Spring 2018

FIRST PRINCIPLES QUARTERLY

FPCM

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 2018

FIRST PRINCIPLES QUARTERLY

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Spring 2018

FIRST PRINCIPLES QUARTERLY

CIO LETTER

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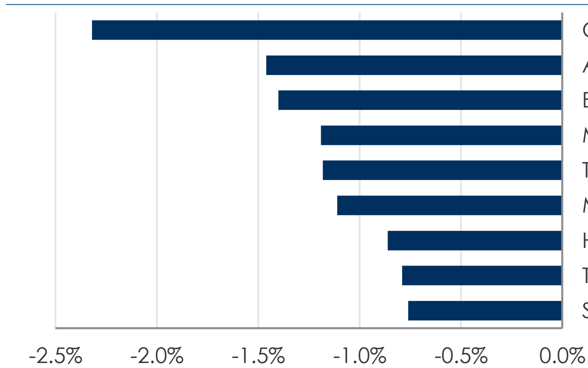
Get Shorty

First quarter performance of most US dollar denominated fixed income asset classes was generally underwhelming as rates rose across the curve. Moreover, credit sensitive asset classes suffered additional losses as volatility returned to all markets. Given the relatively low levels of compensation offered by most asset classes, prospectively which asset classes offer the best risk-adjusted returns over the next three quarters of 2018 when the balance of risk points to higher rates?

Chart 1: Q1 returns for S&P and USD bond indices



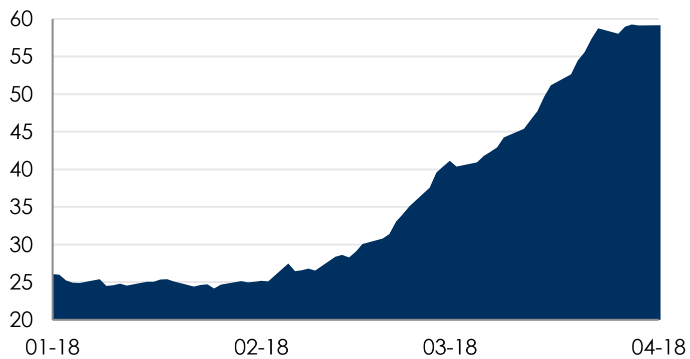
Source: Bloomberg

Monetary policy

The last FOMC meeting confirmed market expectations for at least two more 25 basis point (bp) rate rises in 2018. However, the dot plot was revised slightly upward indicating a steeper trajectory for the federal funds rate after 2018. Moreover, there were modestly positive adjustments to Fed projections for GDP (2.7% in 2018), unemployment (3.8% in 2018), and core inflation (2.1% in 2019), as the committee acknowledged the potential salutary effects of the recent Tax Cuts and Jobs Act and Bipartisan Budget Bill passed by Congress. And with regard to inflation expectations, the committee expressed greater confidence in achieving the 2% target, as it accelerated its estimate that "inflation will move up this year" to "… in coming months."

The minutes of the March meeting and recent speeches by members of the committee have been perceptibly more hawkish than the Yellen FOMC, notwithstanding the following issues that have bedeviled the markets in Q1: 1) unexpectedly weak economic activity data – particularly soft (survey) data, 2) excessive market volatility, 3) potential impact of the administration's America First / trade tariff initiative, and 4) the eruption of the LIBOR-OIS spread to levels unobserved since the height of the financial crisis.

Chart 2: LIBOR minus OIS [bp]



Source: Bloomberg

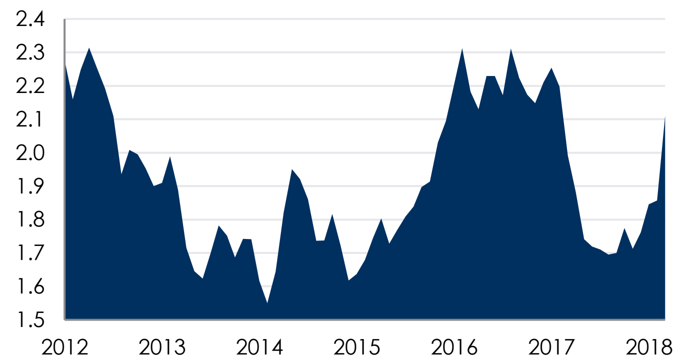
The relative weakness of the economic data was dismissed as "transitory" and the overall assessment was that the "… economic outlook has strengthened in recent months." When asked to assess the recent market tumult, Vice Chairman Dudley remarked that if "… the stock market were to go down precipitously and stay down … that would affect my view for monetary policy … but (now) I don't think it's a big story at all for central bankers." The March minutes predictably viewed tariffs and retaliatory trade actions as a downside risk to the economy and there was cursory mention of the LIBOR-OIS phenomenon in the Staff notes.

The equanimity of the response of the committee to these developments hints that the strike on the "Powell put" is lower than that of Chairwoman Yellen and, in the absence of fundamental changes, it is expected that the FOMC will continue to gradually remove accommodation through quarterly rate rises and scheduled reduction of the System Open Market Account (SOMA) portfolio.

Inflation firming

Core CPI climbed above 2.1% in March. Although the headline number was inflated, as last March's -0.7% reading was dropped from the series (driven by wireless price deflation), it should be noted that monthly Core CPI has averaged 0.21% over the last six months and 0.24% (2.9% annualized) in 2018. Although headline CPI fell by 0.1% – largely owing to lower energy prices – there was a rebound in shelter (owners' equivalent rent, tenants rent, and lodging away from home) to 0.4% which comprises more than 33% of the index. And Medical care services jumped by 0.5% in the month which should lead to an acceleration in the next release of Core PCE (FOMC preferred inflation measure), which weights this category much higher than the CPI index.

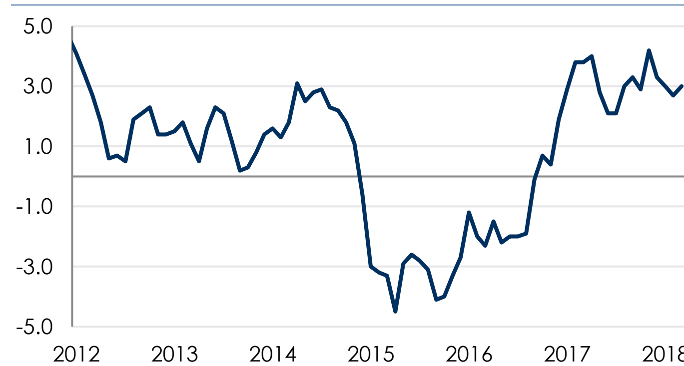
Chart 3: Core CPI percent change YoY



Source: St. Louis Fed

The Producer Price Index (PPI) attained a monthly gain of 0.3% and a six year high of 3.0% YoY in March. The PPI index excluding food, energy, and trade services also achieved multi-year highs (2.9% YoY). The steady improvement of PPI augurs well for continued strength of CPI as the contribution of commodities (less food and energy) – which comprises nearly 20% of the index – has lagged other components of the index in the last year.

