Morningstar Corporate Credit Research Highlights

Corporate credit spreads tighten as risk assets back in favor.

Morningstar Credit Ratings, LLC
18 September 2017

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Credit Rating Actions

- Rating changes

Issuer/Ticker	Current Issuer Credit Rating	Previous Issuer Credit Rating
Mid-America Apartment Communities **MAA**	BBB	N/A
UDR **UDR**	BBB	N/A
Camden Property Trust **CPT**	A-	N/A
Equity Residential **EQR**	A-	N/A
Essex Property Trust **ESS**	BBB+	N/A
AvalonBay Communities **AVB**	A-	N/A

- Rating affirmations

Issuer/Ticker	Current Issuer Credit Rating	Previous Issuer Credit Rating
Bayer **BAYN**	A-/UR-	A-/UR-
Monsanto **MON**	A/UR-	A/UR-
Bristol-Myers Squibb **BMY**	AA-	AA-
Perrigo **PRGO**	BBB-	BBB-
Mylan **MYL**	BBB-	BBB-
Teva Pharmaceutical **TEVA**	BBB-	BBB-
Hess **HES**	BBB-	BBB-
Murphy Oil **MUR**	BB+	BB+

Recent Notes Published by Credit Analysts

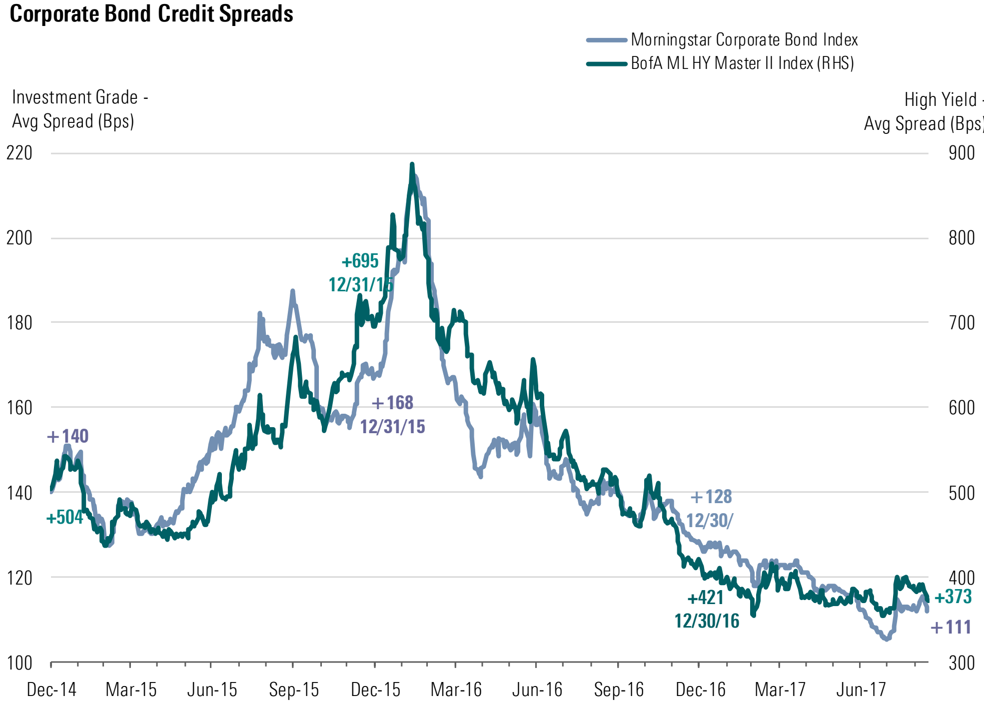
- Upward Revisions to Harvey Loss Estimates and Losses From Irma Unlikely to Affect Credit Quality
- **Dover**'s Exploration of Strategic Alternatives Could Discover Credit Improvements
- **Concho Resources** Announces New Senior Notes Offering to Fund Repurchase of Existing Notes
- **Gilead** Issuing New Debt to Fund Kite Acquisition

Credit Market Insights

Corporate Credit Spreads Tighten as Risk Assets Back in Favor

Risk assets were back in favor last week as corporate credit spreads tightened, stocks rose to new highs, and safe-haven Treasury bonds sold off. Volatility was elevated in the prior few weeks, but the VIX Index has dwindled to 10.2 as hurricanes Harvey and Irma caused only short-term market dislocations and investors have become inured to North Korean rocket launches (12 so far this year) and habituated to minor terrorist attacks in Europe. The average spread of the Morningstar Corporate Bond Index (our proxy for the investment-grade bond market) tightened 4 basis points to +111 last week and the average credit spread of the BofA Merrill Lynch High Yield Master Index tightened 19 basis points to +373.

Corporate Bond Credit Spreads



Source: Morningstar,Inc., BofA Merrill Lynch Global Indexes. Data as of 09/15/2017.

Interest rates on U.S. Treasury bonds had declined since early spring and two weeks ago hit their lowest levels since the presidential elections. However, the Treasury bond market weakened last week and interest rates surged higher. The yield curve rose anywhere from 10 to 17 basis points, with the belly of the curve, consisting of the 5-year and 10-year, performing the worst. At the end of business Friday, yields on the 2-year, 5-year, 10-year, and 30-year were 1.38%, 1.81%, 2.20%, and 2.77%, respectively, increasing by 12, 17, 14, and 10 basis points. In Europe, interest rates also rose with Germany's 10-year sovereign bond climbing 12 basis points to 0.43%, Italy's 10-year bond rising 12 basis points to 2.02%, and Switzerland's 10-year making a run for zero by increasing 11 basis points to negative 0.05%.

Monetary Policy Expected to Begin Tightening at Measured Pace

The next Federal Open Market Committee meeting of the Federal Reserve is scheduled for Sept. 19-20. The market expects the Fed to announce that it will begin its balance sheet reduction program in October. This program will scale back the Fed's current reinvestments to allow $10 billion of assets to roll off per month and then increase the pace of reduction by $10 billion until it reaches a total monthly runoff rate of $50 billion (an annual run rate of $600 billion). To put the run rate in context, the total amount of assets currently held by the Federal Reserve banks is $4.45 trillion.

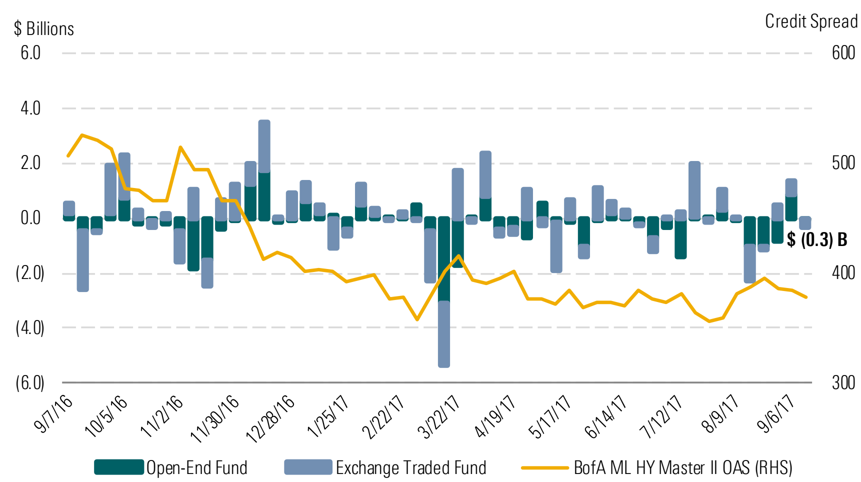
While market expects the Fed will begin to reduce the size of its balance sheet in the near term, it remains uncertain whether the Fed will hike the federal funds rate one more time before the end of the year. The market-implied probability of the latter happening has surged to 58% from 31% a week ago.

The European Central Bank has implied that it will announce at its October meeting its plan to begin winding down its asset-purchase program in 2018; however, the ECB will continue its quantitative easing program of purchasing EUR 60 billion of bonds per month through the end of this year (approximately another quarter trillion).

High-Yield Fund Flows

Through the week ended Sept. 13, high-yield exchange-traded funds and open-end mutual funds experienced an outflow of $0.3 billion. The outflows were concentrated in the ETF sector as the fund flows across open-end mutual funds were essentially unchanged.

Estimated Weekly High-Yield Bond Fund Flows and High-Yield Credit Spreads



Source: Morningstar , Inc. and BofA Merrill Lynch Global Indexes.

