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Key Credit Factors For The Oil Refining And Marketing Industry

Primary Credit Analysts:
Michael V Grande, New York (1) 212-438-2242; michael.grande@standardandpoors.com
Per Karlsson, Stockholm (46) 8-440-5927; per.karlsson@standardandpoors.com

Secondary Credit Analysts:
Andrew M Wong, Singapore (65) 6239-6306; andrew.wong@standardandpoors.com
David C Lundberg, CFA, New York (1) 212-438-7551; david.lundberg@standardandpoors.com

Criteria Officers:
Mark Puccia, New York (1) 212-438-7233; mark.puccia@standardandpoors.com
Peter Kernan, London (44) 20-7176-3618; peter.kernan@standardandpoors.com
Gregoire Buet, New York (1) 212-438-4122; gregoire.buet@standardandpoors.com

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*(**Editor's Note:** These criteria supersede "Key Credit Factors: Criteria For Rating The Global Oil Refining Industry," published Nov. 28, 2011.)*

1. Standard & Poor's Ratings Services is updating and adapting its methodology and assumptions for its key credit factors for the oil refining and marketing industry. We are publishing this article to help market participants better understand the key credit factors in this industry. This article is related to our global corporate criteria (see "Corporate Methodology," published Nov. 19, 2013) and to our criteria article "Principles Of Credit Ratings," which we published on Feb. 16, 2011, both on RatingsDirect.

2. These criteria supersede "Key Credit Factors: Criteria For Rating The Global Oil Refining Industry," published Nov. 28, 2011.

SCOPE OF THE CRITERIA

3. Standard & Poor's Ratings Services is updating its criteria for the oil refining and marketing industry. By "oil refining," we mean companies that derive a majority of their operating cash flow from the process of refining crude oil into various oil-related refined products such as gasoline, diesel, and jet fuel. By "marketing," we mean companies that are wholesale suppliers of refined products, such as gasoline and diesel, to retail outlets (gas stations). For oil refining and marketing companies that own retail operations and convenience stores that sell refined products, we apply the key credit factors outlined in "Key Credit Factors For The Retail And Restaurants Industry," published Nov. 19, 2013. Operating cash flow is our preferred method of determining which companies are subject to these criteria, but we will use revenues if operating cash flow data are not available.

4. These criteria are also applicable in assessing the business risk of refining and marketing (also known as "downstream") operations of integrated oil and gas companies that generally derive the majority of their earnings from oil and gas exploration and production ("upstream") businesses and that also typically have "midstream" businesses, which include the transportation, storage, wholesale marketing, and trading of oil, natural gas, and refined products. To the extent that separate revenue or segment-level operating cash flow information to distinguish these business lines is not available (as is sometimes the case with multinational, integrated oil and gas companies), we will use other available operating data such as refinery capacity, refinery utilization, and refined product sales.

SUMMARY OF THE CRITERIA

5. Standard & Poor's is updating its global criteria for analyzing oil refining and marketing companies by applying Standard & Poor's global corporate criteria.

6. We view oil refining and marketing as a "moderately high-risk" industry under our criteria, given the industry's "moderately high" cyclicality risk and "moderately high" competitive risk and growth. In assessing an oil refining and marketing company's competitive position, we put particular emphasis on the following factors:

   - Ability to source cost-advantaged feedstocks,
   - The refinery's complexity (i.e., its ability to process less-expensive crude oil feedstocks into value-added refined products),
   - Cost position, and
   - Operating flexibility and efficiency.

7. In our assessment of the financial risk profile, we consider industry- or company-specific working capital characteristics (including seasonality and outflows/inflows over the business cycle) and their effect on core ratios such as debt to EBITDA and on supplemental ratios including cash flow coverage (EBITDA to interest) and/or free operating cash flow (FOCF) to total debt.

IMPACT ON OUTSTANDING RATINGS

8. We do not expect these criteria, in and of themselves, to result in any rating changes.

EFFECTIVE DATE AND TRANSITION

9. These criteria are effective immediately on the date of publication.

METHODOLOGY

Part I--Business Risk Analysis

Industry risk

10. Within the framework of Standard & Poor's general criteria for assessing industry risk (see "Methodology: Industry Risk," published Nov. 19, 2013), we view oil refining and marketing--referred to as the "oil and gas refining and marketing industry" in our global corporate criteria and industry risk criteria articles--as a "moderately high-risk" industry (category 4). Our assessment is derived from our view of the industry's "moderately high" (4) cyclicality and "moderately high" (4) competitive risk and growth.

11. The refining business poses substantial risks: It is highly capital-intensive, has high operating risk, has large working capital requirements, and has a long lead time--at least several years--to construct new refineries and bring them into operation. As a result, periods of undercapacity, leading to high profit margins, and overcapacity, when profit margins are low, are common. Operating risks are hazards such as explosions, fires, spills, toxic emissions, maritime accidents, and weather disruptions (such as hurricanes). Finally, intra-month changes in working capital can be large because payments for crude and customer receipts are not perfectly aligned. Changing crude prices can further exacerbate the swings in working capital.

12. Government-related entities (GREs) control a material portion of global refining capacity. GREs are sometimes not as sensitive to market factors as independent companies are, given the importance the former places on ensuring domestic fuel supply security, generating hard currency, and providing employment. GRE control can cause significant distortions in global and regional competition for refined products. For example, refineries that produce under free-market regimes can sometimes be at a disadvantage over those that benefit from government subsidies. But subsidized refiners may be less inclined to reduce production in an economic downturn, leading to oversupply.

13. Refineries are typically among the most significant sources of air and water pollution in areas where they operate, and their most important finished products--transportation fuels--account for a major share of all air pollution globally. As such, refining companies have been subject to successive rounds of new restrictions on direct emissions, especially in OECD countries. Moreover, regulators have repeatedly tightened or otherwise modified formulation standards for gasoline and diesel fuel--significantly adding to refiners' investment requirements and operating costs, while sometimes disrupting end markets. In some cases, governments have imposed blending mandates or placed incentives on the development and use of cleaner-burning alternatives to fossil fuels, spurred by concerns regarding global warming. This has helped slow growth in demand for petroleum products in developed economies.

Cyclicality

14. Key drivers of cyclicality in the oil refining and marketing industry consist of regional and global supply and demand of crude oil and refined products, general economic growth, and, at times, geopolitical factors. Changes in the price of crude oil (the primary raw material for refineries) and of key finished products such as gasoline, diesel, and jet fuel also determine the industry's cyclicality. Pricing differences between grades of crude oil (known as "pricing differentials") are also important factors. Refineries are designed to use specific grades or types of crude oil. Adverse changes in the price differentials between grades can undermine a refinery's competitiveness.

15. We assess the oil refining and marketing industry's cyclicality as "moderately high" (category 4), relative to that of other industries, in both revenue and profitability, the two key measures we use (see "Methodology: Industry Risk"). Based on our analysis of global data from Compustat (from 1950 to 2010 in the U.S. and from 1987 to 2010 in other major economies), oil refining and marketing companies experienced an average peak-to-trough (PTT) decline in revenues of 12% during recessionary periods since 1972. The steepest decline was an average of 31% during the most recent downturn (2007 to 2009). For the same period, these companies experienced an average PTT decline in EBITDA margin of about 22% during recessions, with the steepest PTT drop being 50% during the latest recession.

16. We generally believe that the higher an industry's cyclicality of profitability, the higher the credit risk for entities in that industry. However, the overall effect of cyclicality on an industry's risk profile may be mitigated or exacerbated by the industry's competitive risk and growth.

Competitive risk and growth

17. We view the oil refining and marketing industry's competitive risk and growth as "moderately high" (4). To arrive at this assessment, we evaluate four sub-factors as low, medium, or high risk. These sub-factors are:

- Effectiveness of barriers to entry;
- Level and trend of industry profit margins;
- Risk of secular change and substitution by products, services, and technologies; and

- Risk in growth trends.

18. ***Effectiveness of barriers to entry: Low risk.*** Barriers to entry are very high for new greenfield facilities. The most notable barriers are the significant capital cost and long lead times to get a facility up and running. The constraints posed by government permitting of new refineries and of major upgrades to existing refineries are significant. In some countries, the permitting process is considered so cumbersome that construction of new greenfield facilities is highly unlikely. Meaningful changes in an existing facility could take up to a year or longer to execute and require significant capital.

19. Another factor that could inhibit new entrants is government regulations concerning refinery emissions (air, water) and environmental remediation of spills. As seen in various countries, mandated changes to product specifications could result in significant investment requirements and roil end-use demand patterns, although mandates can also insulate refining companies from competition, at least temporarily. We believe, though, that existing refineries can make important capacity additions, or change the product slate, with somewhat shorter lead times than previously. However, the global trade of refined products allows refiners in one region to compete in the markets of another.

20. Exit barriers are high in certain countries or regions in the sense that they discourage refiners from closing outmoded capacity, thereby offsetting the advantages provided by high barriers to entry. When a refinery does close, the entire industry faces added costs as it attempts to adjust capacity over a number of years. In some cases, costly environmental remediation obligations may become payable once operations are formally terminated, and severance costs may be triggered as employees are laid off.

21. ***Level and trend of industry profit margins: High risk.*** Refining margins are very volatile and affected by many factors, most of which are outside a refining company's control, such as refined product demand and crude oil price differentials. The inherent volatility in refining margins is apparent in the average return on capital (ROC) for independent U.S. refiners during the strong period between 2005 and 2007 and the trough period of 2008 and 2009. The average ROC during the strong period was 37.1% compared with 7.3% during the trough period. In 2009, a particularly weak year for refiners, the average ROC was 3.8%.

22. Increases in the cost of inputs, notably crude oil, may pressure margins significantly if prices of refined products do not move in tandem. Crude oil, the primary raw material for refiners, is a globally traded commodity subject to volatile price fluctuations. The key refined products--gasoline, diesel, jet fuel, and residual fuel--also are globally traded commodities. Refined products' prices tend to be closely tied to crude oil prices, but extended timing lags can sometimes squeeze refining companies' profit margins, although there have also been extended periods of highly favorable prices relative to feedstock costs. In addition, adverse changes in the price differentials between crude oil grades can undermine a refinery's competitiveness because refineries are designed to use specific grades of crude oil.

23. In some countries, transportation fuel sales are heavily taxed, significantly constraining demand. By contrast, transportation fuels have historically been subsidized in some countries (e.g., Saudi Arabia and Venezuela), or prices are regulated (e.g., Indonesia and China) to ease the financial burden for retail and industrial consumers of crude oil price spikes. Price caps, unless offset by subsidies to refining companies, can severely impinge on refining companies' profit margins. Environmental factors such as restricting refinery emissions, formulating standards for gasoline and diesel fuel, and blending mandates to produce cleaner-burning fossil fuels add significant costs and investment requirements, thereby pressuring refining margins.

24. ***Risk of secular change and substitution by products, services, and technologies: Medium risk.*** In the medium term (20 to 25 years), we fully expect gasoline and diesel to constitute the lion's share of fuel in the transportation segment, and we believe there is a low risk of product obsolescence. Given ongoing industrialization and expansion of public and private transport in China, India, and other emerging markets, demand for refined products should continue to grow substantially for the foreseeable future, boosting global market activity. Nevertheless, government mandates regarding the use of alternative fuels can cut into demand for refined products like gasoline and diesel. For example, in the U.S., the Renewable Fuel Standard requires refiners to incorporate biofuel (such as ethanol or biodiesel) into their finished products, displacing a percentage of refined petroleum products in each gallon of fuel. In this way, government-support mechanisms like tax credits or volumetric mandates (or emission regulations that help biofuel plants) can increase competitive pressures on refineries in the medium to long term.

25. However, renewable fuel sources, particularly ethanol, are gaining in popularity and making material inroads on demand for traditional refined products in some markets. Some refining companies have invested in alternative energy sources and technologies (e.g., ethanol and biodiesel) to offset the future drop in demand of conventional petroleum-based transportation fuels.

26. ***Risk in growth trends: High risk.*** Conservation trends, technological advancements (e.g., improving gasoline mileage in automobiles), and government-imposed blending mandates are material risks to long-term growth in the refining industry. Government-led efforts to spur conservation and encourage use of renewable fuels, and other regulations and subsidies are intended to improve fuel efficiency. Furthermore, geopolitical factors can result in high oil prices, and therefore high transportation fuel prices, encouraging a shift in demand toward more fuel-efficient vehicles or vehicles that run on natural gas or electricity. We believe these negative factors are only partially mitigated by slight increases in aggregate fuel usage in developing countries (even if demand drops in some).

Country risk

27. Country risk plays a critical role in determining all ratings on companies in a given country. Country-related risk factors can have a substantial effect on company creditworthiness, directly and indirectly. In assessing country risk for a refining and marketing company, we use the same methodology that we use for other corporate issuers (see "Corporate Methodology"). The country risk assessment is a key factor in our business risk analysis for corporate issuers and covers the broad range of economic, institutional, financial market, and legal risks that arise from doing business in a specific country.

28. Beyond the risks captured in our country risk assessment, some factors can lead to major credit variations among refining industries in different countries and in some cases, among regional markets within countries. These factors include:

- The extent to which the market is served by domestic refining capacity, and the nature of domestic refiners' access to various types or grades of crude oil;
- The nature of the refined product transportation and wholesale and retail distribution systems, including control of retail sales outlets;
- The government's role in local environmental regulations;
- The nature of end-use demand, such as the size and growth rate of the passenger- and commercial-vehicle stock in operation, the intensity of vehicle usage, and the composition of the local industrial fuel oil user base;
- The extent to which the market is open to refined product imports, given the state of transportation infrastructure (e.g., import terminals, pipelines) and trade barriers; and
- The maturity of the national or regional economy, prospects for GDP growth, prospects for growth in the key

energy-consuming sectors of the economy, and the extent to which the economy is subject to cycles and shocks.

29. We capture the effect of these country- or region-specific industry risks in our assessment of a company's competitive position.

30. We generally determine exposure to country risk using revenues, as this information is consistently available. However, if country exposure by EBITDA or assets is available and indicative of a materially different country exposure profile, we may use EBITDA or assets instead. For example, if profit margins are materially higher in one region because government policies insulate the refiners from foreign competition, EBITDA would be more appropriate. In certain cases, we apply a "weak-link" approach to refining companies that have exposure to more than one country (see "Corporate Methodology").

Competitive position (including profitability)

31. Under our global corporate criteria, we assess a company's competitive position as (1) "excellent," (2) "strong," (3) "satisfactory," (4) "fair," (5) "weak," or (6) "vulnerable." In assessing the competitive position for oil refining and marketing companies, we review the following components:

- Competitive advantage;
- Scale, scope, and diversity;
- Operating efficiency; and
- Profitability.

32. We assess each of the first three components as (1) "strong," (2) "strong/adequate," (3) "adequate," (4) "adequate/weak," or (5) "weak." We assess profitability separately by analyzing two subcomponents: the level of profitability, and the volatility of profitability.

33. After evaluating the first three components, we determine the preliminary competitive position assessment by ascribing a specific weight to each component. The applicable weightings will depend on the company's Competitive Position Group Profile (CPGP).

34. The CPGP assigned to oil refining and marketing companies we rate is "Commodity Focus/Scale Driven," as they have little product differentiation, if any, and compete primarily on cost of feedstock and price of finished products. We weight the first three components of the competitive position as follows: competitive advantage (10%); scale, scope, and diversity (55%); and operating efficiency (35%).

35. ***Competitive advantage.*** Competitive advantage is generally of limited importance in our analysis of oil refiners and marketing companies. Refiners buy and sell commodities that have little, if any, competitive edge or profitability difference due to product differentiation or brand name. We generally assess this factor as "adequate," but it may be stronger or weaker in limited circumstances.

36. An oil refining and marketing company that we believe has a "strong" or "strong/adequate" competitive advantage is typically integrated with other business lines (e.g., midstream or retail) that extend its basic refining operations and enable the company to demonstrate higher or less volatile profitability over its entire operations than would otherwise be the case.

37. A company that we believe has a "weak" or "adequate/weak" competitive advantage typically has limited integration

with other business lines and competes mainly against larger, diversified entities, particularly if it is in countries where refining operations are subsidized, placing independent refiners at a disadvantage.

38. ***Scale, scope, and diversity.*** In assessing the scale, scope, and diversity of an oil refining and marketing company, we consider:

    - Total refining capacity;
    - Number of refineries and degree of reliance on a single refinery to generate earnings;
    - Geographic footprint (for instance feedstock supply diversity, specifically from a logistics standpoint), and access to attractive demand markets;
    - Complexity and product mix; and
    - Degree of midstream/downstream integration and extent of marketing operations.

39. Scale (as an indicator of market position) is an important aspect of a refining and marketing company's competitive position. For example, a company with a large total capacity base, which we define as at least 500,000 barrels per day (bpd), can achieve economies of scale or synergies by spreading their overhead costs over more production volume than can companies with a smaller capacity base. Also, large refining companies are sometimes able to negotiate more competitive purchase contracts for crude oil and other raw materials than smaller companies can. Ultimately, larger scale should contribute to lower unit production costs. And the relative attractiveness of the markets in which the refining company competes (for example, in terms of demand for high-value-added products and the extent of competition with other producers), the diversity of those markets, and the refining company's market position with respect to product mix are key determinants of its profit potential and exposure to downside risks.

40. The number of refineries a company operates and the overall size of the capacity base are significant factors in a refinery's scale, scope, and diversity assessment. Having operations spread over at least three different facilities minimizes the potential downside of operating hazards. Operating multiple refineries also indicates geographic or market diversity. In addition, refining companies with high production diversity should over time be able to benefit from higher operating rates than less diversified refiners.

41. Market conditions may vary considerably across regions and countries. We consider the diversity of the geographic markets in which a company competes, including the location and regional concentration of its refining and marketing assets. If assets are concentrated in one region, offsetting factors to this could be the relative attractiveness of supply/demand characteristics, crude feedstock options, and access to markets with strong demand for refined products. A small-scale refinery may be highly profitable if it has an entrenched or niche position (as reflected in pricing power) in a market that is insulated from competition. In addition, being able to switch between serving domestic and export markets as demand and pricing conditions fluctuate can be a distinct advantage.

42. Crude oil typically accounts for well over 80% of a refinery's cash costs, and the mix of crude oil sourced by a refining company is a key aspect of its competitive profile. Related to this, "complexity"--the refinery's ability to process less-expensive crude oil feedstocks (heavier and higher-sulfur-content crude oils) into value-added products--is an important consideration. Light, sweet crudes are generally more expensive than heavy, sour crudes because the former require less treatment and produce a slate of products with a greater percentage of high-priced refined products (such as gasoline, kerosene, and jet fuel) than heavy, refined products (asphalt and residual fuel oil). Therefore, the more

complex the refinery and more flexible the feedstock slate, the better-positioned the refinery generally is to take advantage of the differential between heavy sour and light sweet crude prices. (Less complex refineries generally consist of simple distillation and desulfurization capacities.)

43. In making comparisons among facilities and companies, we use indices compiled by third-party sources, including the Nelson Complexity Index. Complexity does not provide absolute protection against adverse market conditions. The financial performance of more complex facilities depends on the price differential between low-quality and high-quality crude oil, which can change depending on global production. On balance, though, we consider complexity to be a competitive advantage, and we expect companies with highly complex refineries to have better and more stable profitability than others over time.

44. Refining and marketing companies that have midstream and downstream operations typically have greater flexibility in sourcing different types of crude oil, which minimizes feedstock costs and enables the refinery to more readily bring its finished products to market. Downstream integration and diversification may include participation in oil and gas common-carrier pipelines with regulated tariffs, ownership of logistics networks, and integration into high-value-added petrochemicals. Logistics networks could be extensive, supported by a fuel marketing business that may encompass transportation, distribution, and retail operations (such as a chain of branded gas stations).

45. An oil refining and marketing company with a "strong" or "strong/adequate" scale, scope, and diversity assessment typically is characterized by a combination of:

- Large scale (usually at least 500,000 bpd), based on total refining capacity;
- Having at least three different refineries, and the company is not overly reliant on any one asset to generate cash flow;
- A geographically diversified asset base, or if assets are concentrated regionally, they are in markets with attractive supply/demand characteristics marked by advantageous crude feedstock options and access to demand for premium refined products;
- A high degree of complexity and value-added product mix; and
- Downstream integration from an established midstream or retail network.

46. Typically, a company we assess as "strong" would meet all or all but one of the above characteristics; for "strong/adequate," it would meet at least three.

47. A company with a "weak" or "adequate/weak" scale, scope, and diversity assessment typically is characterized by a combination of:

- Small scale (usually less than 500,000 bpd), based on total refining capacity;
- Few (or fewer than three) refineries;
- One market or closely correlated markets served by several competitors, and no market advantage in terms of low-cost feedstock or refined product premiums;
- Low complexity and low-value finished products; and
- Limited or no midstream or downstream integration.

48. Typically, a company we assess as "weak" would meet all or most of the above characteristics; for "adequate/weak," it would meet at least three.

49. ***Operating efficiency.*** In assessing operating efficiency for an oil refining and marketing company, we consider:

    - Operating and processing costs, including age of the refinery, retrofitting or upgrades to equipment, and fuel costs, which can vary by region;
    - Utilization rates;
    - Operating flexibility relative to that of its peers;
    - Unplanned outages; and
    - Ability to source feedstock and market product.

50. Among the operating and processing costs we consider (excluding raw material costs), energy is the dominant component. Companies with access to low-cost natural gas (as in the U.S. presently) may have a significant cost advantage over companies that must use fuel oil. In considering processing costs, we calculate cash operating expenses per barrel of throughput. Processing costs vary considerably depending on complexity, so it is most meaningful to compare peer companies with similar costs in this regard.

51. In assessing cost position, we consider the age of a company's refineries, as new refineries are generally more efficient and reliable than old ones. However, some well-maintained old facilities have undergone such extensive retrofitting that their age is not an appreciable disadvantage. Thus, ongoing operating results in these circumstances are a better gauge of cost-competitiveness than age.

52. The size of a company's individual refineries is also important in the cost position. Large-scale refineries (which we view as having at least 150,000 bpd of capacity) are typically the most efficient. Usually, such large-scale refiners benefit from economies of scale and often have investments in hydrocrackers and cokers to improve the yield of high-value-added products.

53. The high-fixed-cost nature of the refining business means refining companies must generally maintain high utilization rates to keep unit fixed costs low and achieve satisfactory profitability. In assessing operating efficiency, we compare peer companies based on their disclosed operating rates to understand how these rates are defined and circumstances surrounding major unplanned outages.

54. Apart from its relevance to market position, location can be another key determinant of a refining company's cost-competitiveness and operating flexibility. The closer a refinery is to its crude supply and end users, the lower its all-in feedstock and transport costs. Landlocked refineries may benefit from their insulation from waterborne imports but have the disadvantage of limited access to other end markets and few options in sourcing crude oil feedstocks. On the other hand, coastal refineries may have much greater flexibility in sourcing relatively low-cost, waterborne feedstocks and in exploiting sales opportunities in export markets but may also face more competition from waterborne imports in their home territories.

55. Some refining and marketing companies maintain extensive proprietary crude oil and refined product pipelines, giving them a significant and defensible advantage over regional peers in feedstock sourcing and marketing. For example, a refining company that owns its own pipeline can direct products to the market that offers the greatest return.

56. Given the potential for significant operating hazards, refining companies commonly maintain extensive third-party property and casualty insurance coverage, including business interruption protection. We believe standard insurance

provides incomplete protection against operating hazards. For example, coverage for hurricane damage is usually limited, and coverage for terrorism risks typically contains very broad exclusions. As a result of market conditions, premiums and deductibles for certain insurance products could escalate over time, becoming uneconomical.

57. An oil refining and marketing company with a "strong" or "strong/adequate" operating efficiency assessment typically is characterized by a combination of:

- Above-average complexity yielding a relatively high-value-added product mix compared with that of its industry peers;
- Lower-than-average operating or processing costs;
- Consistently high utilization rates;
- Minimal unplanned downtime or outages;
- An extensive network of proprietary crude oil and refined product pipelines; and
- Insurance coverage at least in line with industry standards.

58. An oil refining and marketing company with a "weak" or "adequate/weak" operating efficiency assessment typically is characterized by a combination of:

- Below-average complexity yielding relatively low-value-added product mix compared with that of its industry peers;
- Higher-than-average operating or processing costs;
- Inconsistent utilization rates;
- Inconsistent operating performance characterized by a high occurrence of unplanned downtime or outages;
- Sole reliance on third-party logistics assets to source feedstock and market products; and
- Limited insurance coverage.

59. ***Profitability.*** The profitability assessment can confirm or modify the preliminary competitive position assessment. The profitability assessment consists of two components: the level of profitability, and the volatility of profitability. The two components are combined into the final profitability assessment using a matrix (see "Corporate Methodology").

60. We assess the level of profitability on a three-point scale: "above average," "average," and "below average."

61. For refiners, the key general profitability measure is ROC. Operating margins or EBITDA to revenues tend not to be useful as a general measure of profitability for refining companies, given the "pass-through" nature of the business, where a refiner's margin can fluctuate with the price of crude oil, to a large degree, and where the absolute size of the refiner's EBITDA is thus a better indication of profitability than as expressed in terms of a profit margin.

62. Because profitability can vary so widely from year to year depending on industry conditions, we generally forecast ROC using near-term market conditions (typically for the current year and for the following year) based on current trends, but we use normalized, or "mid-cycle," expectations for later years.

63. We define "mid-cycle" conditions as a long-term average that typically encompasses the last 10 years, provided that the period contains both strong and weak market conditions (see table for threshold guidelines). As an example, the most recent cyclical peak was 2005 through 2007, and the trough was 2008 and 2009.

Return On Capital (ROC) Under Mid-Cycle Conditions

	Below average	Average	Above average
ROC	< 10%	10%-20%	> 20%

64. We assess volatility of profitability on a six-point scale, from '1' (least volatile) to '6' (most volatile). In accordance with our global corporate criteria, we generally use the standard error of regression (SER), subject to having at least seven years of historical annual data, and we generally use ROC to determine the SER for refining and marketing companies, although we may also use nominal EBITDA when comparing companies with similar fixed asset bases. We also may--subject to certain conditions being met--adjust the SER assessment by up to two categories better (less volatile) or worse (more volatile). If we do not have sufficient historical information to determine the SER, we follow the global corporate criteria guidelines to assess the volatility of profitability.

Part II--Financial Risk Analysis

Accounting and analytical adjustments

65. In assessing the accounting characteristics of refining and marketing companies, we use the same methodology that we use for other corporate issuers. Our analysis of a company's financial statements begins with determining whether the statements accurately measure the company's performance and financial position relative to those of its peers and the universe of corporate entities. To allow for globally consistent and comparable financial analyses, we may include quantitative adjustments to a company's reported results. These adjustments enable better alignment of a company's reported figures with our view of underlying economic conditions and allow for a more accurate portrayal of a company's ongoing business. Adjustments that pertain broadly to all corporate industries, including this one, are discussed in "Corporate Methodology: Ratios And Adjustments," published Nov. 19, 2013. The most relevant adjustments in the refining and marketing industry relate to LIFO and FIFO inventory adjustments and financial derivatives (see "Corporate Methodology: Ratios And Adjustments," paragraphs 110-117 and 155-156, respectively).

Cash flow/leverage analysis

66. In assessing the cash flow and leverage of a refining and marketing issuer, we use the same methodology that we use for other corporate issuers (see "Corporate Methodology"). We assess cash flow and leverage on a six-point scale, ranging from '1' (minimal) to '6' (highly leveraged), by aggregating the assessments of a range of credit ratios, predominantly cash flow-based, that complement each other by focusing on a company's cash flow in relation to its obligations.

Core ratios

67. For each company, we calculate two core debt payback ratios, funds from operations (FFO) to debt and debt to EBITDA, in accordance with our ratios and adjustment criteria (see "Corporate Methodology: Ratios And Adjustments").

68. Given the significant cyclicality in refining, these core ratios can vary widely over the course of an industry cycle and even from year to year. When forecasting cash flow, we generally forecast near-term market conditions (typically for the current year and the following year) based on current trends, but we use normalized, or "mid-cycle," expectations (see paragraph 63) for the later years.

Supplemental ratios

69. We also consider supplemental ratios to develop a fuller understanding of a company's credit risk profile and to refine our cash flow analysis in accordance with our global corporate criteria. For refining and marketing companies, we

generally use:

- FOCF to debt, the preferred supplemental ratio, which could confirm or adjust the preliminary cash flow and leverage assessment indicated by the core financial ratios. In calculating FOCF, we generally include only maintenance-related capital spending that is required to maintain the integrity of the refinery (including environmental, safety, and other regulatory spending needed to continue operations), as opposed to large growth-based expenditures that can skew the ratio.
- We may alternatively use debt service coverage ratios (FFO + interest to cash interest, or EBITDA to interest), when the cash flow and leverage assessment indicated by the core ratios is "significant" or weaker.

Volatility adjustment

70. In accordance with our global corporate criteria, we may adjust the cash flow and leverage assessment to account for expected volatility (see "Corporate Methodology," paragraph 124, subsection 5). When market conditions are strong, i.e., when we believe refining margins are at or near the peak of the commodity cycle, we typically consider refiners' cash flow ratios to be "highly volatile" because of the tendency for ratios to drop by two categories when industry conditions reach the trough.

71. When market conditions reflect our mid-cycle assumptions, we typically adjust the cash flow and leverage assessment to one category weaker to account for volatility.

72. When recent history reflects trough-like market conditions or we apply trough-like assumptions in our forecasts, we typically do not use any volatility adjustment because this forecast already assumes stressed market conditions. We also may not apply any volatility adjustment if the refinery has or is expected to maintain minimal debt, provided we believe that leverage and cash flow ratios will not move out of the "minimal" category, even during times of severe market stress.

Part III--Rating Modifiers

Diversification/Portfolio effect

73. In assessing a refining and marketing company's diversification/portfolio effect, we use the same methodology that we use for other corporate issuers (see "Corporate Methodology").

Capital structure

74. In assessing a refining and marketing company's capital structure, we use the same methodology that we use for other corporate issuers (see "Corporate Methodology").

Financial policy

75. In assessing a refining and marketing company's financial policy, we use the same methodology that we use for other corporate issuers (see "Corporate Methodology").

Liquidity

76. In assessing a refining and marketing company's liquidity, we use the same methodology that we use for other corporate issuers (see "Corporate Methodology"). Working capital constitutes a significant use of liquidity for many refiners, and needs can change within the year and even within the month. But supply and offtake intermediation

agreements may partially offset such swings.

77. Our liquidity criteria (see "Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers," published Jan. 2, 2014) specify certain tests for defining each liquidity category. One requirement is that defined sources must cover defined uses of liquidity, even with a specified percentage decline in EBITDA. Another requirement is that covenants must allow sufficient headroom for forecasted EBITDA to decline by a specified percentage without the company's breaching the covenant coverage tests. Because we view refining and marketing companies' earnings and cash flows as relatively volatile, we generally apply more stringent standards. Specifically:

- To have "adequate" liquidity, refining companies' liquidity sources must exceed uses (A minus B is a positive result) even if forecasted EBITDA declines by 30%.
- To have "strong" liquidity, sources must exceed uses even if forecasted EBITDA declines by 50%.
- To have "exceptional" liquidity, sources must exceed uses even if forecasted EBITDA declines by 67%.

78. However, if we project trough-like market conditions for the following year, we do not apply this harsher standard, but rather the standards in the general liquidity criteria.

Management and governance

79. In assessing a refining and marketing company's management and governance, we use the same methodology that we use for other corporate issuers (see "Corporate Methodology").

Comparable ratings analysis

80. In assessing a refining and marketing company's comparable ratings analysis, we use the same methodology that we use for other corporate issuers (see "Corporate Methodology").

Related Criteria And Research

Related criteria

- Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers, Jan. 2, 2014
- