

Winter 2017-18

# FIRST PRINCIPLES QUARTERLY

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Winter 2017-18

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## CIO LETTER



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### Dismal science indeed ...

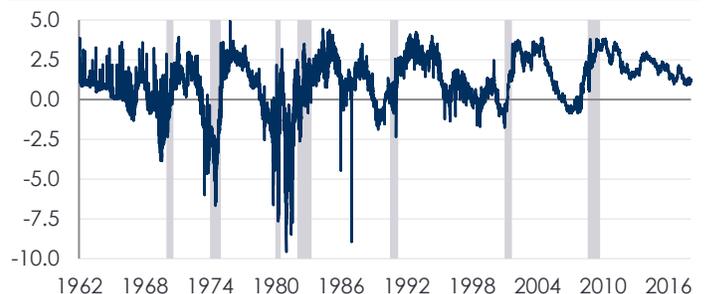
The relentless flattening – narrowing of yields between long and short-dated interest rates – of the Treasury yield curve over the last year has stoked fears of an impending recession (Chart 1) although financial markets rally apace. The capacity of yield curve inversions – short rates exceeding long rates – to signal recessions in the US is a generally accepted theory/conventional wisdom. Much of it stems from the facts that: (1) in the last seven recessions, the Federal Funds (FF) rate has exceeded the yield on the 10-year Treasury note prior to the onset of a recession (Chart 2) and (2) published research has shown that, econometrically, it is the dominant market indicator in terms of forecasting recessions<sup>1</sup>.

**Chart 1: US Treasury 10-year maturity less 2-year [bp]**



Source: Bloomberg

**Chart 2: 10-year constant maturity UST less fed funds rate [%]**



Source: Federal reserve bank of St. Louis

<sup>1</sup> Estrella, A. and Trubin, M., The Yield Curve as a Leading Indicator, Federal Reserve Bank of New York, Volume 12, Number 5, 2006.

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Given the exuberance in the financial markets, is this a replay of Cassandra and the Trojans? Or can the market's apathy be attributed to Martin Wolf's four most dangerous words in finance: this time is different.

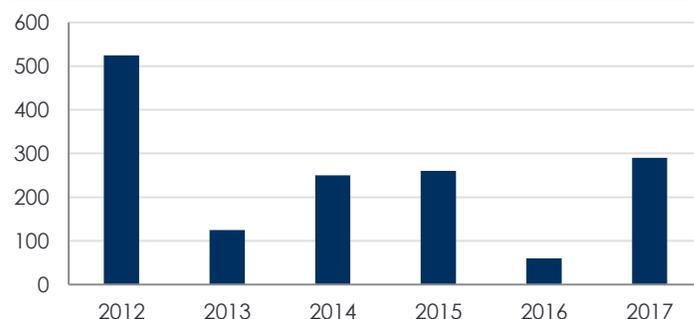
### Term structure of interest rates

Given that the inversion of the yield curve is simply the difference between short and long-term rates and that the spot rates are largely driven by the federal funds rate, it is critical to examine why long-term rates remain stubbornly low. Theoretically, long-term rates reflect the market's expectation for the average level of short-term rates adjusted for compensation to hold longer dated securities (term premium). After nearly a decade of monetary intervention, long-term rates imply expectations for short rates to be well below historical norms and/or depressed term premia. Does yield curve inversion in a low rate environment have the same predictive power witnessed in the last several recessions at much higher absolute levels of rates? Several market (technical and fundamental) factors can possibly rationally explain the low levels of long-term rates (2.55% in 10-year Treasuries and 2.85% in 30-year Treasuries).

### Technical demand

The demand for high-quality, long-duration bonds has been fueled by: (1) the enormity of the central bank quantitative easing programs – central banks hold nearly \$15 trillion of debt of which roughly 60% is sovereign – and (2) worldwide regulatory modifications that have required many institutions to hold more high-quality assets. And as yields have fallen, liability-driven investors with asset/liability gaps have been compelled to purchase more long-duration assets to offset the negative convexity of the portfolio. In addition, because US long-term yields remain among the most attractive of all developed sovereign markets, foreign investors have fled to the US market on both a currency hedged and unhedged basis. Net purchases for long-term US securities (Treasuries, Agencies, and Corporates) by foreign institutions (official and private) reached a peak in 2017 after the steep decline in 2013 (Chart 3).

**Chart 3: Net foreign purchases of long-term securities [ex EQ, \$bn]**



Source: Federal Reserve

The manifestation of this supply/demand imbalance is best illustrated by examining the term premium for 10-year zero coupon Treasuries. Prior to the crisis, there were no instances in which the premium was negative. Since late 2011, the term premium has been predominantly below zero. It reached a low of -86bp in 2012 and is currently estimated to be -33bp. Investors are perversely willing to sacrifice compensation to bear long-term real rate and inflation risk! (Chart 4)

**Chart 4: Term premium on a 10-year zero coupon bond [%]**



Source: Bond of governance of the Federal Reserve system [US]

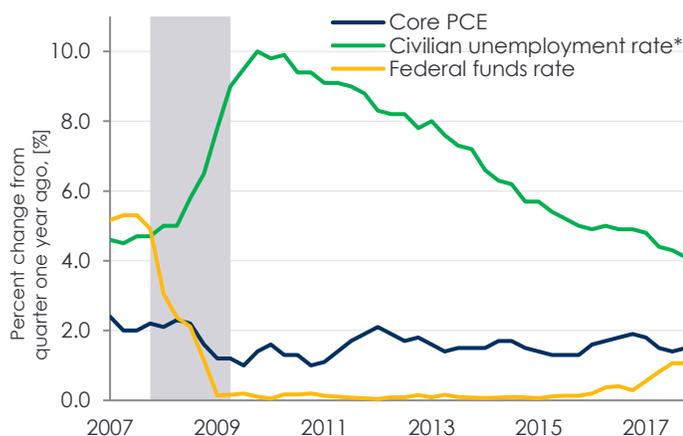
### Monetary policy

The January 2012 decisions to establish an inflation objective of 2% and to publish FOMC member policy rate projections (one, two, and three years hence and a longer run estimate) on a quarterly basis have had a profound effect on shaping investor expectations about the term structure of interest rates. Since 2012, PCE – the FOMC's inflation measure – has been below target while unemployment has monotonically declined from 8.3% to 4.1% (Chart 5). The absence of

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inflation, however, has clearly influenced the committee's view on the long run policy rate. The median federal funds rate has been revised down from 4.3% to 2.8% in December of 2017 as Chairwoman Yellen simultaneously characterized the persistence of low inflation as a "mystery" and the unobservable neutral rate of interest as "low by historical standards."

**Chart 5: Inflation vs unemployment vs fed funds rate [%]**



Source: BEA, BLS, Bond Governance

\*Seasonally adjusted

Clearly, the unprecedented long run, gloomy guidance has suppressed expectations for long-term rates.

### Fundamentals

The post-crisis expansion is now the second longest on record at 102 months. But the average rate of growth of 2.4% is the lowest of all post-recession expansions since 1960 (Table 1). This lackluster recovery after the unprecedented monetary stimulus programs is likely reflected in subdued investor expectations for future growth prospects at this point in the expansion and therefore for the path of short-term rates to rise modestly.

