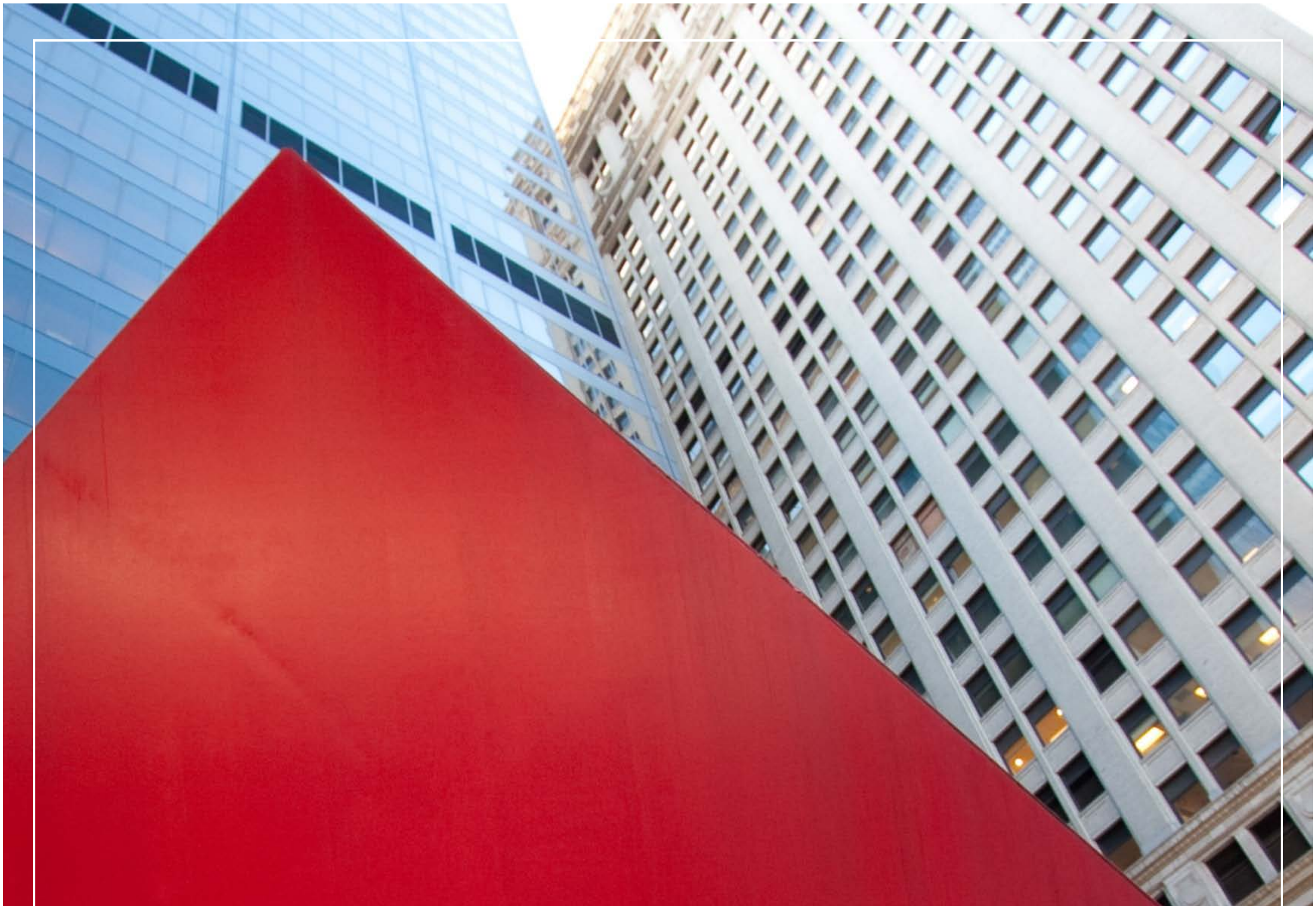

Spring 2017

FIRST PRINCIPLES QUARTERLY

First Principles Capital Management, LLC

First Principles Capital Management is an investment management firm with expertise across the global fixed income securities and derivatives markets. The firm provides highly customized investment portfolios for its clients, which include prominent endowments and foundations, financial institutions, industrial corporations, pension funds, family offices and trusts.

The investment team has extensive experience and a noteworthy history of innovation in the debt capital markets. The investment process and client service model is founded on the principle that it is necessary to gain an understanding of client-specific objectives, constraints and idiosyncratic factors in order to design and execute on the optimal strategy for each client. The orientation of the team facilitates a continuous relative value assessment within and across fixed income asset classes.

Spring 2017

FIRST PRINCIPLES QUARTERLY

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In This Issue

CIO LETTER

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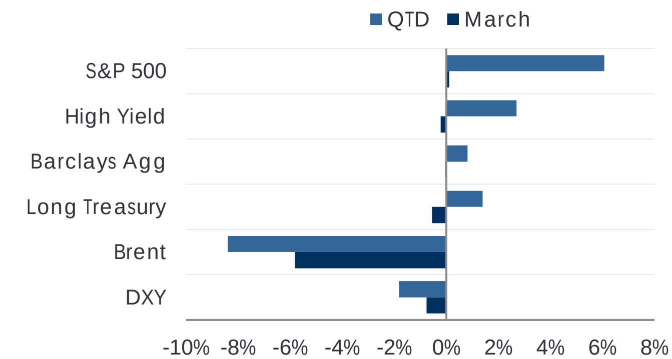
Hope collides with reality

First quarter performance of risky assets suggests that the reflation narrative that fueled post-election returns continued to be widely held. Closer scrutiny, however, reveals the rally has stalled since the beginning of March. Is this a pause as investors consolidate at existing lofty valuations or have recent conditions and/or data diminished expectations?

Chart 1: Asset class performance [total return]



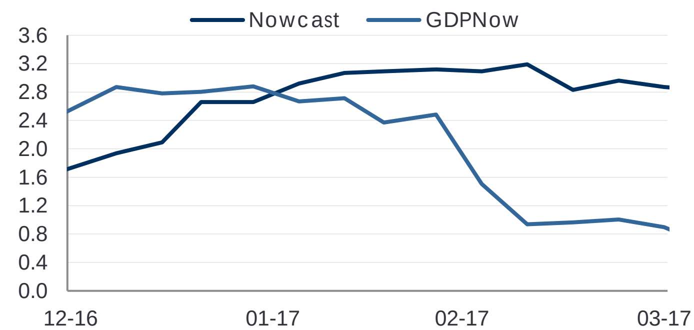
Source: Bloomberg

Mixed macroeconomic data, the administration's lack of productivity in translating the pro-growth agenda into legislative success during the first 100 days, and a much less accommodative posture by the Federal Reserve are developments that may threaten the case for reflation in the near-term.

Macroeconomic data and forecasts

The divergence in so-called hard and soft data and forecasts for growth has been striking as of late. In particular, it is the divergence between the competing GDP forecasts produced by the Atlanta Fed (GDPNow) and the NY Fed (Nowcast) that depict wildly different paths for the domestic economy in the first quarter. The two metrics tracked one another reasonably well throughout January and February. However, since the end of February, the GDPNow has been revised down 1.9% to 0.6% given the mixed hard data (NFP only 98k in March, retail sales, stagnating wage growth and core PCE Inflation, growth of Consumer and Industrial loans, ...) observed in the last five weeks.