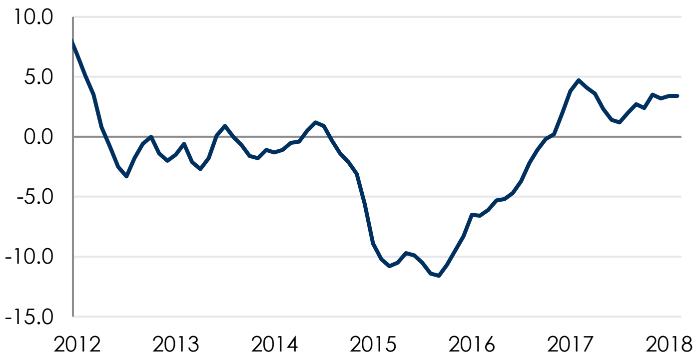
Chart 4: Producer Price Index percent change YoY



Source: Bloomberg

Finally, import prices have risen to 3.4% with no change in March. This is the fifth consecutive month of above 3.0% YoY price increases and the index has not had a negative monthly realization since July 2017. Much of the advance in import prices (excluding fuel and other dollar denominated goods) can be explained by the 13.5% devaluation of the dollar since January of 2017. A reversal of the dollar is not a certainty given the anticipated normalization of rates in other developed markets and nascent concerns about the growth of domestic deficits.

Chart 5: US Import Price Index percent change YoY



Source: Bloomberg

Chart 6: Dollar Index

Source: Bloomberg

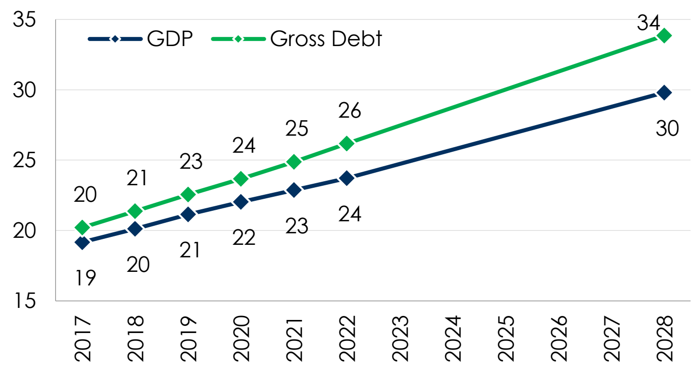
Fiscal outlook

The aforementioned recent initiatives by Congress are likely to be expansionary in an economy with unemployment below the non-accelerating inflation rate of unemployment (NAIRU), a positive output gap, and inflation expected to approach the FOMC's target in the near-term. Quantifying the magnitude of the impact of the actions – both short and long-term – on GDP, employment, inflation (consumer and wage), interest rates, and consequent government revenues and outlays is indubitably more art than science.

The Congressional Budget Office issued a comprehensive (162 pages) report projecting — with new legislation and updated economic forecasts from their 2017 effort — that:

1. Unemployment rate will dip to 3.3% in 2019.
2. Annualized real GDP will be augmented by 0.7% on average over the next decade.
3. Deficits would increase by a total of $1.26 trillion over the next five years and that the next $1 trillion annual dollar deficit will be realized in 2020 not 2022.
4. Gross debt as a percentage of GDP will increase by more than 8% over the next decade.

Chart 7: CBO projections [$tn]



Source: Congressional Budget Office

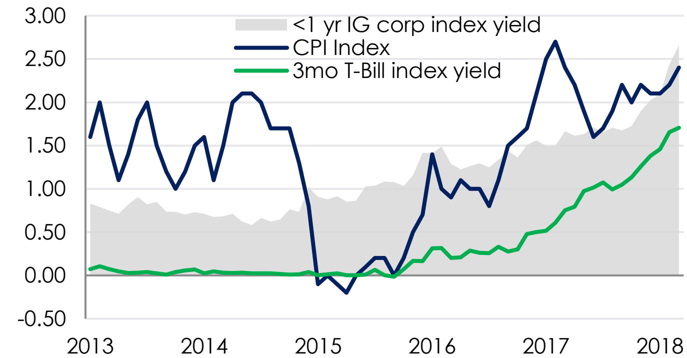
Notwithstanding the projected improved trajectory of GDP and employment, deficits/debt are expected to grow at an accelerated pace as a consequence of the legislation – so much so that the CBO anticipates that the cost of debt service will exceed defense spending in 2023 (2017 debt service outlays were $227 billion less than defense). And the IMF estimates that the U.S. will have a higher debt/GDP ratio (~117%) than Italy in 2023!

Given the surfeit of debt, investors should, at some point, begin to demand, at a minimum, greater compensation to hold Treasuries. In the limit, according to the Director of the CBO "high and rising debt would have serious negative consequence for the budget and nation … (and) the likelihood of a fiscal crisis in the United States would increase."

Resurrection of front end

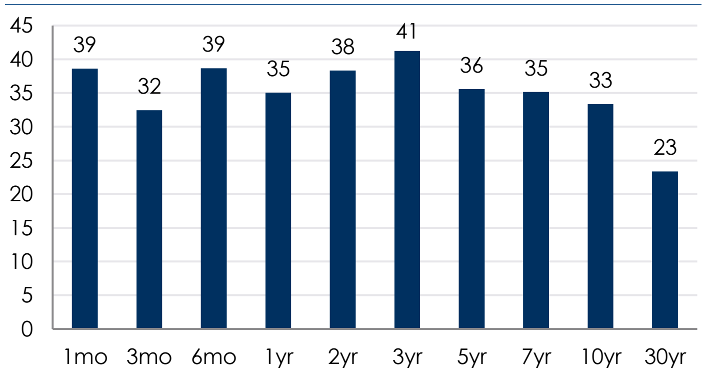
The precipitous rise of both interest rates and credit spreads in Q1 has rekindled interest in investing in short-term bonds. Much of the sell-off in yields can be attributed to increased confidence in the FOMC's commitment to normalize rates and the deluge of Treasury Bill supply. Short-term credit spreads have widened substantially – as exemplified by the LIBOR-OIS spread. The explanations for this dramatic move are myriad: implications of the Tax Cut (repatriation and base erosion and anti-abuse tax – AKA "BEAT"), Treasury Bill supply competing with credit sensitive assets, and the reduction of the SOMA portfolio – lowering reserves – has forced banks to find other sources of funding.

