US Rates Viewpoint

Stagflation, no. Slowflation, yes.

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Call it "slowflation"

The word stagflation has seen a revival in the current environment, given that the pandemic created severe supply distortions. These newer forms are on a milder level than true stagflation, however. "Slowflation" may be a better term. Focusing on the near-term event driven stories, one commonality is that they may prove transitory, versus the mid-'60s to 70s which were marked by several major inflation spikes and stubbornly elevated prices. In this note we evaluate historical periods of "slowflation" as well as the Fed and market response, which reveal that timing and duration are key.

When have we previously observed "slowflation"?

In this note we start by identifying three periods where growth slowed even as inflation increased, leaving the Fed in a monetary policy bind. Three distinct periods in addition to the current episode stand out: May- October 2005, November 2007-July 2008, and August 2010- October 2011. Each of these periods saw different overall economic conditions and were met with distinct policy responses. Therefore "slowflation" garnered different responses from the Fed across each of these periods. In the past, inflation driven by commodity prices without an increase in labor costs generally caused the Fed to take a more dovish stance.

Expected FOMC response to "slowflation"

It has been our long held view that most of the current inflation is transitory and we have already seen some fading in the recent CPI print. However, not all of the increase is transitory and more persistent factors build as the labor market and broader economy continue to recover. Hence by 2023 with some sustained higher inflation and the economy fully reopened, Fed lift off will begin.

Inflation can play a role in either accelerating or decelerating this timeline depending on the underlying components as well as the trajectory of longer run inflation expectations. The Fed is likely to see inflation driven by supply shortages as a tax on consumption which risks slowing growth. We expect the Fed to remain patient as these supply shortages resolve themselves, assuming longer-dated inflation expectations remain stable.

Market response to "slowflation"

The market price response in "slowflation" periods has generally been mixed. This is largely a function of both how the Fed responded during these episodes as well as the overall growth environment. A true "slowflation" period would likely occur alongside higher commodity prices rather than persistent inflation which is usually accompanied by stronger growth. While the Fed may be tempted to sound more hawkish in the event that "slowflation" causes longer term inflation expectations to increase, our base case is for the Fed to remain on hold. In a similar "slowflation" period to what we saw in 2010-2011, we anticipate the Fed to choose supporting growth over responding to shorter lived fluctuations in commodity prices. Therefore, the likely market response is similar to what we observed in 2010-2011: lower nominal and real rates and higher inflation breakevens.

Refer to important disclosures on page 10 to 12.

Is stagflation on the horizon?

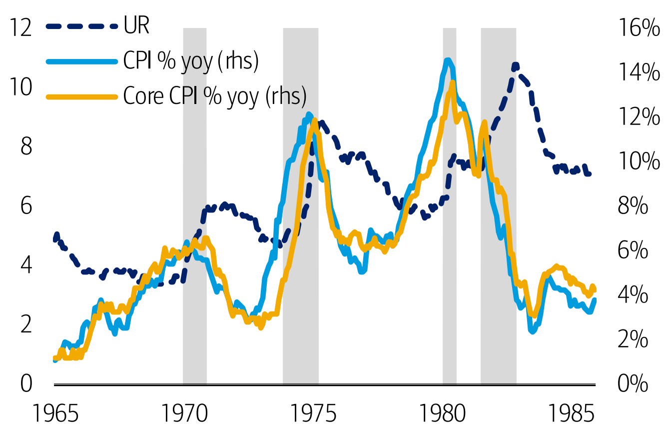
Chatter around stagflation has returned to the market given continued disruptions to supply chains coupled with the recent surge in energy prices. In our view, true stagflation akin to the mid-1960s to 1970s is highly unlikely. Rather there are several flavors of mild stagflation in the current environment, call it "slowflation."

The origins of stagflation and the dilemma for policy

Stagflation is a portmanteau of the words stagnant and inflation, and reflects an economic environment in which real activity and labor markets are weak but price pressures are elevated. The US faced stagflation during the "Great Inflation" era, which stretched from the mid-1960s through the 1970s as the unemployment rate trended upwards, headline CPI inflation averaged 5.9% yoy and core inflation averaged 5.5% yoy, with several inflation spikes—some to double digits (Exhibit 1). How did this come about exactly? Academics have pointed to multiple factors including coordinated and excessively easy fiscal and monetary policy that emphasized employment over price stability, a slowdown in productivity, as well as two major oil supply shocks that created significant cost-push inflation. These factors contributed to a wage-price spiral that kept inflation stubbornly high for almost two decades.

