2019 US IG Credit Outlook

Jeff Meli
jeff.meli@barclays.com
+1 212 412 2056
BCI, US

March 2019

Forecasts and key questions

- **After a sizable rally to start the year, we expect spreads to widen c20bp through year-end**
  - Near-term technical remain strong, softness more likely in H2 if recession concerns reemerge
  - Inversion of 3m10y Treasury curve remains a source of concern
  - IG credit reacts in advance of a recession; liquidity conditions to exacerbate any widening

- **Corporate fundamentals overall are robust but quantum of BBBs pose a risk**
  - Leverage is slightly elevated but so are margins
  - Growth in BBB debt is an issue when the cycle turns

- **Systemic concerns regarding leveraged loans are overdone**
  - Ownership changes have driven the shift to cov-lite, but also mitigate forced selling/contagion risks
  - But recoveries are likely to be lower through the next cycle

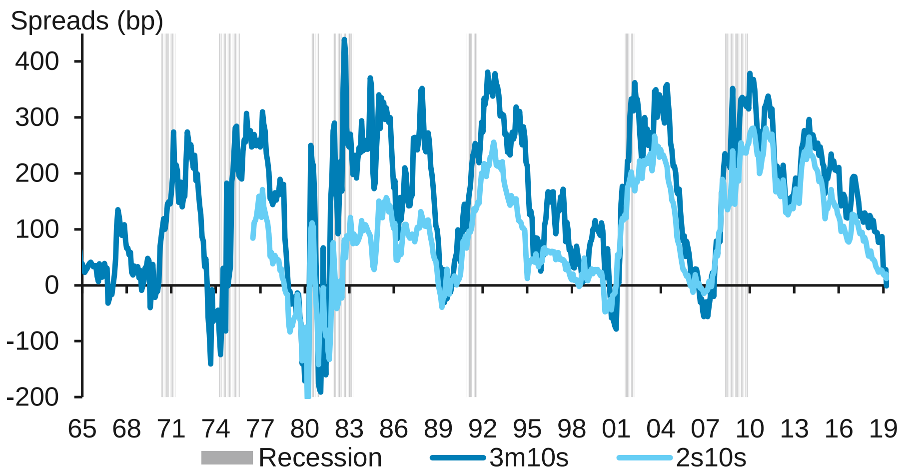
- **Tax reform will result in lower leverage over the medium term**
  - Initial effects (eg lower tech supply) have already been noticeable

Source for all charts: Bloomberg, ISM, BLS, Barclays Research

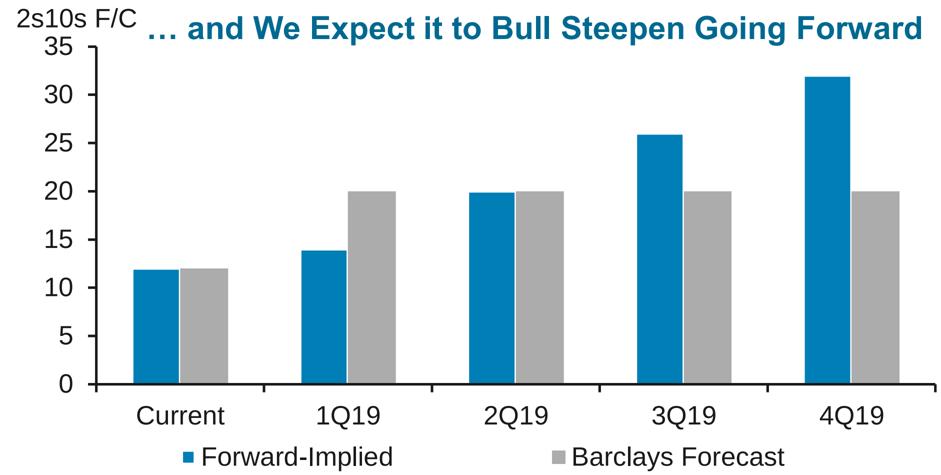
Restricted - External

The inversion of 3m10y Treasury curve will be a focus

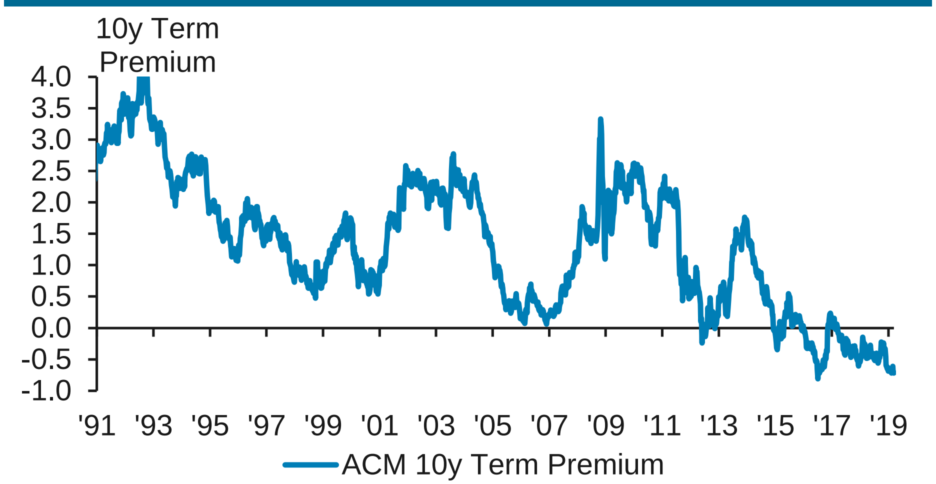
US 3m10y Inverted; First Time Since ‘07



2s10s Has Not Inverted Yet…



But Does the Low Term Premium* …



… Reduce the Efficacy of this Indicator?

- Is a flatter curve easier to invert?
- Curve inversion can cause distortions that can contribute to recessions
    - Bank lending, capex, asset allocation
- Lack of term premium reflects one-sided risks from monetary policy

*Kim and Wright Model. Source: https://www.federalreserve.gov/pubs/feds/2005/200533/200533abs.html. Source: Bloomberg, Barclays Research

However, we do not believe the credit cycle will end in 2019 and chances remain low even for early 2020

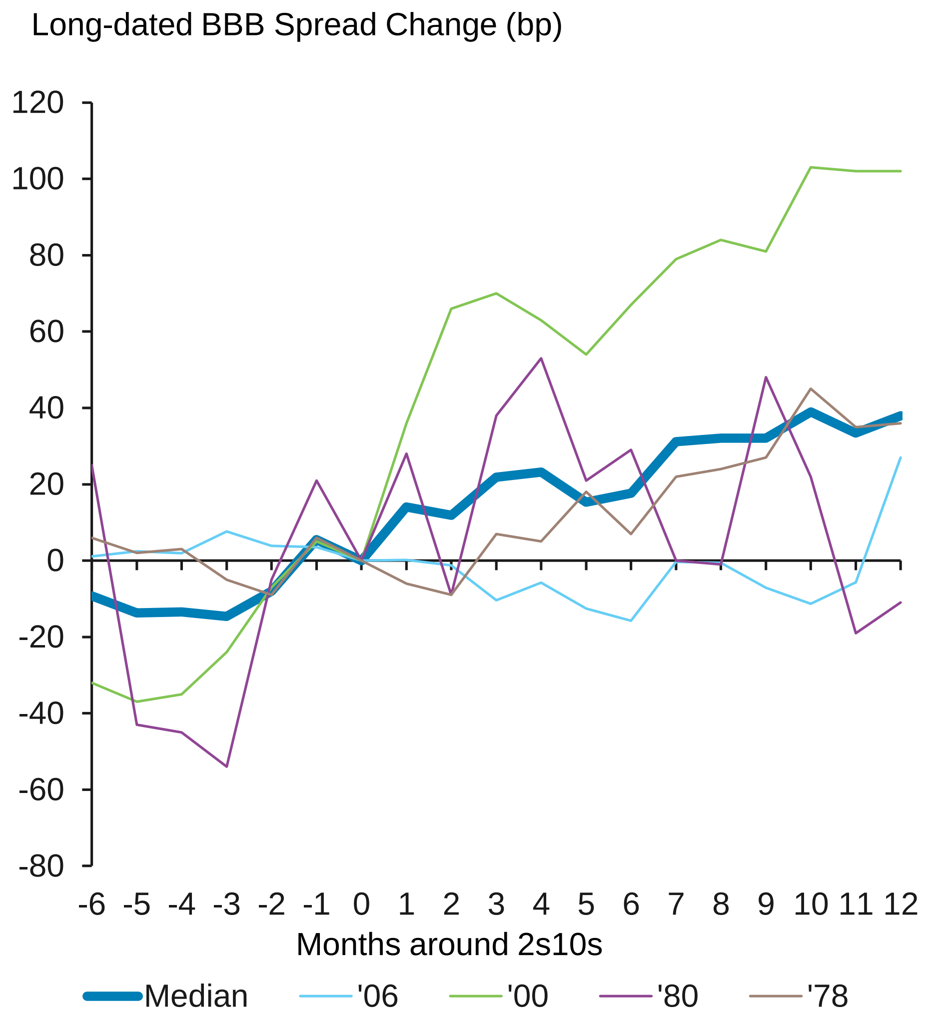
Factors and Their Relationship with Recession: Not Flashing Red Yet

Factors	Current State	Recession Indication (on average)
Treasury Curve Term Spread (2s10s and 3m10s)	2s10s and 3m10s are close to flat, near cycle lows	Recession starts 5Qs following 2s10s curve inversion (using 3m10s, it's ~4Qs)
Output Gap	Near top levels, hasn’t started to roll over	Output gap starts to roll over 3-4Qs before a recession
Jobless Claims	Low, but stagnating to slightly increasing	Jobless claims turn from decreasing to increasing 3Qs prior to a recession
Leading Economic Indicators	Trending lower after reaching multi-year highs last year, but still positive	Recession starts 2Qs after LEI turns negative Typically, a mini-cycle in the LEI (defined as zero to local peak, and back to zero) takes ~3y

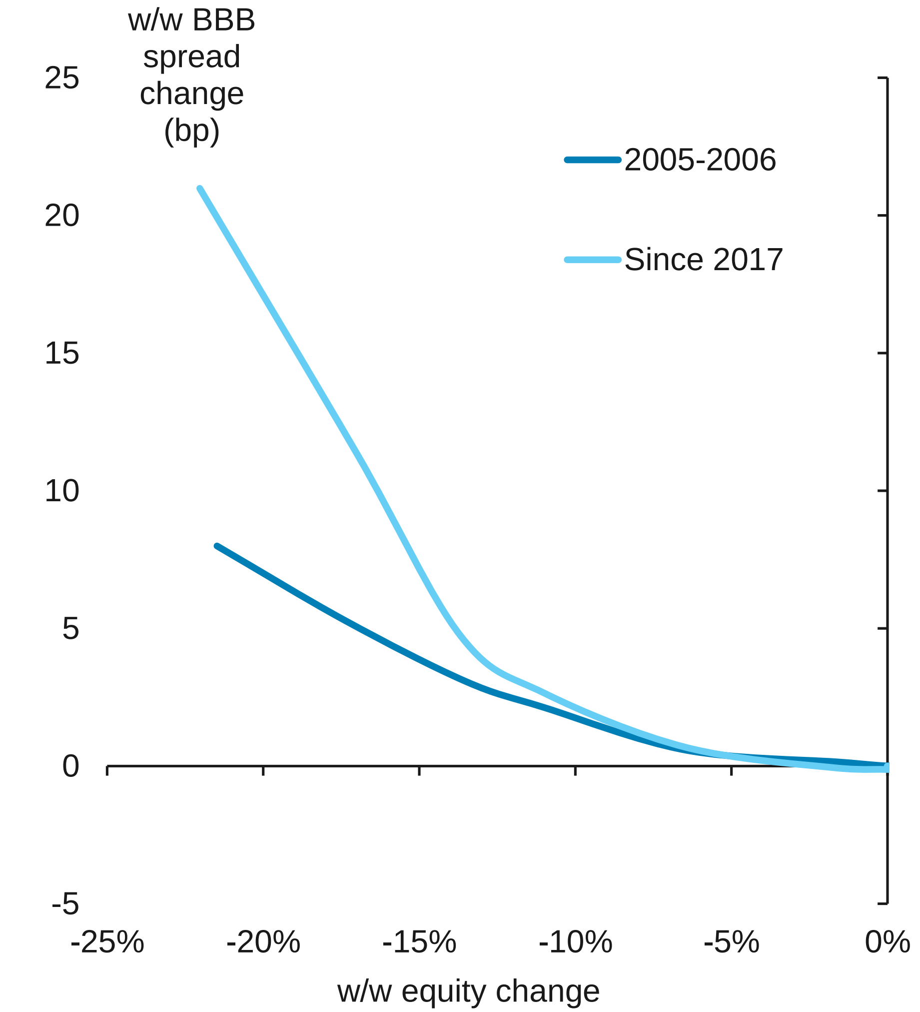
Source for all charts: Dealogic, S&P LCD, Bloomberg, Barclays Research

IG spreads react earlier than other asset classes to a weakening macro backdrop and could widen if 2s10s invert

Credit Sells Off around 2s10s Inversion



Credit Reacted Stronger to Equities Lately



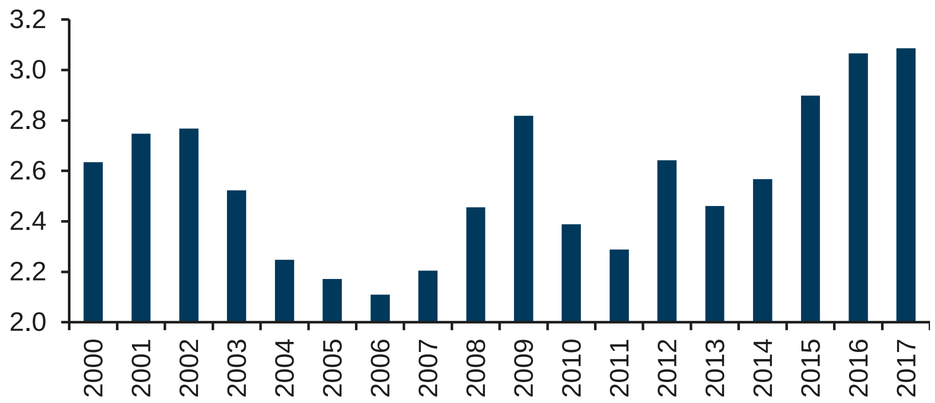
Source: Moody's, Bloomberg, Bloomberg Barclays Indices, Barclays Research