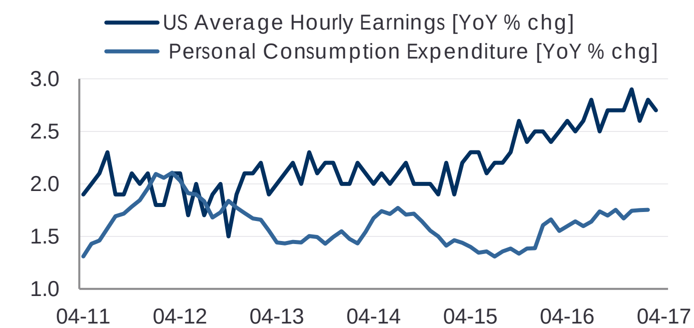
Chart 2: Federal Reserve GDP forecast



Source: Bloomberg

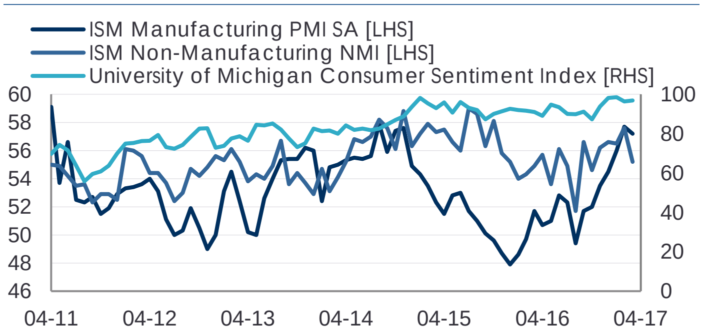
Conversely, Nowcast is virtually unchanged at a robust level hovering around 3%! Much of this owes to the underlying methodologies - Nowcast most certainly has greater sensitivity to soft data than GDPNow. And the balance of soft data (ISM indices and consumer surveys) have indicated greater strength than the hard data.

Chart 3: Hard Data



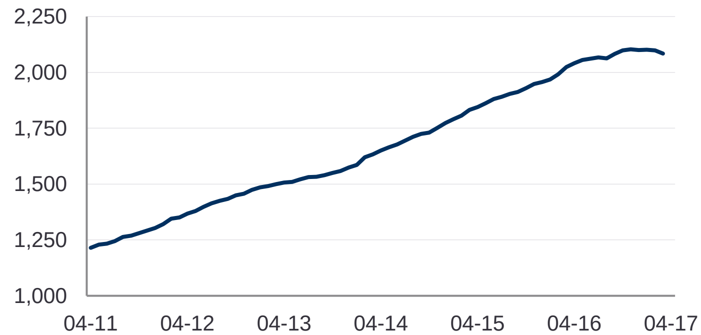
Source: Bloomberg

Chart 4: Soft Data



Source: Bloomberg

Chart 5: Commercial and industrial loans [$bn]



Source: Federal Reserve

Although there is little consensus on the Q1 GDP outcome -- Q1 has generally been weaker than the remaining three quarters since 2010 with an average close to 1% -- both sets of data support the conclusion that the underlying economy is fundamentally sound and more supportive of modest, if not unspectacular, 2% average growth in 2017 without any additional fiscal stimulus.

Prospects for the global economy are similarly showing some momentum. Global GDP is expected to be at or in excess of 3.4% by various institutions (IMF, JP Morgan, Capital Economics), global PMI has accelerated sharply over the last nine months, and business confidence is steadily recovering. The usually dour head of the IMF, Christine Lagarde, was recently quoted as saying that “we see spring in the air of the global economy.” These developments coupled with continued accommodative support from Central Banks -- save the Federal Reserve -- balance the upside/ downside risk.

Domestic reflation

The enthusiasm for the swift and wholesale implementation of the administration’s pro-business/growth agenda – tax reform, infrastructure, trade reform, and deregulation – have been dashed by the miasma of Washington and a fractious Republican party. As we approach the arbitrary but important milestone of 100 days in office, there are no legislative successes to point to and the surprising failure to repeal and reform the Affordable Care Act (“ACA”). Nineteen Executive Orders, which are less impactful than legislation, have been signed on a variety of topics from immigration, deregulation, trade, and healthcare.

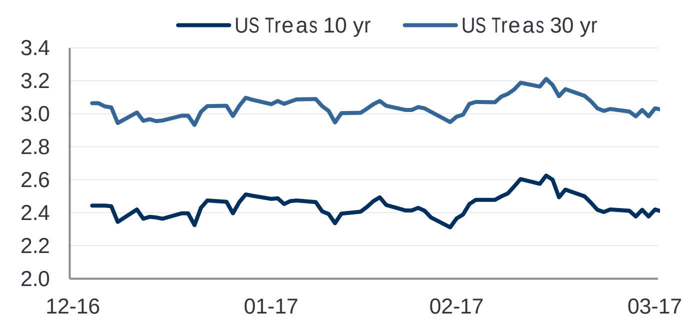
As such, the excess growth and inflation that the market had anticipated are not likely to materialize in 2017. The question is what share of the 13% gain in the S&P after election eve and run-up in other risky assets is attributed to the anticipated acceleration in economic activity and corporate earnings associated with the comprehensive and timely implementation of tax reform and fiscal stimulus from infrastructure programs? Although impossible to discern, equity market valuations are by no means cheap at quarter end.

Feisty Fed

The rhetoric from FOMC members between the February and March meetings transitioned from being overly cautious and data dependent to aggressive and optimistic about the prospects for the economy. A gaggle of Fed speakers, led by Vice Chairman Dudley, were quite vocal about the prospect for an impending tightening of the policy rate at the March meeting. Dudley's initial comment moved the market probability of a rate hike from 52% on February 28th to 80% on March 1. This marked the all-time high on the S&P and a steady increase in long-term rates which reached post-election peaks prior to the March 15th meeting.

The incremental changes to the already unexceptional forecasts for GDP (2.1%), CPI (1.9%), and unemployment revealed at the meeting, coupled with a virtually unchanged dot plot, surprised/confused market observers given the tone, vehemence, and uniformity of the pre-meeting Fed speak in the wake of arguably mixed first quarter data. Consequently, rates and equities retraced to levels observed at the end February.

Chart 6: Treasury yields [%]



Source: Bloomberg

The FOMC minutes, however, explained away some of the inconsistency. There was agreement to reduce the size of the balance sheet by changing the reinvestment policy later in 2017 whereas market consensus was that this would take place sometime in 2018. This was viewed as an additional mechanism for tightening policy and therefore additional changes to the trajectory of the dot plot may not have been necessary.

The March pause in the risk asset rally seems to be justified on the basis of unremarkable domestic underlying fundamentals, disappointment on the execution of expected pro-growth policies, and an FOMC that appears to be slightly more anxious to normalize policy in an environment of 2% growth and benign inflation. The transition from monetary accommodation to fiscal stimulus is lagging the hyperactive expectations of the market.

Outlook

Absent a stellar earnings season for sectors other than Energy, the balance of risks for US equities and credIt are to the downside given their Q1 performances -- S&P returned 6%, IG credit spreads were five basis points ("bps") tighter, and high yield returned 2.7% -- fueled by anticipation of prompt implementation of economic and fiscal programs, not dramatically improving fundamentals. The risk of a correction is higher as the market reconciles the trajectory to reflation with current valuations. The magnitude of the correction should be limited given that global growth in 2017 is poised to exceed expectations.

