

The U.S. Business Cycle is Maturing, But (Likely) Still Has Plenty of Life Left

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Highlights

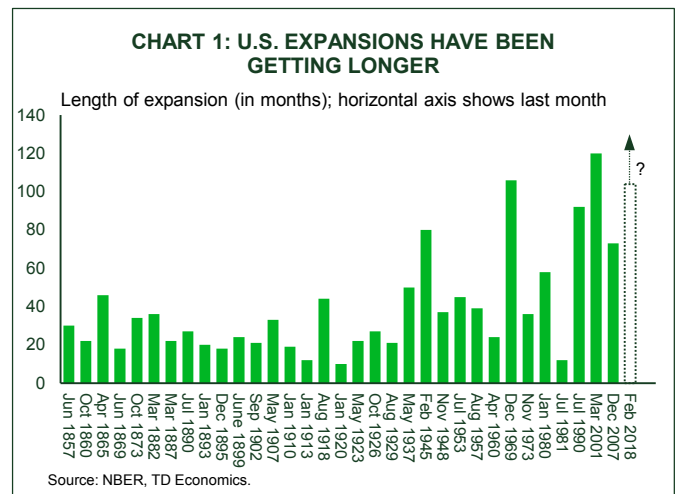
- The U.S. economy has made considerable progress since the end of the Great Recession in 2009. As of February, the expansion has entered its 104th month, just two months shy of the second longest on record and only 16 months away from taking the crown as the longest expansion in modern history.
- There is good reason to think this expansion will break the all-time record. Leading economic indicators show scant evidence for a turn in the business cycle over the next several months. Rather, they point to ongoing and even accelerating economic growth.
- Evaluating recession risks further out on the horizon is inherently more uncertain, but recessions happen for a reason. Predicting the exact timing of the shock may not be possible, but we can examine a few likely sources where risks have been building.
- With respect to credit excesses, the good news is that after years of deleveraging and firming income prospects, households appear able to withstand higher mortgage rates. That said, debt has built up in auto and student loan segments, as well as in the corporate sector.

The American economy is well into its eighth year of expansion. If it lasts through May it will become the second longest expansion in modern history.¹ And, if it makes it to the second half of 2019, it will take the title of longest expansion away from the decade long record set from March 1991 to March 2001 (Chart 1).

As the expansion grows longer, the natural question is how much life does it have left? Expansions do not die of old age.² But, the passage of time may expose economies to imbalances as pent-up demand is exhausted and higher leverage takes hold.

This report lays out a framework to explore whether this is occurring. We break the task of judging the likelihood of a recession over the next 12 to 24 months into two parts: First, we look at leading indicators that have predicted turns in the business cycle in the past. Importantly, this dashboard of indicators shows little risk of an immediate recession. Instead, most indicators are pointing to ongoing economic strength.

Second, we look a bit further out on the horizon for potential areas where vulnerabilities may be building. The good news is that after several years of deleveraging, the household sector appears well equipped for higher interest rates. The housing market has typically been an important driver of U.S. business cycles and its recovery is nowhere near complete.



Nonetheless, debt has built up in certain household borrowing areas such as auto and student loans. While relatively small, and in the case of student debt somewhat insulated from the broader financial sector, these remain important areas to watch.