Corporate fundamentals still robust; BBBs are a growing concern

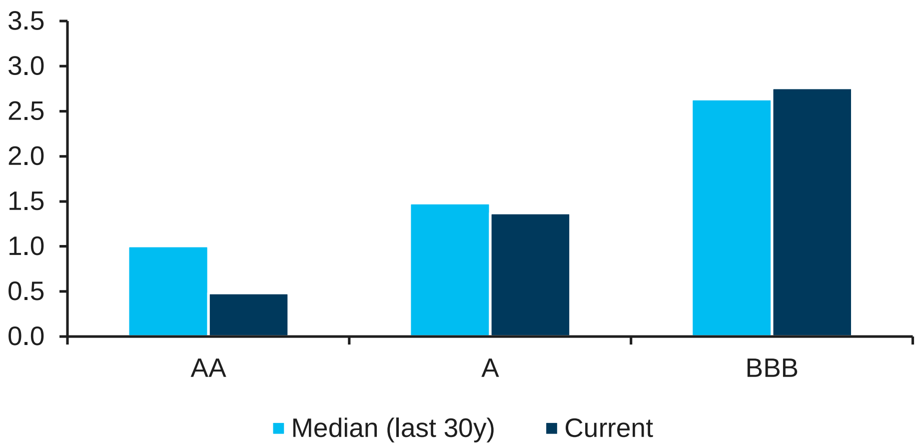
Some US credit metrics seem worrisome at first glance, but properly adjusted metrics look less troublesome

Simple Avg of IG Leverage Has Risen

IG gross leverage* (2017 cohort)

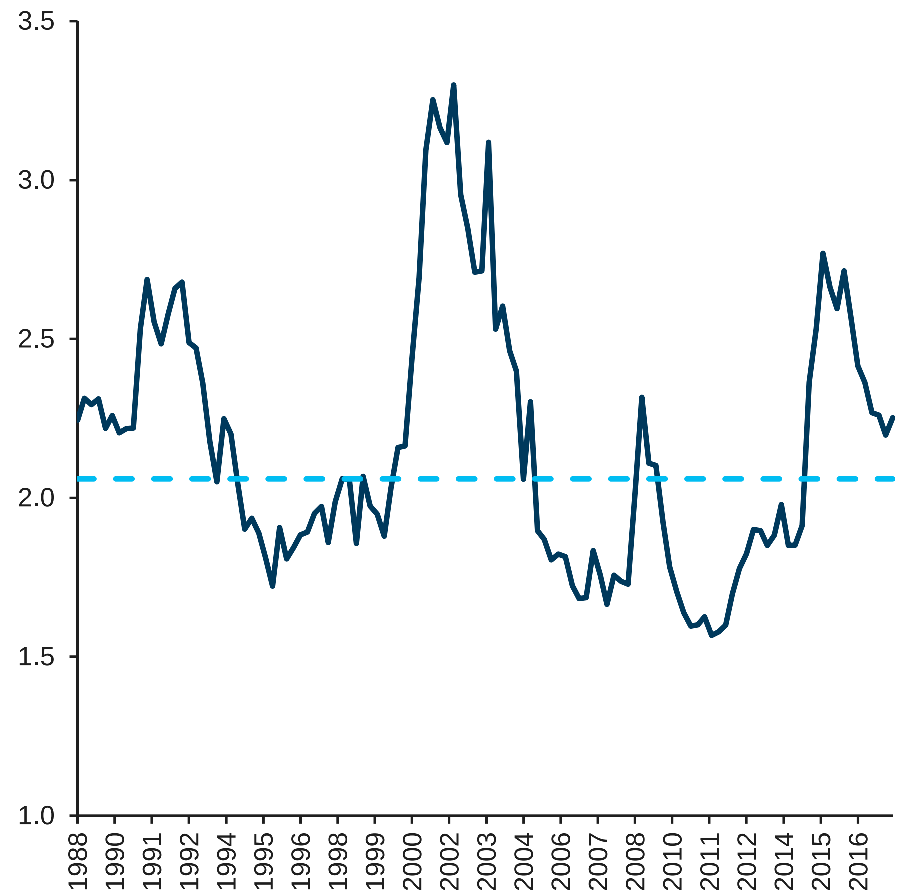


Net Leverage by Rating



Non-Fin Leverage Is Near Long-term Avg

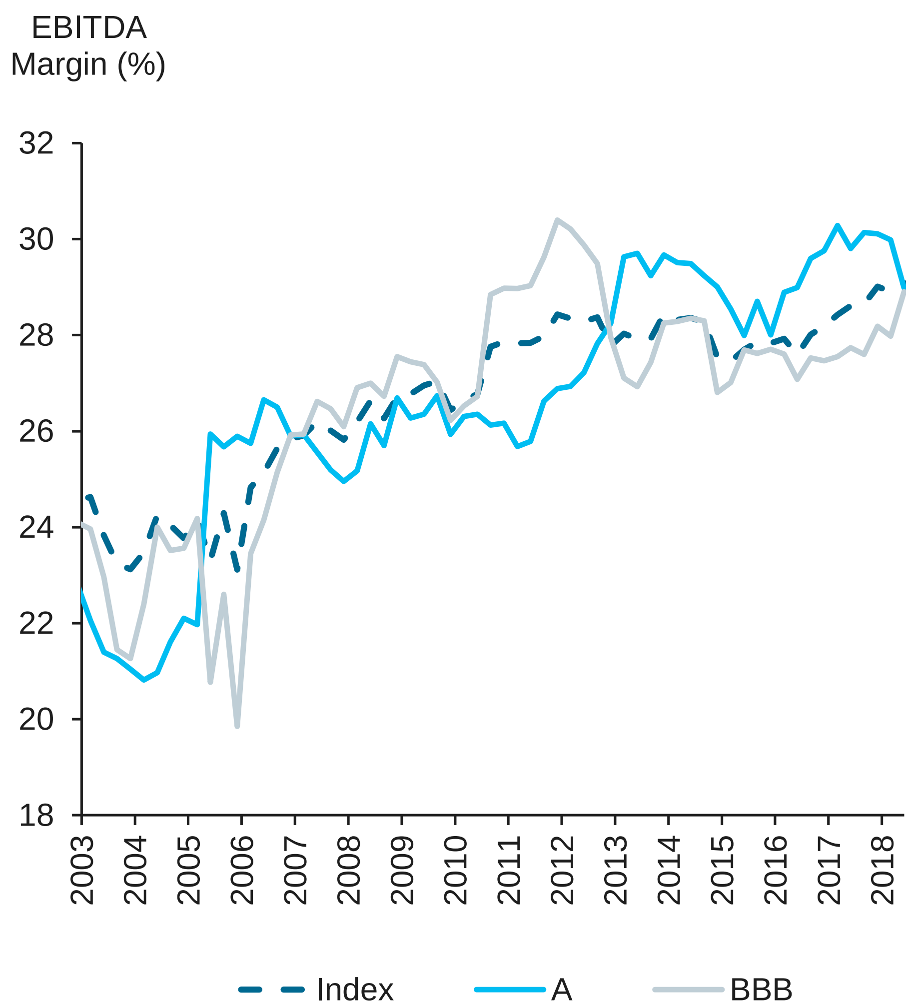
IG Index-Weighted Net Leverage (ex-financials)



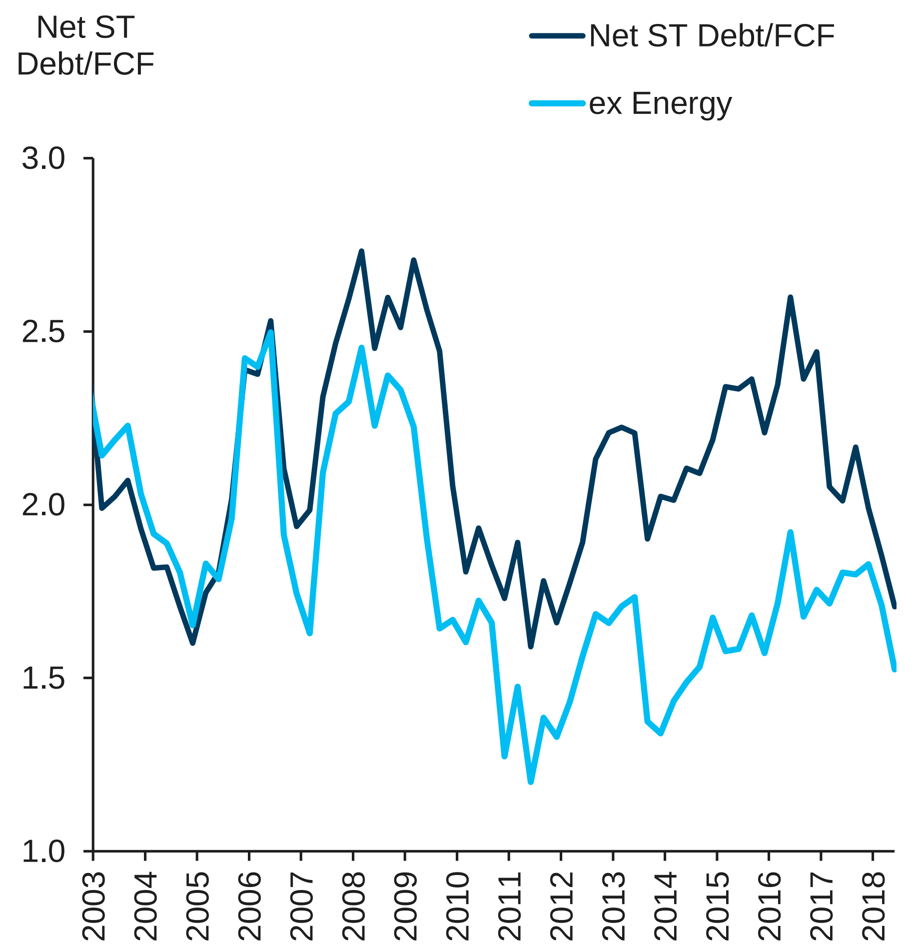
Note: Leverage and EBITDA data excludes financials. Source: Factset, Compustat, Bloomberg Barclays Indices, Barclays Research.

High EBITDA margin and low short-term debt likely to support valuations in a downturn

IG EBITDA Margins



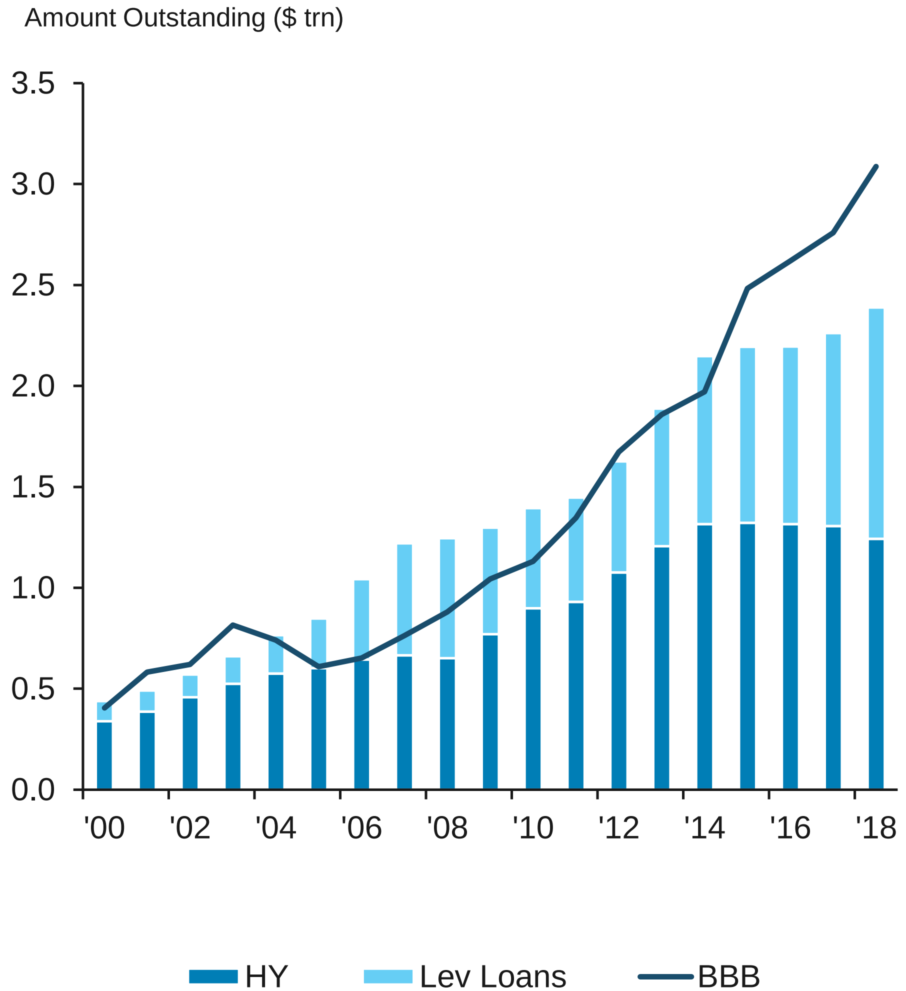
Reliance on Short-Term Debt Relative Is Near Lows