Chart 8: Short-term yields and CPI [%]



Source: Bloomberg

Chart 9: Q1 change in UST rates 12/29/2017 to 3/29/2018 [bp]



Source: Bloomberg

This represents the first time in the post-crisis era – modulo the period from late 2014 through mid-2016 when energy prices collapsed, and inflation YoY approached zero – that investors at the short-end can enjoy positive returns after inflation. And given the very modest compensation investors are offered to extend maturities and the negative fundamentals (aggressive FOMC, strengthening inflation, and deteriorating fiscal position), it behooves investors to consider a larger allocation to short-term corporate bonds.

Chart 10: US BBB 1yr corp spread [bp]

Source: Bloomberg

USD fixed rate corporates with maturities less than 18 months and two-year floating rate notes offer the most attractive risk-adjusted returns. And, surprisingly, there are opportunities in short yen and euro corporate bonds swapped back to dollars. The principal risks to these allocations are being short duration if one or more of the following scenarios emerges: 1) an unexpected downturn in the economy, 2) a reversal in the expectations for inflation, and 3) a surge in demand for long duration assets from foreign central banks and/or non-commercial (e.g., liability-driven) investors.

MUNICIPALS

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QUICK READ

- Munis sold off in line with Treasuries during the first quarter
- Yearly supply/demand technicals exacerbated by passing of Tax Act
- Opportunity could emerge from hangover of first quarter developments
- Investors should consider the cost/benefit of diversifying when comparing local and national portfolios

Municipal bonds ebb with the fixed income tide

The municipal bond market sold off in January – in sync with the rest of the fixed income market. For the quarter, the AAA Bloomberg General Obligation Bond curve rose 34 basis points (bp) compared with a 33bp sell-off in Treasuries.

Buyers no show

Historically, the first quarter has been very friendly to municipal bonds, generating returns that are among the best for the year. The driving forces are usually technical – demand tends to be high as investors typically increase municipal bond allocation at the beginning of the year, and supply is generally low as municipalities take time to prepare issuance for the year.

This typical first quarter supply/demand imbalance was anticipated to be exacerbated this year because of the Tax Cuts and Jobs Act ("Tax Act") enacted in December 2017. The Tax Act repealed advanced refunding and, in the weeks prior to enactment, threatened to eliminate tax-exemption for private activity bonds as well. As a result, municipalities rushed to issue in November and December, thereby exerting downward pressure on market prices.

Having rushed to issue amidst uncertainty of how the Tax Act would ultimately play out, private activity issuers have likely pushed their funding needs out until the second or third quarter of 2018, reducing supply even further for the year. Based on this anticipated technical backdrop, dealers and most money managers bought the rest of the December supply hand over fist lest there would be a supply vacuum in the coming quarter.

As anticipated, first quarter supply dropped significantly compared to last year. However, contrary to expectations, demand did not push the municipal bond market higher. What happened? Several things: 1) the Tax Act significantly diminished the attractiveness of municipal bonds for banks and insurance companies, rendering these large players sellers, making up for the supply slack from issuers; 2) money managers bought in excess of their needs in December, so first quarter new money was largely spoken for by way of inventory, thereby reducing the demand for additional bonds from the market; 3) the prevailing sell-off in fixed income over the first quarter broadly gave investors pause as to whether to enter the market.

Supply is expected to pick up following the anemic first quarter – with elevated dealer inventory, and with bank and insurance companies having turned from net buyers to net sellers, there is a real possibility of municipal bonds cheapening over the next couple of quarters. If this scenario unfolds, it could present an opportunity for investors to increase their allocation to municipal bonds.

National vs. state-specific bonds

Another provision of the Tax Act is limited deduction for state and local taxes ("SALT"). All else equal, the Tax Act has increased the value of state-specific bonds, as most state-specific bonds are exempt from state income tax for that state's residents. Does this render them attractive enough to replace a well-diversified national portfolio? We have conducted an analysis of a hypothetical national portfolio compared with a couple of hypothetical state-specific portfolios to determine which is more beneficial for residents of these particular states.

In comparing national vs. state-specific portfolios, we selected two of the most populous, highest tax states – New York and California. In conducting the analysis, the first step is to source yields representative of nationally diversified ("national"), New York only, and California only portfolios. Per Barclays indices, yield levels as of first quarter end are:

National	2.68%
New York	2.61%
California	2.48%

Given the highest marginal personal income tax rate of 8.82% in New York and 13.3% in California, the after state-tax yields of the national portfolio for each New York and California are:

National (after NY state-tax):	2.44% (= 2.68% * [1 – 8.82%])
National (after CA state-tax):	2.32% (= 2.68% * [1 – 13.3%])

The after state-tax yields observed for the national portfolio trailed the New York-only portfolio by 17 bp (2.61% – 2.44%) and trailed the California-only portfolio by a mere 16bp (2.48% – 2.32%)– a small cost for the benefit of diversification. For residents of these two states, it seems imprudent to construct New York or California-only portfolios, as the risk/reward profile is asymmetric compared to a national portfolio, and we would prefer a well-diversified national portfolio from both a risk and liquidity perspective.

INFLATION

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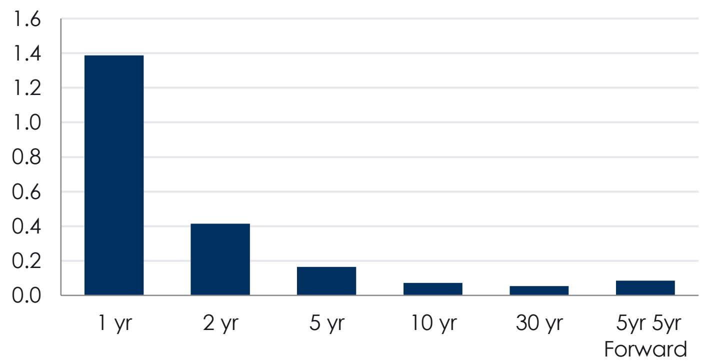
QUICK READ

- Surging first quarter encounters headwinds
- Increased inflation expectations supported by strength in several underlying components
- Fiscal policy and prospect of trade war further contribute to increased inflation expectations

Inflation speculation arises in short order

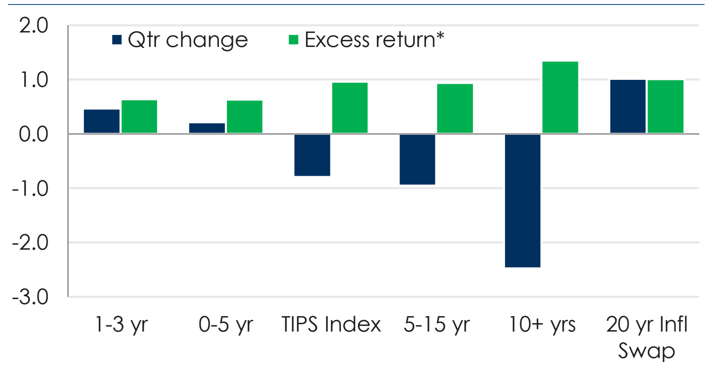
Riding momentum from the Tax Cuts and Jobs Act (Tax Act) and Bipartisan Budget Bill passed by Congress, risk assets soared in January and the long end of the curve sold off by over 30 basis points (bp). However, this sentiment reversed by mid-February as concerns about inflation and trade wars came to be the prevailing market narrative. Treasuries rallied into quarter-end and recovered some, but not all losses – ending the quarter with negative returns. Inflation expectations mostly mirrored the trend in rising rates (Charts 1 and 2). The breakeven inflation curve flattened significantly as it rose by over 40bps on the front end compared to 5bps on the long end. Not surprisingly, TIPS outperformed maturity matched Treasuries.