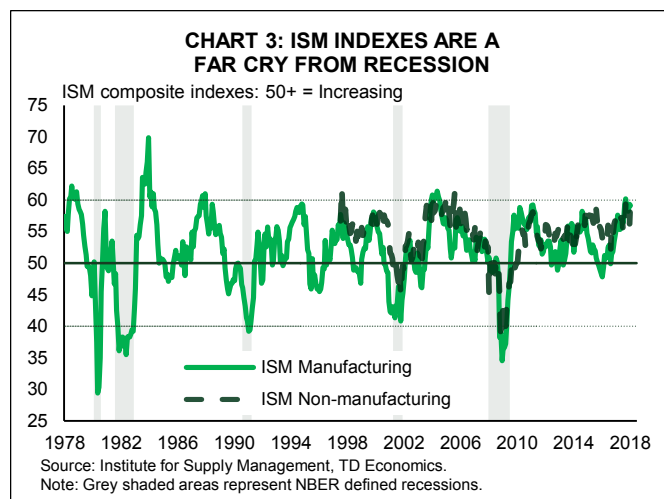
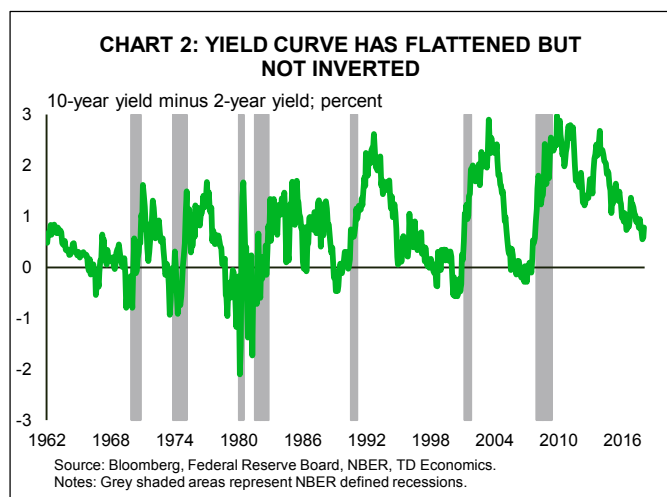
Within the corporate sector, debt levels have also risen considerably over the last several years as risk spreads have fallen near all-time lows (making debt loads manageable at the moment). Equity market valuations have also risen, and are prone to sudden corrections (as observed over the start of February). As interest rates continue to normalize, this is another area to watch for signs of stress.

Leading indicators point to economic strength

The indicator that is cited most often as predicting a turn in the business cycle is the yield curve – the spread between short and long-term interest rates. An inverted yield curve (short-term rates moving higher than long-term) has been a harbinger of recession (Chart 2).

We wrote about the signals coming from the bond market in a [report in December](#). It is a useful indicator, but the lead is typically long and variable. Recently, the spread between short and long-term interest rates has flat-lined, as expectations around tax cuts have put pressure on all parts of the curve. With the long-term rate moving up just as much as the short, there are few signs that the curve is set to invert.

But, even more important than the signals coming from financial markets are those coming from the economy



itself. Two of the most-watched timely indicators are the ISM manufacturing and non-manufacturing composite indices. The manufacturing index has the advantage of having a long history (data going back to 1948), while the non-manufacturing index (started in 1997) has the advantage of tracking activity in the majority of sectors in the economy. For both indices, a decline in the level implies growth is decelerating, while a reading below 50 means activity is contracting.

Rather than showing any evidence of weakness, the indices are at or near cycle highs (Chart 3). Over its history, the ISM non-manufacturing composite index has only been higher than its current level two percent of the time. The longer-running manufacturing index, meanwhile, has only been higher than its current level 16% of the time.

The strength in the ISM indices are backed up by other production indicators. The industrial production index, which troughed in the first half of 2016 (giving a recession signal at that time), has since reversed and was up 3.6% year-on-year in December.

Table 1 at the top of the following page shows a dashboard of indicators that are useful at gauging the health of the economy and the likelihood of a turn in cycle. To each we give a green, yellow, or red signal. As shown, none of the indicators are pointing red, and the majority are pointing green for ongoing, and strengthening pace of economic growth. For detailed discussion of the indicators and the interpretation of their current level please see the [Appendix](#).