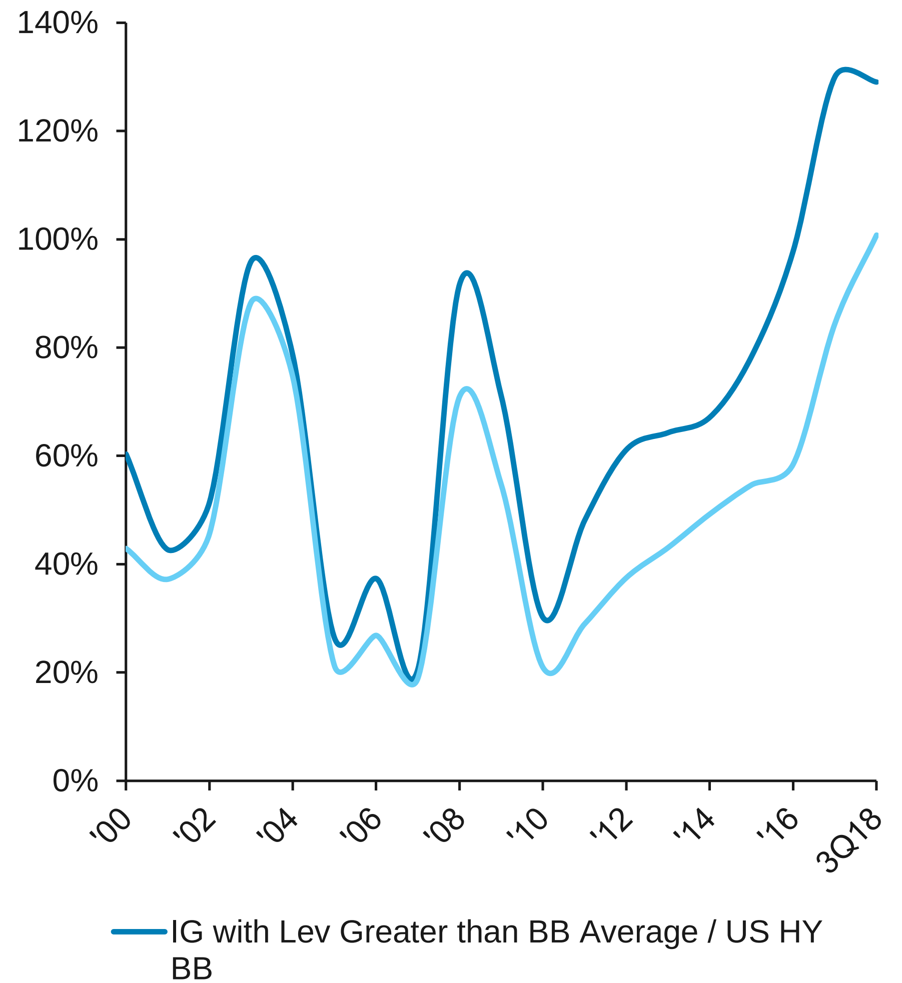
*For non-financial BBBs only. Please see *Beyond Leverage: Fundamental Factors That Matter*. Source for all charts: Factset, Bloomberg Barclays Indices, Bloomberg, Barclays Research

The increase in BBB debt poses a risk

BBB Market vs. HY & Leveraged Loans



Size: IG with Lev Above BB Avg vs. BB

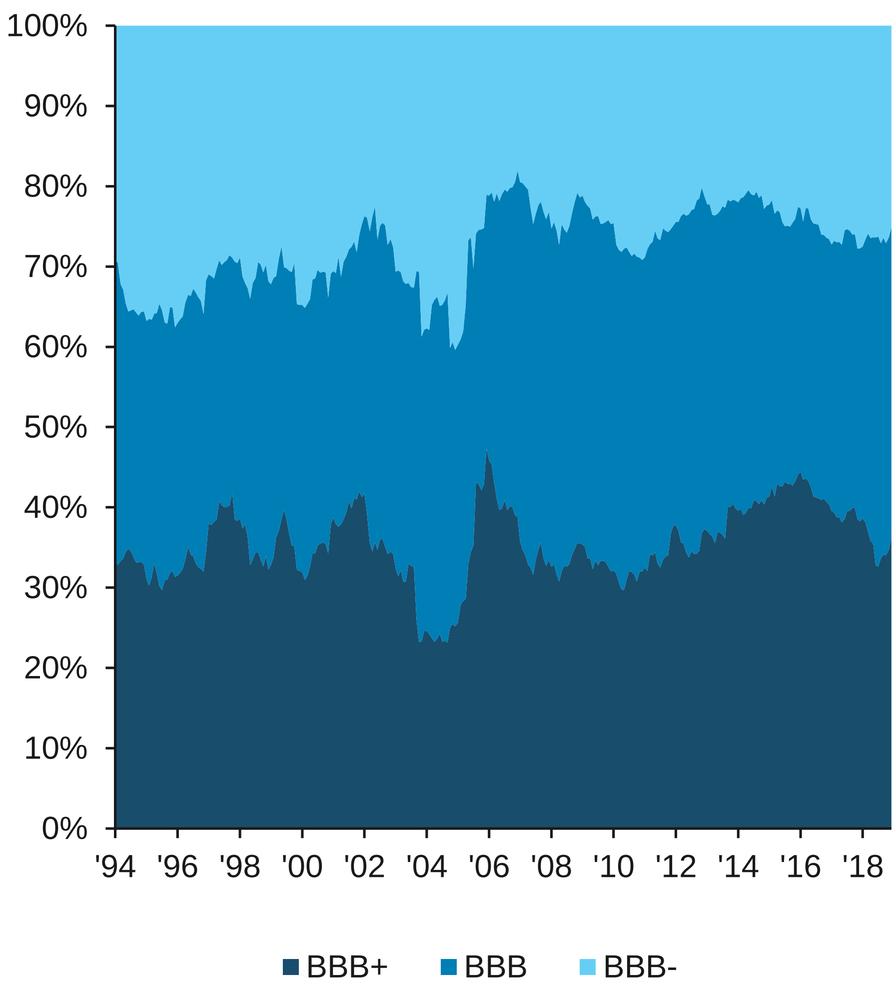


Note: For more details, see "Gauging the Effect of Falling BBBs" June 29, 2018. Source for all charts: Bloomberg, Bloomberg Barclays Indices, S&P LCD

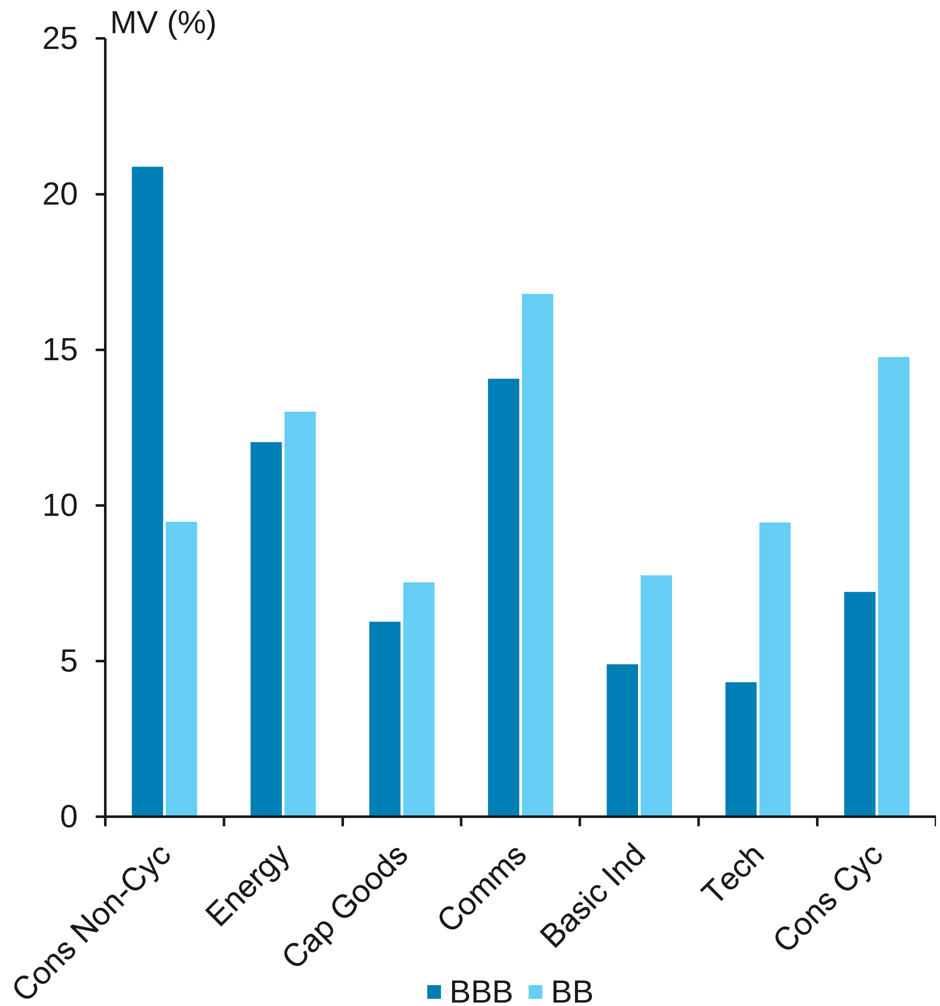
BARCLAYS

However, this is offset by more defensive nature of the highly leveraged issuers

Portion of BBB- Cohort Has Been Stable



BBB Skews More toward Cons Non-Cyclical



Note: For more details, see "Gauging the Effect of Falling BBBs" June 29, 2018. Source for all charts: Bloomberg, Bloomberg Barclays Indices, S&P LCD

Large BBBs are unlikely to go to HY: they have several levers to pull to avoid downgrades

Framework for evaluating large BBB company's likelihood of avoiding downgrades to HY

Large BBB
[eg. GE]

Ratings Challenge → Fallen Angel?

Ability:

Cut Dividend/Buyback
[$8.4bn ➤ $0.3bn]

Cut Capex
[$3.1bn ➤ $2.4bn]

Asset Sales
[Potential 3.1x deleveraging]

Willingness:

Financing needs
[~$100bn debt outstanding]

Business Model
[Sells expensive aircraft engines and gas turbines with long-term servicing contract in competitive markets]

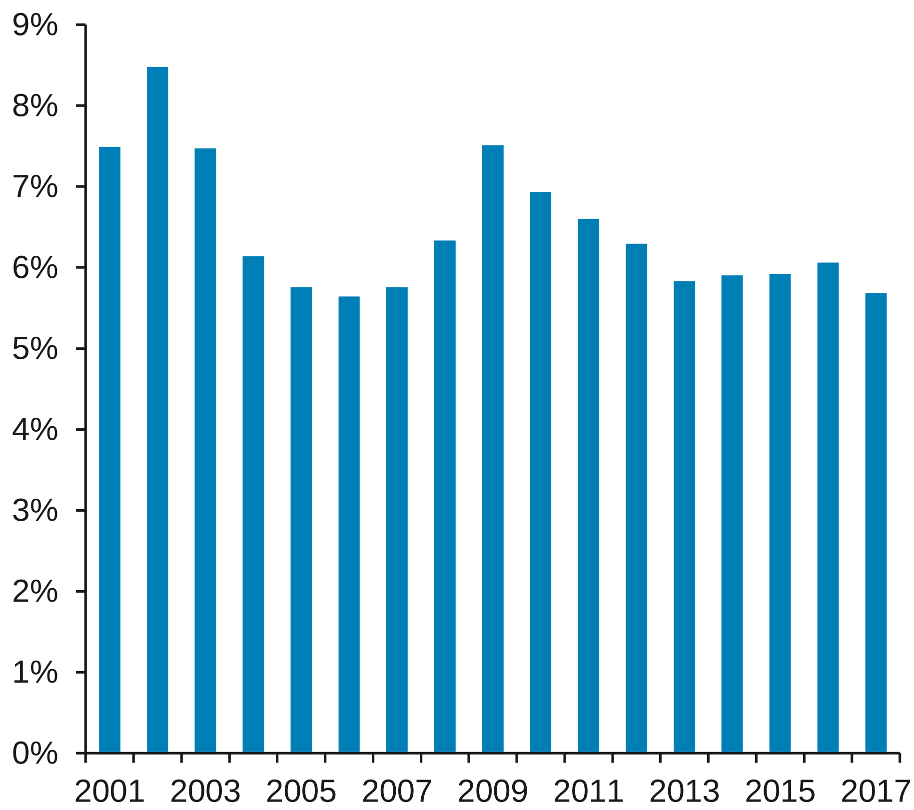
Operational Challenges
[Significant]

For more details see: US Credit Strategy: Big BBBs Won't Break Bad. Source: Barclays Research

Restricted - External

Insurance companies are underexposed to HY today and changes in risk factors should make fallen angels less punitive to hold

Insurance Allocation to HY Has Declined Over Time

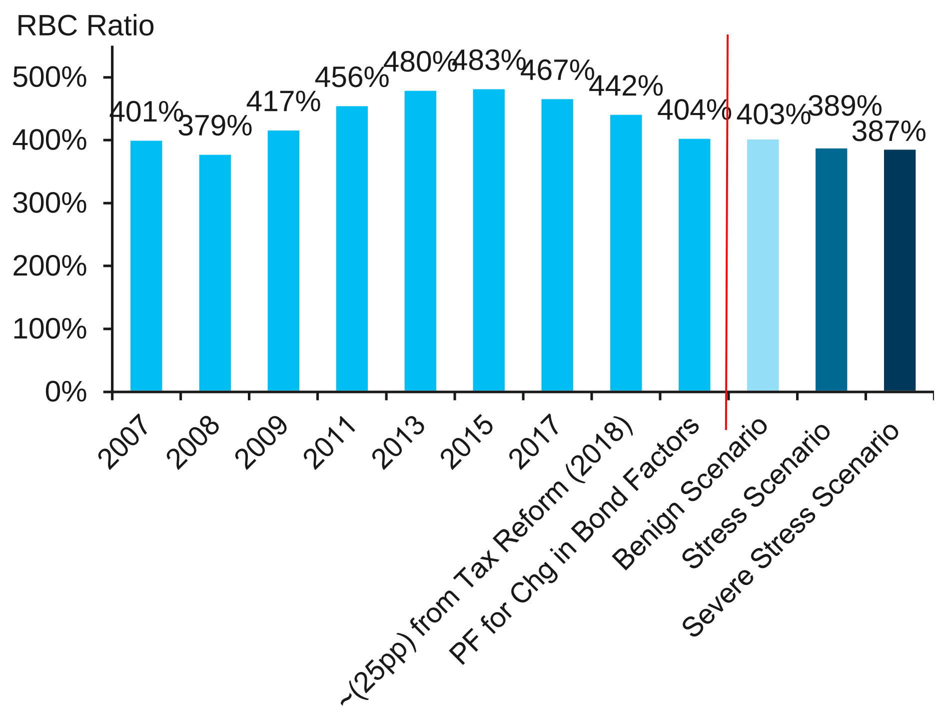


High Fallen Angel Volume: Minimal Incremental Effect to Insur. RBC Ratio

RBC ratio faces risk from a recessionary scenario, but layering on a high volume of fallen angels has minimal incremental effect

Stress scenario: rating migration patterns in line with Moody's rating transition data for 2007-08.