Chart 1: Inflation breakeven changes for the qtr [%]



Source: Bloomberg

Chart 2: TIPS Returns [%]



Source: Bloomberg

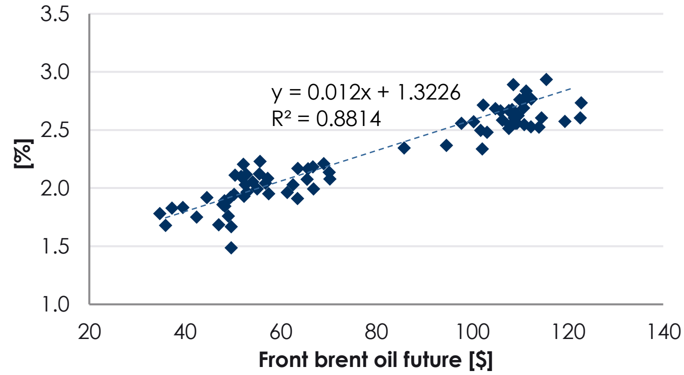
* Excess returns over maturity matched Treasuries

INFLATION

CPI components

Market expectations for inflation continue to strengthen as individual Consumer Price Index (CPI) components have become supportive of higher inflation (Table 1). Energy, constituting about 8% of the CPI basket, generally has an outsized effect on headline inflation and is a core driver of inflation volatility – statistical analysis of recent data show that a $10 increase in oil prices leads to an approximately 0.1% increase in forward inflation (Chart 3). The recently announced reaffirmation of the successful Saudi-Russian oil alliance is likely to be a continuing, supportive factor for oil prices. Further, emergent analysis of constrained infrastructure has cast doubt on additional ramp-up in US shale production – a factor previously expected to ameliorate potentially higher oil prices.

Chart 3: Oil prices vs forward inflation



Source: Bloomberg

CPI components

Group	Category	Weight	% Change Monthly 1m	% Change 3m 3m	% Change 1y 1year	Contribution Monthly 1m	Contribution 3m 3m	Contribution 1y 1year
0	Headline CPI	100	-0.06	2.53	2.36	-0.063	2.53	2.36
1	Food	13.3	0.13	1.29	1.29	0.017	0.18	0.18
2	Energy	7.7	-2.75	0.97	7.03	-0.211	0.07	0.50
3	Goods ex. Food & energy	19.9	-0.13	1.35	-0.33	-0.025	0.25	-0.06
4	Services ex. Energy	59.1	0.27	3.31	2.88	0.157	1.99	1.73
1	Food at home	7.3	0.15	0.08	0.38	0.011	0.01	0.03
1	Food away from home	6.0	0.11	2.86	2.50	0.007	0.17	0.14
2	Energy goods	4.3	-4.70	-0.27	11.33	-0.200	-0.01	0.40
2	Energy services	3.4	-0.23	1.41	2.49	-0.008	0.05	0.09
3	Household furnishings & supplies	3.4	-0.06	0.61	-1.53	-0.002	0.02	-0.05
3	Apparel	3.1	-0.63	10.4	0.28	-0.020	0.31	0.01
3	Transportation commodities less motor fuel: New vehicles	3.8	0.03	-2.13	-1.22	0.001	-0.08	-0.05
3	Transportation commodities less motor fuel: Used cars & trucks	2.4	-0.33	-0.65	0.37	-0.008	-0.01	0.01
4	Shelter: Owners' equivalent rent	23.6	0.31	3.19	3.26	0.074	0.79	0.80
4	Shelter: Tenants' rent	7.8	0.26	3.25	3.61	0.020	0.26	0.28
4	Medical care services	6.9	0.47	3.17	3.35	0.033	0.21	0.22
4	Transportation services: Other transportation services	5.3	0.13	9.08	5.50	0.007	0.48	0.29
4	Education and communication services: Tuition and other school fees	2.9	-0.06	0.88	1.92	-0.002	0.03	0.06
4	Education and communication services: Communication services	3.2	-0.26	-3.58	-1.66	-0.008	-0.11	-0.05
4	Recreational services	3.9	-0.14	0.22	2.21	-0.005	0.01	0.09

Source: Bloomberg

INFLATION

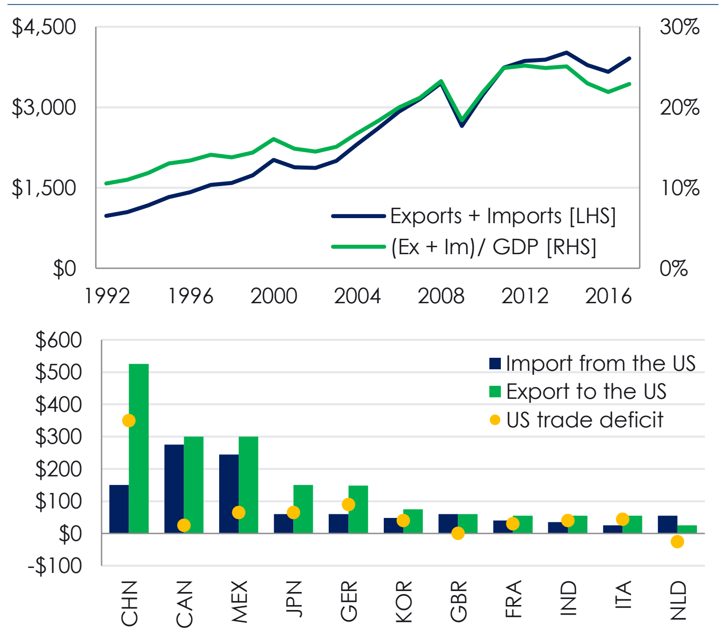
Services ex-energy is the largest component of the CPI Index at 59% and has averaged approximately 2.2% annual increases over the last 5 years. Similarly, shelter – the largest sub-component of this category at 32% of CPI – has averaged annual increases above 3% for the past few years. The three main drivers for shelter CPI – housing prices, rentals, and mortgage delinquencies – have shown strength, albeit off their peaks, and are accretive to above-target inflation. Another services subsector – health care expenses – has gradually accelerated in recent years and is expected to maintain an upward trajectory, as aging demographics are conducive to upward pressure. Other service related inflation has been mild recently, highlighted by the sharp double digit drop in cell phone services in Mar 2017. Labor market tightness, however, is beginning to influence the services category as wage price increases are passed through to the service users