Stagflation poses a major dilemma for the Fed and policymakers. In normal times, inflation comes when the economy is strong and unemployment is low, so the dual mandate is in sync and complementary. But in stagflation this is not the case: inflation rises despite a sluggish economy and high unemployment. In other words, the Phillips curve is not just flat but inverted. The misery index was borne out of the stagflation era to help track this dilemma—it is a simple sum of CPI inflation and the unemployment rate (Exhibit 2). In this environment, the Fed has to make a choice of what is the greater of two evils, high inflation or high unemployment. Of course we know what happened back then, the Volcker Fed wisely chose high inflation and hiked aggressively to stop it, sending the economy into a double dip recession in the early 1980s.

Exhibit 1: Unemployment vs inflation during the Great Inflation
Unemployment and inflation both trended higher, reflecting stagflation



Source: Bureau of Labor Statistics, Bureau of Economic Analysis

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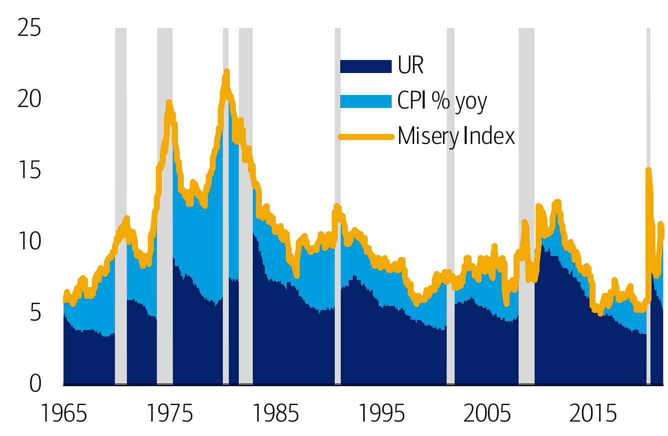
Exhibit 2: The misery index (unemployment + inflation)
Stagflation creates the greatest misery



Source: Bureau of Labor Statistics, Haver

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Call it "slowflation"

In the current environment, true stagflation akin the 1970s is highly unlikely. The economy has rebounded rapidly in the post-pandemic period, with real GDP surpassing its pre-pandemic level in 2Q and the unemployment rate falling to 5.2% as of August. The virus cooled things off in 3Q—we are tracking a still robust 3.8% qoq saar for GDP—but cases and hospitalizations have been trending lower which should underpin renewed acceleration to end the year. Factoring in significant excess savings from stimulus, growth is likely to remain elevated next year at 5.2% supporting a return to a tight economy and labor market. On inflation, we are likely past the peak of transitory inflation which will mean core inflation cooling off into 2022 but remaining above the 2% target. Long run inflation expectations have improved, but likely to levels consistent with around 2% inflation.

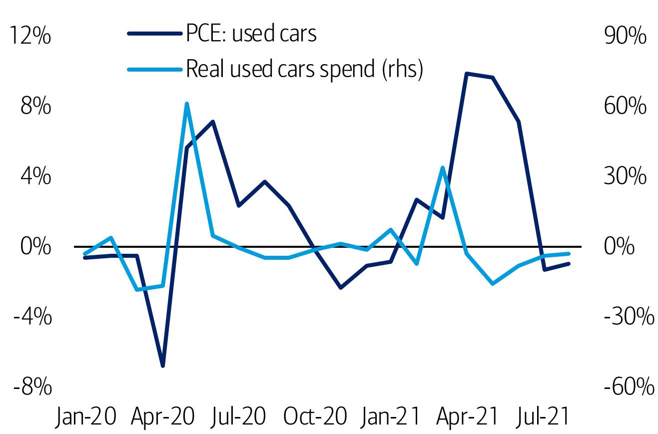
The word stagflation has seen a revival in the current environment, given that the pandemic created severe supply distortions. These newer forms of stagflation are on a milder level, however. "Slowflation" may be a better term.