Severe scenario: stress scenario + large BBB downgrades

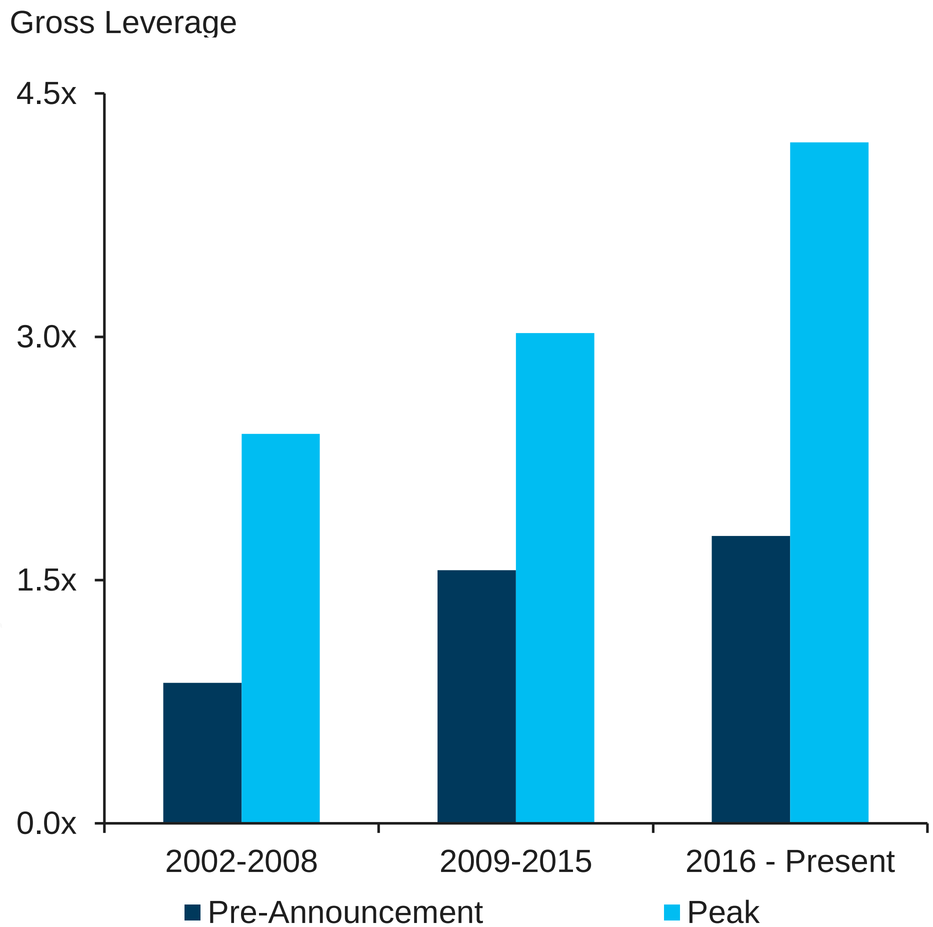


Note: For the risk factors, we assume tax factors for 2019 are the same as 2018. For bottom right chart, PF for Chg column reflects the life insurance industry aggregate RBC ratio at year-end 2017, pro forma for Barclays Research's estimates of the effects from changes in the RBC formula related to tax reform and the change in bond risk factors.
For more details, please see "Fallen Angels to See Less Selling Pressure from Life Insurers", Jan 22, 2019. Source for all charts: SNL, NAIC, Barclays Research

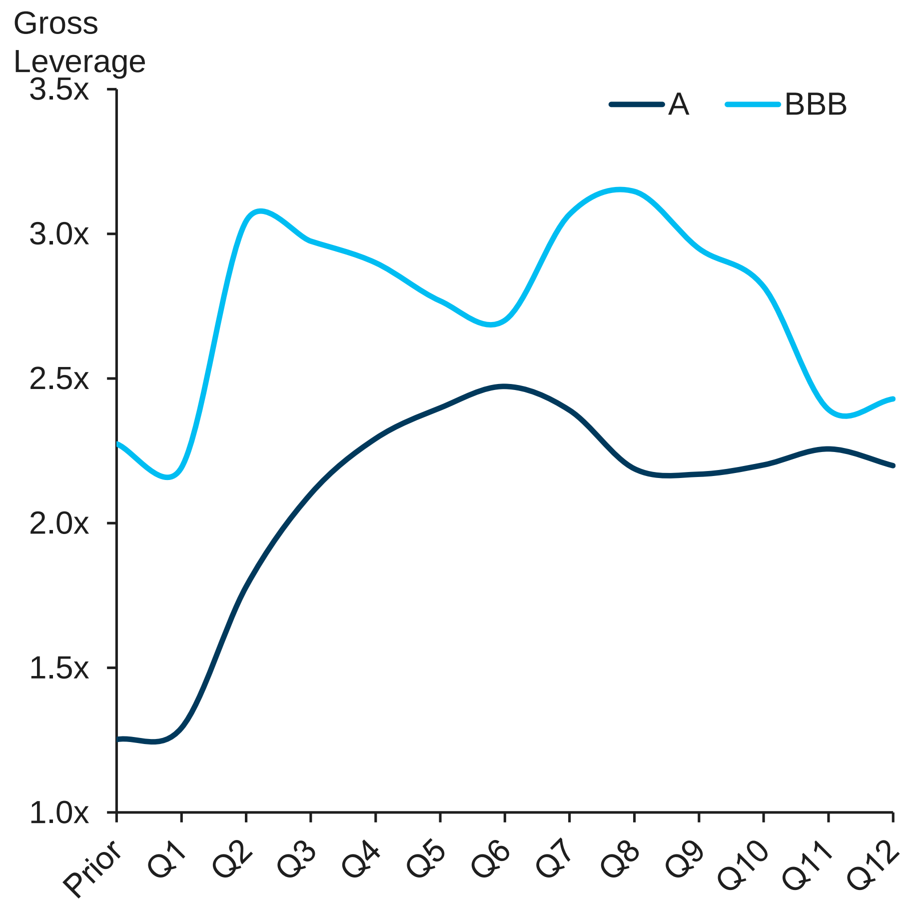
Our thoughts on debt-driven M&A

M&A credits could face Intra-IG downgrades: acquirers have added more leverage and higher quality credits have not deleveraged substantially

Most Recent M&A Cohort has the Highest Starting Lev. & Highest Peak Leverage



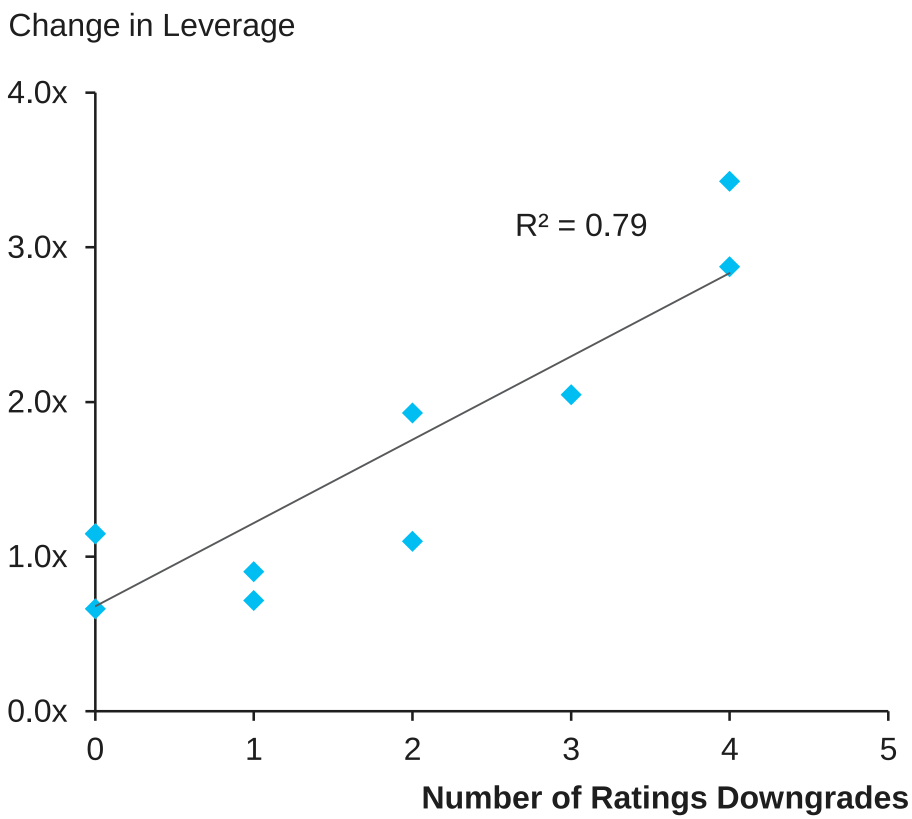
Unlike BBBs, As Tend to Keep Leverage Elevated after M&A



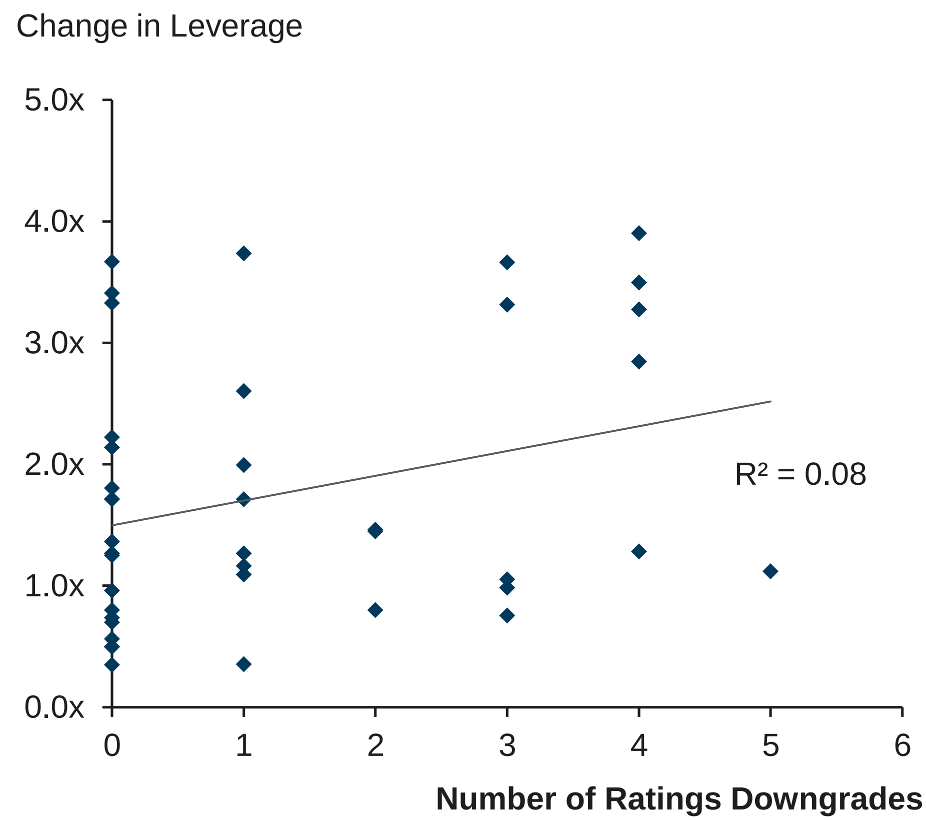
For more details, see "M&A Deleveraging Stuck in the Slow Lane," Aug 3, 2018. Source for all charts: Factset, Barclays Research

Rating agencies have been lenient but recently have been more stringent on M&A names late to deleverage