Goods ex-food and energy (20% of CPI) is a component that has been rather subdued in recent years. However, current economic conditions lend themselves to a potentially larger upside in goods inflation. Increasingly robust spending by both businesses and consumers over the last few years has resulted in a global manufacturing boom. Manufacturing capacity utilization has increased as slack in labor and product continues to decline globally. These factors have already led to a robust recovery on global producer price indices and are likely to eventually filter down to households – and thus into the CPI index. In addition to a record tight labor market, current conditions in the US are conducive to higher goods inflation due to dollar weakness. Should the much-ballyhooed talk of trade sanctions come to fruition, the near-term impact on goods inflation could be significant. Another component which could potentially lead to volatile inflation numbers is food (13% of CPI) – a category that has been coming in below core CPI for the last few years, though there are currently no trigger events on the radar which could cause a spike in this category.

Trade wars, fiscal policy, and inflation

The relationship between trade wars and inflation is complex, thereby difficult to quantify or estimate with certainty. However, the potential pass-through impact on inflation from any new tariffs on goods would likely be large given the significant size of the current US trade deficit in goods ($800bn) – approximately 16% of total retail sales (Chart 4). Higher inflation would likely translate into lower consumption followed by a decline in GDP. Recent studies by the Peterson Institute[1] and European Parliament[2] present a detailed analysis of the impact of trade wars and highlight the possibility of the US encountering a sharp 4-5% drop in GDP, pushing the economy into a recession. The increasing global harmonization of the supply chain network is migrating manufacturers into the realm of "global entities." By some measures, depending on the industry, 5%-20% of the total value of final goods imported into US consist of locally produced intermediates, while US manufacturers are increasingly dependent on foreign made intermediate goods.

Chart 4: US Trade and deficit in 2016 [$bn]



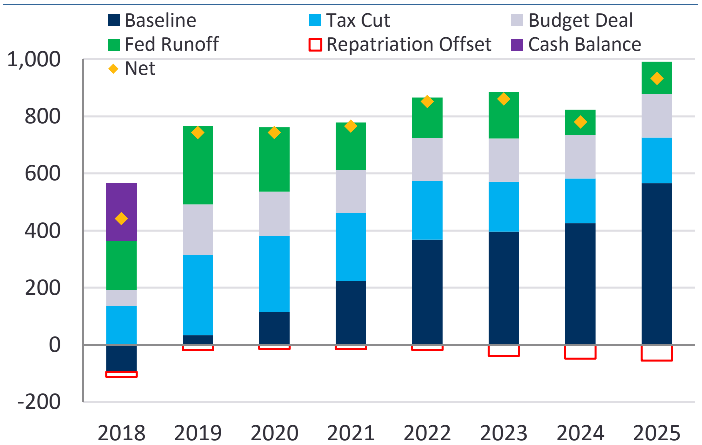
Source: BEA, Rabobank based on UNCTAD database

[1] Assessing Trade Agendas in the US Presidential Campaign, Marcus Noland Et al., 16-6 Peterson Institute for International Economics, Sep 2016

[2] The added value of international trade and impact of trade barriers, European Parliamentary Research Service, PE603.240, Sep 2017

Recent fiscal policy actions are also adding to inflation risk. Passage of the Tax Act and increased spending under the new budget deal are likely to contribute to growth – the policy moves are also exacerbating existing high deficits (Chart 5), increasing the beta of interest expense to the Treasury from any potential rate increases by the Fed. Presently, a 1% increase in interest would equate to approximately 1% of GDP and a 5% increase in interest expense (using a government budget of 20% of GDP).

Chart 5: Increase in net Treasury supply (relative to 2017 baseline); FY [$bn]



Source: Credit Suisse, Federal Reserve

Conclusion

Heightened inflation awareness could lead to normalization of the inflation premium from subdued low levels observed over the past few years. This normalization, in turn, could result in further widening of breakeven inflation – especially in the long end. Recent dealer research highlights the likelihood of increasingly fatter right tails in future inflation distributions. While the specter of stagflation is present, it is highly improbable – though a possibility in the event of a full-blown trade war. Given the current backdrop, an allocation to inflation linked securities is poised to outperform an equivalent portfolio of nominal securities.

MORTGAGE-BACKED SECURITIES

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QUICK READ

- Reverse mortgage insurance premiums have been mispriced by the FHA for years
- Measures taken to correct for mispricing has led to decreased prepayment speeds for older loans
- HECM-to-HECM refinancing for newly originated loans has become easier

What the HECM is going on?

If you watch CNBC, then you have likely seen Tom Selleck promoting reverse mortgages for a company called AAG[3]. As Tom explains in the commercial, a reverse mortgage is a product that allows senior citizens to extract equity from their home without having to make loan payments. The market for reverse mortgages, also known as Home Equity Conversion Mortgages (HECMs) is dominated by the government via the Federal Housing Authority (FHA). The FHA charges borrowers Mortgage Insurance Premiums (MIPs) for the FHA to guarantee principal and interest payments to investors. Unfortunately, the FHA has mispriced this program over the years. Since 2015, the actuarial net present value of the FHA's HECM guarantee book dropped from +$6.8bn to -$14.2bn.

FHA HECM	2015	2016	2017
NPV ($bn)	+6.8	-7.7	-14.2

To right the ship, the FHA announced a couple of large changes to their HECM program in the 4th quarter of 2017[4]. First, the FHA increased the MIPs that borrowers pay upfront from 50bps to 200bps[5] and they decreased the MIPs paid annually from 125bps to 50bps[6]. More importantly, the FHA noticeably decreased the amount of equity that borrowers can extract from their home by roughly 20%. So instead of a 72-year-old borrower being able to extract 71% of their home's value, they can only extract 48% under the new program. Reducing the amount of equity seniors can extract has had a sizable impact on prepayment speeds for loans originated prior to the program change.

[3] https://www.youtube.com/watch?v=wvAui0vUT88 , https://www.youtube.com/watch?v=M5ILMby4pGg

[4] https://www.hud.gov/sites/documents/17-12ML.PDF

[5] Paid as a percentage of the maximum claim amount which is the minimum of the home value and the FHA's loan limits.

[6] Paid on the outstanding mortgage balance

MORTGAGE-BACKED SECURITIES

FHA HECM	Oct 17	Nov 17	Dec 17	Jan 18	Feb 18	Mar 18
Prepayments (CPR)[7]	10.5	13.4	10.0	9.7	8.9	6.7

This is because borrowers that have experienced home price appreciation have historically utilized reverse mortgage cash-out refinancings to extract more equity. However, now that the FHA has restricted how much equity can be withdrawn, many existing borrowers have insufficient home price appreciation to qualify for a cash-out refinancing.