The case for an allocation to long Treasury bonds as a diversifier in the near-term remains strong as the prospects for the impact of pro-growth programs are deferred and/or dimmed. Long Treasuries have traded in a 30bp range year-to-date. With inflation expectations moderating – FOMC forecasts 1.9% in 2017 – and low 2% growth being the consensus, the probability for long-term real rates above 1.25%-1.50% are receding and therefore 30 year nominal rates are unlikely to rise above 3.5% in the near-term. Moreover, the demand from long duration buyers (pension funds and insurers) is unabated. And they have the imbedded safe-haven optionality in an environment of heightened geo-political uncertainty and the impending battle on the continuing resolution to fund the government

MUNICIPALS

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QUICK READ

- Muni performance highly susceptible to tax reform/speculation
- Recent hiccups in enacting new legislation bode poorly for prospects of anticipated changes
- Value to be found in shorter maturity bonds, avoiding extension risk
- All eyes are on the new administration's efficacy, with predictability to market Fed reactions.

Municipal bonds performed well in 1Q17

Municipal bonds recovered some of their losses from 2016 and bull-steepened, outperforming Treasuries during the first quarter of 2017. For the quarter, municipal bonds rallied 13 basis points ("bps") and Treasuries rallied 1bp. The sense that tax reform may take longer than expected to enact was one of the contributing factors to the municipal bond market's outperformance.

Major tax reform faces higher hurdle

Unable to garner the support of the Freedom Caucus in March, Republicans in the House of Representatives withdrew the AHCA bill (American Health Care Act of 2017) that would have repealed the Patient Protection and Affordable Care Act (aka Obamacare). Given the non-vote, the municipal bond market repriced higher, reflecting changes in expectations of the timing and extent of tax reform. Additionally, in the wake of the AHCA non-vote, market participants perceive an increased urgency on the part of the administration and Congress to expeditiously enact any sort of tax reform – even if not revenue neutral – in order to chalk-up a needed victory. Considering the Freedom Caucus' stance during the AHCA episode, its endorsement of a tax deal that would dramatically increase our national debt does not seem propitious. Rather, a long, drawn out battle pitting one interest group against another – with a non-trivial probability of insignificant reform due to disagreements – is the more likely scenario, in our view. If tax reform is not passed or passes with less tax rate reduction than had originally been anticipated, then municipal bonds are cheap vs. taxable bonds and we would thus expect them to richen.

Municipal bonds with maturities longer than 15 years are rich

The AAA municipal bond curve has undergone a (roughly) parallel sell-off of 55bps for maturities of six years or longer since the 2016 presidential election. While on first look this indicates that all bonds sold off roughly proportional to their durations, in reality, this is far from the truth. In fact, longer maturity bonds have actually traded with shorter duration than shorter maturity bonds during this sell-off.

MUNICIPALS

To understand the cause of this anomaly, it must be noted that the AAA municipal bond curve is a callable bond curve for maturities longer than ten years. Thusly, for maturities less than ten years, all bonds are assumed to be bullet bonds and yields are to maturity. However, for maturities greater than ten years, all bonds are assumed to be callable at year ten and coupons are assumed to be 5%. For these longer-maturity bonds, the yields used are yields to worst; and in this low rate environment, yields to worst are yields to the ten-year call-date. For example, the 30-year AAA municipal bond yield was 2.53% on November 7, 2016, the day before the presidential election. This means that a bond with a final maturity of 30 years, callable at year ten, coupon of 5%, would have a yield to the ten year call-date of 2.53%.

Comparing price actions before and after the sell-off on a 10-year maturity bond versus a 30-year maturity bond:

- The 10-year AAA municipal bond rate was 1.70% on November 7, 2016, meaning that a bond with 5% coupon and 10-year maturity would have traded at a yield to maturity of 1.70% or a price of $130.23. That same bond had a yield of 2.25% as of March 31, 2017 - a sell-off of 55 basis points. Assuming that the sell-off was instantaneous, the bond would trade at a price of $124.50 - a loss of 4.4%.
- On November 7, 2016, the 30-year AAA municipal bond with 5% coupon, 30 years to final maturity, and callable in ten years, had a yield to call of 2.53%, which translated to a price of $121.70. As of March 31, 2017, the 30-year AAA municipal bond yield was 3.05% - a sell-off of 52 basis points. Again, assuming an instantaneous rate move, this means the 30-year bond sold off to a price of $116.70 - a reduction of 4.1%. This reduction was less than the 4.4% loss experienced by the 10-year bond!

In theory, a callable bond should trade with longer duration than a bullet bond with a maturity date equal to the call-date of the callable bond – because of a callable bond's propensity to extend beyond the call-date in a market sell-off. However, in the scenario highlighted above, the 30-year bond, callable in ten years, traded with a duration shorter than the 10-year bullet bond – despite the market sell-off and respective increased extension probability. This occurrence was a surprise given its counterintuitive nature - analytically, this means that the forward curve flattened massively as opposed to the parallel move that some market participants had expected.

Given the shape of the yield curve now, we think there is still decent value in bonds with maturities less than 15 years. With maturities longer than fifteen years, we think the excess yields that investors receive are not quite enough to compensate for extension risk held by investors in the event of a continued sell-off.

Conclusion

Interest rates have been in a tight range this year as the market tries to decipher how much the new administration will accomplish and how far along we are in the economic recovery. Fed tightening will be viewed as an obstruction to growth and the market will react with risk reduction and curve flattening. Hence, fixed income markets will sell off as we get close to live Fed meeting dates, followed by a rally and flattening once the Fed makes its move. Overall, we think being slightly short duration is still the right strategy overall, but we caution against keeping positions too short as there could be bouts of significant rallies in between, causing significant mark-to-market volatility

Spring 2017

FIRST PRINCIPLES QUARTERLY

RATES

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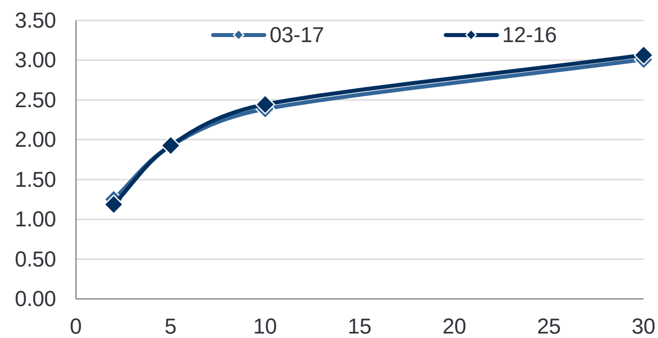
QUICK READ

- 10yr UST rangebound due to conflicting economic and political pressures
- Hawkish Fed now turning attention to balance sheet
- Divergence between hard and soft economic indicators continues to grow
- Libor remains stable following MM reform, Japanese funding
- Swap spreads continue to be driven by technicals, looser balance sheet constraint

Treasury Yields

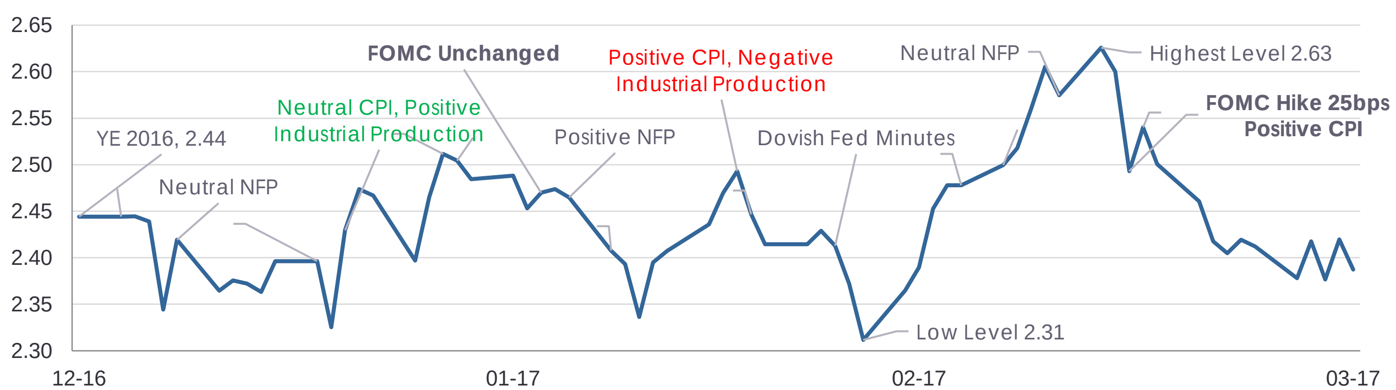
The rates market was rangebound over the first quarter of 2017 with 10-year Treasury yields trading within a 30 basis points ("bps") range – one of the narrowest quarterly ranges over the past five years. Economic data has been firming up globally and central banks have adopted a more hawkish tone than markets were expecting at the beginning of the year. On the other hand, there have been disappointing developments on the political front that put into question the ability of the new administration to deliver significant tax reform and fiscal stimulus in the near future.