Second, notwithstanding the extensive fiscal and monetary policy, record low unemployment, and a recovery in energy prices, the experience level of inflation has yet to satisfy the FOMC's 2% target. In general, inflation attained much higher levels prior to recession. The last two recessions were credit related – 2001 Dotcom bubble causing several notable bankruptcies and the 2008 housing crisis – and had less to do with an overheating economy and, therefore, inflation was at more manageable levels.

**Table 1: Expansions since 1960**

Recession	Expansion [quarters]	Cumulative change in real GDP	Average annualized real GDP growth
1960	35	54%	6.1%
1970	12	16%	5.3%
1973	20	23%	4.7%
1980/82	32	38%	4.8%
1991	41	43%	4.2%
2001	24	18%	3.0%
2008	33	20%	2.4%

Source: CME

The relative strength of the US dollar since 2014 – modulo the decline since mid-2017 – has reigned in inflationary pressures. Increased competition from foreign suppliers and the salutary effect on the commodity process have weighed on the more volatile components of the CPI.

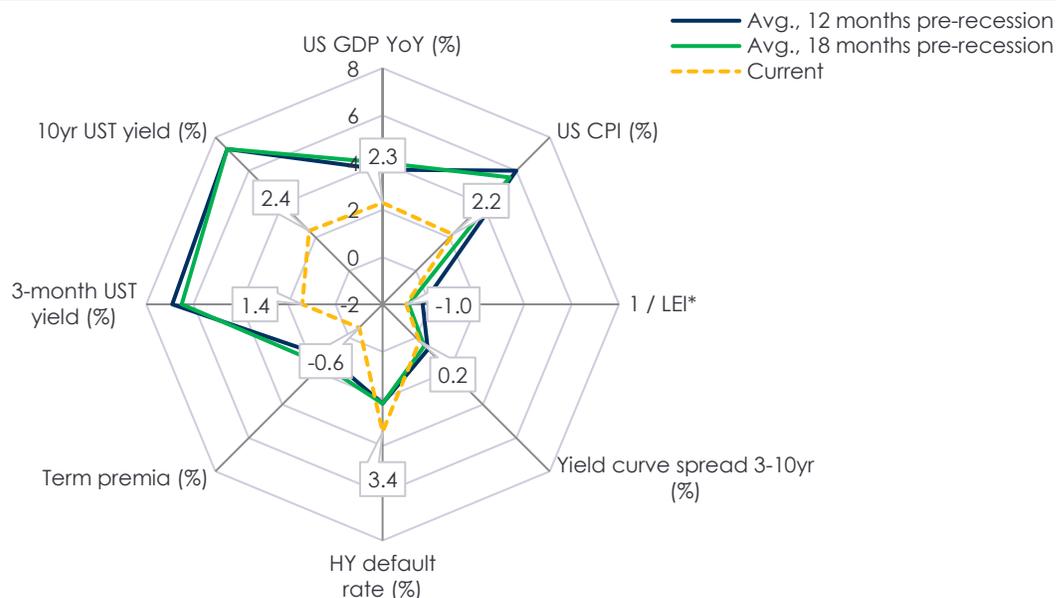
Thus, the relative flattening of the yield curve has more to do with the desire of the FOMC to normalize policy (five rate rises over the past two years and three to four expected in 2018) coupled with justifiably low long-term yields and conditions that depart from those usually found prior to recession.

### Historical perspective

When compared on a number of macroeconomic and market parameters (e.g., GDP, 3 month UST yield, 10-year spread, CPI, HY default rate, and risk premia) the current state of the economy appears to be healthier than the overall average of the previous seven recessions both 12 and 18 months prior to the onset (Chart 6). The only measure that falls outside the area circumscribed by the averages is the HY default rate for both time periods. The largest departures from previous recessions are observed in the absolute level of rates, the term premia, and the prevailing level of inflation. In general, none of the current conditions, either on a standalone basis or in aggregate, remotely augur a turning point in this business cycle at this time.

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**Chart 6: Macroeconomic and market indicators**



Source: FPCM, Bloomberg, Bank of America, Conference Board

\*Conference Board Leading Economic Index (LEI)

The phenomena of the yield curve as a leading indicator is less persuasive in other developed markets. Chinn and Kucko<sup>2</sup> surmised that “the yield curve clearly possesses some forecasting power ... (but) there is some evidence that the United States is something of an outlier” in a study that covered several developed markets. More importantly, they concluded that in Japan, which has had very low rates for two decades, the short-term/long-term yield spread had no statistical significance and furthermore that “lower .... short-term interest rates tend to precede time of slower growth.”

### Outlook

The argument that the current flattening of the yield curve is presaging a recession in the near term appears somewhat specious. The prevailing market factors that generally exist prior to a classical recession – high inflation, high rates, and oftentimes a decline in economic activity – appear to be more noise than signal presently. And the spectre of a credit

event that could precipitate the next downturn – as in the 2002 and 2008 recessions – is not at all obvious.

The case for a bear steepening at the long-end of the curve has been fortified by the fact that central bank policies are getting less accommodative coupled with the recent supply-side tax cut, the aggressive trade policy, and the weaker dollar. All of which should lead to higher growth prospects in 2018, larger deficits/greater Treasury issuance, and higher inflation. All of which should manifest itself in higher term premium and a normalization of real rates if the FOMC does not depart radically from its intention to raise rates three to four times this year.

The changing dynamics of the economy and the still very long shadows cast by the central banks appear to have rendered yet another market empirical paradigm broken if not obsolete. The first casualty was the Phillips curve and the shape of the yield curve as a reliable harbinger for forecasting recessions may be the next.

<sup>2</sup> Chinn, M.D. and Kucko, K.J., The Predictive Power of the Yield Curve Across Countries and Time, National Bureau of Economic Research, Working Paper 16398, 2010.

# FIRST PRINCIPLES QUARTERLY

## MUNICIPALS



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### QUICK READ

- Municipal bond curve flattened significantly in Q4
- Monetary and fiscal policy have softened demand for short-maturity Treasuries and have increased demand for long-maturity Treasuries
- Spurred by the Tax Act and perpetuated by technical factors, munis went through multiple cycles of cheapening and richening
- Issuance has been pulled forward, causing inventory to expand on the books of dealers and investors

### Municipal bonds encounter a volatile Q4

The municipal bond market went through an uncharacteristically wild ride in the fourth quarter of 2017. Speculation leading up to and passage of the Tax Cut and Jobs Act ("Tax Act") contributed to significant gyrations in the muni market throughout the quarter. The muni curve flattened tremendously, to a degree even greater than Treasury curve flattening over the same period – the AAA Bloomberg yield curve flattened by 82 basis points (bp) between 2-year and 30-year maturities (2s30s); compared to the Treasury yield curve flattening of 52bp in 2s30s. For the quarter, AAA Bloomberg yields rose 15bp compared with 17bp of yield rise for Treasuries.

### Curve flattening across markets

Yield curves across the fixed income spectrum flattened significantly during the quarter. Short-maturity fixed income assets sold off sharply owing, in part, to both: 1) Hurricanes Harvey and Irma coming and going, and 2) the decreased likelihood of the Fed altering its path, leading to increased market expectations of continued Fed quantitative tightening. Further, following the beginning of the Fed's tapering, initiated in October, the Treasury announced the intention to shorten the duration of future issuances – meaning future Treasury supply will be heavily tilted toward the short end, causing more stress in that part of the curve. These shifting dynamics' cause and effect are evidenced by a 40bp sell-off in 2-year Treasuries throughout the quarter.