Exhibit 1 Morningstar Credit New Issue Monitor

Week ended Sept. 15, 2017

(000,000s $ unless otherwise noted)

Issuer			Issue				
Name	Ticker	Morningstar Corporate Rating	Size	Coupon	Description	Maturity	Approx Spread to US Treasuries
Anglo American	AAL	BB+	€ 600	1.63%	Senior Unsecured	2025	NA
Archer-Daniels	ADM	BBB+	$500	3.75%	Senior Unsecured	2047	+105
Bank of America	BAC	BBB	$2,000	VAR	Senior Unsecured	2021	+85
Bank of America	BAC	BBB	$750	L+65	Senior Unsecured	2021	NA
Bank of America	BAC	BBB	€ 1,000	Euribor+37	Senior Unsecured	2021	NA
BP Capital Markets	BP	A-(1)	$500	1.77%	Senior Unsecured	2019	+40
BP Capital Markets	BP	A-(1)	$300	L+65	Senior Unsecured	2022	NA
BP Capital Markets	BP	A-(1)	$700	2.52%	Senior Unsecured	2022	+73
BP Capital Markets	BP	A-(1)	$1,500	3.28%	Senior Unsecured	2027	NA
Concho Resources	CXO	BB+	$1,000	3.75%	Senior Unsecured	2027	+160
Concho Resources	CXO	BB+	$800	4.88%	Senior Unsecured	2047	+210
General Dynamics	GD	A+	$500	2.38%	Senior Unsecured	2024	+55
General Dynamics	GD	A+	$500	2.63%	Senior Unsecured	2027	+75
Gilead Sciences	GILD	A+/UR-	$750	L+17	Senior Unsecured	2018	NA
Gilead Sciences	GILD	A+/UR-	$500	L+25	Senior Unsecured	2019	NA
Gilead Sciences	GILD	A+/UR-	$750	L+22	Senior Unsecured	2019	NA
Gilead Sciences	GILD	A+/UR-	$1,000	1.85%	Senior Unsecured	2019	+50
Hasbro	HAS	BBB+	$500	3.50%	Senior Unsecured	2027	+145
Hewlett Packard Enterprise	HPQ	BBB	$1,100	2.10%	Senior Unsecured	2019	+78
Unilever NV	ULVR	A+	GBP 250	1.38%	Senior Unsecured	2024	NA
Unilever NV	ULVR	A+	GBP 250	1.88%	Senior Unsecured	2029	NA
Union Pacific	UNP	A	$500	3.60%	Senior Unsecured	2037	+83
Union Pacific	UNP	A	$500	4.10%	Senior Unsecured	2067	+133

Source: Bloomberg, company Securities and Exchange Commission filings

(1) Morningstar's issuer credit rating is assigned at the holding company level.

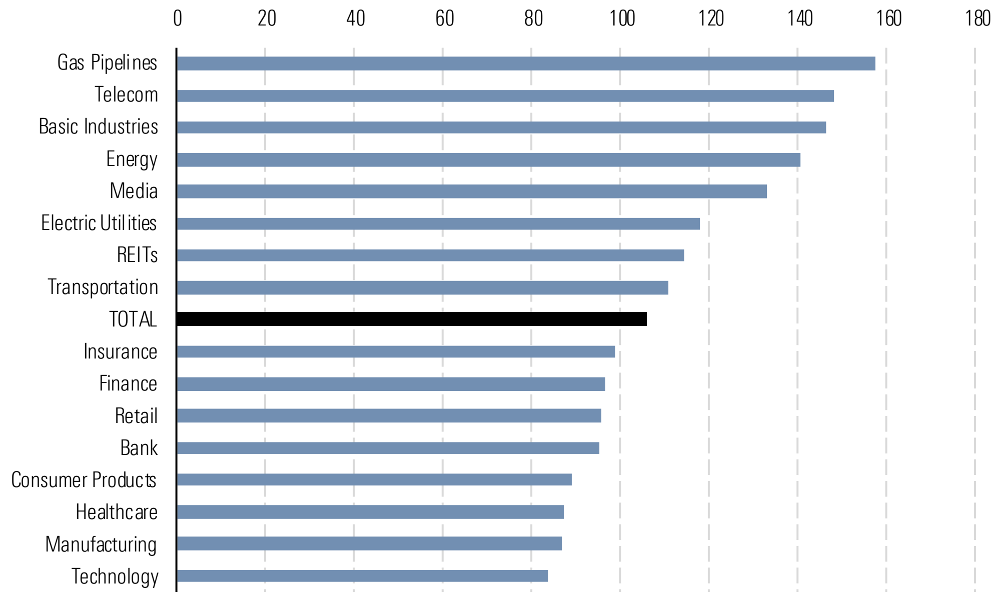
Exhibit 2 Morningstar, Inc. Corporate Bond Index Sector Summary

Sector	Average Rating	Number of Issues	Modified Duration	Spread (bps)	MTD Spread Chg (bps)	YTD Spread Chg (bps)	MTD Total Return (%)	YTD Total Return (%)
TOTAL	**A-**	**4,843**	**7.0**	**111**	**(1)**	**(17)**	**(0.18)**	**5.25**
FINANCIAL	**A-**	**1,446**	**5.5**	**99**	**(1)**	**(24)**	**(0.21)**	**4.72**
Bank	A-	887	5.1	97	(1)	(25)	(0.17)	4.55
Finance	A	257	5.8	99	(2)	(22)	(0.27)	4.54
Insurance	A	214	7.9	103	0	(19)	(0.32)	5.96
REITs	BBB+	79	5.9	115	2	(20)	(0.40)	5.27
INDUSTRIAL	**A-**	**2,822**	**7.6**	**116**	**(2)**	**(14)**	**(0.16)**	**5.46**
Basic Industries	BBB	227	7.8	145	(4)	(35)	(0.07)	8.32
Consumer Products	A-	325	7.6	96	(1)	(11)	(0.23)	4.91
Energy	A-	406	7.3	141	(6)	(14)	0.04	6.00
Healthcare	A-	402	7.9	98	(3)	(17)	(0.16)	5.87
Manufacturing	A-	439	6.2	96	3	(13)	(0.19)	4.24
Media	BBB+	197	8.4	149	(2)	(9)	(0.28)	5.45
Retail	A-	159	8.2	104	(2)	(4)	(0.22)	4.61
Technology	A+	328	7.3	91	(0)	(14)	(0.32)	4.93
Telecom	BBB+	156	9.0	159	0	1	(0.05)	5.10
Transportation	BBB+	137	8.9	114	(3)	(19)	(0.18)	6.17
UTILITY	**BBB+**	**537**	**8.6**	**136**	**(2)**	**(16)**	**(0.24)**	**6.33**
Electric Utilities	A-	315	9.1	117	(1)	(19)	(0.36)	6.58
Gas Pipelines	BBB	210	7.7	164	(4)	(13)	(0.04)	5.98
Rating Bucket								
AAA Bucket		111	8.2	60	(0)	(6)	(0.33)	4.67
AA Bucket		478	6.0	69	(0)	(14)	(0.26)	3.88
A Bucket		1,851	6.9	89	(1)	(17)	(0.27)	4.78
BBB Bucket		2,403	7.2	142	(4)	(22)	(0.09)	6.04
Term Bucket								
1-4	A-	1,523	2.4	66	(1)	(27)	(0.08)	2.38
4-7	A-	1,169	4.7	94	(1)	(21)	(0.23)	4.49
7-10	A-	906	7.1	124	(2)	(13)	(0.30)	5.80
10PLUS	A-	1,245	13.9	166	(3)	(9)	(0.19)	8.87

Data as of 09/15/2017

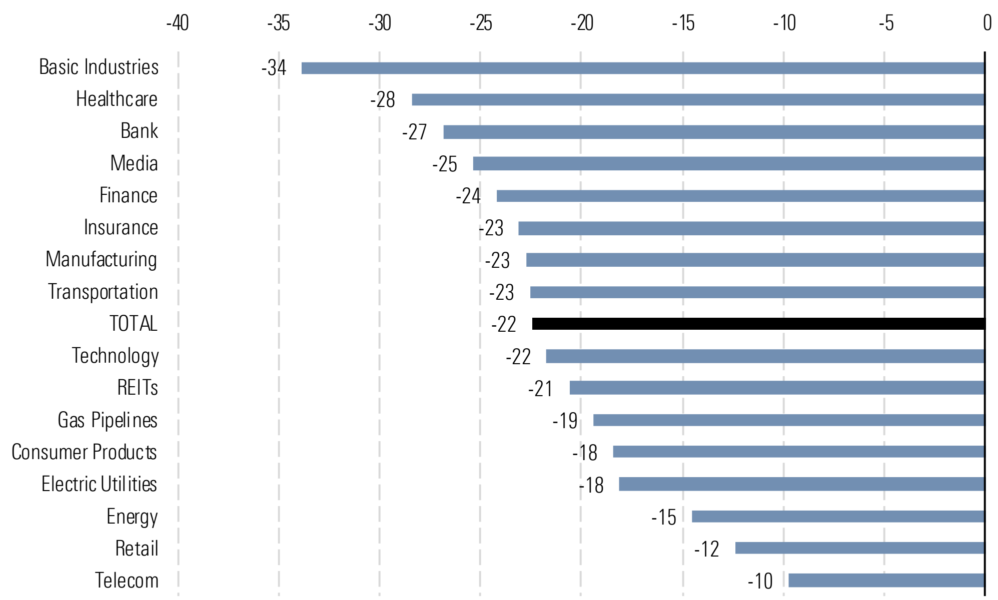
Source: Morningstar, Inc.