Chart 1: Treasury Yields [bp]



Source: Bloomberg

Chart 2: 10 Year Treasury Yields [%]



Source: Bloomberg

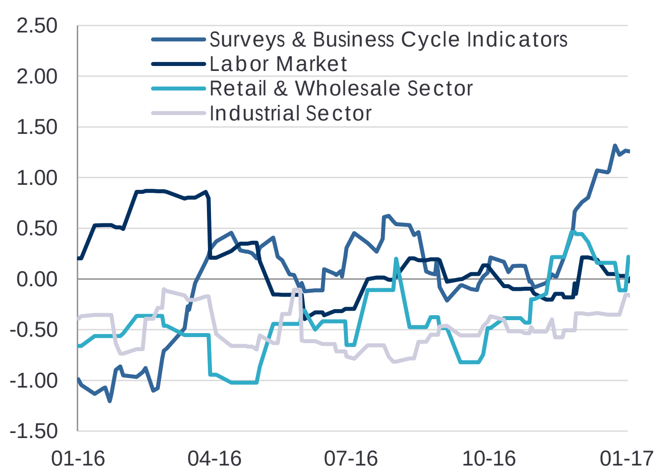
RATES

Until the end of February, investors had placed a low probability of a March rate hike – dovish Fed minutes and risk-off sentiment over Dutch and French elections dominated the market. However, a few Fed speakers subsequently delivered hawkish statements which turned around sentiment to fully price a March hike. Upon increasing the Fed Funds rate by 25bps, the Fed signaled more confidence in their economic outlook, especially pertaining to inflation. In terms of forecasts, the median Fed Funds projections stayed unchanged but there was a drift higher in the dots from December's meeting. Fed minutes as well as Dudley's comments suggest the unwind of the Fed Balance sheet might come as soon as December 2017 and will affect both Treasuries and Mortgages.

Economic indicators and the Fed

Data releases were mostly positive over the quarter. However, there is a growing divergence between soft (surveys) and hard (investment and spending aggregates) releases. Examining the components of the data surprise indices [Chart 3] reveals that there has been a significant improvement in surveys and business cycle indicators followed by labor market releases. Retail and industrial data has been modest as expected. This differential is also reflected in the divergence between Q1 GDP forecasts from the Atlanta Fed's GDPNow model (0.6%) and the NY Fed's Nowcasting report (2.8%).

Chart 3: Data surprise Index by sector

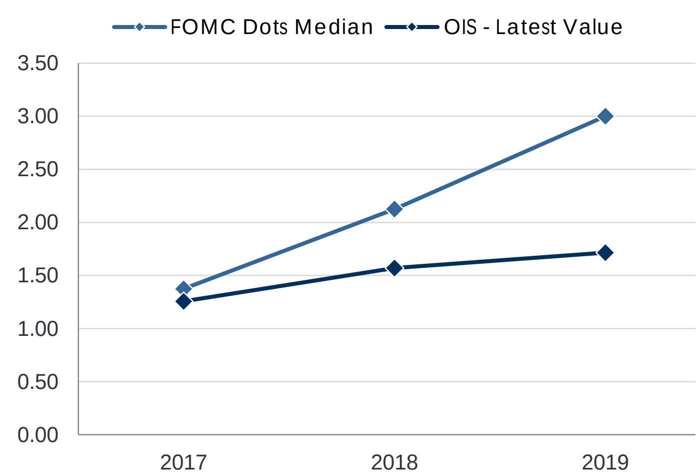


Source: Bloomberg

According to Credit Suisse, the interest rate market has been skeptical of the jumps in survey-based data as market movements have been mostly driven by hard data and the assumed Fed reaction function.

They estimate, that to break the current 10-year Treasury trading range, the market needs a one standard deviation change in quarterly data to produce a 50bp shift in either direction. The market is pricing in the Fed to hike fewer than four times before the end of 2018 – does the market need significantly firmer data or merely a change in the perceptions of Fed hawkishness/dovishness? There are several changes forthcoming at the Fed and President Trump will have the ability to change the Fed's reaction function through his appointments to the Board of Governors.

Chart 4: Market expectations vs Fed median projections



Source: Bloomberg

RATES

Chart 5: Upcoming changes at FOMC*

Member	Hawk/Dove		2017 voter	2018 voter
George (Kansas City)	▲	3		
Lacker (Richmond)	▲	2		X
Mester (Cleveland)	—	1		X
Harker (Philadelphia)	—	1	X	
Kaplan (Dallas)	—	1	X	
Rosengren (Boston)	—	1		
Powell (FRB)	—	0	X	X
New appointee			X	X
New appointee			X	X
Lockhart (Atlanta)	—	0		X
Williams (SF)	—	0		X
Fischer (Vice Chair)	—	-1	X	X
Dudley (New York)	—	-1	X	X
Yellen (Chair)	—	-1	X	X
Tarullo (FRB)	—	-2	X	X
Bullard (St. Louis)	▼	-2		
Evans (Chicago)	▼	-2	X	
Brainard (FRB)	▼	-3	X	X
Kashkari (Mineapolis)	▼	-3	X	

Source: Bloomberg, Credit Suisse
*Lacker resigned on Apr 4th but was due to Retire in October 2017. Fischer's term as vice chair ends June 12, 2018. Tarullo is retiring early April. Lockhart will be replaced by Bostic in June. Yellen's term as chair ends Feb 3, 2018.
**Grey shading indicates potential transition

Short Rates

Libor fixings stayed mostly unchanged after the Fed hike, causing a tightening of 20bps in the spread between Treasuries and Libor. The resilience of Libor suggests a structural change in dollar funding markets, particularly in the main price setters in this market – Japanese mega banks. As the money market reform deadline approached in October 2016, Japanese banks were forced to bid up for funding in the commercial paper ("CP")/certificate of deposit ("CD") markets driving Libor higher. However, as of late, Citi analysis points out that Japanese banks have turned to more stable dollar liabilities by increasing client related USD deposits as well as increased repo funding. Moreover, the Japan's fiscal year-end might have contributed to a deleveraging exercise by Japanese banks.

Without active CP trading, spot Libor has been stable while Overnight Index Swap ("OIS") and Treasury Bills have repriced a more hawkish Fed. The change due to money market reform combined with lower repo rates resulting from the debt ceiling also brought front-end cross currency basis tighter this year (especially vs JPY and EUR).

Swap spreads

The dynamics of swap spreads continue to be very technical in Q1, as there appear to be very different drivers in various parts of the curve. In the short end, there was supply shortage of Treasuries due to the debt limit deadline whilst the long end seems to be mostly affected by variable annuity hedging practices. There is a common factor that appears to be helping Treasuries to richen versus swaps across the curve – easier balance sheet conditions. Barclays analyzed market measures of liquidity premium such as cash IG index-CDX basis, cross-currency basis, and spread between repo General Collateral vs Fed Funds – all which, in the past few months, have moved in line with looser balance sheet conditions.