Meanwhile, borrowers who take out loans under the new program, don't face these same refinancing hurdles. In fact, the FHA made another policy change at the end of 2017[8] which allows borrowers to apply part of the upfront MIPs paid on their old loan to their new loan in a HECM-to-HECM refinancing. This makes it easier for new HECM borrowers, who have paid 200bps in upfront MIPs, to refinance.

Given these policy changes, we expect prepayment speeds on old collateral to continue to moderate and prepayment speeds on new collateral to increase over time. We don't think this difference is fully priced into the market. Therefore, we prefer Ginnie Mae MBS, specifically high dollar price pools and interest only CMOs (IOs), backed by old HECM loans to bonds backed by loans originated under the new program.

[7] Annual Libor HECM 3.0 2014 program. Prepayments are adjusted for day count and seasonality

[8] https://www.hud.gov/sites/dfiles/Housing/documents/HECMRefinanceReleaseNotes12_28_17.pdf

CORPORATE CREDIT

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QUICK READ

- Headlines may be misguiding investor perception of covenant-lite loan riskiness
- With increased demand for bank loans and CLO product comes less resistance to covenant-lite loans
- Counterintuitively, covenant-lite loans have experienced a smaller risk of default – due to pliability in restructuring
- Investments should be examined in context of entire covenant package
- Recent covenant-lite surge may be reflective of rewarding strong issuer fundamentals rather than a need to access capital
- As always, it is important for investors to apply in-depth fundamental analysis on each transaction

The pervasive FOMC (Fear of Missing Covenants)

The plethora of articles on the rampant covenant-lite trend in the loan market might be misleading investors into believing in a doomsday scenario for this traditionally defensive asset class. Financial maintenance covenants that provide investors with early warnings of deterioration in a borrower's performance are unquestionably valuable to lenders. But the case against covenant-lite loans does not appear to be substantiated by the data. In fact, the limited data available suggest that covenant-lite loans do not necessarily translate to riskier investments.

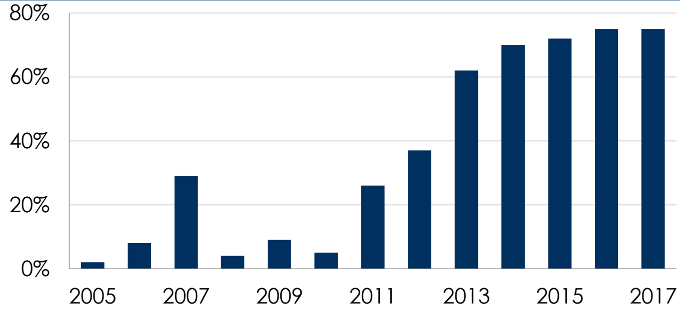
Eroding protection

Bank loans increasingly lack the more stringent covenants historically associated with the asset class. The covenant-lite issuance trend continues to thrive, currently accounting for 75% of loan issuance, up from 29% a decade ago at the pre-crisis peak, as depicted in Chart 1. Given strong loan demand -- retail has invested $13bn into loan funds in 2017 on rate hike expectations, with another $117bn in CLO activity -- it is not surprising that covenant-lite new issues have faced little resistance. A study of 200 publicly reporting issuers[9] reveals that the covenant-lite universe bears higher leverage[10] versus the covenant-heavy group of issuers, as portrayed in Chart 2. The difference in leverage between the two groups appears to be cyclical, ascending (faster for covenant-lite issuers) in issuer friendly markets when the economy is expanding, and contracting during economic troughs. This helps to explain the leverage spike in covenant-lite loans from 2012-2014, and the troughs preceding it. However, the leverage for the covenant-lite group has steadily converged to the levels of covenant-heavy issuers and has leveled off to a difference of less than 1x.

[9] Representing ~25% of the S&P LCD leveraged loan Index's outstanding

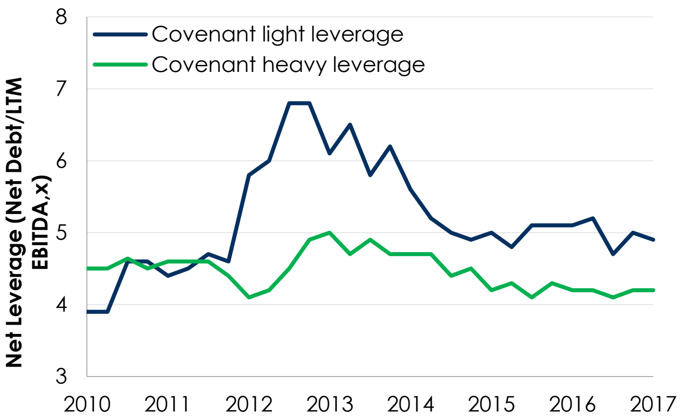
[10] Leverage is measured as the aggregate sum of net debt divided by LTM EBITDA for the dataset of 200 publicly reporting loan issuers

Chart 1: Cov-lite bank loan trend continues to strengthen



Source: S&P LCD, Guggenheim

Chart 2: Leverage ratio of cov-life vs cov-heavy loans*



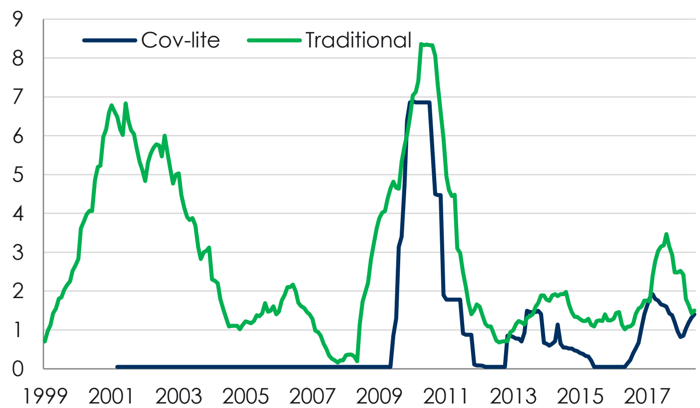
Source: BofA Merrill Lynch Global Research, Bloomberg
*Using Tableau - Tableau is a business intelligence and data visualization tool for multi-dimensional, complex data systems

Additional investor considerations

Higher leverage for covenant-lite loans appears to be a reflection of the higher proliferation of sponsored deals in the covenant-lite space, rather than an indication of higher default risk. Actually, covenant-lite loans have displayed a smaller propensity to default historically, as less restrictive terms helped issuers navigate their balance sheets in times of crisis (Chart 3). Private equity sponsors have generally enjoyed a larger share of covenant-lite loans, versus their non-sponsored counterparts. Nonetheless, the proportion of the covenant-lite universe with a backing sponsor rose to highs of 80% in 2012, gradually receding to 60% at the end of 2017 (Chart 4). Moreover, when covenants do exist, how much protection do they really provide? According to Moody's, covenant quality is at its weakest on record.