Leverage and Downgrades Correlated Pre-Crisis…



…But Not Post-Crisis

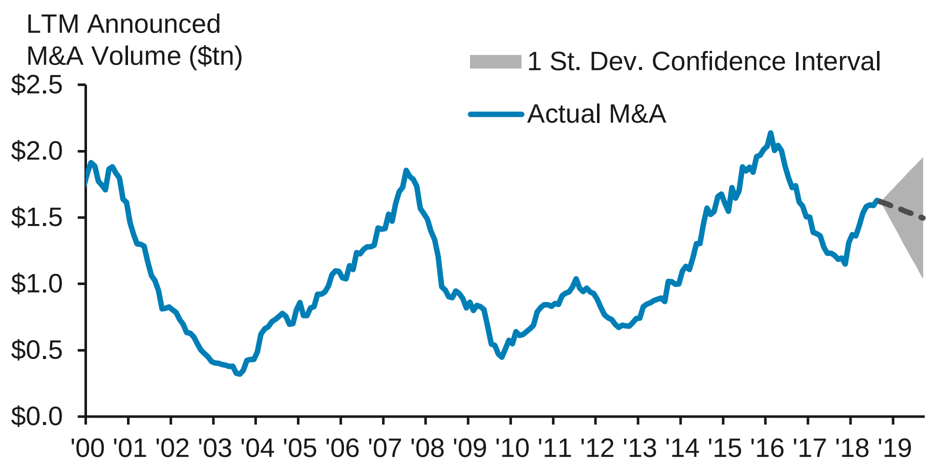


Source for all charts: Bloomberg Barclays Indices, Barclays Research

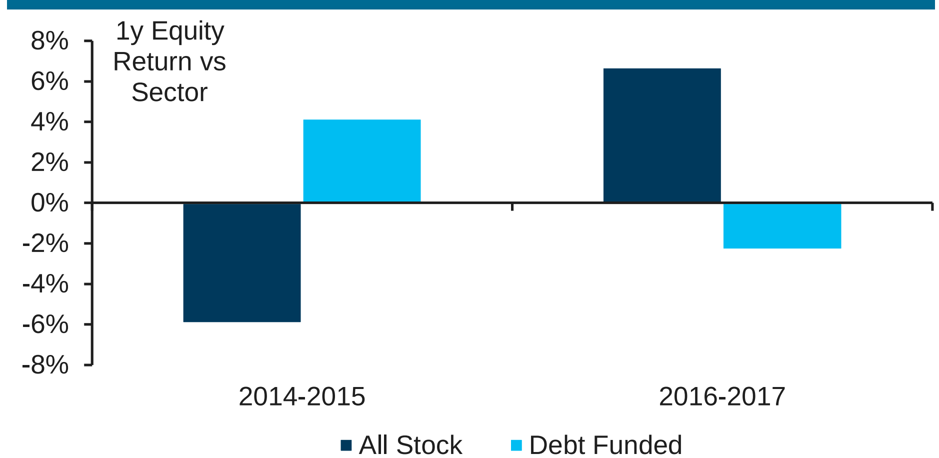
BARCLAYS

Cheap financing has driven debt-funded M&A, but companies are not being rewarded for debt-funded deals anymore

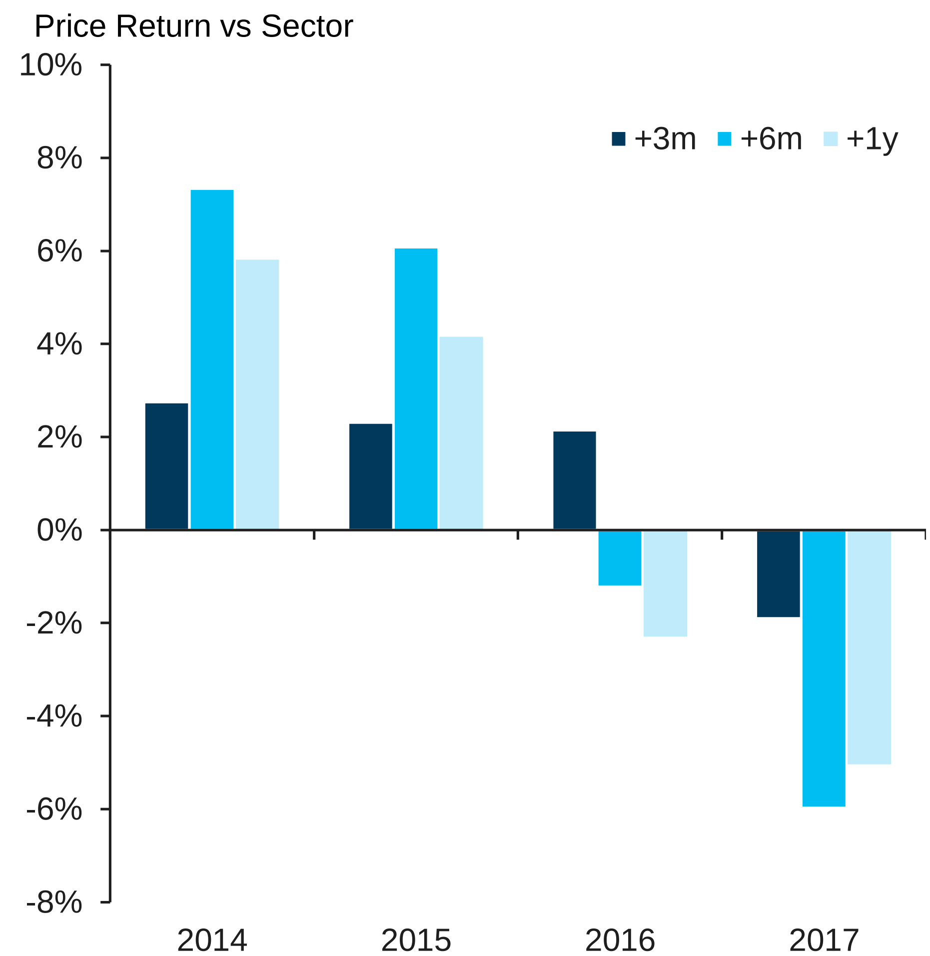
We expect M&A activity to decline



All Stock vs Debt-funded M&A Deals



Equity Performance of Debt-funded M&A*

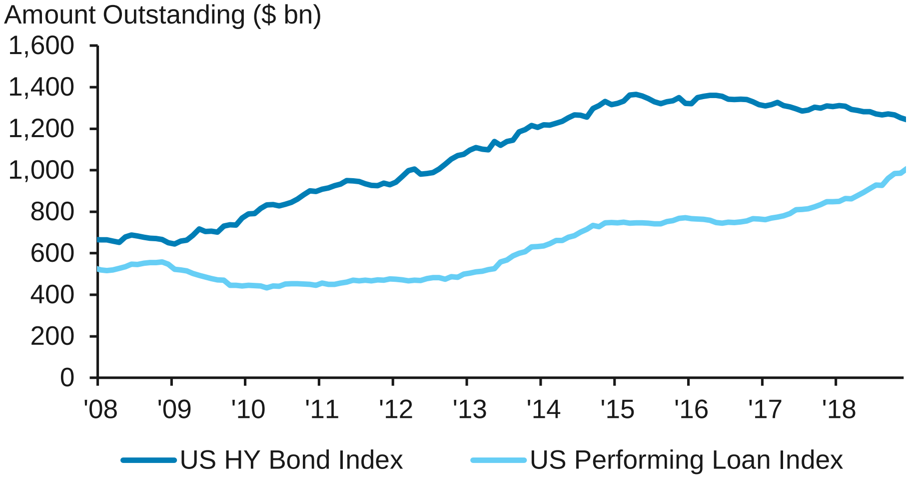


*: Our sample is naturally biased toward equities with higher credit quality, which have underperformed the broader market since 2016. 2017 deals announced within the past twelve months show to-date performance instead of +1y. For more details, see *Debt-Funded Acquisitions Lose Their Luster*, July 27, 2018. Source for all charts: Bloomberg, Bloomberg Barclays Indices, Barclays Research

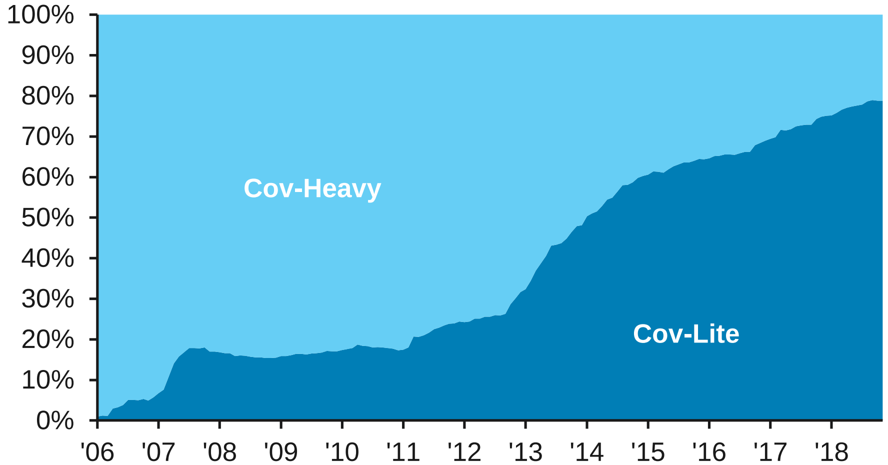
Concerns regarding leveraged loans are overdone

In loans, rapid growth and the loosening of protection have attracted scrutiny

Phenomenal Loan Market Growth



Cov-Lite Represent ~80% of the Loan Market



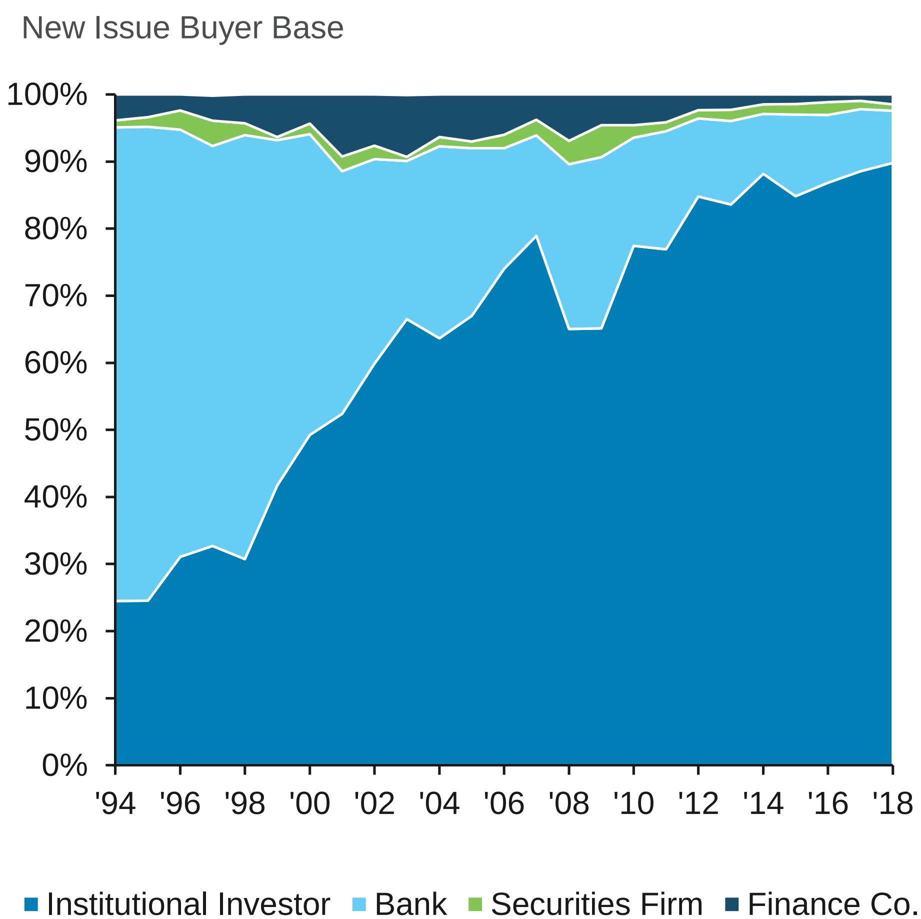
Its Not Just Cov-Lite

- Cov-heavy protections have deteriorated as well, as the number and types of covenants have declined
- New issue leverage has increased, particularly since the easing of the leveraged lending guidelines
- Bond cushion subordinated to loans has declined notably
- These almost surely have implications for loans themselves: lower recoveries, more bond-like performance
- But cov-lite still has the same protections as HY bonds…

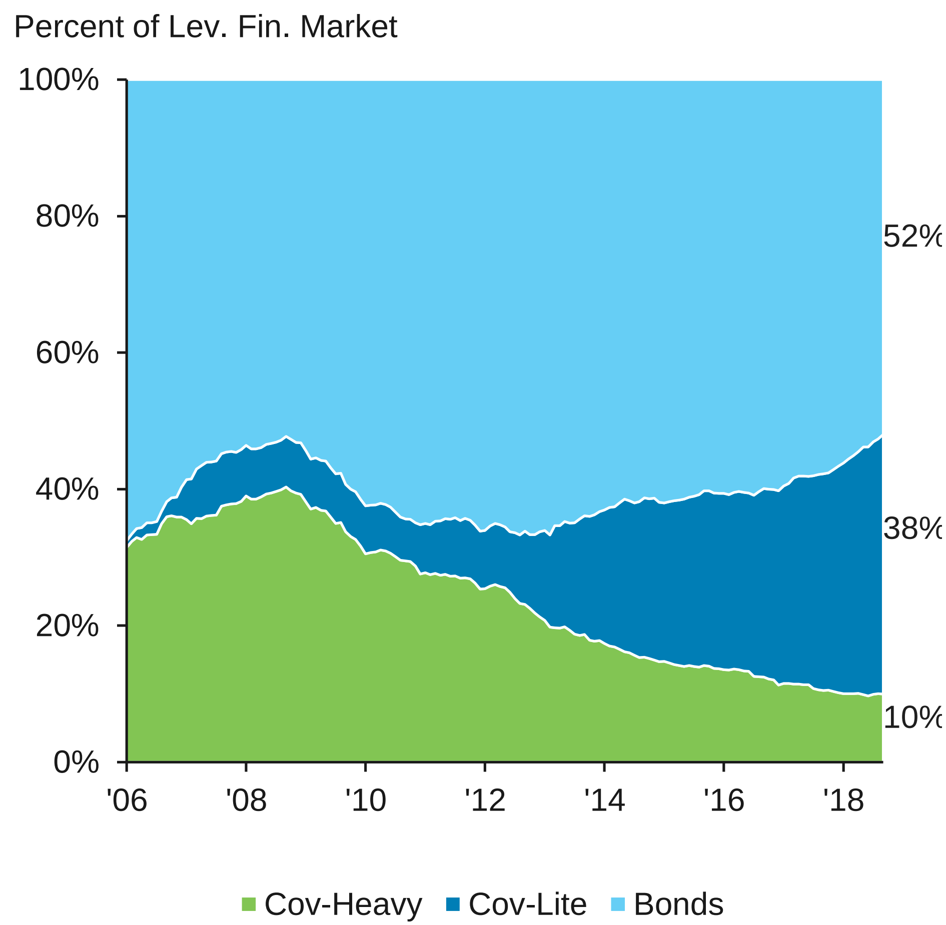
For more details, see "Covenant-Lite: An Evolution, Not a Revolution", February 20, 2019. Source for all charts: S&P LCD, Bloomberg, Bloomberg Barclays Indices, Barclays Research