We use several of the indicators in the table as explana-

Table 1: Business Cycle Dashboard		Level & Signal:
		Green (g) = healthy Yellow (y) = caution Red (r) = danger
<i>Near-term forward-looking indicators</i>		
ISM Manufacturing Index	59.1	(g)
ISM Non-manufacturing Index	59.9	(g)
Initial Jobless Claims (000s)	221	(g)
Housing permits (000s)	1,300	(g)
Commodity Volatility (WTI OVX)	30	(g)
High Yield Corporate Bond Spread	3.5%	(g)
TDE Financial Stress Indicator	-0.2	(y)
<i>Business-cycle maturity indicators</i>		
Monetary Accommodation (real FFR-r*)	-0.75%	(g)
Corporate Operating Margins	13%	(g)
Residential Investment/GDP	3%	(g)
Unemployment Rate Gap	-0.6%	(y)
Slope of the Treasury Yield Curve (UST 10-2y)	0.8%	(y)
Cyclically Adjusted S&P P/E ratio (CAPE)	33.4	(y)
Please see Appendix for detailed discussion of indicators. Source: TD Economics.		

tory variables in a “probit” regression model to forecast the chances of recession in the next 6-to-12 months. This shows only a 15% probability of recession over this time frame.

If housing is the business cycle then it is still in an early stage

The raw economic data suggest that the economy is at little risk of an immediate recession, but this will not remain the case forever. Evaluating recession risks further out on the horizon is inherently more uncertain, but recessions happen for a reason. Predicting the exact timing of the shock may not be possible, but we can examine a few likely sources where risks have been building.

There is an [argument](#), put forward by Edward Leamer (who wrote about it prior to the onset of the recession in 2007), that the housing market is central to business cycle dynamics.³ Since household spending is the biggest component of economic activity and residential real estate is the largest asset for the majority of households, housing is central to debt markets and the transmission of monetary policy and therefore a key driver of economic cycles.

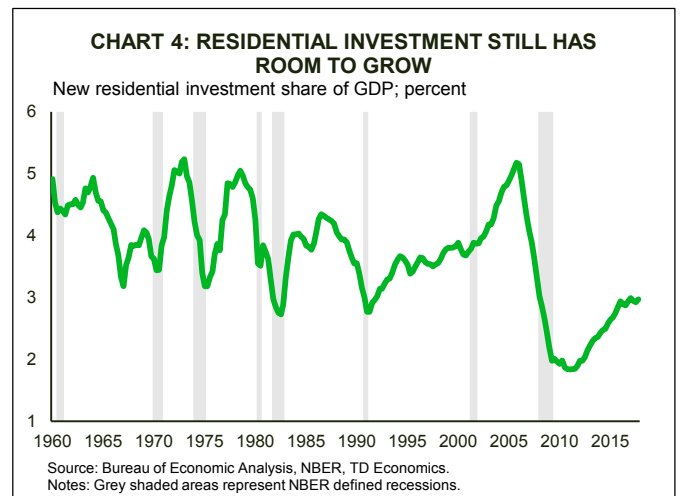
The credit crunch, debt overhang, and foreclosure crisis that followed the Great Recession restrained the housing sector’s recovery. Residential investment fell to all-time lows relative to GDP, and continued to fall a year after the broader economic recovery was underway. Even after six years of growth, it remains just a hair above troughs that were hit during previous recessions (Chart 4).

Just as significant, household debt also continued to decline for the first three years of the recovery, forming a trough in 2012. Some of the decline in household debt reflected the continued write-off of bad mortgage debt related to the housing crisis, which slowed the pace of consumer spending and therefore broader economic growth relative to previous expansions.

While household debt has been growing since then, income growth has kept pace, implying little change in household leverage over the past five years. This is also evident in the homeownership rate, which did not trough at its all-time low until the second quarter of 2016 (more than six years into the expansion). Since then it has inched up by less than a full percentage point, after dropping more than six percentage points from its peak in 2004. A housing market recovery that remains in its early stages, suggests that the business cycle expansion still has legs beneath it.