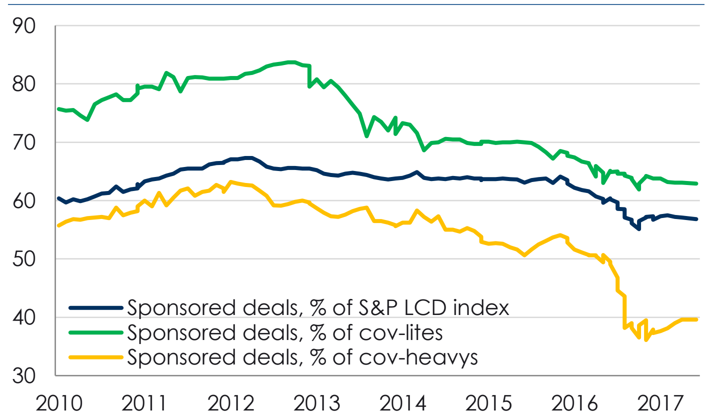
The resurgence of dividend recapitalizations has led to a notable deterioration in restricted payments covenants, which traditionally limit cash leakage to equity holders. An astonishing 48% of U.S. leveraged loans permit borrowers to make unlimited cash restricted payments such as dividends, which were previously capped by a fixed dollar amount. Evidently, it is erroneous to evaluate the riskiness of an investment solely based on its covenant-lite nature, when it should be examined in the context of the entire covenant package in the loan agreement.

Chart 3: Trailing 12m loan issuer weighted default rate [%]



Source: S&P LCD

Chart 4: Proliferation of sponsored deals in S&P's LCD index



Source: S&P LCD

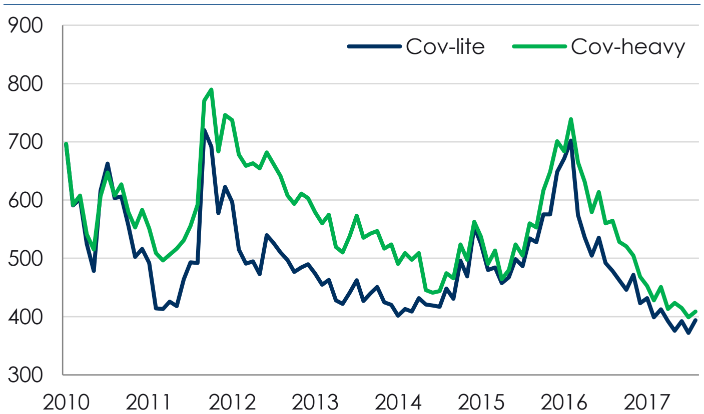
CORPORATE CREDIT

Lighter on covenants, but higher in quality?

Despite their higher collective leverage, covenant-lite issuer spreads in this cycle have traded inside the covenant-heavy group (Chart 5), indicating that covenant-lite issuers tend to be higher quality issuers, all else equal. Furthermore, while the total leverage of covenant-lite loans may be higher, their secured leverage, a more appropriate measure for loan investors, is about equal to their covenant-heavy counterparts. This might explain why the gap between both universes' margin has narrowed since 2014.

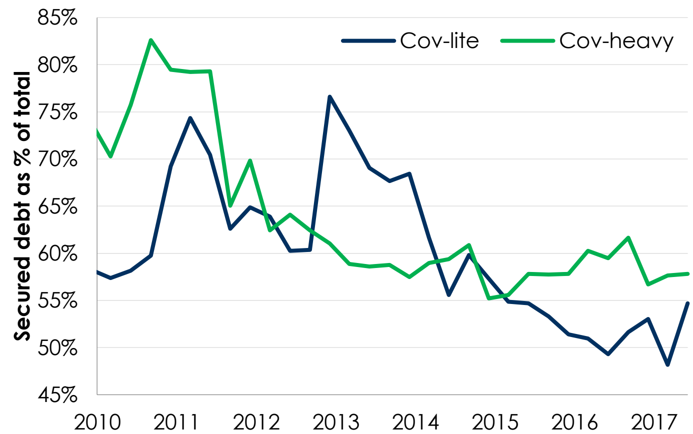
Hence, the recent surge in covenant-lite deals might reflect better issuers receiving lighter deal terms, rather than weaker issuers accessing cheap capital. Lower total leverage but similar secured leverage translates to a proportionally lower amount of secured debt on covenant-lite issuers' capital structures as shown in Chart 6. This actually benefits secured investors given that debt cushion (i.e. the presence of junior debt in the capital structure) is a better indicator of recovery rates than priority ranking – the higher the debt cushion, the lesser the risk of credit losses on secured debt since junior debt tranches are the first to absorb losses in an event of default. A 2015 recovery study by S&P spanning the last two decades corroborates this, pointing to covenant-lite recoveries of 92.5% versus 81.0% for loans with maintenance covenants.

Chart 5: Cov-lite spreads tend to trade inside of cov-heavy loan spreads



Source: S&P LCD

Chart 6: Cov-lites have proportionally lower secured debt



Source: BofA Merrill Lynch Global Research

Conclusion

Traditional covenants are always preferable for lenders. While covenant-lite loans are inherently part of the risk picture, it is critically important to understand a few considerations. Financial covenant packages are only a small part of the overall credit agreement. The increasing volume of covenant-lite deals should not be used as the sole gauge of overall credit quality or as an indicator of reckless lending. A covenant-lite loan isn't necessarily riskier just because it is light on covenants, as there are other relevant considerations. As with understanding risks of most debt investments, investors need to examine the quality of the capital structure, financial health of the enterprises, and the ability of the sponsor to recapitalize the company in order to determine the riskiness of a loan.

ASSET-BACKED SECURITIES

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QUICK READ

- The ABS market seemed euphoric with Tesla's inaugural auto lease ABS transaction
- Yet this new deal presents several unique risks compared to other auto lease ABS
- Extreme concentration of only two models (S and X) in the deal runs counter to the diversification principle of ABS structure
- Other idiosyncratic risks include a niche electric vehicle product with limited residual value history, approaching competition from other OEMs and cannibalization from its own lower priced Model 3, and the company's weak credit profile
- The question is: Do investors fully understand the real and discernible tail residual value risk in this untested auto lease ABS deal?

Tesla's inaugural auto lease ABS not fully charged

The ABS market seemed euphoric in early February this year with Tesla's inaugural auto lease ABS transaction (2018-A). The deal was reportedly oversubscribed by approximately 14x, compared with typical highs of 4 to 5x for regular ABS deals. The real question is: Do investors truly understand the residual value (RV) risks involved in this auto lease ABS deal, especially with respect to the tail risk exposure to the RV of Model S and X?