Exhibit 3 Morningstar, Inc. Corporate Bond Index Spread by Sector



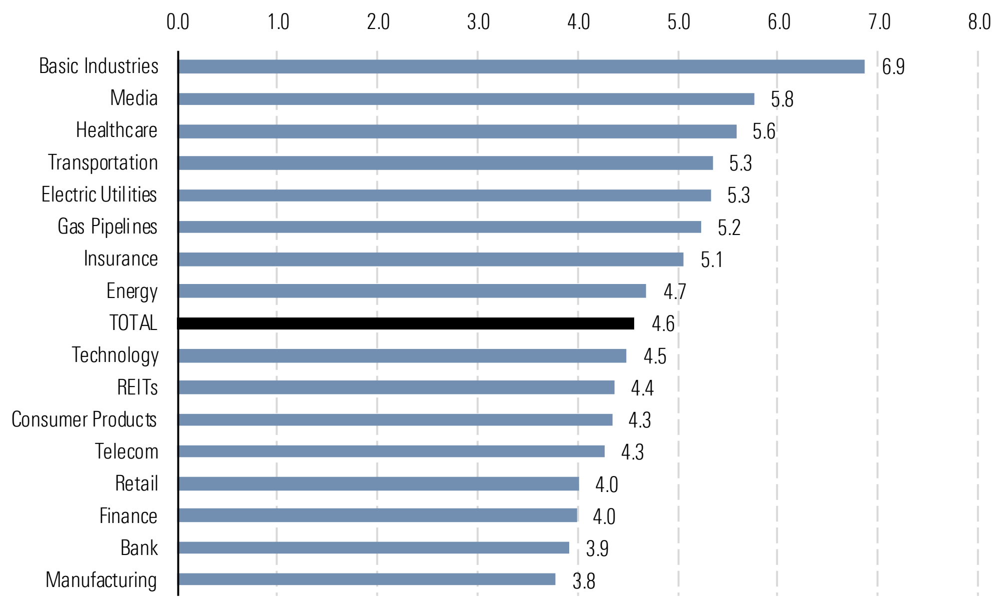
Source: Morningstar, Inc.

Exhibit 4 Morningstar, Inc. Corporate Bond Index YTD Spread Change



Source: Morningstar, Inc.

Exhibit 5 Morningstar, Inc. Corporate Bond Index YTD Return



Source: Morningstar, Inc.

Credit Rating Actions

Rating changes

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Monsanto **MON**	A/UR-	A/UR-
Bristol-Myers Squibb **BMY**	AA-	AA-
Perrigo **PRGO**	BBB-	BBB-
Mylan **MYL**	BBB-	BBB-
Teva Pharmaceutical **TEVA**	BBB-	BBB-
Hess **HES**	BBB-	BBB-
Murphy Oil **MUR**	BB+	BB+

Mid-America Apartment Communities Initiated With Credit Rating of BBB and Stable Outlook
Morningstar Credit Ratings, LLC is assigning a new corporate credit rating of BBB to Mid-America Apartment Communities, Inc. The outlook is stable. The rating is based on MAA's average-quality portfolio of apartment complexes located in 24 markets in 17 states, coverage and leverage metrics close to the peer group average, and highly experienced management team. The December 2016 acquisition of Atlanta-based Post Properties added to MAA's portfolio in the Southeastern United States and brought total properties to more than 300 with more than 100,000 units. Since 2014, total debt has been increased by about $1.1 billion, with about $260 million less secured debt and $1.6 billion more unsecured debt by year-end 2017.

Mid-America owns gross real estate assets in excess of $13.3 billion, placing it near the middle of the other multifamily real estate investment trusts in the peer group. Mid-America's average monthly rent per unit is $1,158, which is near the national average, but is well below that of the other multifamily REITs rated by Morningstar. The company's credit metrics are in line with peers, with 2017 projected debt/EBITDA of 6.2 times (elevated as a result of the recent Post Properties acquisition) and EBITDA/interest coverage of 5.5 times; MCR anticipates coverage declining to below 5.0 times through the forecast period as a result of rising interest rates. We estimate that Mid-America will produce adjusted funds from operations of about $610 million-$630 million per year from 2017 through 2021, though MCR anticipates that the company will access debt financing to fund debt maturities averaging $438 million in 2017-19. Availability of a credit line and a mostly unencumbered portfolio support the average Cash Flow Cushion rank of 5. Our assumptions are based on Mid-America continuing to operate in a variety of markets, but with little investment in major high-rent markets on the coasts, and a modest development program. As with the other multifamily REITs, we assign no sustainable competitive advantage to Mid-America, as the apartment industry has major players in the public and private spheres as well as many smaller participants of varying sizes and capabilities. With so much competition, and with a product that has commoditylike characteristics even at the higher price points, it is unlikely that any given company can establish a meaningful advantage. The lack of sustainable competitive advantage and low-rent, low-barrier markets are offset by low cyclicality and a strong management team to produce an average Business Risk score of 5.

Mid-America's rating could improve if the company can navigate successfully through the next year or two of moderating market conditions affecting many apartment markets throughout the U.S. while achieving lower leverage and maintaining the largely unsecured borrowing platform. Should Mid-America reverse course and meaningfully increase its development program to approach 10% of gross assets without accompanying increases in backup liquidity, or should the company reverse course on improvements in secured debt levels to the detriment of unsecured creditors, Business Risk and Cash Flow Cushion would deteriorate and a downgrade could result.

UDR's Credit Rating Initiated at BBB With Stable Outlook

Morningstar Credit Ratings, LLC is assigning a new corporate credit rating of BBB to UDR, Inc. The outlook is stable. The rating is based on UDR's high-quality portfolio of apartment complexes located primarily in high-rent, high-barrier markets, solid coverage and leverage metrics, and experienced management team. We project EBITDA/interest coverage, at just under 5.0 times at year-end 2016, to decline modestly through 2018 as a result of higher debt levels associated with funding UDR's development pipeline.

UDR owns gross assets of $9.9 billion including projects under development, roughly average among the largest multifamily real estate investment trusts. UDR's average monthly revenue per unit is $2,141, among the highest in the sector. The company's credit metrics are in line with peers', with debt/EBITDA of 5.4 times and EBITDA/interest coverage of 5.1 times. We estimate that UDR will produce average adjusted funds from operations around $420 million per year over the next few years, which compares favorably with maturities of $334 million in 2018 and $357 million in 2019. Availability of a $1.1 billion credit line (expandable to $2.0 billion) and a significant unencumbered portfolio support UDR's average Cash Flow Cushion rank of 5. Our assumptions are based on UDR continuing to spread its exposure among a variety of first- and second-tier markets across the United States while recycling out of older assets and into newer ones. We assign no sustainable competitive advantage to UDR as the apartment industry has major players in the public and private spheres as well as many smaller participants of varying sizes and capabilities. With so much competition, and with a product that has commoditylike characteristics even at the higher price points, it is extremely challenging for any given company to enjoy a meaningful advantage. The lack of sustainable competitive advantage and comparatively small size are offset by low cyclicality and a strong management team to produce an average Business Risk score of 5.

UDR's rating could improve if the company can navigate successfully through the next year or two of moderating market conditions in Washington, D.C., New York City, and San Francisco while reducing leverage. If the period of slow rent growth in certain markets is more prolonged than expected and credit metrics significantly deteriorate, a downgrade could result.

Camden Property Trust Initiated With Corporate Credit Rating of A- and Stable Outlook
Morningstar Credit Ratings, LLC is assigning a new corporate credit rating of A- to Camden Property Trust. The outlook is stable. The rating is based on Camden's high-quality portfolio of apartment complexes located in 15 widely diverse markets, solid coverage and leverage metrics, and highly experienced management team. Since 2014, debt has been reduced by about $400 million, mainly through the retirement of senior unsecured debt, while same-property net operating income has increased at an annual rate of about 5%.

Camden owns gross real estate assets in excess of $7.2 billion, which provides meaningful scale, though is still smaller than that of the other multifamily REITs in its peer group. Camden's average monthly rent per unit is $1,428, which is well above the national average, but lower than that of most peers. The company's credit metrics are in line with or better than those of peers, with debt/EBITDA of 4.5 times for the most recent quarter and EBITDA/interest of 5.4 times for the most recent four quarters. MCR projects leverage to remain in the 4.5-5.0 range over the next couple of years, with some deterioration in coverage as a result of rising interest rates. We estimate that Camden will produce increasing adjusted funds from operations from $355 million to around $380 million per year from 2017 through 2019, but that it will access debt and equity financing to fund debt maturities of $175 million in 2018 and $644 million in 2019; Camden currently has no maturities in 2017 and 2020. It announced an equity raise of roughly $445 million on Sept. 11, 2017. Availability of a credit line and a significant unencumbered portfolio support Camden's average Cash Flow Cushion rank of 5. Our assumptions are based on Camden continuing to operate in a variety of markets, with a moderate development program. We assign no sustainable competitive advantage to Camden, as the apartment industry has major players in the public and private spheres, as well as many smaller participants of varying sizes and capabilities. With so much competition, and with a product that has commoditylike characteristics even at the higher price points, it is extremely challenging for any given company to enjoy a meaningful advantage. The lack of sustainable competitive advantage and comparatively small size are offset by low cyclicality and a strong management team to produce an average Business Risk score of 5.

Camden's rating could improve if the company can navigate successfully through the next year or two of moderating market conditions in the Washington, D.C., metro area, while achieving meaningful portfolio growth and maintaining low leverage could help an upward rating movement. Large transactions that increase leverage, especially secured leverage, or sustained development pipelines in excess of 25% of gross assets would put downward pressure on the rating, though we do not consider this likely.

Equity Residential Initiated With A- Credit Rating, Stable Outlook
Morningstar Credit Ratings, LLC is assigning a new A- corporate credit rating to Equity Residential with a stable outlook. The rating is based on Equity Residential's high-quality portfolio of apartment complexes located primarily in high-rent, high-barrier markets, solid coverage and leverage metrics, and highly experienced management team. The sale of a large portfolio of properties from noncore markets in the first quarter of 2016 resulted in a smaller balance sheet and less debt at year-end. Coverage and leverage are expected to change only slightly in 2017 and 2018.