Changing buyer base and shift from bonds to loans both limit any systemic concerns

Buyer Base Shifted from Banks to Institutional



Shift from Bonds to Loans in the Leveraged Finance Market

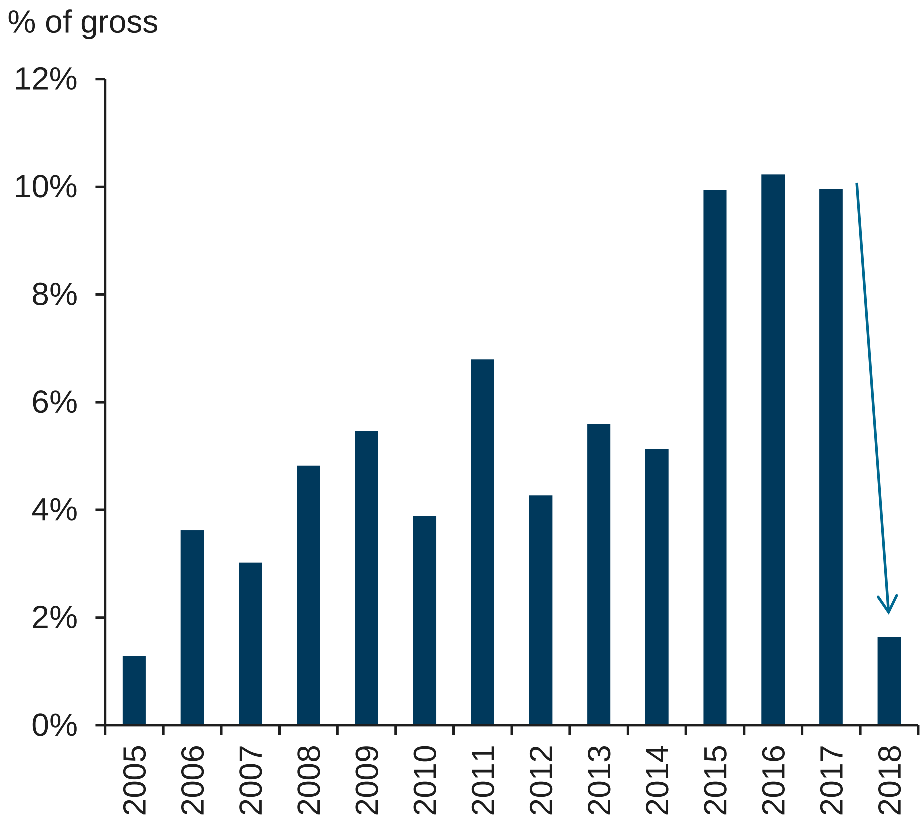


For more details, see "Covenant-Lite: An Evolution, Not a Revolution", February 20, 2019. Source for all charts: S&P LCD, Bloomberg, Bloomberg Barclays Indices, Barclays Research

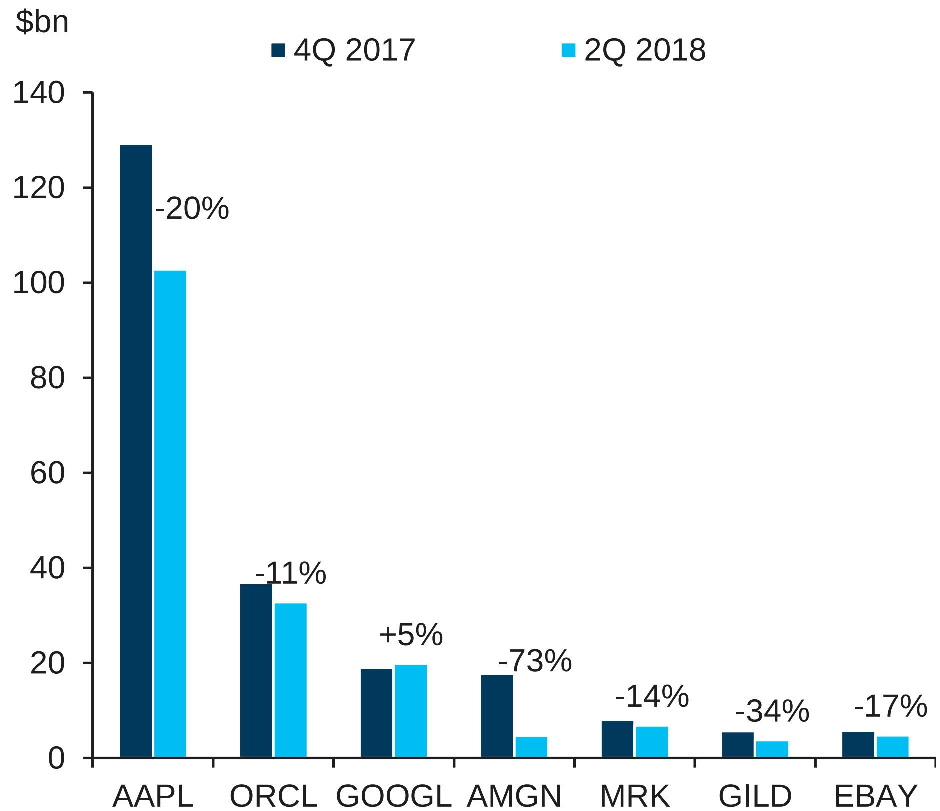
Tax reform should drive long-term deleveraging

The first-order effects of tax reform have been evident

Tech Supply has Slowed



Corp Bond Holdings Have Been Reduced



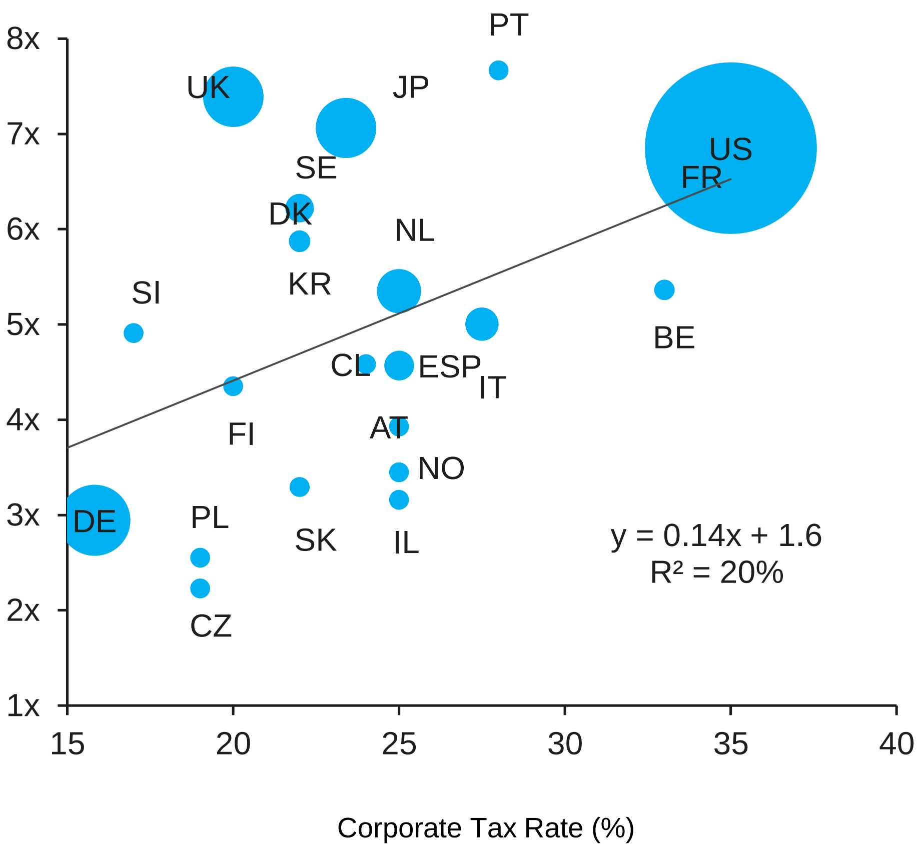
Source for all charts: Company Filings Bloomberg Barclays indices, Kinor, Barclays Research. US Credit Strategy *US Credit Focus: A Little Less Taxation, a Little More Action* , 27, April 2018.

BARCLAYS

Tax cuts should drive deleveraging – there is a positive relationship between tax rates and leverage

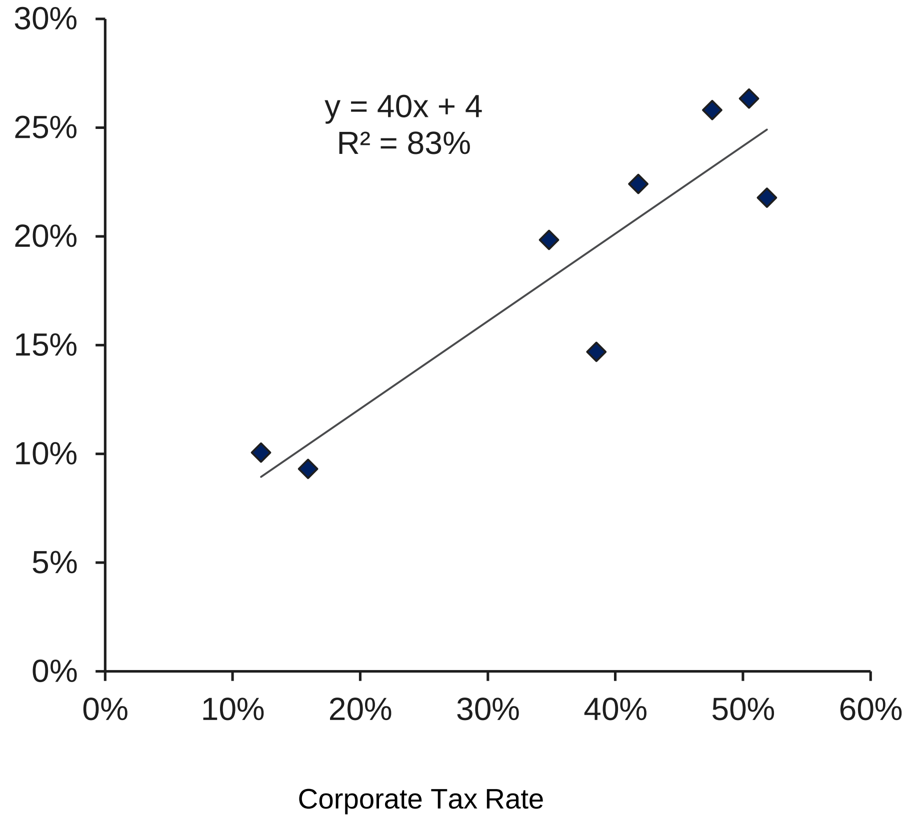
Leverage vs. Taxes across Countries

Non-Fin Debt to Operating Surplus



Lagged Relationship*

Total Debt/Assets

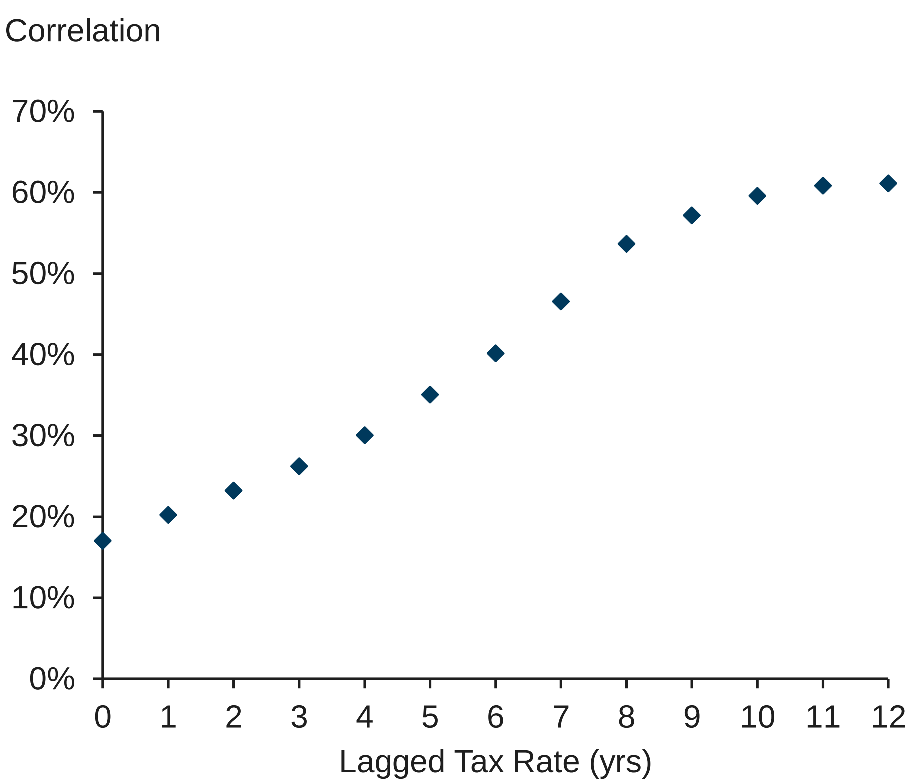


Note: Top Left chart data as of YE 2014. Bubble size corresponds to size of corporate debt market for each country. *For US only. Source: "Century of Capital Structure: The Leveraging of Corporate America," December 2012, Elsevier , OECD, Barclays Research +Assumes EBITDA growth rates of 5%/year . Source: Barclays Research. *A Tax on Leverage* 13 January 2017.

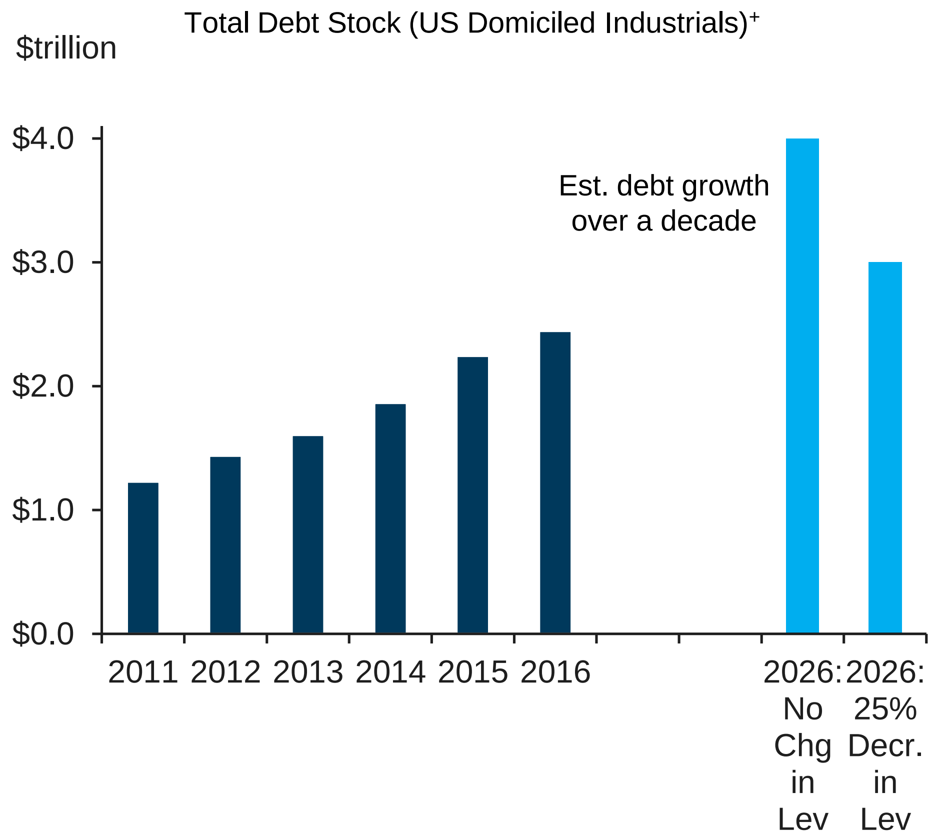
BARCLAYS

But this change has only started and will take up to a decade to be fully implemented

Correlation between Leverage and Tax Rates



Growth in Total Debt Stock Will Be Slower



Note: Top Left chart data as of YE 2014. Bubble size corresponds to size of corporate debt market for each country. *For US only. Source: "Century of Capital Structure: The Leveraging of Corporate America," December 2012, Elsevier , OECD, Barclays Research +Assumes EBITDA growth rates of 5%/year . Source: Barclays Research. *A Tax on Leverage* 13 January 2017.

Analyst Certifications and Important Disclosures

Analyst Certification(s)

I, Jeff Meli, hereby certify (1) that the views expressed in this research report accurately reflect my personal views about any or all of the subject securities or issuers referred to in this research report and (2) no part of my compensation was, is or will be directly or indirectly related to the specific recommendations or views expressed in this research report.

Important Disclosures:

Barclays Research is produced by the Investment Bank of Barclays Bank PLC and its affiliates (collectively and each individually, "Barclays").

All authors contributing to this research report are Research Analysts unless otherwise indicated. The publication date at the top of the report reflects the local time where the report was produced and may differ from the release date provided in GMT.

Availability of Disclosures:

For current important disclosures regarding any issuers which are the subject of this research report please refer to https://publicresearch.barclays.com or alternatively send a written request to: Barclays Research Compliance, 745 Seventh Avenue, 13th Floor, New York, NY 10019 or call +1-212-526-1072.

Barclays Capital Inc. and/or one of its affiliates does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that Barclays may have a conflict of interest that could affect the objectivity of this report. Barclays Capital Inc. and/or one of its affiliates regularly trades, generally deals as principal and generally provides liquidity (as market maker or otherwise) in the debt securities that are the subject of this research report (and related derivatives thereof). Barclays trading desks may have either a long and / or short position in such securities, other financial instruments and / or derivatives, which may pose a conflict with the interests of investing customers. Where permitted and subject to appropriate information barrier restrictions, Barclays fixed income research analysts regularly interact with its trading desk personnel regarding current market conditions and prices. Barclays fixed income research analysts receive compensation based on various factors including, but not limited to, the quality of their work, the overall performance of the firm (including the profitability of the Investment Banking Department), the profitability and revenues of the Markets business and the potential interest of the firm's investing clients in research with respect to the asset class covered by the analyst. To the extent that any historical pricing information was obtained from Barclays trading desks, the firm makes no representation that it is accurate or complete. All levels, prices and spreads are historical and do not necessarily represent current market levels, prices or spreads, some or all of which may have changed since the publication of this document. Barclays Research Department produces various types of research including, but not limited to, fundamental analysis, equity-linked analysis, quantitative analysis, and trade ideas. Recommendations and trade ideas contained in one type of Barclays Research may differ from those contained in other types of Barclays Research, whether as a result of differing time horizons, methodologies, or otherwise.

In order to access Barclays Statement regarding Research Dissemination Policies and Procedures, please refer to *https://publicresearch.barcap.com/S/RD.htm*. In order to access Barclays Research Conflict Management Policy Statement, please refer to: *https://publicresearch.barcap.com/S/CM.htm*.

All pricing information is indicative only. Prices are sourced from Thomson Reuters as of the last available closing price at the time of production of the research report, unless another time and source is indicated.

Explanation of the Barclays Research Corporate Credit Sector Rating System

Overweight (OW):

For sectors rated against the Bloomberg Barclays U.S. Credit Index, the Bloomberg Barclays Pan-European Credit Index, the Bloomberg Barclays EM Asia USD High Grade Credit Index or the Bloomberg Barclays EM USD Corporate and Quasi-Sovereign Index, the analyst expects the six-month excess return of the sector to exceed the six-month excess return of the relevant index.

For sectors rated against the Bloomberg Barclays U.S. High Yield 2% Issuer Capped Credit Index, the Bloomberg Barclays Pan-European High Yield 3% Issuer Capped Credit Index excluding Financials, the Bloomberg Barclays Pan-European High Yield Finance Index or the Bloomberg Barclays EM Asia USD High Yield Corporate Credit Index, the analyst expects the six-month total return of the sector to exceed the six-month total return of the relevant index.

Market Weight (MW):

For sectors rated against the Bloomberg Barclays U.S. Credit Index, the Bloomberg Barclays Pan-European Credit Index, the Bloomberg Barclays EM Asia USD High Grade Credit Index or the Bloomberg Barclays EM USD Corporate and Quasi-Sovereign Index, the analyst expects the six-month excess return of the sector to be in line with the six-month excess return of the relevant index.

For sectors rated against the Bloomberg Barclays U.S. High Yield 2% Issuer Capped Credit Index, the Bloomberg Barclays Pan-European High Yield 3% Issuer Capped Credit Index excluding Financials, the Bloomberg Barclays Pan-European High Yield Finance Index or the Bloomberg Barclays EM Asia USD High Yield Corporate Credit Index, the analyst expects the six-month total return of the sector to be in line with the six-month total return of the relevant index.

Restricted - External

Important Disclosures (continued)

Underweight (UW):

For sectors rated against the Bloomberg Barclays U.S. Credit Index, the Bloomberg Barclays Pan-European Credit Index, the Bloomberg Barclays EM Asia USD High Grade Credit Index or the Bloomberg Barclays EM USD Corporate and Quasi-Sovereign Index, the analyst expects the six-month excess return of the sector to be less than the six-month excess return of the relevant index.

For sectors rated against the Bloomberg Barclays U.S. High Yield 2% Issuer Capped Credit Index, the Bloomberg Barclays Pan-European High Yield 3% Issuer Capped Credit Index excluding Financials, the Bloomberg Barclays Pan-European High Yield Finance Index or the Bloomberg Barclays EM Asia USD High Yield Corporate Credit Index, the analyst expects the six-month total return of the sector to be less than the six-month total return of the relevant index.

Sector definitions:

Sectors in U.S. High Grade Research are defined using the sector definitions of the Bloomberg Barclays U.S. Credit Index and are rated against the Bloomberg Barclays U.S. Credit Index.

Sectors in U.S. High Yield Research are defined using the sector definitions of the Bloomberg Barclays U.S. High Yield 2% Issuer Capped Credit Index and are rated against the Bloomberg Barclays U.S. High Yield 2% Issuer Capped Credit Index.

Sectors in European High Grade Research are defined using the sector definitions of the Bloomberg Barclays Pan-European Credit Index and are rated against the Bloomberg Barclays Pan-European Credit Index.

Sectors in Industrials and Utilities in European High Yield Research are defined using the sector definitions of the Bloomberg Barclays Pan-European High Yield 3% Issuer Capped Credit Index excluding Financials and are rated against the Bloomberg Barclays Pan-European High Yield 3% Issuer Capped Credit Index excluding Financials.

Sectors in Financials in European High Yield Research are defined using the sector definitions of the Bloomberg Barclays Pan-European High Yield Finance Index and are rated against the Bloomberg Barclays Pan-European High Yield Finance Index.

Sectors in Asia High Grade Research are defined on Barclays Live and are rated against the Bloomberg Barclays EM Asia USD High Grade Credit Index.

Sectors in Asia High Yield Research are defined on Barclays Live and are rated against the Bloomberg Barclays EM Asia USD High Yield Corporate Credit Index.

Sectors in EEMEA and Latin America Research are defined on Barclays Live and are rated against the Bloomberg Barclays EM USD Corporate and Quasi Sovereign Index. These sectors may contain both High Grade and High Yield issuers.

To view sector definitions and monthly sector returns for Asia, EEMEA and Latin America Research, go to https://live.barcap.com/go/research/EMSectorReturns on Barclays Live.

Explanation of the Barclays Research Corporate Credit Rating System

For all High Grade issuers covered in the US, Europe or Asia, and for all issuers in Latin America and EEMEA, the credit rating system is based on the analyst's view of the expected excess return over a six-month period of the issuer's index-eligible corporate debt securities* relative to the expected excess return of the relevant sector, as specified on the report.

Overweight (OW): The analyst expects the six-month excess return of the issuer's index-eligible corporate debt securities to exceed the six-month expected excess return of the relevant sector.

Market Weight (MW): The analyst expects the six-month excess return of the issuer's index-eligible corporate debt securities to be in line with the six-month expected excess return of the relevant sector.

Underweight (UW): The analyst expects the six-month excess return of the issuer's index-eligible corporate debt securities to be less than the six-month expected excess return of the relevant sector.

Rating Suspended (RS): The rating has been suspended temporarily due to market events that make coverage impracticable or to comply with applicable regulations and/or firm policies in certain circumstances including where the Investment Bank of Barclays Bank PLC is acting in an advisory capacity in a merger or strategic transaction involving the company.

Coverage Suspended (CS): Coverage of this issuer has been temporarily suspended.

Not Covered (NC): Barclays' fundamental credit research team does not provide formal, continuous coverage of this issuer and has not assigned a rating to the issuer or its debt securities. Any analysis, opinion or trade recommendation provided on a Not Covered issuer or its debt securities is valid only as of the publication date of this report and there should be no expectation that additional reports relating to the Not Covered issuer or its debt securities will be published thereafter.

Restricted - External

Important Disclosures (continued)

For all High Yield issuers (excluding those covered in EEMEA or Latin America), the credit rating system is based on the analyst's view of the expected total returns over a six-month period of the rated debt security relative to the expected total return of the relevant sector, as specified on the report.

Overweight (OW): The analyst expects the six-month total return of the debt security subject to this rating to exceed the six-month expected total return of the relevant sector.

Market Weight (MW): The analyst expects the six-month total return of the debt security subject to this rating to be in line with the six-month expected total return of the relevant sector.

Underweight (UW): The analyst expects the six-month total return of the rated debt security subject to this rating to be less than the six-month expected total return of the relevant sector.

Rating Suspended (RS): The rating has been suspended temporarily due to market events that make coverage impracticable or to comply with applicable regulations and/or firm policies in certain circumstances including where the Investment Bank of Barclays Bank PLC is acting in an advisory capacity in a merger or strategic transaction involving the company.

Coverage Suspended (CS): Coverage of this issuer has been temporarily suspended.

Not Covered (NC): Barclays' fundamental credit research team does not provide formal, continuous coverage of this issuer and has not assigned a rating to the issuer or its debt securities. Any analysis, opinion or trade recommendation provided on a Not Covered issuer or its debt securities is valid only as of the publication date of this report and there should be no expectation that additional reports relating to the Not Covered issuer or its debt securities will be published thereafter.

Where a recommendation is made at the issuer level, it does not apply to any sanctioned securities, where trading in such securities would be prohibited under applicable law, including sanctions laws and regulations.

*In EEMEA and Latin America (and in certain other limited instances in other regions), analysts may occasionally rate issuers that are not part of the Bloomberg Barclays U.S. Credit Index, the Bloomberg Barclays Pan-European Credit Index, the Bloomberg Barclays EM Asia USD High Grade Credit Index or Bloomberg Barclays EM USD Corporate and Quasi Sovereign Index. In such cases the rating will reflect the analyst's view of the expected excess return over a six-month period of the issuer's corporate debt securities relative to the expected excess return of the relevant sector, as specified on the report.

Distribution of ratings assigned by Barclays Corporate Credit Research at the issuer level:

23% have been assigned an Overweight rating which, for purposes of mandatory regulatory disclosures, is classified as a Buy rating; 65% of issuers with this rating category are investment banking clients of the Firm; 80% of the issuers with this rating have received financial services from the Firm.

53% have been assigned Market Weight rating which, for purposes of mandatory regulatory disclosures, is classified as a Hold rating; 68% of issuers with this rating category are investment banking clients of the Firm; 80% of the issuers with this rating have received financial services from the Firm.

24% have been assigned an Underweight rating which, for purposes of mandatory regulatory disclosures, is classified as a Sell rating; 68% of issuers with this rating category are investment banking clients of the Firm; 79% of the issuers with this rating have received financial services from the Firm.

Distribution of ratings assigned by Barclays Corporate Credit Research at the bond level:

26% have been assigned an Overweight rating which, for purposes of mandatory regulatory disclosures, is classified as a Buy rating; 59% of bonds with this rating category are investment banking clients of the Firm; 70% of the issuers with this rating have received financial services from the Firm.

52% have been assigned Market Weight rating which, for purposes of mandatory regulatory disclosures, is classified as a Hold rating; 55% of bonds with this rating category are investment banking clients of the Firm; 76% of the issuers with this rating have received financial services from the Firm.

22% have been assigned an Underweight rating which, for purposes of mandatory regulatory disclosures, is classified as a Sell rating; 49% of bonds with this rating category are investment banking clients of the Firm; 73% of the issuers with this rating have received financial services from the Firm.

Restricted - External

Important Disclosures (continued)

Types of investment recommendations produced by Barclays FICC Research:

In addition to any ratings assigned under Barclays' formal rating systems, this publication may contain investment recommendations in the form of trade ideas, thematic screens, scorecards or portfolio recommendations that have been produced by analysts in FICC Research. Any such investment recommendations produced by non-Credit Research teams shall remain open until they are subsequently amended, rebalanced or closed in a future research report. Any such investment recommendations produced by the Credit Research teams are valid at current market conditions and may not be otherwise relied upon.

Disclosure of other investment recommendations produced by Barclays FICC Research:

Barclays FICC Research may have published other investment recommendations in respect of the same securities/instruments recommended in this research report during the preceding 12 months. To view all investment recommendations published by Barclays FICC Research in the preceding 12 months please refer to *https://live.barcap.com/go/research/Recommendations*.

Legal entities involved in producing Barclays Research:

Barclays Bank PLC (Barclays, UK)

Barclays Capital Inc. (BCI, US)

Barclays Bank Ireland Plc, Frankfurt Branch (BBI, Frankfurt)

Barclays Securities Japan Limited (BSJL, Japan)

Barclays Bank PLC, Hong Kong branch (Barclays Bank, Hong Kong)

Barclays Capital Canada Inc. (BCCI, Canada)

Barclays Bank Mexico, S.A. (BBMX, Mexico)

Barclays Securities (India) Private Limited (BSIPL, India)

Barclays Bank PLC, India branch (Barclays Bank, India)

Barclays Bank PLC, Singapore branch (Barclays Bank, Singapore)

Restricted - External

Disclaimer

This publication has been produced by Barclays Research Department in the Investment Bank of Barclays Bank PLC and/or one or more of its affiliates (collectively and each individually, "Barclays"). It has been distributed by one or more Barclays affiliated legal entities listed below. It is provided to our clients for information purposes only, and Barclays makes no express or implied warranties, and expressly disclaims all warranties of merchantability or fitness for a particular purpose or use with respect to any data included in this publication. To the extent that this publication states on the front page that it is intended for institutional investors and is not subject to all of the independence and disclosure standards applicable to debt research reports prepared for retail investors under U.S. FINRA Rule 2242, it is an "institutional debt research report" and distribution to retail investors is strictly prohibited. Barclays also distributes such institutional debt research reports to various issuers, media, regulatory and academic organisations for their own internal informational news gathering, regulatory or academic purposes and not for the purpose of making investment decisions regarding any debt securities. Media organisations are prohibited from re-publishing any opinion or recommendation concerning a debt issuer or debt security contained in any Barclays institutional debt research report. Any such recipients that do not want to continue receiving Barclays institutional debt research reports should contact debtresearch@barclays.com. Barclays will not treat unauthorized recipients of this report as its clients and accepts no liability for use by them of the contents which may not be suitable for their personal use. Prices shown are indicative and Barclays is not offering to buy or sell or soliciting offers to buy or sell any financial instrument.

Without limiting any of the foregoing and to the extent permitted by law, in no event shall Barclays, nor any affiliate, nor any of their respective officers, directors, partners, or employees have any liability for (a) any special, punitive, indirect, or consequential damages; or (b) any lost profits, lost revenue, loss of anticipated savings or loss of opportunity or other financial loss, even if notified of the possibility of such damages, arising from any use of this publication or its contents.

Other than disclosures relating to Barclays, the information contained in this publication has been obtained from sources that Barclays Research believes to be reliable, but Barclays does not represent or warrant that it is accurate or complete. Barclays is not responsible for, and makes no warranties whatsoever as to, the information or opinions contained in any written, electronic, audio or video presentations of third parties that are accessible via a direct hyperlink in this publication or via a hyperlink to a third-party web site ('Third-Party Content'). Any such Third-Party Content has not been adopted or endorsed by Barclays, does not represent the views or opinions of Barclays, and is not incorporated by reference into this publication. Third-Party Content is provided for information purposes only and Barclays has not independently verified its accuracy or completeness.

The views in this publication are solely and exclusively those of the authoring analyst(s) and are subject to change, and Barclays Research has no obligation to update its opinions or the information in this publication. Unless otherwise disclosed herein, the analysts who authored this report have not received any compensation from the subject companies in the past 12 months. If this publication contains recommendations, they are general recommendations that were prepared independently of any other interests, including those of Barclays and/or its affiliates, and/or the subject companies. This publication does not contain personal investment recommendations or investment advice or take into account the individual financial circumstances or investment objectives of the clients who receive it. The securities and other investments discussed herein may not be suitable for all investors. Barclays is not a fiduciary to any recipient of this publication. Investors must independently evaluate the merits and risks of the investments discussed herein, consult any independent advisors they believe necessary, and exercise independent judgment with regard to any investment decision. The value of and income from any investment may fluctuate from day to day as a result of changes in relevant economic markets (including changes in market liquidity). The information herein is not intended to predict actual results, which may differ substantially from those reflected. Past performance is not necessarily indicative of future results.

This document is being distributed (1) only by or with the approval of an authorised person (Barclays Bank PLC) or (2) to, and is directed at (a) persons in the United Kingdom having professional experience in matters relating to investments and who fall within the definition of "investment professionals" in Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (the "Order"); or (b) high net worth companies, unincorporated associations and partnerships and trustees of high value trusts as described in Article 49(2) of the Order; or (c) other persons to whom it may otherwise lawfully be communicated (all such persons being "Relevant Persons"). Any investment or investment activity to which this communication relates is only available to and will only be engaged in with Relevant Persons. Any other persons who receive this communication should not rely on or act upon it. Barclays Bank PLC is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority and is a member of the London Stock Exchange.

The Investment Bank of Barclays Bank PLC undertakes U.S. securities business in the name of its wholly owned subsidiary Barclays Capital Inc., a FINRA and SIPC member. Barclays Capital Inc., a U.S. registered broker/dealer, is distributing this material in the United States and, in connection therewith accepts responsibility for its contents. Any U.S. person wishing to effect a transaction in any security discussed herein should do so only by contacting a representative of Barclays Capital Inc. in the U.S. at 745 Seventh Avenue, New York, New York 10019.

Non-U.S. persons should contact and execute transactions through a Barclays Bank PLC branch or affiliate in their home jurisdiction unless local regulations permit otherwise.

Barclays Bank PLC, Paris Branch (registered in France under Paris RCS number 381 066 281) is regulated by the Autorité des marchés financiers and the Autorité de contrôle prudentiel. Registered office 34/36 Avenue de Friedland 75008 Paris.

This material is distributed in Canada by Barclays Capital Canada Inc., a registered investment dealer, a Dealer Member of IIROC (www.iiroc.ca), and a Member of the Canadian Investor Protection Fund (CIPF).

All Barclays research reports are distributed to institutional investors in Japan by Barclays Securities Japan Limited. Barclays Securities Japan Limited is a joint-stock company incorporated in Japan with registered office of 6-10-1 Roppongi, Minato-ku, Tokyo 106-6131, Japan. It is a subsidiary of Barclays Bank PLC and a registered financial instruments firm regulated by the Financial Services Agency of Japan. Registered Number: Kanto Zaimukyokucho (kinsho) No. 143.

Restricted - External

Disclaimer (continued)

Barclays Bank PLC, Hong Kong Branch is distributing this material in Hong Kong as an authorised institution regulated by the Hong Kong Monetary Authority. Registered Office: 41/F, Cheung Kong Center, 2 Queen's Road Central, Hong Kong.

All Indian securities-related research and other equity research produced by Barclays' Investment Bank are distributed in India by Barclays Securities (India) Private Limited (BSIPL). BSIPL is a company incorporated under the Companies Act, 1956 having CIN U67120MH2006PTC161063. BSIPL is registered and regulated by the Securities and Exchange Board of India (SEBI) as a Research Analyst: INH000001519; Portfolio Manager INP000002585; Stock Broker/Trading and Clearing Member: National Stock Exchange of India Limited (NSE) Capital Market INB231292732, NSE Futures & Options INF231292732, NSE Currency derivatives INE231450334, Bombay Stock Exchange Limited (BSE) Capital Market INB011292738, BSE Futures & Options INF011292738; Depository Participant (DP) with the National Securities & Depositories Limited (NSDL): DP ID: IN-DP-NSDL-299-2008; Investment Adviser: INA000000391. The registered office of BSIPL is at 208, Ceejay House, Shivsagar Estate, Dr. A. Besant Road, Worli, Mumbai – 400 018, India. Telephone No: +91 2267196000. Fax number: +91 22 67196100. Any other reports produced by Barclays' Investment Bank are distributed in India by Barclays Bank PLC, India Branch, an associate of BSIPL in India that is registered with Reserve Bank of India (RBI) as a Banking Company under the provisions of The Banking Regulation Act, 1949 (Regn No BOM43) and registered with SEBI as Merchant Banker (Regn No INM000002129) and also as Banker to the Issue (Regn No INBI00000950). Barclays Investments and Loans (India) Limited, registered with RBI as Non Banking Financial Company (Regn No RBI CoR-07-00258), and Barclays Wealth Trustees (India) Private Limited, registered with Registrar of Companies (CIN U93000MH2008PTC188438), are associates of BSIPL in India that are not authorised to distribute any reports produced by Barclays' Investment Bank.

Barclays Bank PLC distributes this material in Germany.

This material is distributed in Mexico by Barclays Bank Mexico, S.A.

Nothing herein should be considered investment advice as defined in the Israeli Regulation of Investment Advisory, Investment Marketing and Portfolio Management Law, 1995 ("Advisory Law"). This document is being made to eligible clients (as defined under the Advisory Law) only. Barclays Israeli branch previously held an investment marketing license with the Israel Securities Authority but it cancelled such license on 30/11/2014 as it solely provides its services to eligible clients pursuant to available exemptions under the Advisory Law, therefore a license with the Israel Securities Authority is not required. Accordingly, Barclays does not maintain an insurance coverage pursuant to the Advisory Law.

Barclays Bank PLC in the Dubai International Financial Centre (Registered No. 0060) is regulated by the Dubai Financial Services Authority (DFSA). Principal place of business in the Dubai International Financial Centre: The Gate Village, Building 4, Level 4, PO Box 506504, Dubai, United Arab Emirates. Barclays Bank PLC-DIFC Branch, may only undertake the financial services activities that fall within the scope of its existing DFSA licence. Related financial products or services are only available to Professional Clients, as defined by the Dubai Financial Services Authority.

Barclays Bank PLC in the UAE is regulated by the Central Bank of the UAE and is licensed to conduct business activities as a branch of a commercial bank incorporated outside the UAE in Dubai (Licence No.: 13/1844/2008, Registered Office: Building No. 6, Burj Dubai Business Hub, Sheikh Zayed Road, Dubai City) and Abu Dhabi (Licence No.: 13/952/2008, Registered Office: Al Jazira Towers, Hamdan Street, PO Box 2734, Abu Dhabi).

Barclays Bank PLC in the Qatar Financial Centre (Registered No. 00018) is authorised by the Qatar Financial Centre Regulatory Authority (QFCRA). Barclays Bank PLC-QFC Branch may only undertake the regulated activities that fall within the scope of its existing QFCRA licence. Principal place of business in Qatar: Qatar Financial Centre, Office 1002, 10th Floor, QFC Tower, Diplomatic Area, West Bay, PO Box 15891, Doha, Qatar. Related financial products or services are only available to Business Customers as defined by the Qatar Financial Centre Regulatory Authority.

This material is distributed in the UAE (including the Dubai International Financial Centre) and Qatar by Barclays Bank PLC.

This material is not intended for investors who are not Qualified Investors according to the laws of the Russian Federation as it might contain information about or description of the features of financial instruments not admitted for public offering and/or circulation in the Russian Federation and thus not eligible for non-Qualified Investors. If you are not a Qualified Investor according to the laws of the Russian Federation, please dispose of any copy of this material in your possession.

This material is distributed in Singapore by the Singapore branch of Barclays Bank PLC, a bank licensed in Singapore by the Monetary Authority of Singapore. For matters in connection with this report, recipients in Singapore may contact the Singapore branch of Barclays Bank PLC, whose registered address is 10 Marina Boulevard, #23-01 Marina Bay Financial Centre Tower 2, Singapore 018983.

This material is distributed to persons in Australia by either Barclays Bank PLC, Barclays Capital Inc., Barclays Capital Securities Limited or Barclays Capital Asia Limited. None of Barclays Bank PLC, nor any of the other referenced Barclays group entities, hold an Australian financial services licence and instead they each rely on an exemption from the requirement to hold such a licence. This material is intended to only be distributed to "wholesale clients" as defined by the Australian Corporations Act 2001.

IRS Circular 230 Prepared Materials Disclaimer: Barclays does not provide tax advice and nothing contained herein should be construed to be tax advice. Please be advised that any discussion of U.S. tax matters contained herein (including any attachments) (i) is not intended or written to be used, and cannot be used, by you for the purpose of avoiding U.S. tax-related penalties; and (ii) was written to support the promotion or marketing of the transactions or other matters addressed herein. Accordingly, you should seek advice based on your particular circumstances from an independent tax advisor.

BRCF2242