Conversely, given reduced expectations for future long-maturity Treasury supply and the Treasury Department's abandonment of issuing 50-year bonds, long duration assets performed well over the fourth quarter. Moreover, because of lower 2018 corporate tax rates thanks to the Tax Act, market speculation was that corporate pension plans aggressively bought long duration assets, taking advantage of higher 2017 tax deductions. These supply and demand dynamics, technicals rather than fundamentals, resulted in 30-year Treasuries rallying 12bp during the final three months of 2018.

## MUNICIPALS

The considerable flattening of the Treasury curve paled in comparison to what occurred across the municipal curve. Retail and institutional investors “hid” in short-maturity bonds for the majority of 2017, lest there occur a major sell-off in the fixed income market. However, short-maturity bonds incurred the most suffering as the Fed maintained plans to continue tightening. In the fourth quarter alone the 2-year AAA Bloomberg yield rose 54bp. On the other end of the maturity spectrum, market expectations for 2018 issuance has been greatly reduced due to the Tax Act – thereby triggering a panic reach for yield via long duration municipal bonds and causing the 30-year AAA Bloomberg yield to decrease by 28bp.

### The Tax Act had an outsized impact on muni market fluctuations

The municipal bond market was kept on edge as various tax proposals went through Congress – muni market participants dynamically managing their books as several potential scenarios played out. For example, when exemptions for private activity bonds and advanced refunding were at risk of being removed, issuers rushed to increase issuance. In the end, private activity bonds retained their exemption but advanced refunding did not.

December's municipal bond issuance, around \$64 billion, broke 1985's record of \$54.7 billion. Munis cheapened in response, as the first wave of issuance came to market, only to encounter greater capacity and absorption than expected. This higher than anticipated demand boosted investor confidence, leading to a strong rally. This subsequent rally ran far enough to encourage profit-taking, thereby causing another sell-off. However, the eye of this storm again passed and gave way to an ensuing rally as year-end came and activity slowed to a crawl. Chart 1, utilizing the 30-year AAA Bloomberg yield, illustrates the municipal bond market gyrations in latter part of 2017.

Chart 1: 30-year AAA Bloomberg yield



Source: Bloomberg

### Looking forward

Given that issuers pulled forward portions of future issuance to December, issuance is expected to be down in 2018. Ostensibly, that is a positive for municipal bonds – however, caution must be taken as: 1) dealer inventory is at record high and 2) many investors took down large chunks of December's supply in anticipation of 2018 supply/demand technicals. As such, a potential shortfall caused by lack of issuance may be supplanted by this accumulated dealer/investor inventory. Additionally, as a result of the Tax Act's new corporate tax rate of 21%, municipal bonds are less attractive to corporations/banks/insurance companies – reduced demand from these large investors could neutralize some of the impact of 2018's diminished issuance.

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## RATES



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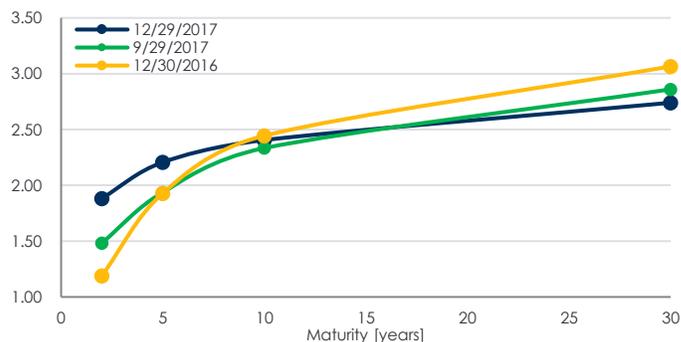
### QUICK READ

- Over Q4, rates were driven largely by policy developments and continued economic strength
- Shifts in Fed seats will likely result in an increasingly hawkish board
- Increased US borrowing, higher short-maturity issuance, will need to be absorbed by investors
- Curve inversion does not necessarily portend a recession, nor the Fed ceasing its hiking path
- Term premium, currently negative across the curve, could re-price on central bank tightening

### Rates take their cue from Washington and a surging economy

Four main stories drove the rates market over Q4 2017: 1) passage of the Tax Cut and Jobs Act ("Tax Act"), 2) the nomination of a new Fed Chair, 3) the Treasury funding announcement, and 4) US economic data. Broadly, the US (and global) economy continued to improve and easing financial conditions persisted. Payroll data prints maintained above-trend job gains, but also failed to evidence elusive wage growth acceleration – expected to coincide with a low, falling unemployment rate. The benchmark 10-year Treasury yield started 2017 at 2.40% and closed the year at 2.40%, covering a 60 basis point (bp) range (Chart 2). The fourth quarter range was narrower, 25bp, as the market swung on prospects varying between the potential selection of a hawkish John Taylor for Fed Chair, to disappointing inflation data, and a pressurized tax plan. Rates volatility, shown in Chart 3, accelerated an already steady decline – 1-year, 10-year forward swap (1yr x 10yr) started the year at 88bp and ended the year at 60bp.

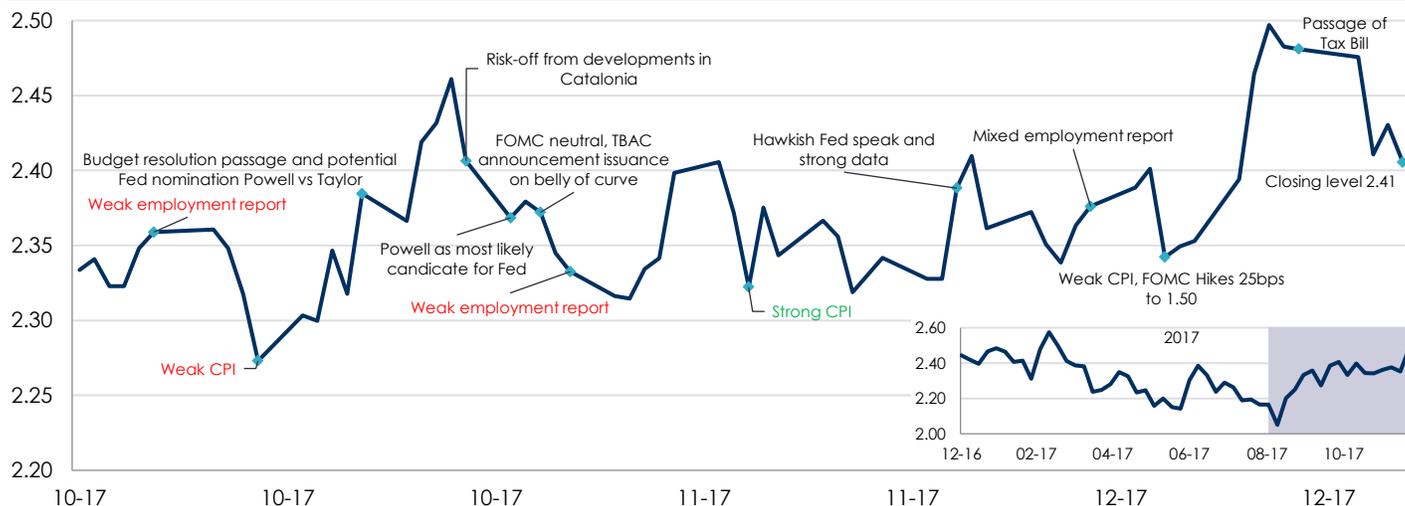
Chart 1: US Treasury yields [%]



Source: Bloomberg

# FIRST PRINCIPLES QUARTERLY RATES

**Chart 2: Historical 10-year Treasury yields [%]**



Source: Bloomberg

**Chart 3: Normalized implied volatility 1yr x 10yr swap [bp]**



Source: Bloomberg

## The Fed

As expected, the Fed raised the fed funds rate in December. Additionally, the minutes of the meeting suggested strong support for three or more hikes in 2018 while remaining vigilant with respect to inflation developments. The Fed started to take a new shape with the appointment of Jerome Powell as Chairman and the confirmation of Randal Quarles for Fed Board of Governors – pending the confirmation of Marvin Goodfriend, there remain three vacancies, one of which is Vice Chair. Further, depicted in Table 1, the Fed's reaction function for 2018 will likely reflect a more hawkish composition – of four seats that will turn over, two are doves (Evans and Kashkari) and two are centrists (Kaplan and Harker). Moving forward, these four seats will be filled with two unknowns (Bostic and Barkin), one centrist (Williams), and one hawk (Mester).