Pockets of vulnerability in student and auto loans

So far the discussion has been on areas that offer little reason to be concerned that a US recession is imminent or that balance sheet excesses are forming. However, it’s



not completely blue skies. Some areas of household consumption do look to be further along the business cycle. One of the indicators to show signs of flagging growth is auto sales. After falling to just 9.4 million (annualized quarterly data) in the first quarter of 2009, light vehicle sales have nearly doubled over the past nine years to close to 18 million. Sales growth appears to have slowed considerably over the past year and appears unlikely to move much higher from here (Chart 5).

As with the other indicators, the signal coming from auto sales is variable. The peaks and troughs in auto sales have historically tended to follow the housing market. It should come as no surprise then that in the last cycle, auto sales peaked in 2005, the same year as housing starts. The two have followed very different trajectories in the recovery to date, with auto sales continuing to gain traction even as new home construction stalled.

Assuming that a peak in auto sales has been achieved, it is not yet time to panic. While the sector is unlikely to provide much of a lift to economic growth, there is little evidence that it will lead the economy into recession either. Still, concern has been expressed about the growth of auto loans, especially in the subprime space.

In fact, subprime loans have grown at about the same rate as overall credit originations. Moreover, auto delinquencies have historically been lower than other forms of consumer credit like credit card debt and mortgage debt (Chart 6). Since people need their vehicles to get to and from work, they tend to be one of the last items they fall behind on. Auto loan delinquencies are more likely

to rise as a result of an economic downturn, than to be a catalyst of one.

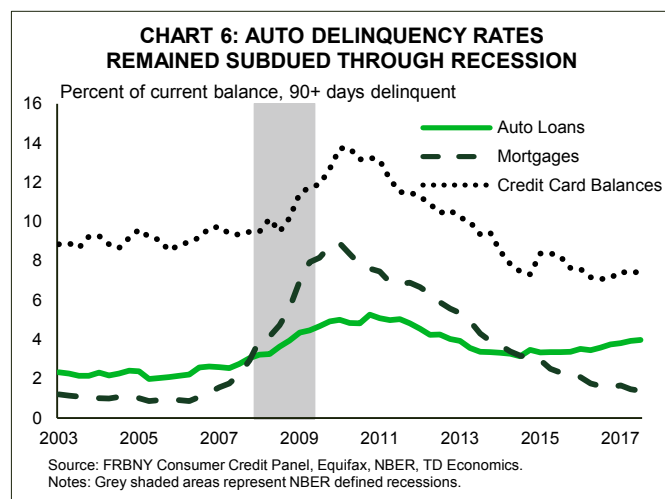
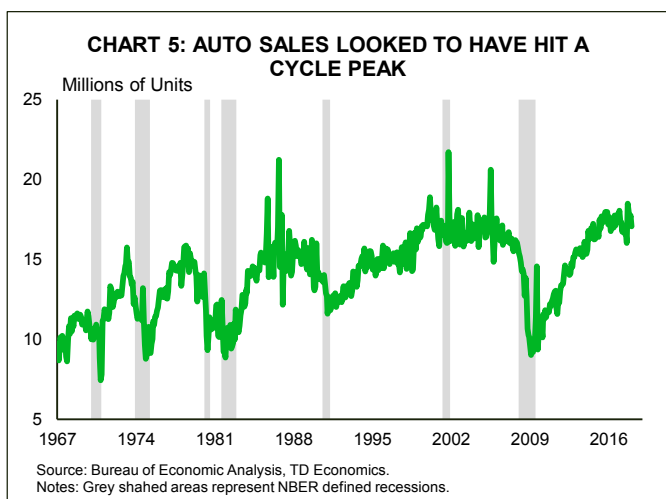
The same concern that has been identified with respect to the growth of auto loans is also true for student loans, which have more than doubled since the recession. The growth in student debt has itself been a reaction to the Great Recession. As job opportunities diminished, many young (and older) people decided to return to school and took advantage of government-backed student loans to do so.