Equity Residential owns gross assets of $26.3 billion, meaningfully above the next-largest multifamily real estate investment trust, AvalonBay Communities, at $21.9 billion. Its average monthly rent per unit is $2,702, the highest in the sector. The company's credit metrics are roughly in line with peers', with debt/EBITDA at 6.0 times and EBITDA/interest at 4.0 times. MCR anticipates little change in leverage and some modest deterioration in coverage as a result of rising interest rates. We estimate that Equity Residential will produce adjusted funds from operations of about $1.1 billion per year from 2017 through 2021, though MCR anticipates the company will access debt and equity financing to fund debt maturities, averaging $892 million over the five-year period, and other obligations. The availability of credit and the large unencumbered portfolio contribute to the average Cash Flow Cushion rank of 5. Our assumptions are based on Equity Residential continuing to focus its exposure to a select few markets along the Northeast corridor and the Pacific Coast while recycling out of older assets and into newer ones. As with most REITs, Morningstar's Equity Research Group does not assign an economic moat to Equity Residential, as there is no clear competitive advantage that would contribute to excess returns over a long time horizon. The lack of sustainable competitive advantage is offset by a presence in high-rent, high-barrier markets and a strong management team to produce an above-average Business Risk score.

Equity Residential's rating could improve if the company can successfully navigate through the next year or two of moderating market conditions in New York City and San Francisco. Maintaining low leverage and keeping the debt structure simple and transparent would also be essential to an upgrade, as would a return to the 4%-6% annual level of rent growth experienced from about 2012 through 2015. If the period of slow rent growth in certain markets is more prolonged than expected, Equity Residential pursues development or acquisitions that are financed with a greater percentage of debt than is currently on the balance sheet, and interest coverage is significantly reduced, a downgrade could result.

Essex Property Trust Initiated With Credit Rating of BBB+ and Stable Outlook

Morningstar Credit Ratings, LLC is assigning a new corporate credit rating to Essex Property Trust. The BBB+ rating and stable outlook are based on Essex's portfolio of apartment complexes located primarily in high-rent, high-barrier markets, solid coverage and leverage metrics, and highly experienced management team. Since 2014, secured debt has remained fairly constant while the larger company's balance sheet has grown through additional unsecured debt and issuance of new equity. EBITDA/interest coverage is expected to decrease slightly through 2019, but should remain close to 4.0 times, recently exceeding 4.0 times in 2015 and 2016. Leverage as measured against adjusted EBITDA is expected to remain at or just above 6.0 times through the forecast period.

Essex owns gross real estate assets of $13.3 billion, considerably less than AvalonBay Communities and Equity Residential. Essex's average monthly rent exceeds $2,000, not quite the equal of AvalonBay and Equity Residential, but well above that of most other apartment REITs. We estimate that Essex will produce average adjusted funds from operations of about $600 million per year from 2017 through 2021. Debt and equity financing will be required to fund debt maturities averaging $443 million over the 4.5-year period, plus common dividends and a fairly active development pipeline. Credit line availability and a good-size unencumbered portfolio support an average Cash Flow Cushion rank of 5. Our assumptions are based on Essex continuing to operate in a select few markets along the Pacific Coast and on its new property developments being as successful as those in the past. Morningstar's Equity Research Group does not ascribe an economic moat to Essex, as there is no clear competitive advantage that would contribute to excess returns over a long time horizon. The lack of sustainable competitive advantage and portfolio concentration in California are offset by a presence in high-rent, high-barrier markets and a strong management team to produce an average Business Risk score for the peer group.

Essex's rating could improve if the company can navigate successfully through the next year or two of moderating market conditions in the San Francisco Bay area. Achieving meaningful growth in portfolio scale and diversity while maintaining low leverage and keeping the debt structure simple and transparent would also be essential to an upgrade, as would a return to the 6%-8% annual level of rent growth experienced from about 2012 through 2015. On the other hand, if the period of slow rent growth in certain markets is more prolonged than expected, Essex's development program fails to achieve the desired returns, and interest coverage is significantly reduced, a downgrade could result.

Credit Rating Initiation: AvalonBay Communities, Inc.
Morningstar Credit Ratings, LLC is assigning a new corporate credit rating of A- to AvalonBay Communities. The outlook is stable. The rating and stable outlook are based on AvalonBay's high-quality portfolio of apartment complexes located primarily in high-rent, high-barrier markets, solid coverage and leverage metrics, and highly experienced management team. Since the start of 2015, roughly $2 billion of secured debt has been replaced by $2.5 billion of senior unsecured debt, a credit plus. EBITDA/interest coverage is expected to decline slightly by 2019 due to higher debt levels, but should remain at or close to 6.0 times. Debt levels are expected to increase to partially fund the company's development program. We expect them to increase some by 2019, but then flatten through 2021.

AvalonBay owns gross real estate assets in excess of $19.2 billion, the second-largest among other publicly traded multifamily REITs. Moreover, AvalonBay's average monthly rent per unit is $2,499, among the highest in the sector. The company's credit metrics are in line with or better than those of peers, with debt/EBITDA of 5.1 times and EBITDA/interest of 6.8 times. MCR anticipates an increase in leverage to 5.5 times EBITDA by year-end 2018, as we assume the company funds new development primarily with new debt, and some slippage in coverage to about 6.0 times by 2019. We estimate that AvalonBay will produce average adjusted funds from operations of roughly $1.2 billion per year from 2017 through 2021, though MCR anticipates that the company will access debt and equity financing with disposition proceeds to fund debt maturities averaging $317 million (and negligible until 2020) and other obligations through 2021. This flexibility, bolstered by an $18.4 billion unencumbered portfolio, supports the company's above-average Cash Flow Cushion rank of 4. Our assumptions are based on AvalonBay continuing to focus its exposure to a select few markets along the Northeast Corridor and the Pacific Coast, as well as its newest market, Denver, while recycling out of older assets and into newer ones, primarily through development.

Despite its good record of profitable operation of a large portfolio of apartment complexes, competition with many other similar offerings, even in high-barrier markets, often presents challenges. Profitable conditions nearly always spark new development, which can lead to oversupply. Similar to most REITs, Morningstar's Equity Research Group does not ascribe an economic moat to AvalonBay, as there is no clear competitive advantage that would contribute to excess returns over a long time horizon. The lack of sustainable competitive advantage is offset by a presence in high-rent, high-barrier markets and a strong management team to produce an above-average Business Risk score of 4.

AvalonBay's rating could improve if it can navigate successfully through the next year or two of moderating market conditions in New York City and San Francisco, while reducing leverage and keeping the debt structure simple and transparent would also be essential to an upgrade. On the other hand, if the period of slow rent growth in certain AvalonBay markets is more prolonged than expected, AvalonBay's extensive development program fails to achieve the desired returns, or interest coverage is significantly reduced, a downgrade could result.

Bayer's A- Rating Affirmed; Under Review Negative Pending Monsanto Merger
Morningstar Credit Ratings, LLC is affirming Bayer AG's A- rating, which remains under review negative as the firm finalizes its proposed acquisition of Monsanto for $66 billion, announced in September 2016 and expected to close by 2018.

Bayer's stand-alone A- rating reflects its diverse product portfolio that spans human and animal pharmaceutical industries, agricultural markets, and material sciences, which favors our Business Risk pillar. Bayer's currently narrow moat as assigned by Morningstar's Equity Research Group is a composite of the wide-moat human drugs business, the narrow moats in the consumer health and crop sciences divisions, along with the no-moat Covestro material sciences segment. Though it holds a minority interest in Covestro (41%), Bayer consolidates financial results of this segment. We believe the addition of wide-moat Monsanto's offering in seeds and genetic traits to Bayer's leading crop chemical portfolio would transform the crop science division into the global leader in the agriculture industry. We believe that Bayer's underlying business is solid with strong intellectual property and exposure to higher-margin growth segments, primarily pharmaceuticals and crop sciences, which should support EBITDA margins in the mid-20s as a percentage of sales through 2021.

We expect Bayer's capital structure will change dramatically upon the completion of its acquisition of Monsanto, but few details are finalized at present. Incremental debt funding needed to complete the transaction will pressure our Cash Flow Cushion and Solvency Score pillars following the purchase. Based on the terms found in the definitive agreement indicating that funding is to come from $19 billion in equitylike securities and the rest with debt issuance, we believe Bayer's gross debt/EBITDA looks set to rise to the low-4s on a pro forma basis, if the deal closes. While Bayer management has said it plans to manage to its current A- rating in the long run, we think its credit metrics immediately following and at least for a couple of years after the proposed merger may be more representative of the broad BBB category. The firm had EUR 19.2 billion in debt on June 30, or 1.6 times gross debt/adjusted EBITDA for the trailing 12 months. Considering EUR 2.8 billion in cash and equivalents on June 30, net leverage stood at 1.4 times for the trailing 12-month period. Taking into account Bayer's underfunded pension and lease obligations, adjusted gross leverage metrics jump by nearly one full turn to 2.5 times for the trailing 12 months. In the event that the merger does not happen, we see Bayer, as a stand-alone entity, easily managing its maturing debt obligations with annual free cash flow that we expect to exceed EUR 5.5 billion through at least 2021, which could be conducive to debt reduction in future years. We estimate that Bayer can maintain solid financial flexibility even as it distributes a healthy dividend to shareholders of around EUR 2 billion per year.

Bayer's management appears willing to boost gross debt/EBITDA to the low 4s on a pro forma basis, which may stress the firm's Cash Flow Cushion and Solvency Score pillars enough to downgrade Bayer's A- credit rating. As we gain further insight into Bayer's deleveraging plan and more comfort in the potential for this merger to close, we will review the combined entity's credit profile and determine its rating at that time.

Monsanto's Rating Affirmed at A; Under Review Negative Due to Bayer Acquisition

Morningstar Credit Ratings, LLC is affirming the A corporate credit rating of Monsanto Company and keeping the rating under review negative pending the closing of the acquisition of the company by Bayer AG (rating: A-, UR-).

Monsanto's stand-alone credit rating reflects low risk profiles for its Business Risk and Distance to Default, along with moderate risk profiles for its Cash Flow Cushion and Solvency Score. Monsanto's Business Risk is primarily supported by its size and wide economic moat as assigned by Morningstar's Equity Research Group. The company's Solvency Score reflects good liquidity and robust returns on invested capital. Its Cash Flow Cushion is dictated by robust operating cash flow coupled with moderate debt maturities and sizable dividends over the next five years while its Distance to Default is supported by the company's large market capitalization of its equity relative to its debt balance.

The rating is buoyed by Monsanto's strong competitive position in the seeds and genomics markets globally, ongoing research and development efforts, strong free cash flow generation, and a conservative capital structure. The company's latest 12 months net debt/EBITDA was approximately 2 times at the end of May, and its LTM free cash flow was approximately $1.8 billion. Monsanto maintains good liquidity, with $1.6 billion in cash and equivalents on hand as of May 31 and availability under its $3 billion unsecured revolving credit facility due 2020; this also backstops its commercial paper program, which had a balance of $1.2 billion as of the end of May.

Our review will consider our expectation that the acquisition will increase Bayer's debt/EBITDA to approximately 4 times, compared with Monsanto's lower current leverage. While we believe the acquisition makes sense for Monsanto from a strategic standpoint, we expect Bayer's balance sheet (inclusive of Monsanto debt) will be leveraged for some time following the transaction.

We may downgrade Monsanto's rating upon the closing of the transaction due to the weakening of the combined company's Cash Flow Cushion and Solvency Score risk profiles. We consider an upgrade unlikely in the near term. If the transaction were not to close for some reason, Monsanto's rating could be raised if its Cash Flow Cushion or Solvency Score significantly improve.

Bristol-Myers Squibb's AA- Rating Affirmed; Outlook Remains Stable

Morningstar Credit Ratings, LLC is affirming Bristol-Myers Squibb Co's AA- rating and stable outlook, reflecting the firm's increasingly strong operational performance and historical financial discipline. We see the firm's strong credit profile, supported by promising growth prospects primarily driven by rising demand for its refreshed medicine bag—including immuno-oncology cornerstone Opdivo and Pfizer-partnered cardiovascular drug Eliquis—as balanced against heavy pressure on its established brand pharmaceuticals.

Over the past five years, Bristol-Myers Squibb has weathered the patent expirations of once-bestselling blockbuster medicines—Plavix (stroke prevention) in 2012 and Abilify (antipsychotic) starting in 2014. While the firm is currently contending with the patent losses of Sustiva (HIV), Reyataz (HIV), and Baraclude (hepatitis B), which together represent around 13% of total sales, solid uptake of Opdivo and Eliquis may support sales growth in the midsingle digits and EBITDA increasing in the low double digits (2016-21 CAGR) in our estimation. Our expectation includes sustained pressure on the firm's established brand portfolio, including hepatitis C treatments from strong brand competition and the expiring medicines. Bristol-Myers Squibb's success is becoming increasingly dependent on Opdivo, as the majority of research dollars are focused on extending uses for the medicine, and as such, we see Opdivo and Eliquis together generating more than 50% of revenue in 2018, which negatively influences our Business Risk pillar. Our concentration concerns are heightened, given mightier competition from Merck's (rating: AA, stable) Keytruda and new entrants—Roche's (rating: AA-, stable) Tecentriq, AstraZeneca's (rating: A-, negative) Imfinzi, and Pfizer (rating: AA-, stable)/Merck KGaA's (rating: BBB+, positive) Bavencio—especially after unfavorable clinical data for Opdivo in the first-line treatment of lung cancer (Checkmate-026) places the firm at a competitive disadvantage in the largest oncology market.

Bristol-Myers Squibb kept gross debt leverage relatively steady during its patent cliff in 2012-15 in the mid-2 times by reducing debt as EBITDA significantly contracted. Also during this period, the company maintained solid liquidity by maintaining a healthy cash and investments balance ($9.1 billion as of June 30) that has yielded a net cash position since 2014. With newfound credit strength at year-end 2016, considering that gross leverage dropped to 1.1 times, the firm increased total debt to $8.2 billion by June 30 after it issued $1.5 billion of new debt in the first quarter to help complete a $2 billion accelerated share repurchase. As a result, gross leverage was 1.5 times for the trailing 12 months, which is still nearing levels seen in 2011 prior to the firm's patent cliff. We expect the credit measure to fall further in conjunction with our assumption that the firm repaid its senior notes due in August ($750 million) with cash, leaving it consistent with 2016. Over the next five years, we anticipate any improvement in leverage may stem from earnings growth, as we think the firm may refinance modest debt maturities during this time of $1.3 billion in 2019. Bristol-Myers Squibb's financial flexibility is growing along with burgeoning profits, as annual free cash flow may average over $6 billion through 2021 in our estimation. Priorities for cash are a progressive dividend ($2.5 billion for the trailing 12 months as of June 30) and small-scale asset purchasing that fill research portfolio gaps across the firm's six core therapeutic areas: immuno-oncology, cardiovascular conditions, fibrotic diseases, immunoscience, oncology, and genetic disorders. We think the firm can ably manage its expectation to repurchase shares of $200 million-$300 million per quarter from stronger cash flow generation. Manageable debt maturities and strengthening free cash flow generation favorably influence our Cash Flow Cushion, Solvency Score, and Distance to Default pillars.

Given our stable outlook on Bristol-Myers Squibb's rating, we see no immediate catalysts to change the rating upward or downward. The firm's rating though considers the potential for strong sales growth bolstered by continued solid demand for Eliquis and Opdivo, and if there is significant deviation from our operational performance estimates such that our Cash Flow Cushion is pressured, then negative rating action may follow. In addition, the AA- rating could be threatened by large leveraging transactions, such as heavy business development or aggressive share repurchases that significantly stretch leverage for a sustained period, and negatively affect the Cash Flow Cushion, Solvency Score, and Distance to Default pillars. On the other hand, a more balanced product portfolio arising from internal research or external business development that eases anticipated reliance on Opdivo and Eliquis may bolster our Business Risk pillar, along with sustained low leverage that keeps the strong leverage-based pillars intact, which may help drive the current rating higher.

Perrigo's BBB- Rating Affirmed; Outlook Changed to Stable

Morningstar Credit Ratings, LLC is affirming Perrigo Co PLC's BBB- credit rating as the latter firm executes its strategy to improve its operations while focusing on maintaining an investment-grade rating. We revise the rating outlook to stable from negative, given Perrigo's actions taken to reduce its debt load over the past year, which returned debt leverage close to levels before its acquisition spree in 2013-15.

Perrigo faces significant operational headwinds as it carries out its strategy to build a durable business. However, it bought some time to execute its business plan after significant debt reduction in fiscal 2017, funded mainly by divestment proceeds that dropped prior elevated leverage into a range consistent with the current rating category, which informs our stable outlook. We think increased internal investment and corporate pruning to reinvigorate flagging performance will probably create volatility in earnings and cash flows as the company carries out its strategic initiatives. Recent asset sales, notably the royalty stream from sales of Tysabri (multiple sclerosis), have decreased diversification, which along with the loss of Perrigo's economic moat, as assigned by Morningstar's Equity Research Group, negatively influences our Business Risk pillar. However, this pressure is mitigated by our more favorable view of management from a creditor's perspective, given the firm's latest actions to strengthen its balance sheet. Despite greater-than-historical generic drug pricing pressures and choppy operating performance, we anticipate revenue to increase in the low single digits and EBITDA in the midsingle digits compounded annually in 2017-21 excluding any contribution from Tysabri, which had represented nearly one third of earnings.

Perrigo's commitment to an investment-grade rating was best exemplified by its debt tender offer ended in June and repayment of long-term debt in May, which decreased its debt load to approximately $3.7 billion at the end of the second quarter from around $5.8 billion at the end of 2016. This debt reduction dropped gross debt leverage to 2.9 times for the latest 12 months as of June 30 from around 3.6 times at the end of 2016, which was inflated from heavy acquisition activity in 2013-15, including the large purchases of Elan ($9.5 billion) and Omega ($4.4 billion). The sudden fall in leverage immediately benefited our Cash Flow Cushion pillar and will eventually boost our Solvency Score pillar, which may create a rating uplift in the long term. We see the firm repaying senior notes (about $370 million) due in December that could further reduce gross leverage. Remaining debt maturities are manageable with free cash flow averaging $700 million through 2021, by our estimates, even though future earnings will be detrimentally affected by the loss of Tysabri royalties. Perrigo held back on repurchasing shares and pursuing large acquisitions in 2016 to preserve cash for its deleveraging efforts. However, we remain cautious on Perrigo's capital deployment going forward since the firm saw its newfound financial flexibility as reason for returning to share repurchasing in the second quarter. In the long run, we would not be surprised to see the firm pursue a transformative acquisition that may once again stress the balance sheet.

Mylan's BBB- Credit Rating Affirmed; Outlook Changed to Negative
Morningstar Credit Ratings, LLC is affirming Mylan's BBB- rating, which depends on the firm easing elevated debt leverage. However, the firm contends with significant operational challenges stemming from increased pricing pressure in the U.S. generics market and subdued expectations for its best-selling EpiPen brand (severe allergic reactions). Combining these challenges with the firm's delay in achieving its net leverage target of 3 times after the $10 billion acquisition of Meda in August 2016, which pressures our Solvency Score pillar, we are changing the rating outlook to negative from stable.

Management remains committed to its investment-grade rating and reaching its leverage goal through the longer term (from around the end of 2017 originally), which we see as attainable by 2020 mainly through debt reduction as the firm works to reverse organic operational declines. Though, we are cautious as Mylan has historically taken an aggressive approach to capital deployment that could jeopardize its debt reduction efforts. The firm's business development strategy over the past few years has eased reliance on EpiPen (now less than 10% of overall sales) and increased geographic reach whereby international markets generate around one-half of total sales. This lightened concentration has supported our Business Risk pillar even as Morningstar's Equity Research Group removed Mylan's narrow moat along with all generic drug industry participants and raised its uncertainty to very high from high as the firm faces nearing generic competition to EpiPen. Mylan holds a competitive advantage with its capability in introducing complex generic drug formulations, including the potential launches of Teva Pharmaceutical Industries Ltd's (rating: BBB-, negative) Copaxone and GlaxoSmithKline PLC's (rating: A, stable) Advair in 2018. We remain optimistic that revenue and EBITDA may rise in the midsingle digits over the next five years compounded annually backstopped by an expanding generic segment, which supports our Cash Flow Cushion and Solvency Score pillars.

Mylan's leverage is stubbornly elevated since the acquisitions of Meda and the Renaissance topicals business in 2016 that more than doubled its debt load to $15.5 billion at the end of 2016 from $7 billion in 2015. Total debt had only modestly eased to $15.1 billion by the end of the second quarter of 2017, or gross leverage of 4.1 times for the past 12 months. With $613 million in cash and investments on June 30, net leverage stood at 3.9 times for the trailing 12 months. Mylan originally planned to reduce net leverage to 3 times within 18 months after the Meda purchase (or around the end of 2017) but now expects net leverage of 3.7 times at the end of this year and the initial expectation as a longer-term goal, which has pressured our Solvency Score pillar. The leverage target miss was foreshadowed in November 2016 by the firm's refinancing of $2.4 billion in term loans due in 2017 with new term loans maturing in 2019 as well as the issuance of floating-rate euro-based notes due in 2020 ($571 million outstanding on June 30). Mylan does have the financial flexibility to utilize average free cash flow of $1.9 billion annually through 2021, in our estimation, to pay off most of its long-term debt maturities (as of June 30) of $1.8 billion in 2018, $1.9 billion in 2019, $1.9 billion due in 2020, and $2.3 billion due in 2021. However, we think the firm may achieve its net leverage goal in 2020 through a combination of moderate debt repayment and relatively steady profitability. Mylan is currently positioned as a weak BBB- credit, which is influenced by its opportunistic share repurchasing and historically heavy business-development activities seeking complementary assets to its branded, generic, and over-the-counter drug portfolios that can occasionally boost gross debt/adjusted EBITDA to more than 4 times on a pro forma basis.

Considering the negative outlook, the main catalyst for a rating downgrade over the next year or so is prolonged inflated leverage such that the Solvency Score pillar further deteriorates, whether through operational stresses or a continued heavy debt load. On the other hand, leverage improvement to the firm's target for a sustained period that maintains or strengthens our leveraged-based pillar could result in positive rating action, including a return to a stable outlook.

Teva's BBB- Credit Rating Affirmed; Outlook Changed to Negative

Morningstar Credit Ratings, LLC is affirming Teva's BBB- credit rating reflecting the firm's leadership in the global generic pharmaceutical industry and its commitment to an investment-grade rating. The negative outlook is informed by our expectation that Teva's balance sheet remains stretched over the ratings horizon due to significant debt used to acquire Actavis in August 2016.

Our main credit concern relates to the firm's elevated gross debt leverage that we see remaining above its target of 3.5 times by 18 months after completion of the leveraging transaction, which stresses our Solvency Score pillar. Maintaining the current rating would require the firm to meaningfully decrease leverage, accomplished through material debt reduction and steady profitability such that our Solvency Score pillar improves over the long term. We are encouraged by Teva's recent actions that demonstrate its desire to maintain investment-grade status, specifically accelerating cost initiatives, reducing its dividend by 75%, and divesting assets in order to repay debt. However, the firm's task is complicated by nearing U.S. generic competition to its best-selling medicine Copaxone (40 mg dosage) that represents 85% of the multiple sclerosis franchise, which in total presently accounts for around 19% of overall sales. Moreover, Teva just hired a new CEO, whose strategy is yet determined, after the abrupt retirement of the prior manager in late 2016. Given Teva's scale, geographic reach, and breadth of its generic drug product offering, which favors our Business Risk pillar, we still see revenue and EBITDA rising in the low single digits compounded annually through 2021, assuming the firm reaches the $1.6 billion of cost synergies in 2017 stemming from the Actavis purchase. We see recovery of top-line growth in 2019 helped by new brand-name medicines, including the specialty drug Austedo for Huntington's disease and tardive dyskinesia, and new generic entrants arising from Teva's broadened pipeline with over 300 generic drug filings under review at the Food and Drug Administration including over 100 first-to-file applications that offer higher profitability from 180-day market exclusivity periods.

Teva's debt load remains inflated at $35.1 billion on June 30, or gross debt leverage of 5.5 times for the trailing 12 months. We remain highly skeptical that Teva will achieve its goal of 3.5 times by 18 months after the purchase of Actavis despite the firm's commitment to an investment-grade rating. With a modest cash balance of $599 million on June 30, net leverage was 5.4 times for the trailing 12 months, only slightly differing from the gross leverage level. We see a path to the firm's leverage expectation in the longer term via significant debt reduction and stable profitability that could drive our Solvency Score higher and support the present BBB- rating. While the firm's decent free cash flow averaging $3.5 billion is not enough to match coming maturities over the next five years, in our estimation, we still see Teva able to decrease its debt balance to move leverage into its goal by 2020. Over the next five years, Teva has long-term debt maturities comprising $5.3 billion in 2018, $3.9 billion in 2019, $4.0 billion in 2020, and $4.2 billion in 2021. Supporting our view is the firm's recent 75% cut to its annual dividend that will preserve more than $1 billion of cash that can be directed to debt reduction. In addition, Teva plans to sell certain assets in the near term, specifically its women's health and European oncology and pain businesses, and utilize proceeds to repay debt. We also recognize that management has taken prior steps to preserve cash flow for debt reduction, including stopping share repurchases and curtailing larger M&A actions.

Considering the negative outlook, any hiccups with the proposed asset sales and subsequent debt repayment beyond early 2018 and with minimizing underwhelming operational performance over the next three quarters including further declining outlook revisions, such that any one of our leverage-based pillars deteriorating from its current level would nudge the rating into speculative-grade territory. In addition, a return of heavy shareholder returns or aggressive M&A activities before gross leverage falls into Teva's preferred range would pressure the BBB- rating downward. On the other hand, leverage improvement to the firm's target for a sustained period that maintains or strengthens our leverage-sensitive pillars could result in positive rating action, including a return to a stable outlook.

Hess' Rating Affirmed at BBB-, Outlook Stable; Cost Reductions Support FCF Generation
Morningstar Credit Ratings, LLC is affirming the BBB- corporate credit rating of Hess Corp. and maintaining a stable outlook. MCR's affirmation incorporates our current oil and gas price forecasts and our estimate for gradually improving company performance over the next several quarters. The stable outlook reflects Hess' excellent progress in lowering its overall cost structure and its growth strategy, with lower-risk, U.S. onshore production providing balance to the company's global offshore E&P activities.

Our rating reflects estimated companywide, organic oil-equivalent production growth at a mid-single-digit percentage rate per year for the next few years. The most influential projects incorporated in our forecast are Hess-operated developments, including growing production from the Bakken Shale (North Dakota, oil-weighted), North Malay Basin (50% Hess, offshore Malaysia, gas), and Stampede development in the deepwater Gulf of Mexico (25% Hess, oil-weighted), helping to fund long-term development of very large, recent discoveries on the Stabroek Block (nonoperated, 30% Hess, offshore Guyana, oil). Our rating also reflects the inherent cyclicality for exploration and production (upstream) activity. Further, our rating reflects the view of Morningstar's Equity Research Group that Hess does not benefit from an economic moat, given the historical volatility of the company's return on invested capital. However, the steady reduction in the company's cost structure should help temper this volatility. The rating outlook incorporates our expectation that operating margins will gradually expand in light of cyclically rebounding oil and natural gas price realizations over the next several quarters.

We view Hess' liquidity relative to scheduled debt maturities through our forecast period as excellent. The company ended the second quarter with approximately $2.5 billion in cash and cash equivalents and total liquidity of $6.8 billion including available committed credit facilities. Hess has guided for approximately $2.3 billion in capital expenditures for 2017 (including midstream), slightly higher than the prior year. Our estimate for capital expenditures in 2018 is $2.4 billion. We expect capital expenditures in both years to be significantly weighted toward the Bakken Shale, with increasing outlays for offshore Guyana offset by declining expenditures in the deepwater GOM and Malaysia as projects there are coming to fruition. After adjusting for capital expenditures, dividends, and divestments, we estimate positive free cash flow for Hess in 2017 of $850 million (equivalent to 13% of second-quarter total debt of $6.7 billion), which benefits from our assumption for $800 million in noncore asset sales. After 2017, we assume noncore asset sales of $100 million per year, which is conservative relative to recent company history. After adjusting for the large, one-time benefit from asset sales in 2017, we expect free cash flow to cycle higher to $760 million by year-end 2021, contributing to an average Cash Flow Cushion score. However, we also expect an increasing return on invested capital, which should drive an improving Solvency Score through our forecast period.

In our base-case forecast, we estimate the company's EBITDAX margin gradually rising to 62% by 2021 after bottoming at 26% in 2016. Commensurate with this, we estimate the ratio of total debt/trailing EBITDAX peaked at about 5.5 times in 2016, and we currently expect it to decline to around 1.5 times by year-end 2019. Our base operating forecast incorporates an average 2017 price assumption of $3.04 per million British thermal units for U.S. natural gas and $3.00 per year thereafter. For oil (West Texas Intermediate basis), our yearly forecast is $51.50/barrel average for 2017, $60/barrel for 2018 and 2019, and $65/barrel for 2020 and 2021. Our natural gas price forecast is 4%-8% above the futures price curve (as of Sept. 5) through 2021. For oil, our annual forecast is 10%-20% above the futures price curve through 2021, at the top end of the range for the last two years of our forecast.

Our rating outlook is stable and assumes that the company is able to incrementally reduce leverage from higher price realizations that should come about from the gradual improvement in oil and gas supply/demand fundamentals. However, if spot pricing continues to languish, further squeezing margins and pressuring the Solvency Score, we may consider a downgrade of the credit rating. Alternatively, if oil and gas supply/demand fundamentals and the pricing outlook improve more quickly than our current expectation, we would consider raising the credit rating as we would expect improvement in our Cash Flow Cushion and Solvency Scores.

Murphy's Rating Affirmed at BB+, Outlook Stable; Cost Reductions Support FCF Generation
Morningstar Credit Ratings, LLC is affirming the BB+ corporate credit rating of Murphy Oil Corp. and maintaining a stable outlook. MCR's affirmation incorporates our current oil and gas price forecasts and our estimate for gradually improving company results over the next several quarters. The stable outlook reflects Murphy's excellent progress in lowering its overall cost structure and its growth strategy, which focuses on low-risk, North American onshore, oil-weighted production.

The rating reflects our expectation for companywide organic oil-equivalent production growth at a mid-single-digit percentage rate per year for the next few years. The most influential projects incorporated in our forecast are Murphy-operated developments, including growing production from recently acquired holdings in the Tupper Montney (northeast British Columbia, gas) and Kaybob Duvernay (Alberta, oil-weighted), partly funded by steady production from cash-flow generating, oil-weighted assets in the Eagle Ford Shale (Texas) and offshore Malaysia. Following last year's adjustments to its portfolio of oil and gas holdings, Murphy's Canadian operations are now better aligned with its unconventional business in the Eagle Ford Shale. Our rating also reflects the inherent cyclicality for exploration and production (upstream) activity. Further, our rating reflects the view of Morningstar's Equity Research Group that Murphy does not benefit from an economic moat, given the historical volatility of the company's return on invested capital. However, the steady reduction in the company's cost structure should help temper this volatility going ahead. The rating outlook incorporates our expectation that operating margins will gradually expand in light of cyclically rebounding oil and natural gas price realizations over the next several quarters.

We view Murphy's liquidity relative to scheduled debt maturities through our forecast period to be excellent. The company ended the second quarter with approximately $1.1 billion in cash, Canadian government securities, and cash equivalents and $922 million available on its $1.1 billion three-year senior unsecured credit facility. Murphy has guided for $890 million in capital expenditures for 2017, about 5% lower than the prior year. On a preliminary basis, the company estimates capital expenditures up to $1.0 billion in 2018. Capital expenditures in both years are planned to be heavily weighted toward the Eagle Ford Shale and, second, Kaybob Duvernay. After adjusting for capital expenditures, dividends, and divestments, we estimate net cash flow for Murphy in 2017 to be about break-even. We assume noncore asset sales of $100 million per year, conservative relative to recent company history, throughout our forecast period. In August, Murphy issued $550 million of senior unsecured notes due 2025, the proceeds from which were subsequently used to redeem $550 million of notes maturing in December. We expect net cash flow to cycle higher to $450 million by year-end 2021, which supports an average Cash Flow Cushion score. However, an increasing return on invested capital drives an improving Solvency Score through our forecast period.

In our base-case forecast, we estimate the company's EBITDAX margin gradually rising to 72% by 2021 after bottoming at 48% in 2015. Commensurate with this, we estimate total debt/trailing EBITDAX peaked at 3.3 times in 2016 and expect it to decline to about 1.5 times by the end of 2020. Our base operating forecast incorporates an average 2017 price assumption of $3.04 per million British thermal units for U.S. natural gas and $3.00 per year thereafter. For oil (WTI basis), our yearly forecast is

$51.50/barrel average for 2017, $60/barrel for 2018 and 2019, and $65/barrel for 2020 and 2021. Our natural gas price forecast is 4%-8% above the futures price curve (as of Sept. 5) through 2021. For oil, our annual forecast is 15%-25% above the futures price curve through 2021, at the top end of the range for the last two years of our forecast.

Our rating outlook is stable and assumes that the company is able to incrementally reduce leverage from higher price realizations that should come about from the gradual improvement in oil and gas supply/demand fundamentals. However, if spot pricing continues to languish, further squeezing margins and pressuring the Solvency Score, we may consider a downgrade of the credit rating. Alternatively, if oil and gas supply/demand fundamentals and the pricing outlook improve more quickly than our current expectation, we would consider raising the credit rating as we would expect improvement in our Cash Flow Cushion and Solvency Scores.

Recent Notes Published by Credit Analysts

Upward Revisions to Harvey Loss Estimates and Losses From Irma Unlikely to Affect Credit Quality

MCR Credit Risk Assessment

Despite the considerable damage caused by Hurricane Harvey and the potential for materially greater losses from Hurricane Irma, we do not foresee any long-term deterioration in the credit quality of Morningstar-rated property and casualty insurance companies as a result of these events. Natural catastrophes are an operating hazard inherent in the industry, and a certain level of losses stemming from these events is factored into our ratings analysis. Furthermore, P&C insurers have had ample time to build up capital levels over the intervening decade, as the last major hurricane to make U.S. landfall above Category 3 or in the state of Florida was Hurricane Wilma in October 2005. Additionally, severe downward pricing pressure in the reinsurance sector—driven by the increasing popularity of alternative capital sources such as catastrophe bonds along with the dearth of major catastrophe losses—has led to favorable reinsurance terms for most primary insurers, such as higher excess of loss limits and multiyear deals.

Generally, issues we would see as a cause for concern when analyzing natural catastrophe loss data include whether losses are disproportionately outsized compared with competitors or if the magnitude of losses from either a single storm or multiple storms are great enough to cause material capital deterioration. Given our examination of catastrophe-prone geographic exposures, business concentration, reinsurance employed and reinsurer credit quality, we believe rating actions linked to hurricanes Harvey and Irma are unlikely at this time. At the same time, though, we are closely following the release of loss estimates, new weather developments, and company reports in order to ascertain a more holistic picture of ultimate losses, and we may take rating actions should any unexpected, materially negative developments occur.

Loss estimates are still in the preliminary stage for Hurricane Harvey, and the full financial impact of the storm likely won't be known for at least a few quarters. However, as additional information comes to light following the damage left in the wake of Hurricane Harvey, loss estimates have been revised upward by industry experts and natural catastrophe modeling agencies. According to Risk Management Solutions, overall economic losses are now estimated to be $70 billion-$90 billion due to the unprecedented flooding of the Houston metropolitan area, with insured losses excluding the National Flood Insurance Program roughly estimated at $15 billion-$30 billion. AIR Worldwide, a competing catastrophe modeling and risk management firm, has revised its economic loss estimate to $65 billion-$75 billion and its insured loss estimate is in excess of $10 billion, with $3 billion of related to damage from winds and storm surge. We believe the upward revisions to insured loss estimates likely consider greater-than-expected losses linked to private and commercial automobiles, commercial property flood damage, and business interruption claims as well as greater information around wind and storm surge damage to insured residential homeowners.

In our previous credit note, "Credit Implications of Hurricane Harvey Minimal Based on Initial Estimates," we provided Texas market share data and the percentage of premiums written in Texas to total U.S. premiums written for Morningstar-rated P&C insurers AIG (rating: BBB, negative), Allstate Corp. (rating:

BBB+, stable), Chubb Ltd. (rating: A-, positive), and Travelers Companies Inc. (rating: A-, stable). We have since analyzed each insurer's total exposure to catastrophe-affected lines of business such as farm/homeowners, commercial and private automobile, allied lines, and commercial multiperil; as a percentage of total U.S. premiums written, Allstate's exposure is 7.5%, Travelers' 3.0%, Chubb's 2.9%, and AIG's 2.6%. As such, we maintain our belief that losses from Hurricane Harvey will probably be an earnings event as opposed to a capital event for these P&C insurers.

While we do not yet have a clear picture of economic losses that might be incurred from Hurricane Irma, with estimates ranging from tens to hundreds of billions of dollars, AIR Worldwide's most recent U.S. insured loss estimate places the total at $20 billion-$40 billion, tightening from an earlier estimated range of $15 billion-$50 billion. Additionally, insured losses to select Caribbean islands are estimated at $5 billion-$15 billion. Whereas a substantial portion of the destruction wrought in Texas was to uninsured residential properties (roughly 70% uninsured), there is a much lower insurance gap (insured versus uninsured property) in the Florida and Southeast coastal markets because of the damage from past hurricanes. However, we believe Morningstar-rated P&C insurance companies are well insulated from homeowners' liability in Florida due to the market evolution that took place since the last spate of major hurricanes over a decade ago, in which large private carriers largely exited the state and smaller regional and state-run insurers took over the lion's share of the market. Irma may be a capital event for these smaller, geographically concentrated homeowners' insurers, but it is likely to be another earnings event much in the same vein as Harvey for our coverage list, as Florida catastrophe-exposed lines of business only represent 4.5% of AIG's total U.S. premiums, 3.0% of Chubb's, 2.5% of Allstate's, and 1.0% of Travelers'.

Market Data
The following spreads over the nearest Treasury are provided by Interactive Data.
Chubb 3.35% notes due in 2026 are indicated at +84 basis points.
Travelers 3.90% notes due in 2020 are indicated at +58 basis points.
Allstate 3.28% notes due in 2026 are indicated at +90 basis points.
AIG 3.90% notes due in 2026 are indicated at +131 basis points.

Dover's Exploration of Strategic Alternatives Could Discover Credit Improvements

MCR Credit Risk Assessment
After weeks of speculation, Dover Corp (rating: A-, negative) formally announced Sept. 12 that it is exploring strategic alternatives for its upstream energy business. The group, called Wellsite, includes the company's artificial lift, energy automation, and U.S. Synthetic units. We think the timing is wise on Dover's part, as the recent improvement in fortunes should maximize the net proceeds. The energy segment, which includes the bearings and compression business and the Tulsa Winch group that are not part of the review, delivered 39% organic revenue growth for the six months ended June 30 while improving EBITDA margins 870 basis points to 23.2%. Management expects Wellsite to generate $1 billion in sales and $250 million in EBITDA in 2017.

At present, we think the elimination of this business has the potential to help revive Dover's credit profile in many areas. The energy business is on track to report more robust profitability than two of Dover's remaining segments: fluids (28% of sales, 17.1% EBITDA margins) and refrigeration and food equipment (21% of sales, 16.5% EBITDA margins). However, the energy segment saw revenue get cut in half from 2014 to 2016 despite $225 million in acquired growth while EBITDA margins contracted to 16.8% from 28.4%. Thus, eliminating this business may smooth out the cyclicality component of the company's Business Risk score, even while the size and concentration components will get marginally worse. If the firm were to use the funds, which we estimate could range from $1 billion to $1.5 billion in gross proceeds depending on an outright sale or a tax-free spin-off, to repay debt, then it would help improve the Solvency and Cash Flow Cushion scores.

Although they only compete in some business segments, diversified peers Parker Hannifin Corp (rating: A-, stable) and Illinois Tool Works Inc (rating: A, stable) are reasonable comparables for Dover. Aside from its negative outlook, on a relative basis, Dover's Business Risk suffers from its smaller revenue base—$7 billion versus $13 billion for Parker, pro forma for Clarcor, and $14 billion for Illinois Tool Works—and a weakened financial position, as indicated by our negative outlook.

Market Data
The following spreads over the nearest Treasury are provided by Interactive Data.
Dover 3.15% notes due 2025 are indicated at +72 basis points.
Parker Hannifin 3.25% notes due 2027 are indicated at +69 basis points.
Illinois Tool Works 2.65% notes due 2026 are indicated at +87 basis points.

Concho Resources Announces New Senior Notes Offering to Fund Repurchase of Existing Notes
Market Data
Concho Resources (rating: BB+, positive) has announced a new issue of senior unsecured notes, including 2027 and 2047 maturities. According to regulatory filings Sept. 13, Concho indicated that it intends to use net proceeds from the offering, together with cash on hand and borrowings under its credit facility, to fund the purchase of its $600 million 5.5% senior notes due 2022 and $1.55 billion 5.5% senior notes due 2023 (collectively, the "5.5% notes") pursuant to a proposed tender offer and the redemption of any 5.5% notes outstanding after completion or termination of the tender offer.

At the end of June, Concho had $2.75 billion of senior unsecured notes with maturities of $600 million in 2022, $1.55 billion in 2023, and $600 million in 2025. Also at June, the company's commitments from its bank group on its credit facility were $2 billion and its borrowing base was $3 billion. The credit facility matures in May 2022.

For market comparables, we reference similar-rated but more diversified U.S.-based exploration and production peers: Pioneer Natural Resources (rating: BBB-, positive), Apache Corp. (rating: BBB-, positive), and Anadarko Petroleum (rating: BB+, positive). The following market pricing is from Interactive Data as of Sept. 12.

In the 10-year area, comparable issues are indicated:
Pioneer Natural Resources 4.45% notes due 2026 at +134 basis points.
Apache 7.95% notes due 2026 at +219 basis points.
Anadarko Petroleum 7.125% notes due 2027 at +288 basis points.

In the 30-year area, comparable issues are indicated:
Apache 7.375% notes due 2047 at +259 basis points.
Anadarko Petroleum 6.60% notes due 2046 at +250 basis points.

That the Morningstar Corporate Bond BBB- Index was +173 basis points as of Sept. 12. The Morningstar Index approximates 10-year maturities.

MCR Credit Risk Assessment
Concho's Business Risk and Cash Flow Cushion are generally in line with the other BB+ and BBB- E&P comparables. However, its weak Solvency Score compares less favorably with Apache or Pioneer Natural Resources. At the end of June, Concho's net leverage is 1.5 times, lower than that of Apache and Anadarko Petroleum at 1.9 times and 1.8 times, respectively, but higher than that for Pioneer Natural Resources at 0.2 times.

Gilead Issuing New Debt to Fund Kite Acquisition
Market Data
Gilead Sciences Inc. (rating: A+/UR-) is in the market with a proposed offering that includes 18-month and 1- and 2-year floating-rate securities as well as 2-year fixed-coupon maturities. According to a preliminary prospectus filed Sept. 14, net proceeds will be used for the acquisition of Kite Pharma for approximately $11.9 billion. Gilead expects to use proceeds of the new debt issuance and new bank debt to fund the transaction, which is expected to close in the fourth quarter.

For the best comparisons with Gilead's notes, we look to lower-rated peers in the biotechnology industry, Amgen Inc (rating: A, stable) and Biogen Inc (rating: A, stable). All of the following bond data is sourced from Interactive Data. In the approximate 2-year maturity bucket, bonds from these issuers recently traded over the nearest Treasury as follows:
Gilead's 2.05% notes due 2019 at +39 basis points.
Amgen's 1.90% notes due 2019 at +58 basis points.
Biogen's 2.90% notes due 2020 at +55 basis points.

MCR Credit Risk Assessment
Gilead's A+ rating is under review negative given the company's pending acquisition of Kite Pharma for $180 per share, or around $11.9 billion. Kite is a leader in cell therapy and has its leading developmental project axicabtagene ciloleucel (axi-cel) nearing U.S. approval for the treatment of non-Hodgkin lymphoma (Food and Drug Administration action date Nov. 29). The deal has already received approval from each company's board of directors. With the vast majority of its $36.6 billion of cash and marketable securities as of June 30 domiciled overseas (around $31 billion), Gilead plans to finance the

purchase with a combination of cash on hand, bank borrowings, and unsecured notes. We are gaining some certainty regarding the amount of debt financing that will be used for the transaction with this new debt issuance, which could pressure the current rating downward by one notch. After receiving additional clarity on the ultimate capital structure of the firm as a result of the acquisition, we will determine the rating outcome. We had already anticipated that Gilead may consummate a transformational deal in the near term to redefine its growth prospects, given a looming HIV patent cliff and falling HCV revenue. While the proposed transaction opens up a new therapeutic class for Gilead in cell therapy, we do not see a significant revision to our expectations for revenue to decrease in the midsingle digits compounded annually through 2021, with EBITDA declining at a faster rate as Gilead dedicates additional resources to its internal research engine.

Gilead's credit profile is stressed from potentially increasing gross debt leverage as EBITDA compresses from operational duress over the next few years. Total debt stood at $26.3 billion as of June 30, but this was covered by $36.6 billion of cash and investments. Gross debt leverage stood at 1.5 times for the latest 12-month period at the end of the second quarter. We see limited opportunity to substantially reduce gross debt leverage simply from debt retirement over the next three years, given a total of only $1.9 billion maturing in that time frame. Gilead still generates substantial cash flow even as revenue is free-falling. In the first six months of 2017, the firm delivered strong operating cash flow of $6.4 billion. We expect free cash flow to average around $9 billion annually through 2021, with larger flows front-loaded in the next two years. Despite management's main priority of directing capital to business development in 2017, Gilead still focused on shareholder returns in the first half of the year, with share repurchases of $695 million and dividends of $1.4 billion.

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