**Table 1: Expected seat changes at the Fed**

	Dovish	Centrist	Hawkish
2017	Evans	Kaplan	
	Kashkari	Harker	
2018		Williams	Mester
		Bostic	
		Barkin	

## Treasury announcement and Tax Act

The issuance strategy announced by the Treasury Borrowing Advisory Committee (TBAC) at the beginning of November triggered curve-flattening and 30yr swap spread widening. Market expectations were for an increase in coupon or mention of ultra-long issuance – however, the strategy proposed concentrated on bills and notes/bonds up to 5 years. TBAC recommended to issue bills such that they are 25-33% of total marketable debt, versus the current level of approximately 13%. The passage of the Tax Act, however, is going to have a significant effect on budget deficits and issuance in coming years. Barclays estimates that the Tax Act will lower revenues by \$1.5trn over the next decade, however, most of it will be front-loaded. Borrowing needs are anticipated to nearly double to \$1trn in 2018 and will remain elevated in 2019. With the Fed scheduled to reduce its Treasury holdings, the Treasury, then, would be raising approximately \$1.3trn per year from investors other than the Fed.

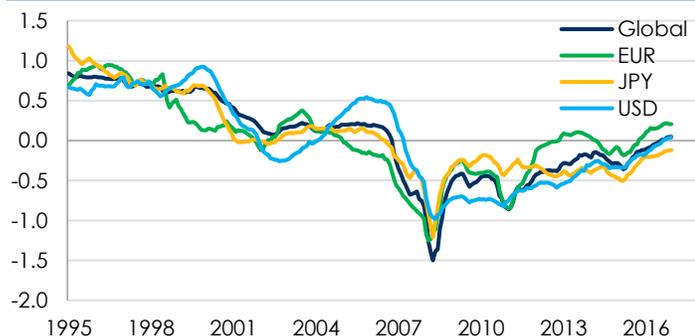
# RATES

## Curve flattening, term premium, and recession fears

The yield curve has steadily flattened over the past few years, but the move during the last quarter of 2017 was enough to lure the previously divided attention of market participants and the media. The shape of the Treasury yield curve has historically been used as a leading indicator of future economic activity and recession risk. Before each of the last seven recessions, short-term interest rates rose above long-term rates – AKA an inverted yield curve.

What could change the slope of the curve? 1) Monetary tightening is expected to be a headwind for sustained economic growth, flattening the yield curve, 2) changes to investor expectations and respective effects on credit demand and future inflation, and 3) changes in financial market conditions (Chart 4), particularly whether changes stem from technical factors or economic fundamentals (supply/demand).

**Chart 4: Financial conditions indices**



Source: Citi Research

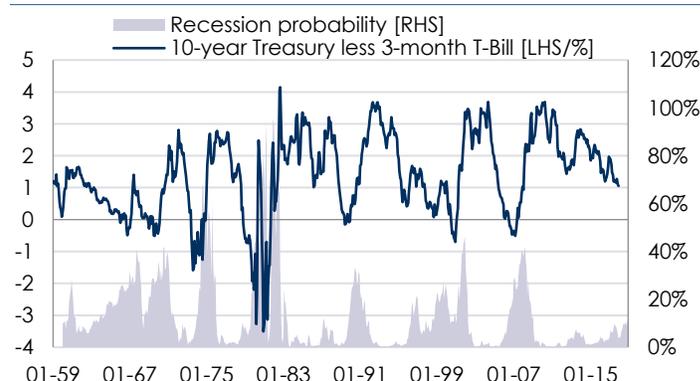
\* Positive (negative) readings indicate looser (tighter) financial conditions than the long-term average. The FCIs are based on "A new index of financial conditions"

## How close are we to an inversion of the curve and a recession?

The recession prediction model developed by the Federal Reserve Bank of New York (FRBNY) is based on spread difference between the 10-year constant maturity Treasury and the 3-month T-Bill, which has shown the most correlated, and thus, predictive power of recessions compared with other maturity combinations. Additionally, this research posits that the inversion of the yield curve must be observed over longer periods – monthly or quarterly average frequency – in order to provide reliable signals, as opposed

to daily or intraday data. The spread between the 10-year Treasury and the 3-month T-Bill was 200bp in 2016 and finished 2017 at 100bp, so there is still a gap before becoming inverted. As such, the model currently assigns a probability of less than 5% that a recession will happen in the next 12 months (Chart 5). The model provides a dependable signal, however, it doesn't forecast the level of the spread as this has varied historically (Table 2).

**Chart 5: 10-year Treasury less 3-month T-Bill versus recession probability**



Sources: National Bureau of Economic Research, Bloomberg

**Table 2: Recessions as defined by NBER\***

Period	Number of months with negative monthly spreads	Minimum level of spread
Jan 1970 - Nov 1970	10	-0.51
Dec 1973 - March 1975	6	-1.59
Feb 1980 - July 1980	12	-2.2
Aug 1981 - Nov 1982	10	-3.51
Aug 1990 - March 1991	3	-0.08
April 2001 - Nov 2001	7	-0.7
Jan 2008 - June 2009	5	-0.51

Sources: \*National Bureau of Economic Research, Bloomberg

## RATES

### Will a flattening curve deter the Fed from continuing its hiking path?

Market participants may associate Fed tightening with periods of yields rising across the curve. However, historically that has not been the case – since liftoff in December 2015, the Fed has raised rates by 125bp while long-term yields have risen just 20bp. This move is less than in similar scenarios of either the 1994 or 2004 tightening cycles. Absent a meaningful change in the economic data, it is very likely that the Fed will continue to hike rates, even in spite of curve inversion as it did the late 1980s, late 1990s, and 2000s. Moreover, when asked recently about this, Yellen attributed the structural decline in long-term premia as one of the drivers of recent curve flattening.

### Long-end behavior and term premium

Following the crisis, economic fundamentals have slowed potential growth, naturally lowering expectations of the neutral fed funds rate – the FOMC's median estimate for the longer run rate has declined by 150bp over the last 5 years, which therefore limits the extent that long-term yields can rise in the current environment. Another key component of the long-end is the term premium. Term premium can be defined as the additional compensation required for investing in longer duration bonds rather than rolling short maturity ones. According to the Adrian, Crump, Moench (ACM) term premium model<sup>3</sup>, the term premium is now negative across the curve and it is more negative in the 10-year sector than at the front end, suggesting investors are not being compensated for the additional risk of buying longer-duration Treasuries.

JPM studied the 10-year ACM term premium as a function of: 1) implied rate volatility, 2) the volatility of medium-term inflation expectations, and 3) global FX reserves. The study showed that these variables can explain 80% of the variation in 10-year term premium over the past 25 years. As

mentioned earlier, implied rate volatility has declined steadily over the past few years which could be attributed to changes in the Fed's policy and supply/demand factors. The Fed has become more open on its communication with the market and more transparent/predictable on the pace of tightening, therefore narrowing expected distribution for the path of rates in the near-term. On the other hand, there has been an increase in volatility selling strategies across asset classes – mostly encouraged by the prospect of generating excess returns in low yielding environments, causing volatility buying investors to take a step back.

Inflation expectations have also been significantly less volatile as the market has gained confidence in the ability of central banks to reduce tail risks or undesirably high inflation.

Finally, highlighting two potential causes for the high demand for Treasuries – foreign exchange reserves and global QE. FX reserves have increased significantly in the past twenty years and, according to Composition of Foreign Exchange Reserves data from the IMF, nearly two-thirds of allocated FX reserves are in USD and, due to their liquidity, most likely are in Treasuries. Large-scale asset purchases by developed market central banks have created a shortage of high-quality, safe harbor assets – US Treasuries are the highest yielding of such in the current environment, therefore increasing their demand.

What could cause an increase in term premium? This year we are entering into uncharted waters of scaled back QE globally – the Fed will be shrinking its balance sheet and the ECB will be tapering its asset purchases, which could cause ripples in the fixed income market. If central bank moves deviate from expectations, this could cause a re-pricing of term premium. Additionally, there is considerable risk of higher term premium if there occurs a significant, unexpected increase in inflation readings.

<sup>3</sup> Treasury Term Premia: 1961-Present  
Adrian, Crump, Mills and Moench, May 2014



# FIRST PRINCIPLES QUARTERLY

## INFLATION



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### QUICK READ

- Since the election, inflation expectations have oscillated on changing expectations of probability and efficacy of fiscal policy
- Real yield curve flattened alongside nominal curve, with inflation persisting below expectations both domestically and abroad
- Popular concepts for subdued inflation – “Amazonization,” tech, and globalization, etc. – may only be part of the story
- Traditional inflation measures have limitations, and creation of a new Fed model is in fledgling stages
- In measuring TIPS performance, measures against real yield and nominals can produce varying results

### Elusive inflation has become the norm, but may surprise to the upside in 2018

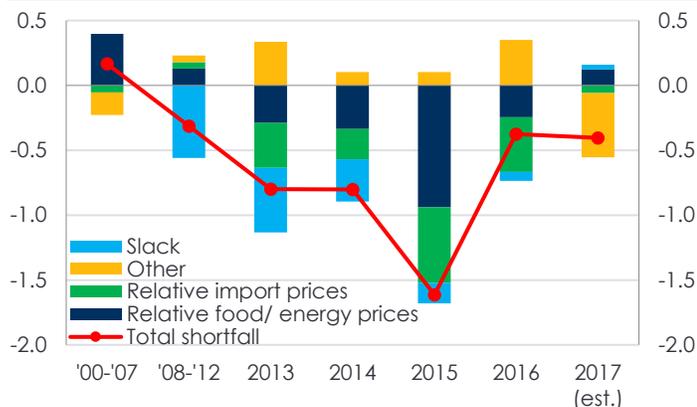
2017 began with lofty expectations of growth owing to anticipation of bold and disruptive policy changes touted by the incoming administration in Washington. Inflation breakevens, which had begun to inch up September 2016, moved higher thanks to the Trump election-bump and closed much higher by the end of 2016. Breakeven inflation expectations 5 years forward gained nearly 70 basis points (bp) while long-end breakevens closed up 50bp. Expectations continued to trend upward in early 2017, but, by mid-March, doubt crept into the market regarding the probability of the enactment of meaningful policy changes in the short-term, thereby again tempering expectations. Inflation expectations then started to slide – a move exacerbated by March inflation coming in below the Fed’s target and continued soft prints in subsequent months. The decline persisted until June, nullifying post-election gains. Inflation expectations have recovered from the lows and, aided by the tax bill-induced bump, closed the year around 2% in the long-end, about 15bp below recent highs.

Mirroring the nominal curve, the real yield curve also flattened for the year. While the 10-year real yield closed essentially unchanged, the 5-year real yield gained approximately 33bp for the year and the 30-year real yield was down 22bp. TIPS underperformed Treasuries – 10+ year TIPS returned around 6.9% while corresponding nominals returned approximately 8.2%. The unexpected softening of core inflation caught most economists by surprise, evidenced by realized PCE Index reading 50bp lower than median expectations of 2%. Decomposition of PCE components (Chart 1) shows the growing contribution of the Other’ category – a possible cause for the shortfall. Soft inflation levels are not just a US phenomenon, as it is prevalent in other advanced economies (Chart 2).



# FIRST PRINCIPLES QUARTERLY INFLATION

**Chart 1: Factor decomposition driving PCE exp. shortfall [%]**



Source: Citi Research, Federal Reserve

**Chart 2: Headline and core inflation among DM [%]**



Source: BIS/Bloomberg

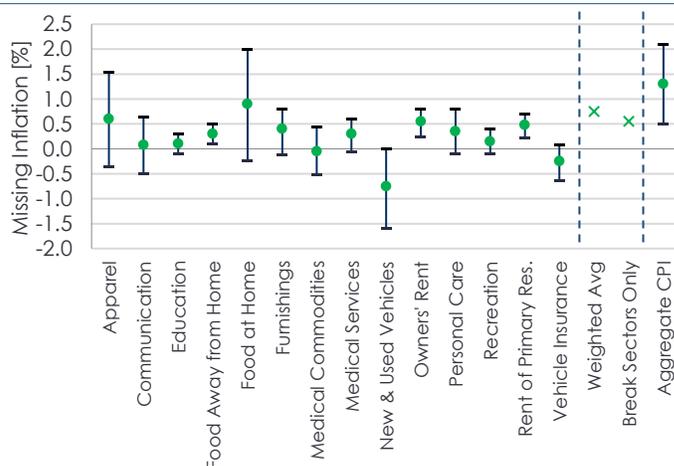
Researchers at the Federal Reserve Bank of Boston<sup>4</sup> recently produced a study that analyzed the sectoral Phillips curve in an attempt to divine contributing factors to changing dynamics of inflation and to potentially identify sector(s) that are driving deviations from historical norms. "Amazonization," technological advances, and globalization have been considered material contributors to weak inflation. The study shows that the impact from Phillips curve flattening spanned most sectors and was not limited solely to sectors impacted by aforementioned factors (Chart 3).

<sup>4</sup> Sectoral Inflation and the Phillips Curve: What Has Changed since the Great Recession?

María José Luengo-Prado, Nikhil Rao, and Viacheslav Sheremirov; Federal Reserve Bank of Boston, Nov 2017

Aggregate CPI would have been 1.29% higher if not for the slope change. Using individual sectors to predict sector level inflation and then taking the weighted mean would have predicted an aggregate CPI 73bp higher. The study also examined inflation persistence and expectations and concluded that inflation persistence has decreased at the sectoral level post-financial crisis. This decrease implies that today's low inflation may not necessarily signal low inflation in the future.

**Chart 3: How much higher would sectoral inflation be without a Phillips curve flattening?**



Source: Federal Reserve of Boston

The effectiveness of the two commonly used measures of inflation (CPI and PCE) to infer trend inflation is limited because of: 1) their low periodicity (monthly) and 2) the high volatility of the data. Researchers at the Federal Reserve Bank of New York have developed a new model called the Underlying Inflation Gauge (UIG) to detect turning points in trend inflation<sup>5</sup>. UIG is defined as the persistent, common component of monthly inflation and is based on a large dataset that includes prices complemented by a wide range of nominal, real, and financial variables. The design of this gauge enables real-time estimates, which makes it useful for policy makers and market participants. Historical analysis shows that the UIG is strongly correlated to 1-year forward core CPI measures. The UIG is currently on the upswing and, assuming the relationship holds, implies higher core inflation in 2018.

<sup>5</sup> The New York Fed Staff Underlying Inflation Gauge (UIG); Marlene Amstad, Simon Potter, and Robert Rich; FRBNY Economic Policy Review/December 2017

## FIRST PRINCIPLES QUARTERLY

## INFLATION

The US economy – already strong – may receive a boost from the recently passed tax bill, which would, in turn, lead to higher inflation expectations. The recent increase in breakeven levels echoes this sentiment. Treasury data provides evidence of stronger TIPS demand from investment managers (Chart 4). Another factor that could influence inflation over the next few years is the sharp 10% drop in the US dollar over 2017. While academic literature generally posits that the impact of FX pass-through to inflation has dropped in recent years, a recent IMF study<sup>6</sup> estimates that the US economy has an FX pass-through beta of 5% and an FX pass-through delta of 10% over 1 year and 2 years respectively. Chart 1 shows the opposite phenomenon in recent years when inflation encountered downward pressure from a rallying USD. TIPS will undoubtedly outperform nominals in a scenario of higher than expected inflation – however, return on TIPS can be dominated by moves in real yield, so it would behoove investors to be cognizant of possible scenarios wherein TIPS could counterintuitively produce negative total return amidst high inflation. The only way to capture a pure upside to inflation is via derivatives or a structured trade with exposure to breakevens.

**Chart 4: Historical avg. allocation across all TIPS auctions**



Source: US Treasury, J.P. Morgan

\*2017 is as of October 2017

<sup>6</sup> Monetary Policy Credibility and Exchange Rate Pass-Through by Yan Carrière-Swallow, Bertrand Gruss, Nicolás E. Magud, and Fabián Valencia; IMF Working Paper WP/16/240; December 2016

# FIRST PRINCIPLES QUARTERLY

## MORTGAGE-BACKED SECURITIES



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### QUICK READ

- Impact of changes to mortgage interest rate reduction should have limited impact on MBS market
- Managers may be incentivized to roll out of MBS funds and into mortgage REITs
- It may be prudent to wait until low cost/leveraged REITs proliferate before allocating

### Fake News

If you pick up a newspaper (or tablet) and read an article about the new Tax Cuts and Jobs Act ("Tax Act"), you are likely to see a paragraph on the change to the mortgage interest deduction. Under the new code, the mortgage interest deduction cap is lowered from \$1,000,000 to \$750,000<sup>7</sup>. The maximum cost of this change is around \$4,500 a year<sup>8</sup> – not very significant when considering that this change primarily impacts high-end homes<sup>9</sup>. Borrowers are also less likely to itemize their deductions, and take the mortgage interest deduction, under the new tax code now that the standard deduction has been increased by \$11,300 – a maximum benefit of around \$4,500. Needless to say, the impact of this change on the housing and mortgage-backed securities (MBS) market should be negligible.

A less publicized change in the new tax code is that non-corporate taxpayers can take a deduction equal to 20 percent of qualified real estate investment trust (REIT) dividends. This can provide taxable investors with as much as 25 basis points (bp) of additional, after-tax yield on unleveraged MBS<sup>10</sup> – a substantial pickup given that zero-volatility spreads to US Treasuries on MBS are roughly 70bp.

Based on this rule change, money managers should convert existing MBS funds to mortgage REITs. Money managers currently hold roughly 11% of the MBS market, while mortgage REITs only hold 4% – so there is the potential for a large flow of funds into REITs. However, impeding this would-be flow is a rule that REITs are required to hold 55% of their assets in whole pools<sup>11</sup>, which can be very difficult to execute in size.

An even bigger hurdle to converting funds to mortgage REITs is that mortgage REITs remain a niche sector of the equity market. While the assets of REITs are quite large, they employ substantial leverage and the combined market cap of the largest 15 mortgage REITs is less than \$45bn – which puts mortgage REITs outside of the top 125 largest single name stocks. Furthermore, only 30% of the equity in mortgage REITs are held by individual (non-institutional) investors.

<sup>7</sup> This for married filing jointly.

<sup>8</sup> Assumes current jumbo mortgage rate of 4.5% mortgage rate and 40% marginal tax rate.

<sup>9</sup> Homes valued over \$1,000,000. If they are valued less than \$1,000,000, then they likely have a mortgage under \$750,000 as most lenders require 75% down payment for a jumbo loan.

<sup>10</sup> This assumes MBS yield of 3.15% and 40% marginal tax rate.

<sup>11</sup> MBS pools are often broken up and sold in pieces. To qualify as a whole pool, a REIT needs to own 100% of the CUSIP.

## MORTGAGE-BACKED SECURITIES

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Mortgage REITs typically charge management fees north of 1% that are not incentive based. Instead of investing in the current generation of REITs, we recommend investors consider waiting for low cost and low leverage REITs to emerge to take advantage of this tax break. If Wall Street is successful in bringing these REITs to market, then we could see mortgage spreads tighten, particularly spreads on new production MBS where it is easier to purchase whole pools.



# FIRST PRINCIPLES QUARTERLY

## CORPORATE CREDIT



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### QUICK READ

- Age of cycle notwithstanding, credit in 2017 proved to be a strong, continued performance of 2016
- Investors are reminded that sell-offs in a few names can result in others being painted with a broad brush
- Low defaults, tax cuts, and a healthy macroeconomic picture suggests a sharp reversal is not on the horizon
- Technicals diverged between IG and HY, with reasons difficult to divine among many potential contributors
- Considering the market's insatiability for risk, pullbacks will present buying opportunities

### A look back on 2017

2017 was a strong year for credit, with investment grade<sup>12</sup> and high yield<sup>13</sup> indices generating total returns of 6.4% and 7.5% respectively. However, cyclical aging remains a concern for many US high yield investors and is hard to refute. The credit cycle has already experienced a major industry meltdown (energy unraveled in 4Q14 and bottomed in 1Q16) along with auto cycle doubts this past spring. Aggregate fundamentals appear healthy, but some core industries are showing signs of deterioration – technology, media and telecommunications (TMT); healthcare– and the fiscal support and regulatory rollback should bring more financial aggression to the leveraged finance market. To a large extent, 2017 was a continuation of many of the trends in 2016 as default rates continued to decline and the commodities complex rallied alongside crude oil and metals price. Will 2018 be a continuation of 2017 trends?

### Low volatility

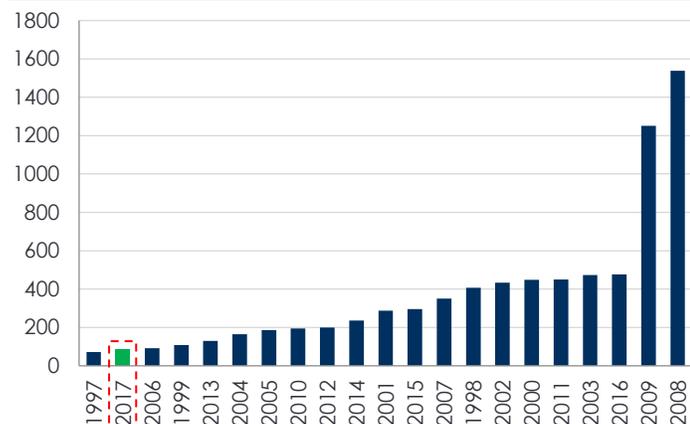
The low volatility in risky assets was among the most discussed trends for FY17. The US high yield market experienced the second most compressed high-low spread range over the past three credit cycles at 83 basis points (bp) – Chart 1 – despite very little major successes in legislation until the most recent tax bill, and \$21 billion in retail outflows. High yield rallied consistently in 2017, ending the year 20bp shy of post-crisis highs, with only three dislocations in March, August, and November (Chart 2). While the March and August dislocations were triggered by factors more macro in nature (a glut of supply in March and the North Korea driven risk-off in August), the sharp 53bp correction in the first half of November was driven by fundamental stresses in a growing number of sectors (retail, supermarkets, and wirelines). This, coupled with a Sprint-induced sell-off following the termination of merger talks with T-Mobile, ultimately provoked a broader risk aversion resulting in indiscriminate selling. Investors were abruptly reminded of one of the mechanisms through which stress in seemingly isolated credits can permeate the rest of the market. Industry and issuer concentrations will need to be monitored – TMT, which represents 27% of the high yield index and was at the epicenter of the recent high yield sell-off, concentrates eleven of the top twenty-five high yield issuers.

<sup>12</sup> Bloomberg Barclays U.S. Investment Grade Corporate Index

<sup>13</sup> Bloomberg Barclays U.S. High Yield Corporate Index

# CORPORATE CREDIT

**Chart 1: US high yield annual spread ranges [bp]**



Source: CreditSights, ICE BofAML Indices. 2017 data through 12/19/2017

**Chart 2: High yield spreads [bp]**



Source: Bloomberg

## Low defaults

With the current credit cycle running at 90 months (since July 2010) under a 6% default rate and almost every piece of US economic data associated with a steady economy, it would take a tremendous shift of fundamentals during the year to move in the direction of a sharp default cycle ahead. Over the past few quarters, US corporates have reported improved sales, and operating margins have recovered after bottoming in 2016 (Chart 3). A growing US economy, a weaker dollar, and a recovery in European growth are factors that have improved the profit outlook. The reduction

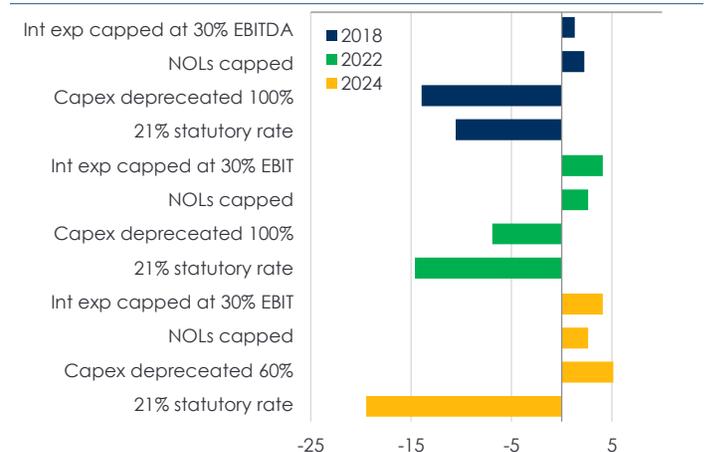
in the US corporate tax rate should further benefit US firms that have high effective tax rates – Bank of America estimates the net tax benefit for public high yield companies at \$21bn in 2018 (Chart 4).

**Chart 3: Investment grade and high yield fundamentals**

3Q17 Investment Grade and High Yield Fundamentals	Weakness ↔ Strength						Change Since Last Quarter
	Red	Orange	Yellow	Light Green	Dark Green	Dark Green	
Economy (US)				X			→
Financials' leverage (IG)				X			→
Gross and net leverage (HY)				X			→
Regulatory action				X			↑
Corporate profits (HY & IG)				X			↑
Operating trends (HY and IG)				X			↑
Oil / commodities				X			↑
Central bank accommodation			X				→
Fund flows / technicals			X				→
Interest coverage (IG)			X				→
Industrials' leverage (IG)		X					↑
Geopolitical risk	X						→
Event risk	X						→

Source: Bloomberg, Bank of America

**Chart 4: Tax reform impact on high yield [\$bn]**

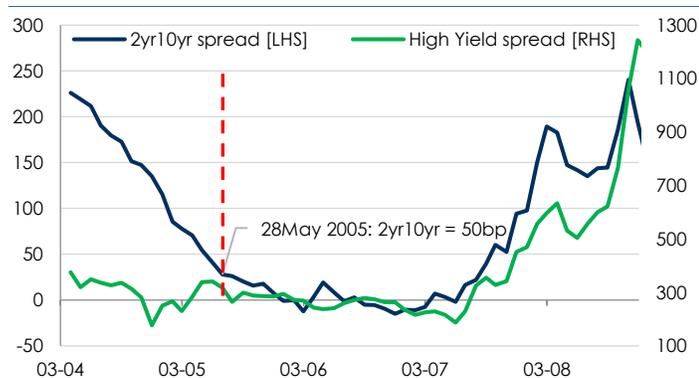


Source: Bank of America

## CORPORATE CREDIT

**Supportive technicals/fundamentals**

Technical diverged in 2017 as record investment grade inflows (largely supported by foreign demand) and supply (\$1.4trn, +6.8% YoY) contrasted with weak high yield technicals. There is no shortage of opinion on what the totality of moving parts (e.g., regulation, tax, yield curve, issuer financial engineering, private equity funds brimming with capital) will mean for the direction of supply and deal quality. We envision that risk appetites will remain high, and corporates will seek deal flow in 2018 to celebrate their lower tax rates. Concerns around a flattening yield curve are rising, yet the last time that the 2yr10yr US Treasury spread was at the current level of 50bp in May 2005, spreads did not meaningfully widen until mid-2007 (Chart 5), suggesting spreads still have room to narrow.

**Chart 5: 2yr/10yr US Treasury spread vs HY spread [bp]**

Source: Bloomberg

**Conclusion**

There are a range of variables that will make 2018 uncertain. Tighter monetary policy in the US, Europe, and possibly Asia could start reversing the current favorable trends and weigh on credit spreads as the year unfolds. Debt-funded M&A is likely to accelerate. Potential risks in credit look asymmetric as the mature economic cycle and tight spreads collide with tighter monetary policy. In a market environment in which investors are continually incentivized to move into riskier investments to achieve higher returns, market pullbacks should continue to represent good opportunities to add to risk assets.