INFLATION

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QUICK READ

- Slight retracement from US breakeven peaks
- Global inflation firming, contributing to positive surprises
- After prolonged modest inflation expectations, data shows firming figures
- Fed supportive of overshooting inflation in face of lower natural interest rates

Domestic inflation

Domestic inflation generally rallied from September 2016 through the end of January 2017 - breakeven inflation rates reached highs of 2.08% and 2.19% in 10 years and 30 years respectively. The upward trend has subsequently eased and breakeven rates closed Q1 slightly lower than their peak levels. For 2017, front-end breakeven levels (5 years and in) closed higher by about 10 basis points ("bps") at 1.90%, while long-end breakeven levels were unchanged, with the 30-year closing at 2.09%.

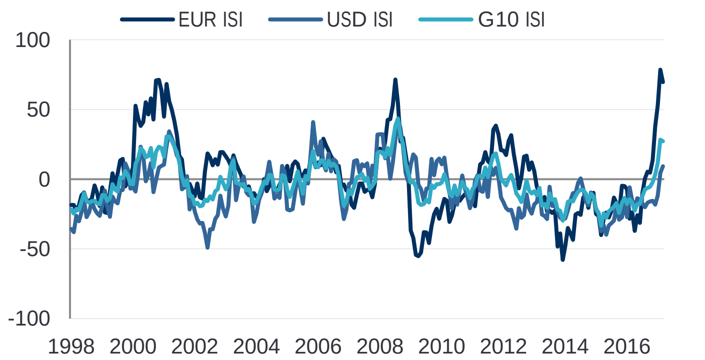
Global Inflation

Global inflation had positive surprises in December and January, breaking a five-year trend of negative surprises (Chart 1). The positive surprises were more sizeable for developed markets ("DM"), although emerging market ("EM") countries have also seen firming inflation. The last time inflation surprised to the upside over a sustained period was in 2010, around the time that the Fed, followed by the ECB, embarked on a prolonged path of quantitative easing ("QE") measures. Although central bank actions were successful in preventing a possible deflationary spiral in DM countries, they were unable to spur higher DM inflation. The result was a paltry year-over-year average CPI inflation in the US of approximately 1.3% over the last five years.

More recently, realized inflation had a sizable uptick with the Euro-area leading the way and the Citi Surprise index at its highest level since 2008. In EM, China has also surprised with positive inflation, likely leading to spillover effects into other EM countries. The uptick in headline inflation has been driven by improving energy and commodities prices. Improving labor markets and falling overcapacity in DM are expected to result in a near-term firming of core inflation. In many of DM countries, inflation is approaching central bank targets.

INFLATION

Chart 1: Citi Inflation Surprise Index

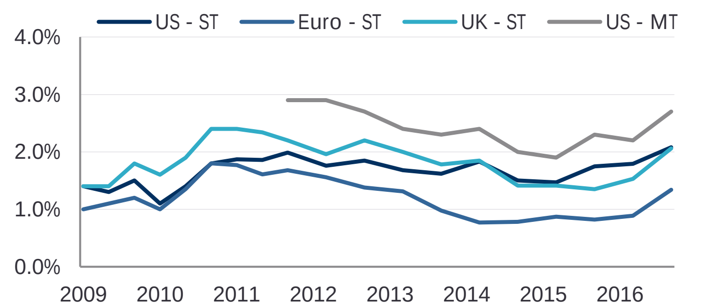


Source: Citi

Survey and market-based inflation expectations

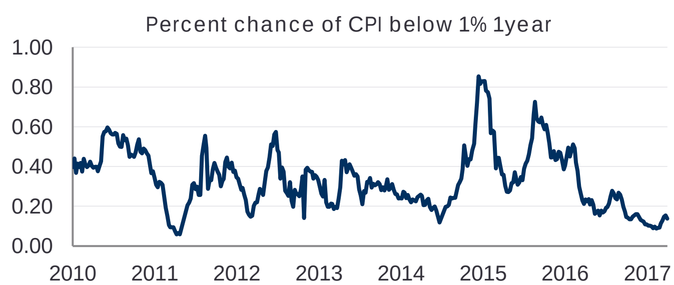
Both survey-based and market-based measures of inflation showing signs of strengthening over the last year following a prolonged period of falling inflation expectations. JP Morgan survey data of investors show that short and medium-term inflation expectations have trended upward, reaching levels last seen in 2012 (Chart 2). Federal Reserve Bank of Minneapolis researchers compiled various measures of market data intended to calculate market expectations of inflation (Chart 3). Their studies, which complement the findings highlighted above, show a large decline in the probability of a sub-1% US inflation scenario. Early 2015 market data suggested an elevated potential for deflation – an 80% probability of 1-year inflation below 1% and corresponding 5-year levels at a 40% probability. Both measures have since receded and are now in the 10-15% range. Data also show that, while the inflation picture has improved considerably, expectations are well contained and do not foresee a scenario of run-away high inflation. While the possibility of inflation exceeding 3% has increased, the corresponding probabilities in both short and medium-term are still below 20%. By comparison, these measures reached around 45% when the Fed enacted QE measures in 2011.

Chart 2: Short & Medium-Term Inflation [ST/MT]

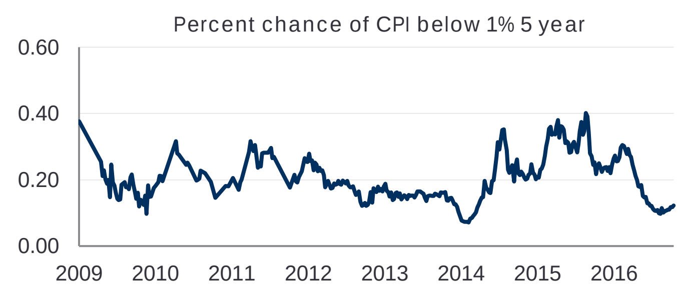


Source: JP Morgan

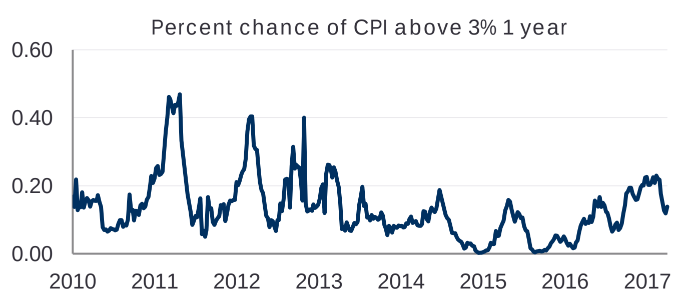
Chart 3: Federal Reserve Bank of Minnesota



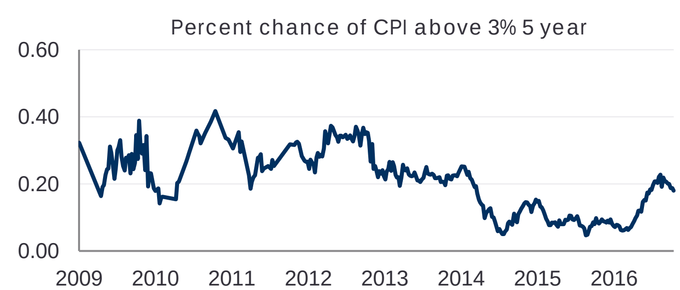
Source: Federal Reserve Bank of Minnesota



Source: Federal Reserve Bank of Minnesota



Source: Federal Reserve Bank of Minnesota



Source: Federal Reserve Bank of Minnesota

INFLATION

Fed views of natural interest rates and inflation

Do these observations portend an extended period of higher inflation in the US? The picture is not entirely clear. Nominally, a 30-year breakeven inflation level 20bps below the 20 year average of 2.25% -- when the economy is growing and the Fed is on a tightening cycle -- should appear to be a good buying opportunity. However, year-to-date changes in the term structure of rates seem to paint a picture less supportive of this thesis.

