

Aziz Sunderji
+1 212 412 2218
aziz.sunderji@barclays.com
BCI, US

Badr El Moutawakil
+44 (0) 20 7773 2902
badr.elmoutawakil@barclays.com
Barclays, UK

Andreas Kolbe
+44 (0) 20 3134 3134
andreas.kolbe@barclays.com
Barclays, UK

Trading EM “Falling Angels”: History Does Not Repeat Itself, but It Rhymes

\$195bn of emerging market credit was downgraded from investment grade to high yield last year. In our base case, a further \$100bn faces the same risk this year. Investors should formulate strategies for trading falling angels based on the names likely to be affected and the performance patterns such cases have historically exhibited. Specifically, we find that falling angels begin underperforming peers three months before the downgrade, but then outperform for the two months following the downgrade. We forecast that some falling angel issuers – because of wider ex-ante index inclusion and greater investment grade-fund holdership – will be more affected than others. If downgraded to high yield, the credits we think could come under the greatest technical pressure include the Turkey and South Africa sovereigns and corporate issuers such as Vale.

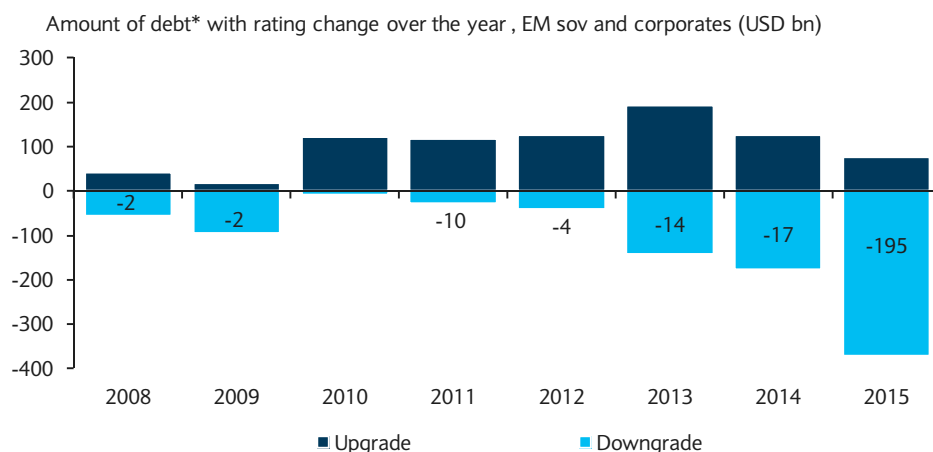
EM Fallen Angels: Lessons from History

Almost \$370bn of EM debt – 25% of the amount outstanding in the Barclays EM USD Aggregate Index – was downgraded by at least one rating notch last year. Of this, \$195bn fell from high grade to high yield (fallen angels). The largest of these were Russia (February 2015), Brazil (December 2015), Petrobras (September 2015), Gazprom (February 2015), and Itau (September 2015). We expect this trend to continue: falling commodity prices continue to strain sovereigns and corporates.

The corporate and sovereign segments are not isolated from each other. In 2015, \$79bn of corporate/quasi-sovereign debt was downgraded to high yield as a direct result of negative actions taken at the sovereign level.

FIGURE 1

The Rating Trend for EM Has Deteriorated Sharply; We Think This Will Continue



Note: Based on Barclays USD EM Aggregate rating. Volume of fallen angel debt highlighted in each downgrade bar.
Source: Barclays Research

If Most EM Indices Span High Grade to High Yield, Why Does Crossing the Threshold Matter?

Most EM indices do not account for rating as a criterion for index eligibility, thus not leading to any potential forced selling flows post-downgrade. But non-EM investment grade indices,

such as the Barclays Global Aggregate Index, the Barclays US Aggregate Index, and the Barclays Global High Yield Indices, do incorporate ratings thresholds in their inclusion rules. Crossing the thresholds of these ratings rules results in forced selling from global/US investment grade investors and forced buying from global high yield investors.