# FIRST PRINCIPLES QUARTERLY

## ASSET-BACKED SECURITIES



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### QUICK READ

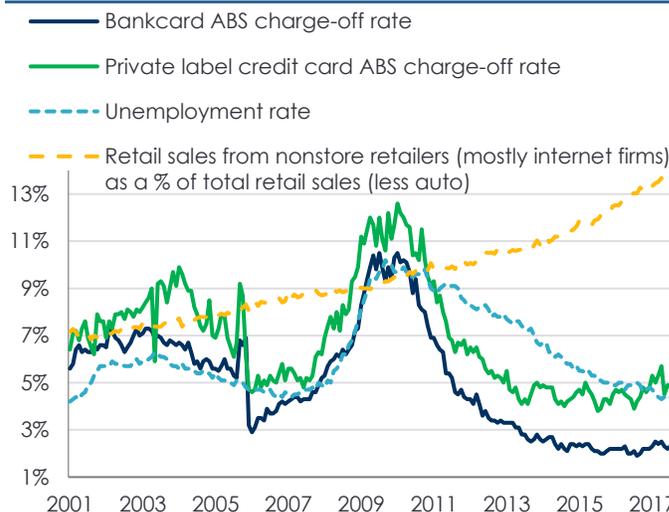
- Retail apocalypse predictions abound with many brick-and-mortar retail store closings and bankruptcies, but retail credit card ABS continue to perform
- However, such ostensible retail gloom and doom have not much affected retail private label credit card ABS performance
- Charge-off rates remain well below financial crisis peak and will likely stay moderate in a strong economy
- Card holders maintain an obligation to fully repay any outstanding balances on their cards regardless of retailer bankruptcy
- Private label credit card banks have increasingly partnered with other retailers or online retailers in the face of shifting retail dynamics
- Senior class retail credit card ABS investors are offered ample protection to withstand potentially higher credit losses

### Retail apocalypse has no discernibly negative effect on retail private label credit card ABS

We get bombarded with retail apocalypse predictions practically every day, as there have been many brick-and-mortar retail store closings and bankruptcies in the face of rising online sales. How does all this ostensible retail gloom and doom affect retail private label credit card ABS? Not much. In fact, retail credit card ABS is riding out the storm well. It is important to separate certain retailers' misfortunes from retail credit card holders' inescapable obligations to fully repay any outstanding balances on their cards.

Performance remains strong for both general purpose bank card and retail private label credit card ABS, despite alarming headlines on retail apocalypse. Charge-off rates for both categories are well below the peak during the financial crisis. Bankcard ABS charge-off rate was 2.2% and private label card ABS was 4.4% in September 2017, vs. a peak of 10.5% and 12.6% in the aftermath of the Great Recession. Historically, credit card charge-off rates are highly correlated with unemployment rates. With a growing economy, the current unemployment rate of 4.1% is the lowest since 2000. We think credit card ABS charge-off rate will likely stay moderate as long as the economy is doing well.

**Chart 1: Rising internet sales have no discernible impact on credit card ABS performance**



Source: U.S. Census Bureau, U.S. Bureau of Labor Statistics, S&P global Ratings

## ASSET-BACKED SECURITIES

The private label credit card business has challenges, especially when its retail partners close stores or file for bankruptcy. In such cases, customers may have less incentive to pay their outstanding card balances, given the loss of utility for their retail cards. Delinquency and charge-off rates have edged higher in such instances. However, retail customers still need to fully repay their balances because failure to repay will damage their vitally important credit scores that impact their future borrowing capacity and even employment applications. A retail credit card is generally issued by a bank or a finance company's bank subsidiary. Even when a retailer files bankruptcy, the bank continues to manage the credit card portfolio and send out monthly billing statements. Customers with outstanding balances are still required to make monthly payments until their balances are paid in full, or collection efforts will be instituted against them. This is similar to GM filing for bankruptcy in 2009 and auto borrowers were still required to make their car payments in full on their car loans.

Private label card issuers have taken steps to deal with the seismic shifts in the retail landscape. One is to replace the existing single-retailer private label card with a co-branded card that enables customers to keep using the co-branded card even when a store chain is closed, thus boosting the utility value of the co-branded card. Co-branded cards are also referred to as dual cards, since they combine benefits

of private label credit cards with general purpose credit cards that can be used elsewhere. Furthermore, as internet sales continue to rise, private label credit card banks have increasingly partnered with online retailers in keeping up with the changing retail dynamics. For example, Amazon Store Card and Prime Store Card are offered by Synchrony Bank, the largest private label credit card issuer. Let's compare the two largest private label credit card master trusts (WFNMT & SYNCT) with two general purpose bankcard trusts (COMET & CHAIT). A few salient differences stand out:

- Private label accounts have much lower average credit limit and average balance, reducing the severity of losses in terms of amount to be charged off for the average account.
- Delinquency and charge-off rates are higher for the two private label trusts than for the two bankcard trusts. Generally, private label ABS portfolios have newer accounts and lower credit quality obligors than bankcard accounts, hence exhibiting higher default rates than bankcard ABS.
- However, the portfolio yield and excess spread for the two private label trusts are also higher than the bankcard trusts. This compensates investors adequately for the higher risks inherent in the private label card ABS.

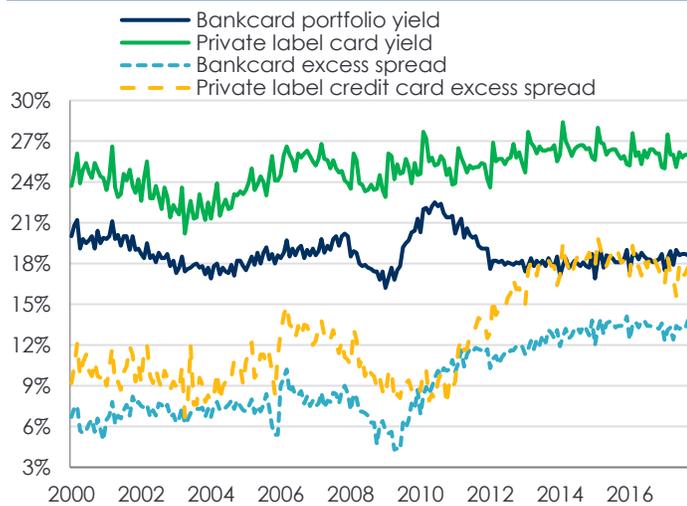
As of 9/30/2017	Ticker	Avg credit limit	Avg balance	Avg acct age (mos)	Utilization rate	Portfolio yield	Charge-off rate (180 dpd)	90+ days past due	1-M excess spread
<b>World Financial Network Credit Card Master Trust</b>	WFNMT	\$1,666	\$485	72	5.9%	35.94%	7.75%	2.77%	23.56%
<b>Synchrony Credit Card Master Note Trust</b>	SYNCT	\$4,214	\$796	157	18.9%	24.64%	5.02%	1.50%	15.25%
<b>Capital One Multi-Asset Execution Trust</b>	COMET	\$8,912	\$1,678	158	19.1%	21.22%	2.14%	0.93%	15.15%
<b>Chase Issuance Trust</b>	CHAIT	\$10,602	\$1,667	181	15.7%	18.20%	2.41%	0.60%	12.65%

Source: Bloomberg

# ASSET-BACKED SECURITIES

How will retail private card ABS be impacted if the brick-and-mortar retailers experience further carnage and the economy goes into a recession? Can the ABS structure be durable enough to withstand stresses down the road? We think so, and believe that senior class ABS retail private-label card investors are offered ample protection to withstand potentially much higher credit losses, through double-digit credit enhancement and double-digit excess spread.

**Chart 2: Bankcard and private label credit card ABS portfolio yield and excess spread**



Source: S&P Global Ratings