While inflation expectations have firmed, real yields have decreased across the curve for the year - pointing to concerns about growth. A recent Fed study[1] suggests a lower real natural interest rate following the financial crisis - potential causes include aging populations, lower long-term growth prospects, and higher saving rates. Recent Fed statements indicate a proclivity for allowing higher temporary inflation - seemingly in line with recommendations of higher inflation targets recently put forth among academic research papers. An allocation to the front end of the inflation curve will likely benefit relative to the long end of the curve. The front end will also benefit if a border tax is enacted, although the chances are far less likely compared to the beginning of 2017.

[1]Monetary Policy in a low interest rate world, Michael Kiley and Joh Roberts; 2017, Federal Reserve Board

MORTGAGE-BACKED SECURITIES

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QUICK READ

- Refinancing is no longer the primary driver of prepayment speeds
- Recent prepayment reports exhibit lock-in effect
- While recent prepayment reports have begun to shed light on turnover speeds, our projections remain data dependent.

Turning over a new leaf

One of the largest drivers of mortgage-backed securities ("MBS") valuations is long-term prepayment speeds. If the annual prepayment rate of 30-year Fannie 4s changes by 5% conditional prepayment rate ("CPR"), then the yield changes by roughly 25 basis points[2] ("bps"). When bonds are refinanceable, as they have been for the past 4 years, prepayments are dominated by refinancings. However, after the sell-off at the end of 2016, most bonds are not refinanceable today, or won't be for long given the upward sloping yield curve. Instead of focusing on refinancings, the market has shifted to focusing on non-refinancing related prepayment speeds – called turnover speeds in the market.

Two predictable and easily identifiable components[3] of turnover prepayments are delinquency buy-outs and curtailments. Delinquency buy-outs occur when the government-sponsored enterprises ("GSEs") buy-out loans from pools once they are 90 days delinquent. Curtailments occur when borrowers voluntarily pay down part of their mortgage – more than what is scheduled. Unfortunately, they are not significant in scope, as they each only contribute 0.5 CPR to overall prepayments. To truly analyze turnover speeds, we need to look at how bonds with no incentive to refinance prepay.

In Q1 of 2017 we finally got our first glimpse of what prepays look like on bonds with no incentive to refinance. The prepayment speeds reported in Q1 of 2017 roughly correspond to the sell-off in rates which took place in Q4 of 2017. This is because once a borrower applies for a loan and the rate is locked, it takes 7 weeks on average to close the

2 Using March 31st close price of 104-30+

3 These prepayments can be identified from mortgage data released by the GSEs

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loan[4]. Below (Chart 1) is a summary of prepayments for seasoned[5] 30-year Fannie Mae mortgages by coupon in Q1 2017 (prepayments with more/less incentive to refinance are shaded yellow/green):

Chart 1: Prepays over time

Driving Mtg Rate	Net Coupon	2.5	3.0	3.5
	Gross Coupon	3.2	3.6	4.1
4.15	Mar ‘17	6.8%	8.1%	10.3%
4.23	Feb ‘17	4.2%	5.8%	8.2%
3.91	Jan ‘17	5.0%	7.1%	10.6%
3.50	Dec ‘16	7.0%	10.8%	17.0%
3.46	Nov ‘16	7.7%	13.1%	20.6%
3.44	Oct ‘16	9.0%	14.1%	21.7%

Source: Fannie Mae and FPCM estimates

From this chart, it appears that overall turnover prepay speeds range from roughly 4 to 8 CPR. However, day count (the number of business days mortgage originators have to close loans in a month) and seasonals obfuscate this data. If we normalize for day-count[6] and seasonals[7], we see that overall turnover speeds are roughly between 5.5 to 7.5 CPR (Chart 2):

Chart 2: Adjusted prepays over time

Driving Mtg Rate	Net Coupon	2.5	3.0	3.5
	Gross Coupon	3.2	3.6	4.1
4.15	Mar ‘17	6.5%	7.7%	9.9%
4.23	Feb ‘17	5.5%	7.6%	10.8%
3.91	Jan ‘ 17	6.6%	9.3%	14.0%
3.50	Dec ‘16	6.6%	10.2%	16.1%
3.46	Nov ‘16	8.4%	14.2%	22.3%
3.44	Oct ‘16	9.8%	15.4%	23.7%

Source: Fannie Mae and FPCM estimates

Taking a closer look, we see that as borrowers become more and more out of the money, they prepay slower and slower. This is commonly referred to as lock-in, where borrowers are more hesitant to do a cash-out refinancing or move as they are going to have to pay higher rates on their new loan.

Given the upward sloping yield curve, forward mortgage rates are priced to be higher (e.g. roughly 50bp higher in 2.5 years). As rates rise, existing borrowers will become more out of the money to refinance, and turnover speeds will converge to Fannie 2.5% MBS, which are backed by mortgages paying rates roughly 100bp lower than prevailing mortgage rates for the last two prepayment reports. Looking at Fannie 2.5s we see that their turnover speeds are 5.5-6.5 CPR.

It is inherently difficult forecasting almost 30 years of prepayment speeds using a few months of observations. We recommend investors pay close attention to incoming prepayment data, and based on current data, we think overall bonds should be priced to 6 CPR for long term turnover speeds.

[4] https://cdn.elliemae.com/origination-insight-reports/Ellie_Mae_OIR_FEBRUARY2017.pdf

[5] 2016/17 are excluded given that prepayments are slower for new loans – called seasoning ramp.

[6] Using SIFMA as the holiday calendar

[7] Calculated using the US Census Bureau’s X-13ARIMA-SEATS model on existing home sales divided by inventory.

CORPORATE CREDIT

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QUICK READ

- Investors must think critically about implications of changing economy and monetary policy
- IG optimism abounds in 2016, but the year ahead less certain
- At high current valuations, investors must be vigilant re: HY exposure
- Loans likely to continue positive performance despite certain headwinds
- While a downturn does not appear imminent, investors must maintain focus on fundamentals

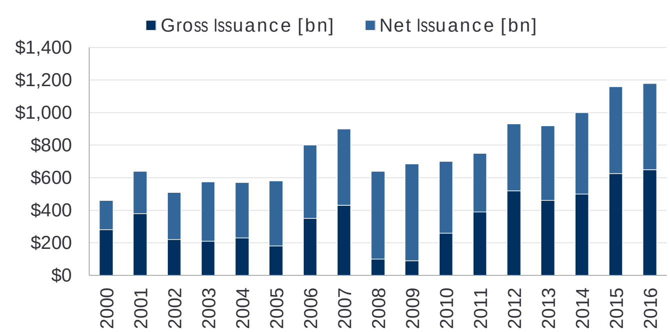
On the back of a solid 2016, skepticism reigns in 2017

Risk assets posted solid returns in 2016 and, in many respects, 2017 also started on a strong footing. As widely anticipated, the Fed raised its target overnight interest rate by 0.25% on March 15. While a rate hike doesn't necessarily portend the end of the rally, it does mean that the favorable combination of improving economic data and a patient Fed is likely in the rear-view mirror. In this "new regime," where should investors find value and what are the causes for concern in 2017?