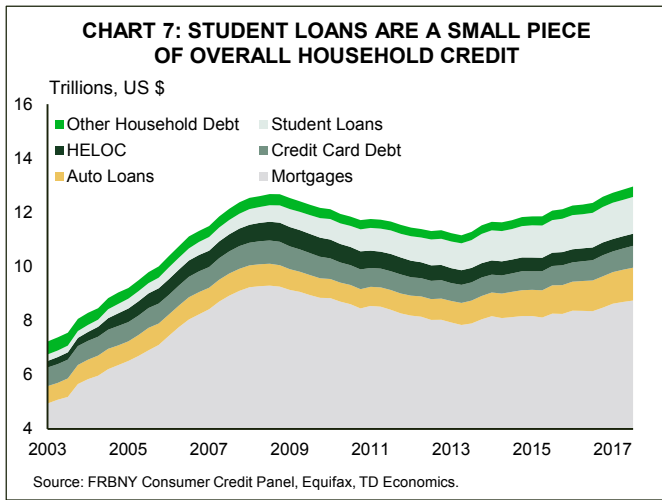
The growth in student debt has been relatively widespread across income groups. We have written about the challenge student loans pose to would-be homebuyers ([link](#)). Increased levels of student loan debt are an impediment to marriage and homeownership. What is cause for concern is that even in relatively good economic times, non-payment rates have risen. The delinquency rate on student loans rose steadily from 2003 through 2012 and has been hovering around 11% since. This is elevated relative to other forms of household debt.

Importantly, the fact that most of the student loan debt is a government asset reduces the risk of contagion to the broader financial sector. And, relative to the debts of the U.S. government or even household debt, the amount is relatively small (Chart 7).

Corporate debt has risen alongside net worth. Healthy now, but vulnerable to shock

With the upturn in global growth, corporate earnings





have improved and expectations for growth in 2018 earnings per share is in the double digits. An improved profit outlook and the unrelenting search for yield, have led corporate bond yields to fall to historical lows relative to government bonds. The BBB corporate yield spread hit one percentage point above the 10-year government yield on a daily basis, the lowest level since before the financial crisis.

This low yield environment has incentivized corporations to issue increased amounts of debt, which implies that corporations are more exposed if interest rates rise. Even investment grade corporates in America have seen net leverage jump nearly a full percent since 2010. As a result, interest coverage ratios have been declining over the last six years, even as earnings have increased. This typically happens late in the business cycle as corporations raise leverage as their growth prospects improve.

While not an immediate risk, the increase in corporate leverage bares monitoring as interest rates continue to normalize. This risk is more acute now than it has been in the past given the extended period of low interest rates, which has led to an increase in duration (sensitivity of bond prices to rising interest rates). As noted in the Office of Financial Research’s 2017 Financial Stability Report, the negative impact of a 100-basis point increase in yields is more than double what it was prior to the recession.⁴

Inflation isn’t likely to threaten gradual pace of interest rate hikes

As discussed above, sectors where leverage has in-

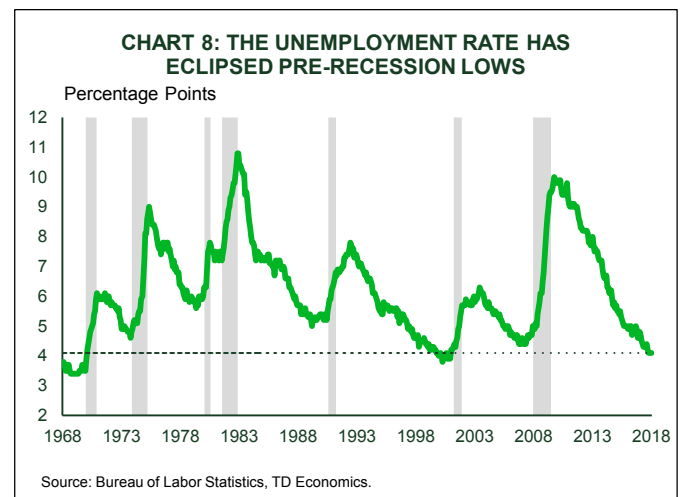
creased are the most vulnerable to sudden changes in interest rates or risk appetite. Recent events in global financial markets illustrate that sentiment can shift suddenly. At the start of February, news that wage growth accelerated ignited fears that inflation (and therefore interest rates) were set to rise faster than anticipated. In combination with valuations that appear high relative to history, this contributed to the sharp sell-off in global equity markets.

It is impossible to predict what might cause the next major sell off in financial markets – it may not need one trigger – but we can address the likelihood that inflation and interest rates are about to move suddenly higher.

Concerns over inflation center on the relationship between economic slack – often proxied by the unemployment rate – and price growth. The continued economic recovery has certainly led to a reduction in slack. Since peaking at 10% in October 2009, the official unemployment rate has fallen to just 4.1%, the lowest rate in seventeen years and below the median long run estimate of members of the Federal Open Market Committee at 4.6% (Chart 8).

Despite the decline in the unemployment rate, there is little reason to fear a sudden rise in inflation. Indeed, the movement in consumer price data over the past year – inflation fell as the unemployment rate dropped – suggests that either the relationship between slack and inflation (the Phillips curve) has weakened or the amount of slack is greater than thought.

In all likelihood, both of these factors are at play. First,

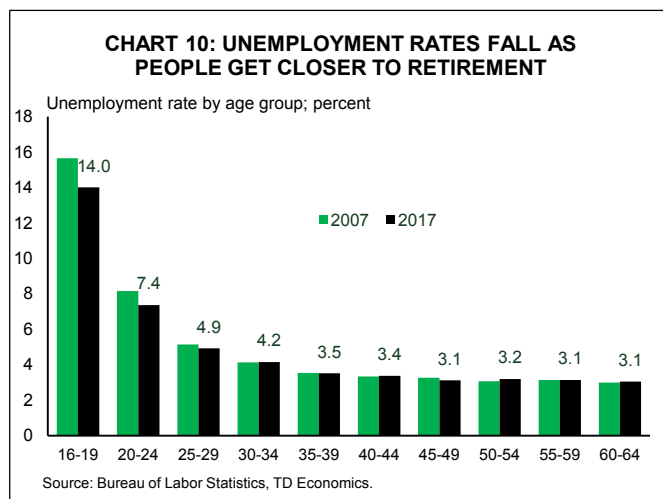
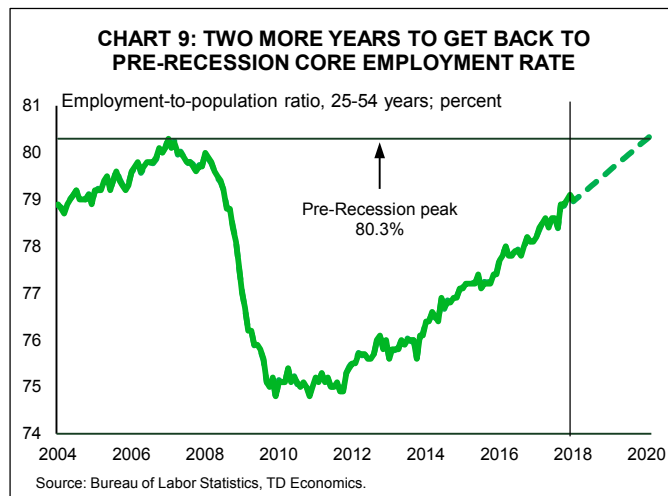


as we have documented ([see report](#)), the slope of the Phillips curve appears to have flattened globally, implying that the economy and labor market must be even tighter than it has been historically in order to generate higher inflation.

Second, the unemployment rate is likely hiding some shadow slack that reduces the likelihood of overheating. The gap between the U6 unemployment rate, for example, which includes part-time (for economic reasons) and marginally attached workers and the official (U3) rate is still elevated relative to its pre-recession level and even more relative to the early 2000s – the period in which the overall unemployment rate was as low as it is today.