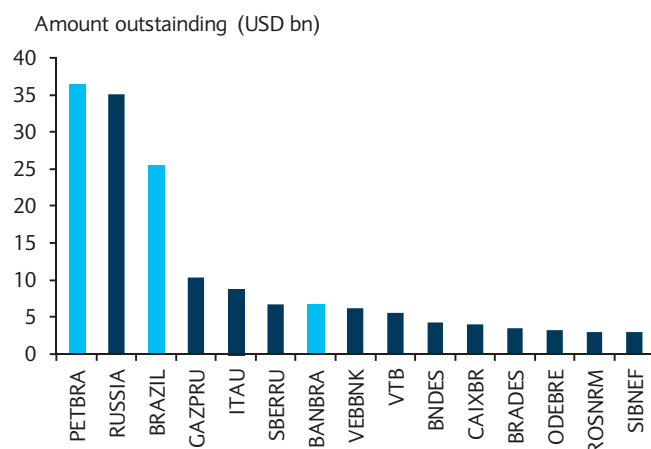
Apart from our Barclays EM USD Aggregate index, emerging market USD bonds are eligible for the following investment grade indices:

- The Barclays Global Aggregate Index includes bonds with a median investment grade rating. The index tracks approximately \$40trn of debt, of which just over \$1trn is EM USD bonds;
- The Barclays US Aggregate Index includes bonds with a median investment grade rating and issued in a international format. The index tracks \$17.5trn of debt, of which \$340bn is EM USD bonds.

Bonds falling to high yield are eligible for the Barclays Global High Yield Index (bonds with a high yield median rating): the index tracks \$2.3trn of debt, of which \$580bn is EM USD bonds. However, no EM issuer is eligible for our Barclays US High Yield or Pan European High Yield Indices, which are the most widely tracked indices in the high yield segment.¹

FIGURE 2

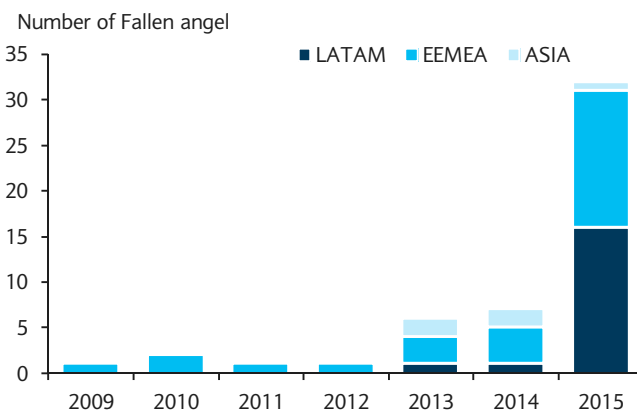
The Top 15 EM Fallen Angels Issuers in 2015 Were Exclusively from Russia and Brazil



Note: Light blue denote issuers in the US and Global Aggregate, while dark blue issuers are in the Global Aggregate only. Data do not include EUR-denominated bonds. Source: Barclays Research

FIGURE 3

Thirty-two EM Credits Were Excluded from The Global Aggregate Index Last Year Because of Downgrades, Only One from Asia



Note: Based on Barclays USD EM Aggregate rating. Source: Barclays Research

Performance Patterns for Fallen Angels Are Clear

Against this backdrop, we have looked at the performance of fallen angels since 2010 and compared them with the Barclays EM USD Aggregate during periods of index exclusion. More specifically, we differentiate between issuers included in: 1) the US Aggregate and the Global Aggregate Indices; and 2) only in the Global Aggregate. We expect forced selling pressure to be greater for those included in both indices because of higher sponsorship from crossover investors.

¹ EM issuers are eligible for the Global High Yield Index; we estimate there is only approximately 110bn tracking this index, see *Emerging Markets Weekly: Ratings risk adding to headwinds*, for further details.

Underperformance into the Downgrade and Investment Grade Index Exclusion

As highlighted in Figures 4 and 5, EM issuers in the Global Aggregate (only) underperformed peers by 6% in total return terms over the five months leading into the downgrade and investment grade index exclusion (with the worst performance occurring during the month of the downgrade itself). In line with our hypothesis, the effect is more pronounced for credits included not just in the Global Aggregate but in the US Aggregate, too – those credits underperformed by approximately 10% over the same period.