Investment Grade

Optimism overtook the investment grade corporate bond market in 2016. Demand for yield facilitated $1.2 trillion of capital raising by corporate issuers, surpassing 2015's record by $24 billion [Chart 1]. Persistent demand and a positive 2017 earnings outlook drove the investment grade rally in 4Q16, with spreads at 117 basis points ("bps") at the end of March, the tightest level since March 2015 despite weak credit fundamentals [Chart 2]. Most of the spread tightening stemmed from the energy sector, ending the year at 148bps -- the tightest level since November 2014. Despite suffering a loss of 2.8% in 4Q16 given the backup in rates, the index returned a strong 6.1% in FY16, reversing the prior year's loss. Although yields look more attractive today than in mid-2016, the absolute level of spreads appears tight (only 19bps away from the post-crisis tights of 97bps), with little dispersion around the index [Chart 3]. The upside/downside for spreads appears asymmetric.

Chart 1: Another Year of Record Issuance



Source: JP Morgan

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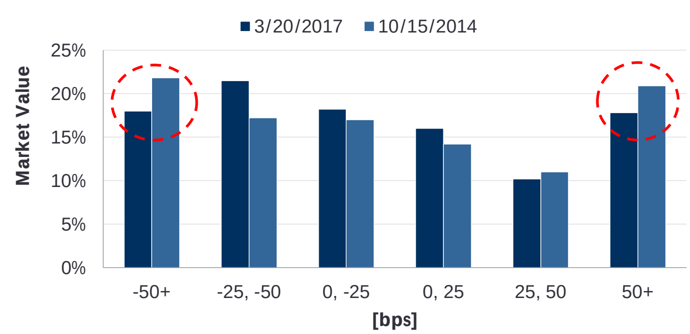
Chart 2: Investment Grade Fundamental

4Q16 Investment Grade Metrics	Weakness						Strength	Change Since Last Quarter
Economy (U.S.)					X			→
Financials' Leverage					X			→
Central Bank Accommodation				X				↓
Regulatory Action				X				→
Fund Flows / Technicals				X				→
Corporate Profits				X				↑
Oil/Commodities				X				↑
Geopolitical Risk			X					→
Event Risk			X					→
Industrials' Leverage		X						→
Interest Coverage				X				↓
Credit Rating Trends		X						→

Source: Bloomberg, Morgan Stanley

Chart 3: Investment Grade Spread Diversion Around the Index

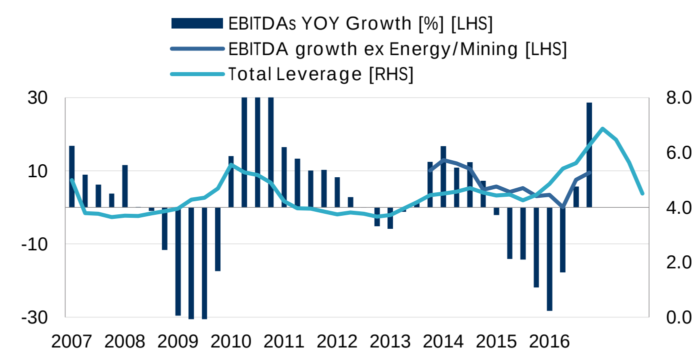


Source: Barclays

High Yield

High yield spreads tightened meaningfully in the second half of 2016 on the back of an improving corporate earnings outlook and declining high yield default rate projections (default rate fell from 7.1% in Jan'17 to 6.1% in Feb'17, the largest one month change since August 2010). In 4Q16, spreads tightened by 71bps, retracing 83% of the spread widening that has occurred since the oil bear market began in July 2014, and ended the year at 409bps despite rates selling off 85bps. All rating categories delivered positive returns, driving a 1.75% return for the quarter and 17% return in FY16. Valuations appeared stretched and the market was within 64bps of the post-crisis tights by the end of March, yet we remain constructive on high yield at current levels, while carefully watching for early indications that this rally is overextended. EBITDAs have rebounded nearly 30% from their levels a year ago [Chart 4], driven primarily by the reversal in energy/metal losses. Leverage has improved from its 3Q16 peak of 6.9x, although it remains at a somewhat elevated level of 4.5x. The market appears to be pricing a fundamental recovery, which makes high yield potentially vulnerable to disappointing economic data or a reversal in technicals.

Chart 4: High Yield EBITDA Growth and Leverage

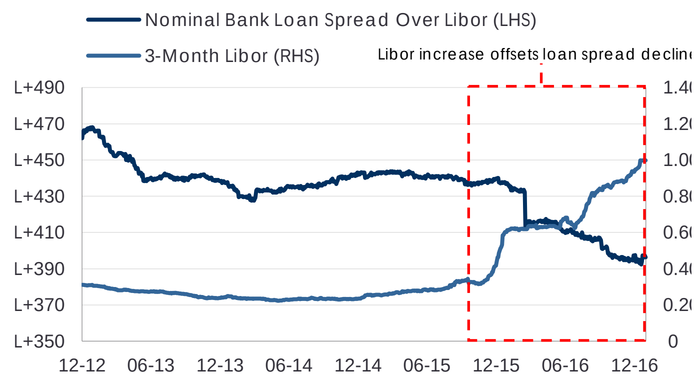


Source: Deutsche Bank

Where can investors find value?

For 2016, the Credit Suisse Leveraged Loan index returned 10% -- the best annual return since 2010. Low default volume, tightening spreads, and robust inflows paint a strong, healthy picture of the loan market to kick off 2017. However, refinancing and repricing activity continue to drive the primary loan market (65% of 2016 new issue), reducing contractual spreads. The 3-year loan yield declined continuously from its 7.6% three-year peak achieved in February 2016, reaching 5.6% at the end of March 2017. Yields are likely to fall further if refinancing activity remains the prominent driver of new issue activity, but this could potentially be offset by higher short term rates. Indeed, 70 bps increase in Libor from August 2015 until December 2016 completely offset the reduction in average loan spreads [Chart 5]. We find loans attractive despite refinancing activity reducing spreads, but investors should remain focused on primary market opportunities where volumes have been robust despite some call protection risk. Notably, the yield differential between leveraged loans and high yield bonds was only 52bps at the end of March 2017.

Chart 5: 3-Months Libor [%] and Leveraged Loans Spread [bps]



Source: Blomberg, Credit Suisse

Conclusion

Despite the market's optimism, we caution investors to remain vigilant. The prolonged period of low interest rates has facilitated investor willingness to accept weaker structural protections in exchange for yield. While this trend has existed for a couple of years, it is garnering increased investor attention, as evidenced by the emergence of contentious "no make-whole premium on default" language in certain bond indentures. The combination of weaker structures and tightening spreads is concerning. Though we believe spreads can tighten from current levels, weaker structures and increased leverage are currently laying the groundwork for future downgrades. The fundamental backdrop for credit is mixed as there are some late cycle indications (e.g., earnings growth is challenged, leverage is high) while the impact of upcoming fiscal and political developments is difficult to predict. Tax reform and regulatory relief could be credit-friendly and supportive of growth, while the adoption of an isolationist trade stance may counterbalance these initiatives.

ASSET-BACKED SECURITIES

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QUICK READ

- The talk of car apocalypse appears an exaggeration.
- There is a big difference among prime, subprime, and deep subprime auto space. Serious problem resides in the small deep subprime segment.
- Auto ABS investors are well protected from severe credit storms due to augmented enhancements.
- Used car prices have declined thanks to increasing off-lease supplies.
- Tesla's coming Model 3 likely to put further downward pressure on car prices.