A typical auto lease ABS deal is backed by a pool of closed-end leases, where the RV risk is assumed by investors and not by the lessees. The lease pool typically has a diverse mix of vehicle types (car vs. light truck) and models. Lease obligors are spread across the country. The vehicles generally have well established RV track records.

Since obligors in an auto lease ABS tend to be of prime credit profile with high FICO scores, credit losses have been low. The much greater risk in an auto lease deal is the vehicles' RV and the volatility of the RV realization. RV risk is the risk that market value of returned vehicles at contract maturity will be below the base RV set at the leases inception. The percentage of aggregate base RV represents well over 50% of the aggregate securitization value (SV) for most lease deals, and 75% in the case of this Tesla deal. SV is the sum of the present value of each lease's remaining monthly lease payment and the present value of related leased vehicle's base RV. Base RV is set at the lower of the contract RV and a third-party RV forecast (usually by ALG).

RV is affected by many factors, including economic downturns, adverse idiosyncratic model development and vehicle recalls, technological breakthroughs, changing consumer tastes, competition, oil price, etc. None of these factors can be predicted with certainty at the lease deal's inception, and exogenous events can happen after the deal's closing. As such, actual RV realization upon disposition of leased vehicles can fluctuate materially from the forecasted value. This RV risk and volatility expose ABS investors to great risks.

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The Tesla 2018-A lease deal presents several idiosyncratically greater risks compared to other auto lease ABS:

- **Little diversification in vehicle types and models.** The Tesla lease pool is comprised exclusively of only two electric vehicle (EV) models: 68% Model S sedans and 32% Model X SUV. This deal's extreme model concentration is rare in auto lease ABS, and runs counter to the diversification principle of ABS structure.
- **Elevated geographic concentration of obligors**. Approximately 47% of Tesla lessees are in California.
- **Limited RV history on Model S and X.** Both Model S (produced since 2012) and X (produced since 2015) are relatively new vehicles, and there is very limited data on the actual residual value realization.
- **A niche EV product with unproven and uncertain RV track record.** EV is a relatively new and tiny segment in the U.S. auto market, despite heavy promotion by OEMs. EV's RV retention rate has been weaker than internal combustion engine (ICE) vehicles, partially due to EV's battery degeneration.
- **Adverse developments in the two vehicles could reduce their RV.** Two fatal crashes involving a Model X on autopilot and a Model S catching fire call into question Model X's reputation as the "safest SUV on the road" and raise questions about the safety of its lithium-ion battery cells. The recent large recall of 123,000 Model S vehicles due to faulty power steering bolts could add downward pressure on RV. It's worth noting that both Model S and X deliveries fell 13% y/y in 1Q 2018.
- **Competition with EV models from other OEMs and cannibalization from its own Model 3.** The ramping up of Tesla's lower priced Model 3 sedans could cannibalize the much higher priced Model S and X, pulling down the two older models' RV.
- **Weak credit profile of OEM.** Unlike other OEMs which are solid investment grade companies, Tesla's senior unsecured credit rating is at deep speculative levels of Caa1 at Moody's and B- at S&P. Tesla has not demonstrated an ability to generate profitability since its inception and continues to experience substantial negative free cash flow.

The Tesla auto lease ABS deal appears to present greater downside RV risk compared to the other traditional auto lease deals, yet the ABS market's pricing for Class A did not seem to differentiate much between Tesla and the other deals. It is true that Tesla's Class A has higher initial enhancement level, but the question is whether that is sufficient to handle the real and discernible tail RV risk in this untested EV market. Unlike equity, there is no upside for ABS investors if Model S and X do well. The risk is asymmetrical.

ASSET-BACKED SECURITIES

Recent Auto Lease ABS	Tesla Auto Lease Trust	Mercedes-Benz Auto Lease Trust	BMW Vehicle Lease Trust	Ford Credit Auto Lease Trust	GM Financial Auto Leasing Trust
Auto lease ABS deal ticker	TESLA 2018-A	MBALT 2018-A	BMWLT 2017-2	FORDL 2017-B	GMALT 2018-1
Weighted average FICO	767	785	784	751	759
Weighted average original term (months)	35	38	36	35.6	36
Number of lease obligors	8,879	35,633	33,054	52,766	56,399
Aggregate securitization value (SV)	$608,083,791	$1,500,004,415	$1,182,033,147	$1,248,455,516	$1,362,401,047
Total ABS notes issued	$546,050,000	$1,286,253,000	$1,000,000,000	$1,108,620,000	$1,250,000,000
Average securitization value	$68,486	$42,096	$35,761	$23,660	$24,156
Initial overcollateralization as a % of initial SV	10.20%	14.25%	15.40%	11.20%	8.25%
Base residual as a % of the aggregate SV	75.1%	70.1%	65.1%	74.8%	73.7%
Vehicle types by SV	Car (68%), SUV (32%)	Car (58%), SUV (42%)	Car (58%), SUV/CUV (42%)	Car (24%), SUV/CUV/Truck (76%)	Car (18%), SUV/CUV/Truck (82%)
Top five vehicle models in the lease pool	Model S (68%), Model X (32%)	C Class (20%), E Class (17%), S Class (11%), ML/GLE Class (15%), GL/GLS Class (12%)	3 Series (19%), 4 Series (14%), 5 Series (14%), X3 (14%), X5 (16%)	Escape (20%), F-150 (19%), Explorer (18%), Fusion (12%), Edge (9%)	Equinox (13%), Silverado (12%), Traverse (7%), XT5 (7%), Acadia (7%)
Geography concentration of lessees	CA (47%), FL (10%), NY (6%), TX (4%), NJ (3%)	CA (25%), NY (14%), FL (13%), NJ (8%)	CA (15%), FL (14%), NJ (14%), NY (13%), TX (5%)	MI (21%), NY (14%), CA (11%), NJ (8%), oh (8%)	MI (30%), NY (12%), CA (10%), FL (7%)
Class A for Tesla and Class A4 for others	Aaa by Moody's	AAA by S&P and Fitch	Aaa by Moody's, AAA by Fitch	AAA by S&P and Fitch	Aaa by Moody's, AAA by S&P
Initial hard credit enhancement	31.25%	14.25%	15.65%	20.40%	19.90%
Spread at offering	30 bps	27 bps	35 bps		30 bps
Coupon rate	2.32%	2.51%	2.19%	2.02%	2.68%
OEM **corporate** credit ratings (senior unsecured) at Moody's and S&P	Caa1/Negative, B-/Negative	A2/Stable, A/Stable	A1/Stable, A+/Stable	Baa2/Negative, BBB/Stable	Baa3/Stable, BBB/Stable

Source: Offering Memorandum, Bloomberg, Moody's, S&P