Moreover, the employment-to-population ratio of core working age people (25 to 54) is still well below its pre-recession level, suggesting that an above-trend rate of job growth could continue for some time. Indeed, even at the current rate of job growth, it would take another two years before it hit its past peak (Chart 9), leaving a lot of runway for further improvement. This can only occur if the participation rate – the share of the population working or actively looking for work increases – but this is exactly what it has done over the past year. From a trough of 80.6% in September 2015, the participation rate of 25 to 54 year olds has risen over one percentage point to 81.8% as of January.

Third, the structural (long-term) unemployment rate that the economy can achieve without putting upward pressure on inflation is likely lower than it has been historically (or is currently estimated by FOMC members). This is an unobserved variable and its estimation is inherently



uncertain. What we do know is that the unemployment rate falls among older workers up to 65 years old (Chart 10). Therefore, population aging should mean a lower structural unemployment rate. How low is difficult to say, but notably, the FOMC’s long-run estimate has been moving down (alongside its inflation forecasts) from 5% in 2015, to its current rate of 4.6%. Maintaining the rate of adjustment seen to date, would have it fall toward 4% over the next few years, implying a labor market that isn’t as tight as the headline suggests.

Last but not least, the trajectory for interest rates depends on the Fed’s view of the neutral rate of interest. This is also a theoretical concept. The neutral federal funds rate is the rate consistent with stable inflation and unemployment. This rate appears to be much lower than it has been historically – likely in the neighborhood of 2.5% to 3.0%. There are a number of reasons for a lower neutral rate. For a fuller discussion, please see [here](#), [here](#), and [here](#). Suffice it to say that with an aging population, demand for safe assets has risen relative to desired investment. As a result, even as the Fed raises rates, the number of hikes will be limited by this lower ceiling. [Longer-term rates will also be limited](#) by the expectation for a lower terminal rate.

All told, without evidence that the labor market is unduly tight, the Fed is at less risk of falling behind the curve and have to raise rates rapidly. Instead, it can afford to be gradual, slowly moving the federal funds rate toward its neutral level. In the absence of an external shock, this gradual path for interest rate hikes, reduces the immediate risk of a recession.

Bottom line

The U.S. economy has entered a more mature phase, but this does not mean that a recession is around the corner. Indeed, forward-looking economic indicators point to ongoing strength. Business cycles end when imbalances build up and rising interest rates expose vulnerabilities. Risks have increased in sub-sectors of household and corporate credit, but so far they remain relatively small

and insulated from the broader economy. Still, with delinquency rates trending up on the household side and leverage at all-time highs on the corporate side, these are the hot spots to watch out for as interest rates push higher. All told, as long as interest rate hikes remain relatively gradual, the economic expansion is likely to continue.

End Notes

1. Recession dating goes back to the mid-19th century. The first recorded business expansion ran from December 1854 to June 1857. The first recession lasted a year and a half from July 1857 to December 1858. For more information see: <http://www.nber.org/cycles.html> (return to text)
2. Rudebusch, Glenn. (2016). "Will the Economic Recovery Die of Old Age." *FRBSF Economic Letter*. <https://www.frbsf.org/economic-research/files/el2016-03.pdf> (return to text)
3. Leamer, Edward E. (2007). "Housing is the Business Cycle." *NBER Working Paper 13428*. <http://www.nber.org/papers/w13428.pdf> (return to text)
4. Office of Financial Research. (2017). "2017 Financial Stability Report." https://www.financialresearch.gov/financial-stability-reports/files/OFR_2017_Financial-Stability-Report.pdf (return to text)

Appendix - Business Cycle Dashboard Variable Descriptions and Level Discussion

Near-Term Forward-Looking Indicators

ISM Manufacturing Index, +50 = expanding

The ISM manufacturing index provides an overview of the health of the manufacturing sector. Historically, the index has acted as a leading indicator of economic activity with a reading above 50 indicating expansion and a reading below 50 indicating contraction. The index currently sits at 59.1, close to its cycle peak established in September 2017.

