blue Chip, Bloomberg, Bureau of Labor Statistics, Federal Reserve Bank of Philadelphia, Federal Reserve Board, Haver Analytics, and the Model of Haubrich, Pennacchi, and Ritchken, 2012. "Inflation Expectations, Real Rates, and Risk Premia: Evidence from Inflation Swaps." Review of Financial Studies, 25(5) <https://www.clevelandfed.org/en/our-research/indicators-and-data/inflation-expectations.aspx>; data as of 12/31/2020.

FIGURE 7
(Left Chart) Ten-Year Expected Inflation, Real Risk, and Inflation Risk Premia
(Right Chart) Expected Inflation Term Structure

Source: <https://www.clevelandfed.org/en/our-research/indicators-and-data>

Federal Reserve Bank of Cleveland calculations based on data from Blue Chip, Bloomberg, Bureau of Labor Statistics, Federal Reserve Bank of Philadelphia, Federal Reserve Board, Haver Analytics, and the model of Haubrich, Pennacchi, and Ritchken, 2012. "Inflation Expectations, Real Rates, and Risk Premia: Evidence from Inflation Swaps." Review of Financial Studies, 25(5).

Are these inflation expectations reasonable?

As suggested earlier, we believe these expectations are reasonable when based on the anticipation that the global economic factors that have been driving inflation related risks lower over the last 40+ years are not likely to change simply because of the record influence from fiscal and monetary authorities. In this section, we highlight some of these global factors and suggest why they are likely to remain primary drivers of lower inflation risks going forward.

Because Gordon Moore says so, that's why. In the 1960s the co-founder of Intel, Gordon E. Moore, projected that technological advancement would result in the ability to do more work more efficiently, at ever declining costs. This idea was eventually coined "Moore's law", and since its first consideration has generally held to be true.

Indeed, over the last 20 years, this has been particularly evident in technology-intensive industries like communication services, computer technology, and manufacturing. Still, even sectors not directly tied to technology have also benefited. Retail services, healthcare, education, and professional services have all seen technological advances impact their industries and limit price pressures.

According to research conducted in 2019 by Vanguard, and supported by related analysis from the US Bureau of Economic Analysis, the amount of technology used in the production of goods and services has more than doubled since 1997, and is estimated to have trimmed 0.5 percentage points per year from production costs since 2001.

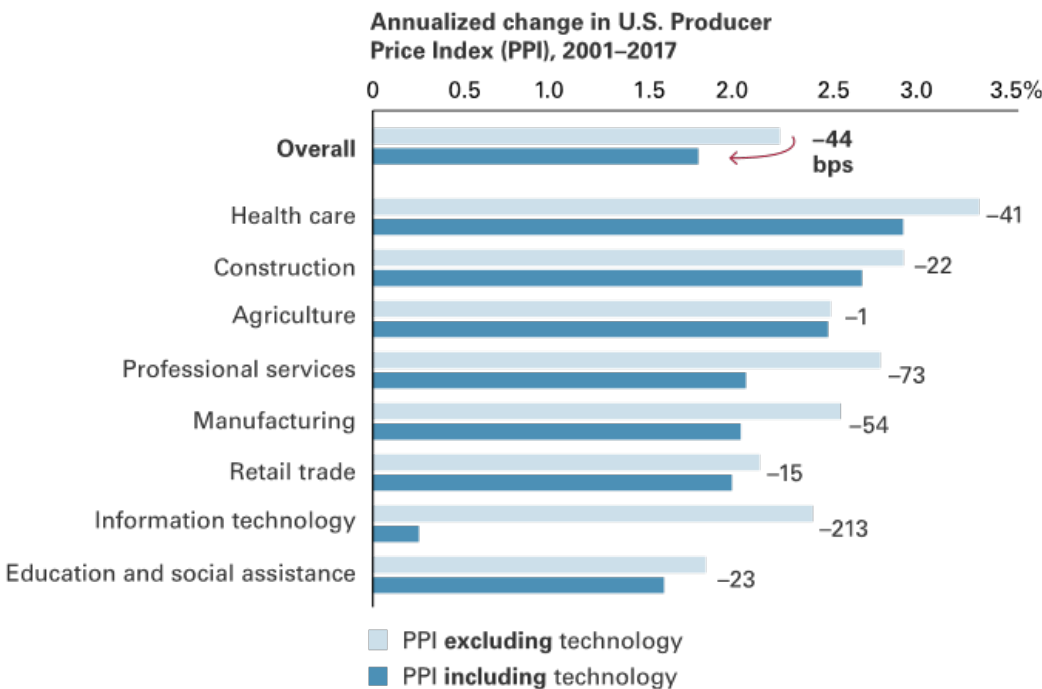


FIGURE 8
Technology's Effect on Prices, by Industry

Source: Vanguard calculations, based on U.S. Bureau of Economic Analysis input-output tables and Thompson Reuters Datastream.

Now, with the virus resulting in global economic restrictions, companies and consumers have been forced to make dramatic changes in the way they operate which has led to aggressive adoption of new technologies.

As an example, software communication platforms like Zoom and Microsoft Teams, which connect users virtually through a computer interface and allows for nearly seamless execution of some operations and services, have seen the applications fully integrated into daily operations.

The adoption of new technologies due to the virus is occurring across the economy broadly. Manufacturing companies are reportedly increasing development and pursuing automated solutions in order to function with fewer employees under future pandemic lock-downs. Increases in autonomous materials handling across shipping and delivery services, more efficient coordination across supply lines, and the ability to operate and coordinate these actions virtually are all being aggressively explored.

Broadly, we anticipate this factor will continue contributing to downward pressure on prices in the future, especially as less developed and emerging economies incorporate more technology.

Global Demographics are Not Conducive to Higher Inflation. Significant research has been done over the last 20 years regarding the impact of demographic factors on inflation. This interest has been driven largely by Japan's experience with inflation, or lack thereof, since the early 1990s, but also from practitioners seeking to better understand the lack of inflation globally after the 2007-2009 financial crisis despite record stimulus and persistently low interest rates. The argument suggests that an aging population places downward pressure on consumer spending.

The link between an aging population and inflation is still an open, ongoing, and contested debate, but private economists, academics, and the central bank community have collectively dedicated enough resources and research to reasonably conclude that it is likely an element in keeping inflation low.

The behaviors of the younger generations are probably also having a significant influence on inflation. There is evidence that they are living at home longer and delaying starting families creating a downward bias on inflationary pressures. The younger and prime working age cohorts also appear to be saving more than the previous generations. Anecdotal reports suggest two, "once in a life time" financial crises, have resulted in younger and middle-aged workforces choosing to save more ahead of the next potential downturn. Should this be accurate, and since an increase in savings comes at the cost of investment, inflation pressures should be less.

The actual measurable impact of these demographic factors is far from certain, but the consensus is that demographics are playing a significant role in creating an economic environment that is defined by low inflation pressures, and we believe this will persist over the near-future.

Record Low Unemployment and Interest Rates Failed to Generate Inflation after the Last Crisis...so Why Should Things be any Different this Time? This argument "fits" in the built-in³ thesis for inflation factors. Specifically, consumers and market participants use the post 2007-2009 crisis inflation experience to guide their expectations and activities for this post-crisis period. They thereby assume that because inflation did not emerge after the last crisis that things will not be different this time.

More directly, unemployment levels after the 2007-2009 crisis declined to a near record low level of 3.5%. Despite the very low unemployment level, inflation failed to materially rise despite a number of traditional economic models that suggested that low unemployment should have led to an increase in inflation risk (if not actual inflation). Add to this, the experience of record low interest rates for a prolonged period, which should have also created inflation pressures, and it is reasonable to anticipate that the expectations should remain subdued unless a material change in economic fundamentals occurs.

³ The "Built-In" theory for inflation suggests that companies and consumers will base their future spending and savings decisions on the assumption that prices will continue to rise at the rate they have been experiencing.

Markets finally agree that reserves are not inflationary. One of the principal arguments fostering the fear that inflation would rise dramatically after the 2007-2009 crisis (in addition to the fiscal stimulus), was the concern that excess reserves created through the Large Scale Asset Purchase program (aka Quantitative Easing or “QE”) would result in banks “lending out” reserves in mass quantities, resulting in materially higher inflation.

The challenge with this argument is that it is based on a misunderstanding of how the reserve system works. Simply put, excess reserves cannot be “spent” or “lent” to consumers or institutions in any capacity that would otherwise create inflation. Instead, the potential inflation-creating activity simply stems from demand for loans and subsequent investment in capital. In this consideration, growth in loan demand should be the metric that garners more attention when considering inflation risks, and according to loan data provided by the Federal Reserve, loan demand has been fairly muted and/or declining for a number of years.

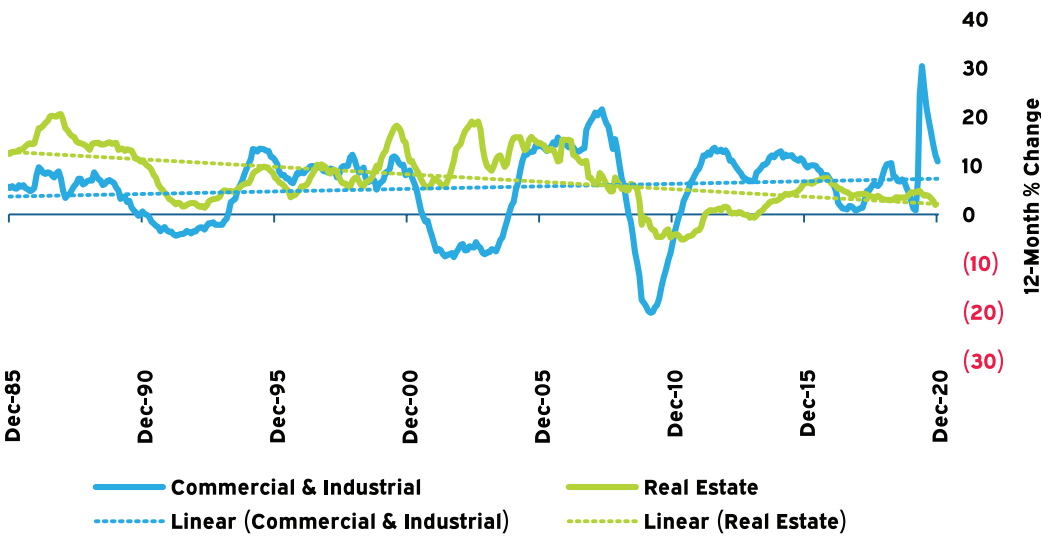


FIGURE 9
Commercial & Industrial, and Real Estate Loans

Source: Federal Reserve Bank of St. Louis; Commercial and Industrial Loans: All Commercial Banks; Real Estate Loans: All Commercial Banks. Data as of December 31, 2020.

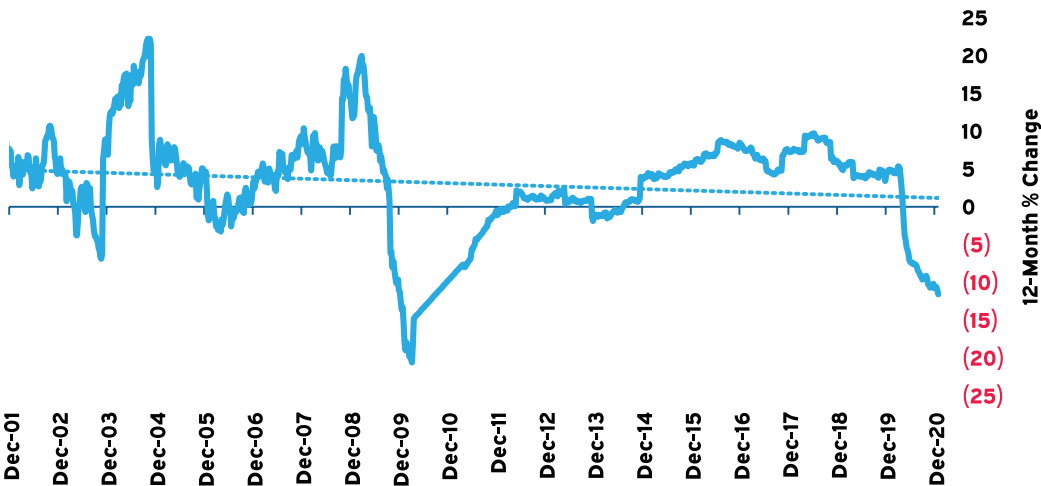


FIGURE 10
US Consumer Loans

Source: Federal Reserve Bank of St. Louis; Credit Cards and Other Revolving Plans, All Commercial Banks. Data as of December 31, 2020.

Globalization and the rise of a “Global” interest rate? The efficiency gains and cost savings associated with globalization of the economy have played a significant role in reducing inflation pressures for the past few decades.