Post-Downgrade Outperformance

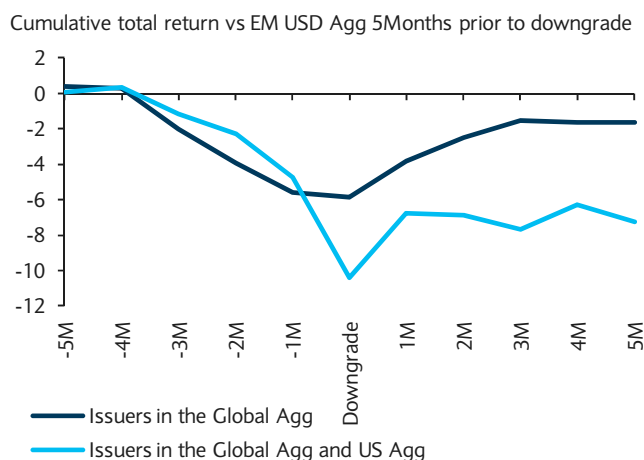
Post-index exclusion, EM fallen angels outperformed the EM benchmark during the first month following the index exclusion and recovered most, but not all, of their underperformance during the following months. The wider the crossover investor following, the weaker the recovery: Global Aggregate (only) included issuers outperformed peers by 4.5% in the months following the downgrade, while those included in both the Global and the US Aggregate outperformed by 3%.

That said, fallen angel credits never fully recover: a few months after the downgrade, the cumulative one-year performance is still negative: -1.5% for Global Aggregate (only) included issuers and a more substantial -7% for those included in both the Global and the US Aggregate.

These Patterns Are Pretty Consistent

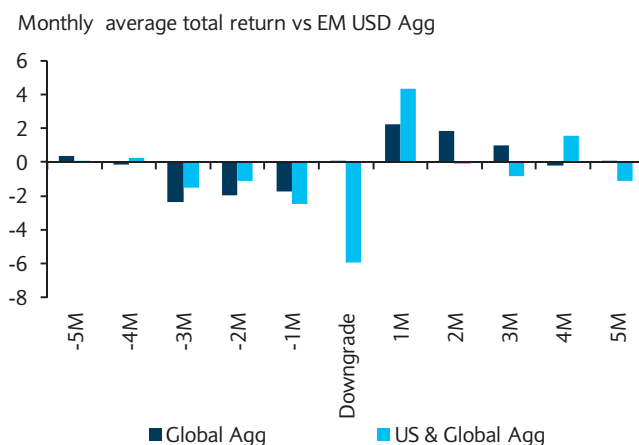
This pattern is consistent across the 50 EM fallen angels that have faced a Global/US Aggregate exclusion since 2009: 75% of falling angels underperformed the Barclays EM USD Aggregate Index starting three months prior to the downgrade.

FIGURE 4
Fallen Angels Underperform into the Downgrade but Outperform Thereafter



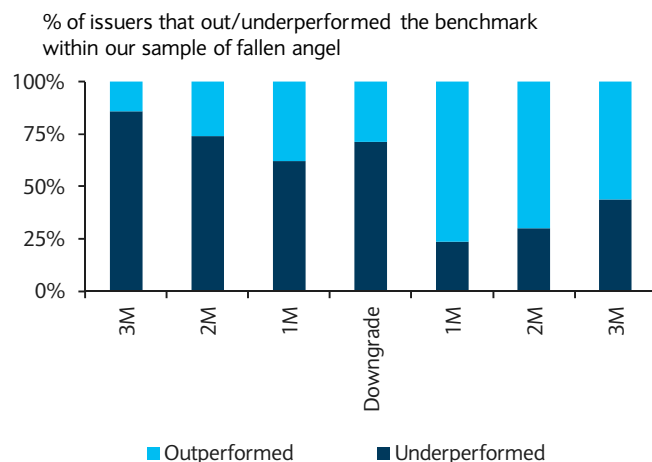
Note: Cumulative total return performance of fallen angels versus Barclays EM USD Aggregate starting five months prior to the index exclusion. Sample of issuers since 2009: 42 fallen angels issuers in the Global Aggregate and five issuers included in the US and Global Aggregate. Source: Barclays Research

FIGURE 5
Credits Included in the US Aggregate and the Global Aggregate Indices Underperform Those Included in Just the Global Aggregate