Car-pocalypse Now? More like a fender bender to us

There has been a plethora of alarming news on subprime auto losses and declining used car values recently, including the eye-catching title of "Car-pocalyspe Now" from Barron's. Is it really an apocalypse in the auto land? An exaggeration, it seems. Remember the talk of "Big Short" on subprime auto a year ago after the release of the Oscar winning movie with the same title? The latest media frenzy strikes a sense of déjà vu about an old theme, once again without looking deeper under the hood.

Is there a problem in auto land? Yes. We have discussed relaxed subprime lending standards extensively in recent years, and have expected credit performance to deteriorate following easier underwriting. However, there is a big chasm among prime vs. subprime and deep subprime auto space. Overall auto default rates remain near the lowest level in a decade at 1.05% in February 2017, due to strong performance in the prime auto space. However, default rates are trending higher in the subprime (FICO < 620) and especially in the deep subprime space. Nevertheless, subprime loss rates remain well below crisis levels.

The materially deteriorating performance in the deep subprime space is concentrated among smaller players that have aggressively chased market share in recent years. One example is CarNow, a smaller player in the deep subprime and 100% used car category, which has seen sharply higher losses. The well-established subprime players have been relatively more prudent in their underwriting, such as AmeriCredit.

In auto ABS, prime auto has exhibited stable performance, with net loss rate at 0.58% in 2016. Subprime auto ABS net loss rate spiked to 7.28%, due to deep subprime issuance representing a growing share of subprime auto. Excluding these deep subprime issues, the "modified" subprime net loss rate rose to a smaller rate of 5.9%.

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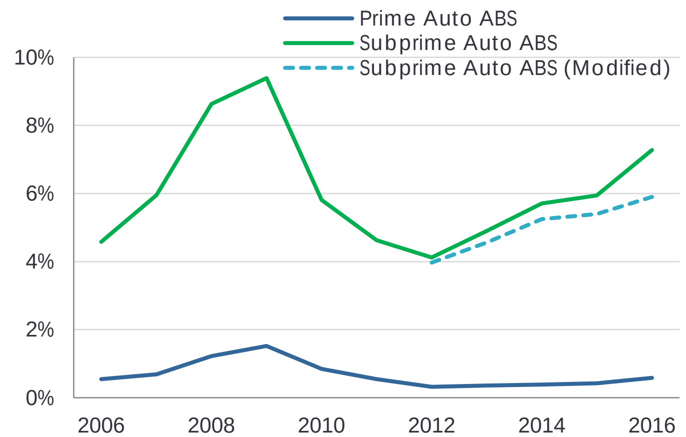
Chart 1: Auto ABS Annual Net Loss Rates



Source: S&P

As losses have increased in subprime auto ABS, credit enhancement levels have been augmented in tandem. According to S&P, average projected cumulative losses were 16.6%, and average Class A enhancement was 39.4% for 2014 subprime auto loan ABS. For 2016 transactions, average projected loss increased to 19.1%, but average Class A enhancement rose even higher to 48%.

Despite rising risk in the subprime raw materials, auto ABS structures offer ample protection for investors and are designed to handle severe credit storms.

Tesla likely to add further disruption to car prices down the road

March auto sales declined to 16.5 million units on a seasonally adjusted annual rate, down from a record high of 17.6 million U.S. vehicles in 2016. The decline YTD was driven primarily by a 11.5% fall in car sales, while light-duty trucks (SUV/cross-over) rose by 5.9%. The trend in consumer preference away from cars to SUVs continues unabated largely since the precipitous decline in oil prices in 2015.

Also, this trend is showing up in used car prices too, where used cars are being hit by several factors. For one, on a macro level, prices of used vehicles in general have fallen due to an increase in off-lease and secondary supply thanks to robust new vehicle sales over the past five years. Second, on a micro level, more of the off-lease supply has a higher percentage of car content versus today's product mix, because 2012-2014 sales were originated in a higher oil price environment. Changing consumer taste away from cars towards trucks and SUVs in the used car arena is best reflected in the divergence of the two major used car indices. The NADA Index, which maintains a discrete basket among cars, trucks and SUVs, has declined by more than the Manheim index, whose composition is driven more by actual sales mix.

So, it's tough environment for car sales, whether new or used. Now let's introduce a new high-volume competitor into the mix.

In this tough environment, Tesla has announced ambitious plans to start producing the Model 3, a high-volume premium electric sedan with a base price of $35k. Plans include commencing production in July of this year, targeting 5,000 vehicles per week 4Q 2017, with a goal of manufacturing 10,000 per week in 2018. Total production for 2017 could reach 80,000. Assuming 7,500 units (a mid-point) produced per week in 2018, assembly would translate into an annual volume of 390,000 units. Further assuming that 60% of all Model 3s will be sold in the U.S., this would mean approximately 234,000 new premium sedans will hit the U.S. car market annually starting next year.

By Tesla's own estimate, the Model 3 will likely compete with small to medium-sized sedans from Audi, BMW, Lexus, Mercedes, Honda, and Toyota. In the U.S., we estimate that the Model 3's target market is likely 90% of all small-to-midsize luxury cars (i.e., a Mercedes S Class buyer probably won't crossover to the Model 3) and 50% of all midsize cars (i.e., a Honda Accord buyer may crossover). That would suggest a domestic target market for the Model 3 of approximately 2.1 million units, based on YTD 2017 annualized sales. Tesla's annual sale goal of 234,000 units of the Model 3 would represent 11% of the market. This is substantial supply disruption to an already beleaguered car market.

Regardless of Tesla's success or not, something has got to give, meaning we should expect some new capacity adjustments among competitors or more likely downward price pressure on new cars, which in turn will impact used car values further. Tesla appears to have picked an inauspicious time to come to market with a new large-scale car product launch.

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Chart 2: U.S. Vehicle Sales

	Mar-17	% Chg from Mar '16	YTD 2017	% Chg from YTD 2016
Cars	611,999	-10.6	1,541,895	-11.5
Midsize	267,340	-16.2	678,291	-17.0
Small	257,808	-4.2	649,676	-6.3
Luxury	86,825	-9.1	213,817	-8.0
Large	26	-72.0	111	-40.0
Light-duty trucks	943,860	5.2	2,491,150	5.9

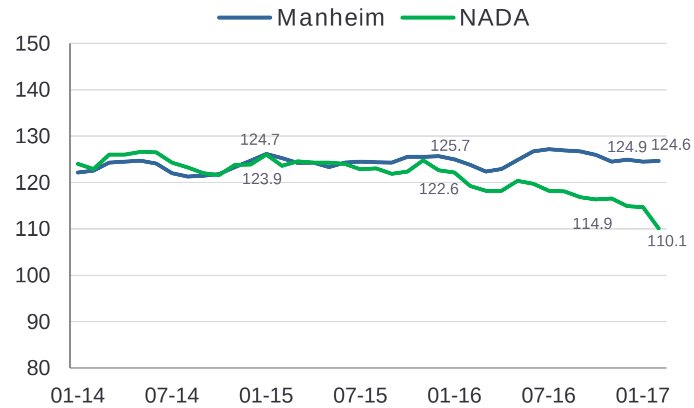
Source: wsj.com

	1Q 2017	Annualized	% Impacted	Competes with Model 3
Luxury car sales	213,817	855,268	90%	769,741
Midsize car sales	678,291	2,713,164	50%	1,356,582
Total	892,108	3,568,432		2,126,323

Potential Tesla Model 3 annual sales in the U.S.	234,000
Potential Tesla Model 3 as a % of affected U.S. car market	**11%**

Source: wsj.com and FPCM estimates

Chart 3: Used Vehicle Indices



Source: NADA Index and Manheim