FX Strategists Athanasios Vamvakidis and Claudio Piron recently pointed to the latest energy crisis as raising stagflation flags in their piece: Stagflation is here. Thus, market participants may view stagflation through the lenses of commodity shocks that create higher inflation and lower growth relative to expectations. As we discussed in our 2018 piece Oil shock: mostly smoke, not much fire, the economic impact of oil shocks has diminished over time due to less energy consumption and reliance on foreign oil, and more effective monetary policy.

We do expect supply shortages to lead to higher prices for certain goods & commodities which will cool overall demand. Inflation driven by these supply constraints essentially acts as a tax on consumption that will lead to lower demand for other goods or services. We also see evidence of supply shortages driving inflation & cooling demand on a sector level in both (1) autos / semiconductors (2) housing.

Autos / semiconductors: the global semi-conductor shortage and related auto production cuts led to extreme price moves in used cars this year while real demand peaked in March and has contracted since then (Exhibit 3). In Semis shortage continues to move the goalposts on sales recovery, John Murphy notes that recent COVID resurgences and shutdowns in Malaysia Southeast Asia have delayed expectations for stabilization to 2H 2022. That said, these constraints may create pent-up demand, creating tailwinds for future growth. In other words, people are reallocating their budgets, which is not proper stagflation.

Exhibit 3: Stagflation in used cars (% mom)
Strong used cars inflation, contracting demand



Source: Bureau of Economic Analysis
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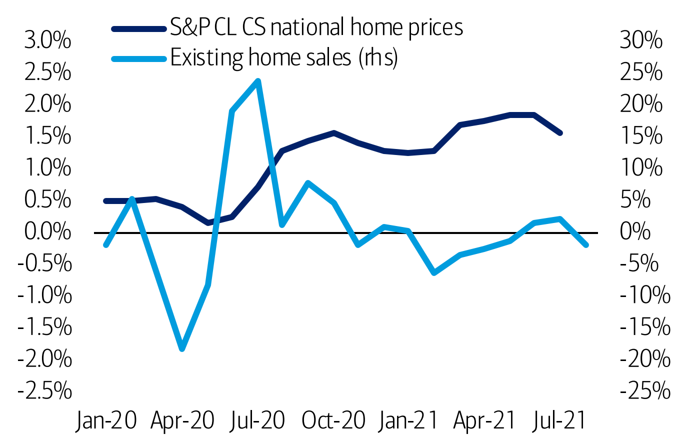
Exhibit 4: Stagflation in housing (% mom)
Home price growth has heated up while existing home sales stagnant



Source: Standard & Poor's, National Association of Realtors
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Housing: home prices reached a record high 19.7% yoy clip in July while existing home sales have trended lower amid historically tight supply (Exhibit 4). Home prices reflect an asset price, however, and do not directly feed into inflation. Rather, housing inflation is measured through rents, as detailed in Inflation: homecoming.

The above stories are more "event driven" inflation & demand dynamics where an exogenous shock or change in behavior causes higher prices and weaker growth in the near term. However, there can also be Fed-driven cyclical inflation + slowing growth. As Ethan Harris describes in Stagflation: too early for a comeback, this occurs in the latter stages of the business cycle when the economy is overheating and the central bank is forced to hit the brakes, hurting employment while elevated inflation continues. Importantly, this brand of slowflation is not a risk for today but rather 2023 or beyond.

Focusing on the near-term event driven stories, one commonality is that they may be short lived, versus the 1970s which were marked by sustained price pressures. In the next sections we evaluate historical periods of "slowflation" as well as the Fed and markets' response, which reveal that timing and duration are key.

When have we previously observed "slowflation"?

In order to identify periods where we have observed a simultaneous cooling in growth alongside an uptick in inflation, we utilize two approaches:

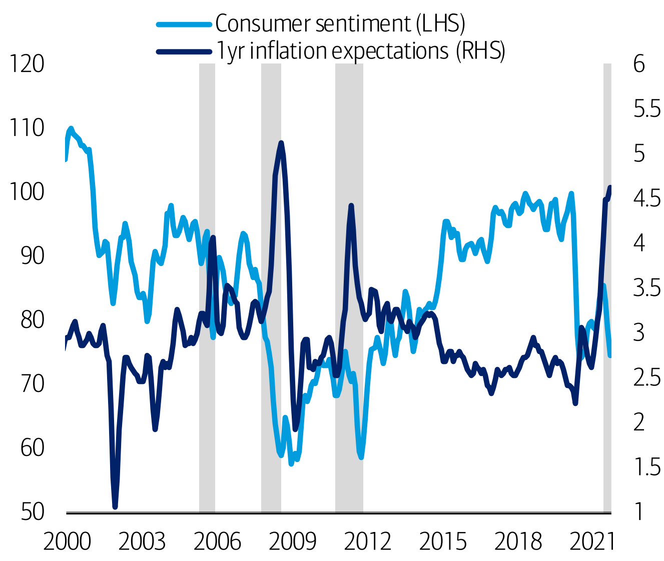
(1) Identifying spikes in 1y ahead inflation expectations alongside declines in consumer sentiment as measured by the University of Michigan Survey