Note: Total return performance of fallen angels versus Barclays EM USD Aggregate. Sample of issuers since 2009: 42 fallen angels in the Global Aggregate and five issuers included in US and Global Aggregate. Source: Barclays Research

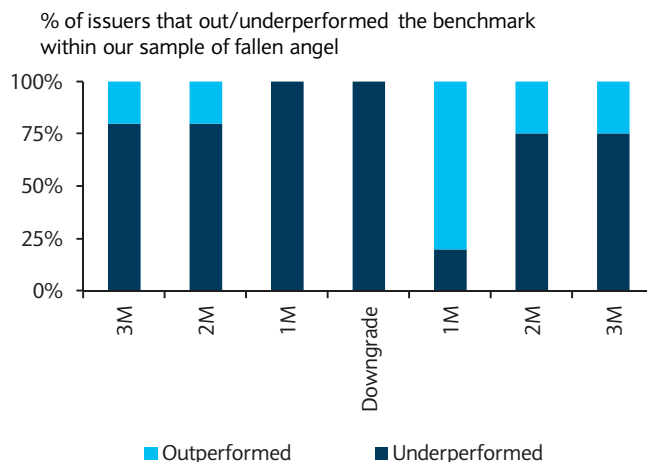
FIGURE 6

EM Fallen Angels in the Global Aggregate Index: Performance Patterns Consistent within the Sample of 45 Issuers

Note: Sample of 45 issuers in the Global Aggregate. Percentage of issuers that out/underperformed the benchmark within our sample of fallen angels.

Source: Barclays Research

FIGURE 7

Similar Pattern for EM Fallen Angels included in the US Aggregate Index

Note: Sample of five issuers included in the Global and US Aggregate.

Source: Barclays Research

Most Affected Potential Falling Angels

Turkey

Turkey has had a BB+, negative outlook rating at S&P, a BBB- stable rating from Fitch, and a Baa3 rating at Moody's with a negative outlook since spring 2014. The next Moody's rating release date for Turkey is scheduled for April 8, following a scheduled release date by Fitch on February 26. Moody's affirmed its Baa3 rating in December but noted that the "combination of challenges facing the country – heightened geopolitical risks, pressure on its external financing and the prospects of weaker growth in the medium term" keep the balance of risks to the downside. Specifically, it said that downward pressure on the rating would arise "from sustained delays in implementing the structural reforms needed to sustain economic, fiscal and institutional strength." In this context, we believe that domestic political uncertainty related to the debate about a presidential system, combined with a generally difficult environment for EM capital flows and escalating geopolitical risks in the region, poses a non-negligible risk to Turkey's investment grade status.

We estimate net selling flows of about USD2.6bn for Turkey.

South Africa

All three ratings are still investment grade, with S&P seemingly closest to moving to non-investment grade, given its negative outlook on the BBB- rating (Moody's moved the outlook on its Baa2 rating to negative in December, while Fitch rates South Africa BBB- with a stable outlook). Low growth, the risk of fiscal slippages, and, as cited by Moody's, political pressures are likely to keep South Africa's rating risks tilted to the downside. Arresting the slide in South Africa's credit metrics will not be easy, and the rating agencies will watch the upcoming budget on February 24 closely. However, with three current investment grade ratings, sub-investment grade status may not be imminent, in our view.

We estimate net selling flows of about USD0.5bn for South Africa.

Vale

We believe that Vale is at near-term risk of a downgrade from Moody's and Fitch, which both have the company on review for downgrade/watch negative. That said, we expect Vale's median rating to remain in investment grade territory, anticipating ratings of Ba1 and BBB- at Moody's and Fitch, respectively, this year, with S&P staying at BBB-; therefore, the company would continue to be included in the Barclays Global and USD Aggregate Indices. There is, however, a non-negligible risk of a set of downgrade events that could push the credit out of the investment grade indices, including further deterioration in the commodities environment and failure to at least partially execute its asset sale plans.

We estimate net selling flows of about USD 0.4bn for Vale.