A more recent phenomenon is the idea of a “Global” interest rate and research suggests developed economies have been drifting to a shared interest rate defined by a global economy. In this case, country-specific factors that would otherwise drive their respective interest rates (including inflation) have less impact. Said another way, if a global interest rate is in fact guiding the direction of financial markets, a specific country’s fiscal and monetary policies are less likely to meet their respective objectives.

Related to this point are a number of studies that suggest a secular decline in global growth is influencing interest rates and economic fundamentals. This includes the ongoing debate about “secular stagnation” (an economy that appears to be operating below capacity even when the economy is growing). As this relates to the US economy more directly, research suggests that the negative global output gap is now a greater influence on US inflation. In other words, the global employment rate and the relationship to output could be outweighing the US employment situation, and in a negative-gap scenario would suppress US inflation.

In summary, markets could be facing diversification pressures that have led to a decline in idiosyncratic factors driving individual economies. Should this be the case, all else equal, markets should expect lower inflation (both expected and realized) to continue.

That said, we could be wrong...

Because the nature of this crisis is outside typical business cycle dynamics, it certainly could be the case that “this time is different”, leading to a notable increase in realized inflation. We discuss a few of the major themes being considered below.

We could be facing a Fiscal Regime Shift. With recent fiscal support representing the most aggressive experienced across the modern economy, consumers may be facing a “regime shift”, defined by a more stimulative fiscal policy strategy going forward, which could result in increased spending and a subsequent increase in consumer prices.

This increased attention from fiscal policymakers could also drive an expectation by consumers for more stimulus in the future, which in-turn could support an increase in inflation through the “built-in” inflation theory discussed previously.

Markets could be facing a Monetary Regime Shift. Initially announced through Chair Powell’s speech⁴ at the Jackson Hole Symposium, and then officially released by the FOMC in the days immediately after through an update to their “Longer-Run Goals and Monetary Policy Strategy”⁵ work, policymakers are now pursuing a “two-way risk” strategy for their inflation policy. The revised strategy

⁴ Source: <https://www.federalreserve.gov/newsevents/speechpowell20200827a.htm>

⁵ Source: <https://www.federalreserve.gov/newsevents/pressreleases/monetary20200827a.htm>

states that “following periods when inflation has been running persistently below 2 percent, appropriate monetary policy will likely aim to achieve inflation moderately above 2 percent for some time.”

While this policy change was largely anticipated by the market due to significant telegraphing by the Committee through various speeches and related research and public conversations over the last few years, it nonetheless represents a material change in the FOMC’s inflation strategy.

What this change brings forth is the increased likelihood that policy rates could remain at significantly low levels despite increases in inflation that would have otherwise prompted a policy response. With monetary policy having a lagged effect on the economy, this could increase the risk of inflation negatively impacting the economy by the time subsequent policy actions take hold. While policymakers still have their suite of policy tools to combat higher inflation should it get away from them, the simple fact that they are comfortable with this risk suggests a degree of caution is warranted.

The FOMC could change how it defines inflation. As an additional monetary-policy-related risk, policymakers could choose to reassess how they measure and react to inflation. This would most likely take the form of a broader number of factors considered important in measuring modern-day inflation, and then policymakers would adjust their reaction function accordingly. While the objective of this would be to strategically maneuver policy to those areas of the economy that might be experiencing respective dislocations, it likely increases the risk that inflation policy becomes overly complex and challenging to implement effectively and reliably.

Isolationism policies could increase inflation risk. Nearly a direct counter to the argument regarding globalization and a global interest rate leading to lower inflation risk, is the potential for protectionist policies over the last few years gaining further traction and increasing inflation pressures.

The recent pandemic and the potential for increased regulation by governments to limit immigration and trade policy to combat future pandemic risks, could result in governments pursuing policies that unwind some of the benefits from global economic diversification.

Conclusion

We suggest that the deep structural forces that have thus far limited inflation risks are likely to prevail, and ultimately result in a return to an inflation environment consistent with what markets have seen over the last few decades. We do, however, acknowledge that fiscal and monetary policymakers (particularly in the US) may be losing patience with their inability to meaningfully stimulate the economy beyond recent economic growth averages. In this potential policy shift, they might be willing to take more dramatic stimulative measures going forward, and unwittingly create an inflation environment that could have significant and potentially negative impacts on the future global economy.

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