(2) Rolling increases in commodity prices alongside declines in manufacturing PMI

Looking at periods that stand out across both of these approaches allows us to isolate instances that have seen a jump in inflation correspond with a slowdown in growth, leaving the Fed with a conflicting signal. As shown in Exhibit 5 and Exhibit 6, three distinct periods in addition to the current episode stand out: May- October 2005, November 2007-July 2008, and August 2010- October 2011.

Exhibit 5: University of Michigan consumer sentiment and 1y ahead inflation expectations

Shaded area reflects periods when consumer sentiment declined and yr ahead inflation expectations increased



Source: BofA Global Research, Bloomberg

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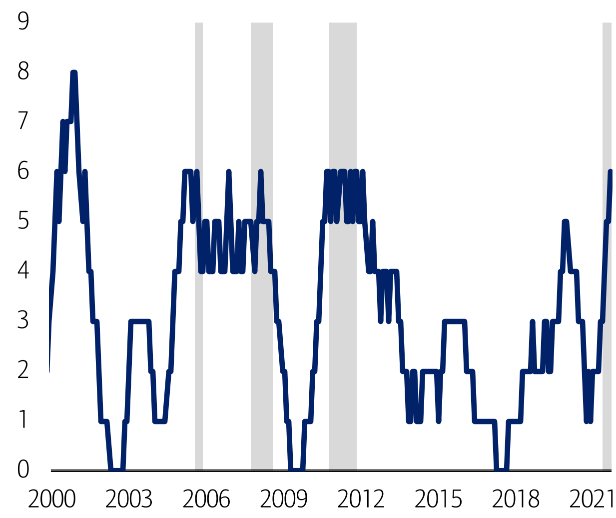
Exhibit 6: Count of instances over prior 12 months when commodity prices increased and manufacturing PMI declined

Shaded area reflects identified periods when UMich survey shows disconnect between inflation expectations and sentiment. These periods tend to line up with instances when PMIs are declining and commodity prices are increasing



Source: BofA Global Research, Bloomberg

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However, each of these periods saw different overall economic conditions and were met by distinct FOMC policy responses. "Slowflation" garnered different responses from the Fed across each of these periods. Looking back on FOMC transcripts, we can gauge the extent of concern from the committee around conflicting growth and inflation to better understand the drivers behind the ultimate policy decisions.

In Exhibit 7, we show the text analysis conducted by the BofA Predictive Analytics Team on FOMC transcripts. The three periods that we identify as "slowflation" episodes above also correspond with either elevated mentions of "stagflation" or show a more negative tone around growth and higher characterization of inflation. In our review of policy action around these periods, we find that inflation driven by commodity prices without an increase in labor costs generally caused the Fed to take a more dovish stance.

2005: Fed continued hiking: The committee was worried about higher inflation at the time and expressed concern about inflation rising to levels observed in the 1970s. Chairman Greenspan explained his belief that the greater risk was inflation running higher vs. growth continuing to slow. He believed that hiking rates would dampen inflation concerns and give the committee policy space to cut if it turned out growth slowed too much. While an increase in inflation expectations was discussed, this was largely observed in shorter versus longer-term measures and an increase in wage pressures was not highlighted as a concern. Weighing price pressure concerns over growth is likely quite different from the approach of current committee, unless a spike in more persistent inflation components or longer-term inflation expectations is observed.

> In the September 2005 transcript, **Greenspan** explained: "But what we definitely need at this stage is a buffer in the monetary policy area to be sure we're well positioned if it turns out that we're running into the early stages of stagflation. If it turns out that is not the case, all to the better. We may have put in more insurance than was necessary, but that insurance, in my judgment, is very well worth the cost."

2007-2008: Fed cut interest rates: During this period, the committee was more concerned about declining growth and the impending recession than inflation. They largely attributed inflationary pressures at the time to commodity prices and did not see a threat of persistent inflation given the absence of wage pressures. In the March 2008 transcript, many noted that models showed little likelihood of inflation continuing to accelerate in the context of the broader economic outlook, including Rosengren and Yellen:

> **Rosengren:** "Some indicators of inflation are higher than we want, but during previous recessions, commodity prices and inflation rates fell. Given my forecast for the economic outlook, I expect substantial excess capacity to significantly reduce inflationary pressures going forward, and I see little evidence that higher commodity prices are causing upward pressures on wages and salaries."

> **Yellen:** "These data raise the issue of whether cutting rates as much as needed to fight a recession may risk persistently higher inflation and inflation expectations. But I tend to think this risk is manageable… the more pronounced slowdown that I expect for economic activity is likely to put somewhat greater downward pressure on inflation going forward." .

2010-2011: Fed kept interest rates at zero: While the Fed saw threats of higher inflation, they similarly believed that these forces were largely driven by food, energy, and commodity prices. The absence of rising labor costs and wages also gave many comfort that higher inflation would not persist over the medium term. Several also pointed to the fact that inflation expectations remained relatively well-grounded. The committee expressed concerns around a fiscal drag and the impact of higher commodity prices on growth, and ultimately decided to keep monetary policy loose. Excerpts below are from the April 2011 transcript.

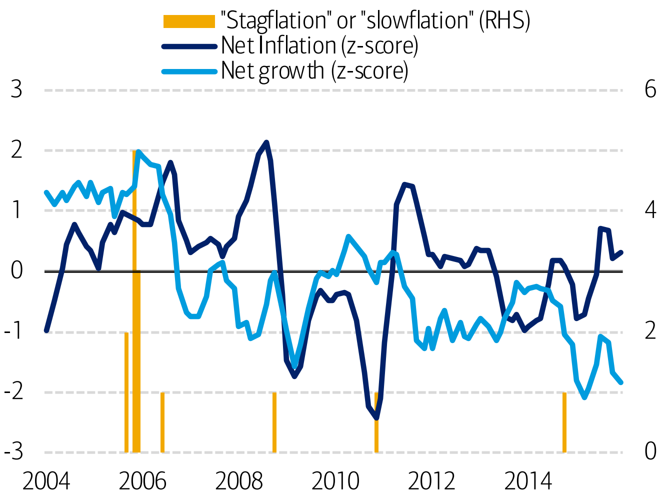
> **Evans:** "The key question centers on the medium term… Clearly, we do have a large amount of monetary accommodation in place, which makes many nervous about rising inflation. However, it would be quite unusual for inflationary momentum to build in the absence of rising labor costs and wages. I know there are disagreements around the table, but I still see the evidence favoring the view that a substantial degree of resource slack is holding back inflationary pressures."

> **Bernanke:** "You'll see that a remarkably large amount of the recent inflation we've seen actually is attributable to an increase in essentially one commodity, which is oil. Moreover, there seems to be a good chance that the increase will

be temporary… It doesn't invalidate the concerns about pass-through or about inflation expectations, any of those things. But I think at least the initial shock here is not really entirely monetary."

Exhibit 7: Text patterns in FOMC transcripts

Net growth patterns were calculated as z-score of difference between high growth and low growth patterns. Net inflation was calculated as z-score of difference between inflation and disinflation patterns.



Source: BofA Global Research, Bloomberg

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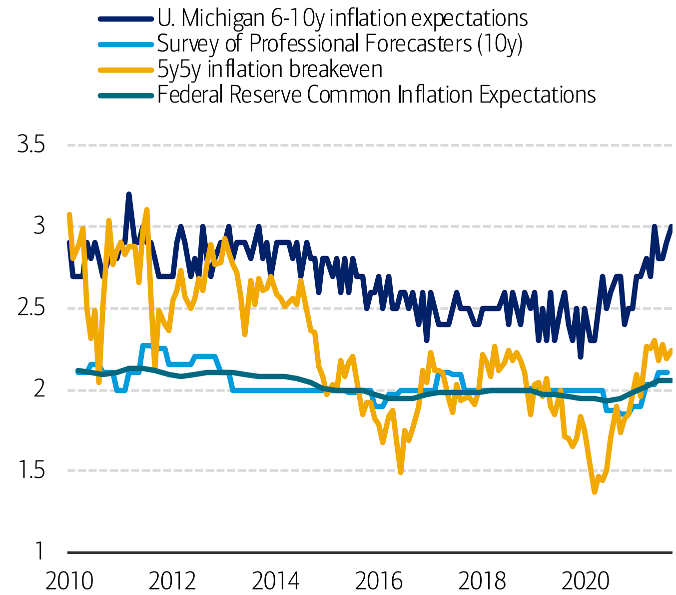
Exhibit 8: Longer term inflation expectations

Longer-term inflation expectations have increased but remain within historic ranges



Source: BofA Global Research, Bloomberg

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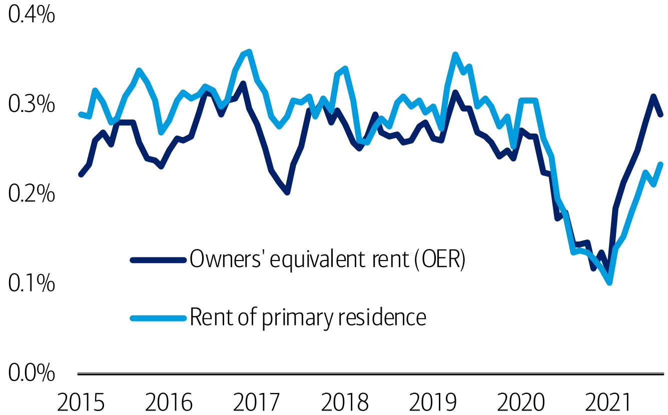
Expected FOMC response to "slowflation"

In the 07-08 and 10-11 "slowflation" periods, the Fed took the side of growth over inflation and decided to keep policy easy when their key mandates were in contradiction. In both of these instances, it was generally believed that inflation would be short lived, and that the drag on growth would eventually offset the sharp increase in more volatile inflation components. The committee tended to focus specifically on the lack of movement in labor costs/ wages and longer term inflation expectations, which gave them comfort in classifying inflation as short-lived.

The current environment has seen a unique set of inflation drivers as the economy re-opens. Persistent inflation pressures have proven their mettle as % mom owners' equivalent rent (OER) has already rebounded in recent months to its pre-pandemic trend of 0.3% mom and wage growth has held its ground (Exhibit 9). Two of our preferred wage metrics are the Employment Cost Index (ECI) and Atlanta Fed Wage Tracker given that they control for compositional shifts in the labor force. The ECI rebounded to 2.8% in 2Q, which is only a tenth lower than the pre-pandemic high of 2.9%, while the Atlanta Fed Wage Tracker has moderated to 3.5% on net from 3.7% (Exhibit 10). More transitory components like used car prices also remains notably high. Longer term inflation expectations have indeed increased (Exhibit 8), though they are well within historical ranges.

Exhibit 9: Rent inflation (% mom)
Rent inflation has recovered quickly



Source: Bureau of Labor Statistics

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Exhibit 10: Employment Cost Index vs Atlanta Fed Wage tracker (% yoy)
Wage growth has been resilient during the pandemic

Source: Bureau of Labor Statistics, Atlanta Fed

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It has been our long held view that transitory inflation will fade, as we began to see in the most recent CPI print (see: Inflation: too soon to count it out), while more persistent factors build as the labor market and broader economy continue to recover. We have anticipated the re-opening dislocations keeping transitory inflation and unemployment elevated to moderate over the next year, paving the way for the Fed to liftoff in the second half of 2023. Inflation can play a role in either accelerating or decelerating this timeline depending on the underlying components as well as the trajectory of longer run inflation expectations:

Persistent factors drive inflation: As they had previously, the Fed will be very mindful of how underlying components of inflation are evolving. If we observe a continued increase in stickier cyclical inflation factors like wage pressures and OER, it is more likely that the Fed responds to inflation with more aggressive action than they did in 07-08 and 10-11. Strengthening persistent inflation pressures is likely coinciding with further progress in the labor market, which is inconsistent with a "slowflation" regime. Put another way, it is less likely that stronger persistent inflation is happening at the same time as "slowflation." Rather, "slowflation" could stall the recovery and lead to a more patient Fed.

Inflation expectations anchored around 2%: Long run inflation expectations provide an anchor for inflation and are therefore critical for the medium term trajectory, especially given the flattening of the Phillips curve over time. The downward drift in the previous business cycle likely helped motivate the Fed to shift to Flexible Average Inflation Targeting (FAIT) and increase their tolerance for above-target inflation. Conversely, the rebound during this pandemic has been well received with Chair Powell and other Fed officials citing the Fed Staff's Index of Common Inflation Expectations (CIE) returning to levels consistent with their 2% target. We would expect long run inflation expectations to largely look past "slowflation," but there is risk that a period of higher prices applies additional pressure on expectations. In other words, transitory inflation feeds through into persistent dynamics. In this event, we could see the Fed more willing to accelerate the hiking process.

We believe that inflation expectations are key to understanding the Fed's reaction function at present. If supply shortages keep inflation high but result in moderating demand, we expect the Fed will be patient. The Fed is only likely to fight supply driven inflation if expectations break out of their historic ranges and suggest a de-anchoring of inflation expectations to the high side.

Commodity prices keep inflation elevated: Commodity prices have become a larger part of the inflation versus growth debate in recent weeks. As we have observed in previous instances, the Fed tends to be more dismissive of inflation driven by commodities and tends to keep policy accommodative when growth is at risk. If in the current environment we continue to observe increases in commodity prices alongside disruptions in supply channels and shortages, we would not expect the FOMC to respond with rate hikes. Instead, the FOMC will likely view higher commodity prices as a headwind to growth and will be more likely to be on hold for longer. As discussed in (A storm away from the next macro hurricane) this is becoming a larger risk.

Likely market response to "slowflation"

The market price response in "slowflation" periods has generally been mixed (Exhibit 11), but in the current environment, we would expect lower belly nominal and real rates. The market response is largely a function of both how the Fed responded during these episodes as well as the overall growth environment. With the Fed hiking in 2005, the curve flattened and real rates increased while inflation breakevens were modestly lower to little-changed. This is notably different from the rates moves observed in 07-08 and 10-11, when interest rates declined led by real rates, as the Fed either cut rates or remained accommodative. Therefore, the expected market response to "slowflation" is largely conditional on how the Fed is expected to respond to these risks.

Exhibit 11: Market price response during "slowflation" episodes (BPS, %)
Market response was generally more similar in 07-08 and 10-11 when Fed was more accommodative than in '05 when Fed continued to hike

	2y	5y	10y	2y10y	5y Real	5y BE	10y Real	10y BE	SPX	DXY
May '05 - Oct '05	72	55	35	-38	63	-8	39	-4	4%	7%
Nov '07 - Jul '08	-144	-93	-52	91	-85	-8	-48	-5	-18%	-4%
Aug '10 - Oct '11	-31	-64	-79	-48	-107	43	-109	30	14%	-7%

Source: BofA Global Research, Bloomberg

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As discussed above, a true "slowflation" period would likely occur alongside higher commodity prices and supply disruptions rather than persistent inflation which is usually accompanied by stronger growth. While the Fed may be tempted to sound more hawkish in the event that "slowflation" causes longer term inflation expectations to increase, our base case is for the Fed to remain on hold. In a similar "slowflation" period to what we saw in 2010-2011, we anticipate the Fed to choose supporting growth over responding to shorter lived price fluctuations, especially should longer- term inflation expectations remain stable. Therefore, the likely market response is similar to what we observed in 2010-2011: lower nominal and real rates alongside higher inflation breakevens.

Bottom line: Increases in commodity prices and slower normalization in supply chains could result in higher inflation for longer alongside cooling growth, which we refer to as "slowflation." In such an environment, we think it is less likely for the Fed to respond hawkishly to these inflationary pressures due to the potential headwind they pose to growth.

In the absence of a pickup in more persistent components of inflation like wages, the Fed will likely side with growth and keep policy easy as they have in prior "slowflation" periods. This could limit the extent of hikes that are priced into calendar year '22 and support our view of a steeper 2s10s curve. A dovish Fed that looks through inflation driven by supply shortages should also support a steeper 5s30s curve due to lower OIS path in intermediate tenors & higher inflation risk premium in longer-dated tenors.

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