Analyst Certification

We, Badr El Moutawakil, Andreas Kolbe and Aziz Sunderji, hereby certify (1) that the views expressed in this research report accurately reflect our personal views about any or all of the subject securities or issuers referred to in this research report and (2) no part of our 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 a part of the Investment Bank of Barclays Bank PLC and its affiliates (collectively and each individually, "Barclays"). Where any companies are the subject of this research report, for current important disclosures regarding those companies please send a written request to: Barclays Research Compliance, 745 Seventh Avenue, 13th Floor, New York, NY 10019 or refer to <http://publicresearch.barclays.com> or call 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 represent current market levels, prices or spreads, some or all of which may have changed since the publication of this document. The Investment Bank's Research Department produces various types of research including, but not limited to, fundamental analysis, equity-linked analysis, quantitative analysis, and trade ideas. Recommendations contained in one type of research may differ from recommendations contained in other types of research, whether as a result of differing time horizons, methodologies, or otherwise. Unless otherwise indicated, trade ideas contained herein are provided as of the date of this report and are subject to change without notice due to changes in prices. In order to access Barclays Statement regarding Research Dissemination Policies and Procedures, please refer to http://publicresearch.barcap.com/static/S_ResearchDissemination.html. In order to access Barclays Research Conflict Management Policy Statement, please refer to: http://publicresearch.barcap.com/static/S_ConflictManagement.html.

Barclays legal entities involved in publishing research:

Barclays Bank PLC (Barclays, UK)
Barclays Capital Inc. (BCI, US)
Barclays Securities Japan Limited (BSJL, Japan)
Barclays Bank PLC, Tokyo branch (Barclays Bank, Japan)
Barclays Bank PLC, Hong Kong branch (Barclays Bank, Hong Kong)
Barclays Capital Canada Inc. (BCCI, Canada)
Absa Bank Limited (Absa, South Africa)
Barclays Bank Mexico, S.A. (BBMX, Mexico)
Barclays Capital Securities Taiwan Limited (BCSTW, Taiwan)
Barclays Capital Securities Limited (BCSL, South Korea)
Barclays Securities (India) Private Limited (BSIPL, India)
Barclays Bank PLC, India branch (Barclays Bank, India)
Barclays Bank PLC, Singapore branch (Barclays Bank, Singapore)
Barclays Bank PLC, Australia branch (Barclays Bank, Australia)

Explanation of the Barclays Research Sector Rating System

Overweight (OW):

For sectors rated against the Barclays U.S. Credit Index, the Barclays Pan-European Credit Index, the Barclays EM Asia USD High Grade Credit Index or the 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 Barclays U.S. High Yield 2% Issuer Capped Credit Index, the Barclays Pan-European High Yield 3% Issuer Capped Credit Index excluding Financials, the Barclays Pan-European High Yield Finance Index or the 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 Barclays U.S. Credit Index, the Barclays Pan-European Credit Index, the Barclays EM Asia USD High Grade Credit Index or the 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 Barclays U.S. High Yield 2% Issuer Capped Credit Index, the Barclays Pan-European High Yield 3% Issuer Capped Credit Index excluding Financials, the Barclays Pan-European High Yield Finance Index or the 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.

Underweight (UW):

For sectors rated against the Barclays U.S. Credit Index, the Barclays Pan-European Credit Index, the Barclays EM Asia USD High Grade Credit Index or the 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 Barclays U.S. High Yield 2% Issuer Capped Credit Index, the Barclays Pan-European High Yield 3% Issuer Capped Credit Index excluding Financials, the Barclays Pan-European High Yield Finance Index or the 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 Barclays U.S. Credit Index and are rated against the Barclays U.S. Credit Index.

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

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

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

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

Sectors in Asia High Yield Research are defined on Barclays Live and are rated against the 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 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/RSL/servlets/dv.search?pubType=4511&contentType=latest> on Barclays Live.

Explanation of the Barclays Research Credit Rating System

For all High Grade issuers covered in the US, Europe or Asia, and for all issuers in Latin America and EEMEA (excluding South Africa), 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.

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.

For all issuers in South Africa, the credit rating system is based on the analyst's view of the expected total return over a six-month period of the issuer's rand-denominated fixed rate notes or floating rate notes (as applicable) relative to the South African Credit Fixed Market Index (CFIX95) or the South African Credit Floating Market Index (CFL020), respectively.

Overweight (OW): The analyst expects the six-month total returns of the issuer's rand-denominated fixed rate notes or floating rate notes (as applicable) to exceed the six-month expected total returns the South African Credit Fixed Market Index (CFIX95) or the South African Credit Floating Market Index

(CFL020), respectively.

Market Weight (MW): The analyst expects the six-month total returns of the issuer's rand-denominated fixed rate notes or floating rate notes (as applicable) to be in line with the six-month expected total returns the South African Credit Fixed Market Index (CFIX95) or the South African Credit Floating Market Index (CFL020), respectively..

Underweight (UW): The analyst expects the six-month total returns of the issuer's rand-denominated fixed rate notes or floating rate notes (as applicable) to be below the six-month expected total returns the South African Credit Fixed Market Index (CFIX95) or the South African Credit Floating Market Index (CFL020), respectively..

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.

*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 U.S. Credit Index, the Barclays Pan-European Credit Index, the Barclays EM Asia USD High Grade Credit Index or 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.

Disclaimer

This publication has been produced by 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 legal entities that are a part of the Investment Bank as provided 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. 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 content of any third-party web site accessed via a hyperlink in this publication and such information is not incorporated by reference.

The views in this publication are those of the author(s) and are subject to change, and Barclays has no obligation to update its opinions or the information in this publication. If this publication contains recommendations, those recommendations reflect solely and exclusively those of the authoring analyst(s), and such opinions were prepared independently of any other interests, including those of Barclays and/or its affiliates. This publication does not constitute personal investment advice or take into account the individual financial circumstances or objectives of the clients who receive it. The securities discussed herein may not be suitable for all investors. Barclays recommends that investors independently evaluate each issuer, security or instrument discussed herein and consult any independent advisors they believe necessary. 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).

Subject to the conditions of this publication as set out above, the Corporate & Investment Banking Division of Absa Bank Limited, an authorised financial services provider (Registration No.: 1986/004794/06. Registered Credit Provider Reg No NCRCP7), is distributing this material in South Africa. Absa Bank Limited is regulated by the South African Reserve Bank. This publication is not, nor is it intended to be, advice as defined and/or contemplated in the (South African) Financial Advisory and Intermediary Services Act, 37 of 2002, or any other financial, investment, trading, tax, legal, accounting, retirement, actuarial or other professional advice or service whatsoever. Any South African person or entity wishing to effect a transaction in any security discussed herein should do so only by contacting a representative of the Corporate & Investment Banking Division of Absa Bank Limited in South Africa, 15 Alice Lane, Sandton, Johannesburg, Gauteng 2196. Absa Bank Limited is a member of the Barclays group.

In Japan, foreign exchange research reports are prepared and distributed by Barclays Bank PLC Tokyo Branch. Other 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 Zaimukyokuchō (kinsho) No. 143.

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.

Information on securities/instruments that trade in Taiwan or written by a Taiwan-based research analyst is distributed by Barclays Capital Securities Taiwan Limited to its clients. The material on securities/instruments not traded in Taiwan is not to be construed as 'recommendation' in Taiwan. Barclays Capital Securities Taiwan Limited does not accept orders from clients to trade in such securities. This material may not be distributed to the public media or used by the public media without prior written consent of Barclays.

This material is distributed in South Korea by Barclays Capital Securities Limited, Seoul Branch.

All Indian securities-related research and other equity research produced by the 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; Merchant Banker: INM000011195; 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, Cejaya 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 the 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 the Investment Bank.

Barclays Bank PLC Frankfurt Branch distributes this material in Germany under the supervision of Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin).

This material is distributed in Malaysia by Barclays Capital Markets Malaysia Sdn Bhd.

This material is distributed in Brazil by Banco Barclays S.A.

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

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.

Barclays Bank PLC, Australia Branch (ARBN 062 449 585, AFSL 246617) is distributing this material in Australia. It is directed at 'wholesale clients' as defined by 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.

© Copyright Barclays Bank PLC (2016). All rights reserved. No part of this publication may be reproduced or redistributed in any manner without the prior written permission of Barclays. Barclays Bank PLC is registered in England No. 1026167. Registered office 1 Churchill Place, London, E14 5HP. Additional information regarding this publication will be furnished upon request.