ISM Non-Manufacturing Index, +50 = expanding

The ISM non-manufacturing index depicts the health of the non-manufacturing component of the economy. It is calculated using the same methodology as the manufacturing index. The current level of 59.9 is a cycle high and paints a healthy picture of the non-manufacturing sector, which accounts for approximately 80 percent of the economy.

Initial Jobless Claims (000s)

The number of new claims for unemployment insurance is a measure of the strength of the labor market. Currently, initial claims are hovering near cycle lows and levels last seen in 1973.

Housing Permits (000s)

Building permits are a reflection of the pace of residential construction activity. Permits have increased at a healthy pace over the current expansion, but remain well below the peaks established in previous expansions. Strong labor market conditions and growing wages should support household formations and ultimately the pace of residential construction.

Commodity Volatility (WTI - OVX)

The CBOE Crude Oil ETF Volatility Index ("Oil VIX", Ticker - OVX) measures the market's expectation of 30-day volatility of crude oil prices by applying the VIX® methodology to United States Oil Fund, LP (Ticker - USO) options spanning a wide range of strike prices. The current value of 30 is near the average implying little risk of a commodity-shock driven recession.

High Yield Corporate Bond Spread, %

The high yield corporate spread is an indicator of economic and financial uncertainty. The current spread of 3.5% is low in comparison to history. Spreads reached highs of 9.2% and 5.6% prior to the 2001 and 2008 recessions, respectively. The spread reached all time highs above 20% during the financial crisis in response to rising default rates. The spread has fallen considerably from its recent peak of 8.4% in February 2016 on energy-related default risk.

TDE Financial Stress Indicator

This is a measure of financial stress using a principal components analysis. The TDE financial stress indicator has recently moved from 1 standard deviation below normal levels of stress to neutral levels of stress in response to the recent turbulence in financial markets. Please see the following report. <https://economics.td.com/measuring-us-financial-stress>

Business-Cycle Maturity Indicators

Monetary Accommodation (real FFR- r^*)

The difference between the real fed funds target rate and the estimated equilibrium rate (r^*). A fed funds rate below r^* (as it is today) is stimulative to economic growth and inflation, while a rate above it is restrictive.

Corporate Operating Margins

Operating margins provide a measure of the profitability of the S&P 500. Currently, operating margins are above average, but have retreated from their cycle peak set in November 2014. Elevated profits margins may be a cautionary signal. Historically, peaks have coincided with declines in the S&P 500. In July 2000 for example, as operating margins peaked, the S&P 500 fell 44%.

Residential Investment/GDP, %

Residential investment is arguably central to the business cycle. Over the current expansion, residential investment's share of nominal GDP has increased steadily, but from a very low level following the Great Recession. The relative immaturity of the housing recovery suggests the business cycle still has some life to it.

Unemployment Rate Gap, %

The difference between the unemployment rate and its estimated structural level measures the strength of the labor market, but also the potential for future inflation. Currently, the unemployment rate sits comfortably below NAIRU which is currently estimated at 4.7%, suggesting a hot labor market, that should put upward pressure on inflation. Importantly, as covered in the body of the paper, it is not the only measure of slack. Ultimately, it is the Fed's response to the negative gap that will determine the fate of the business cycle.

Slope of the Treasury Yield Curve (UST 10-2y)

An inverted yield curve is a fairly reliable recession indicator, but may occur well before the onset of a recession. Over the past three decades, the UST 10-2yr spread has hit zero on average two years before a recession begins. However, it has also provided a number of false signals over the years. The current UST 10-2yr spread of 0.8% has been compressed by a number of factors including domestic and international quantitative easing, financial regulation, and low inflationary pressures.

Cyclically Adjusted S&P P/E Ratio (CAPE)

CAPE provides investors with a measure of stock market valuations. The current level of 33.4 suggests that equity market valuations are becoming stretched. CAPE has reached similar levels on two separate occasions, with the S&P 500 subsequently experienced notable declines.

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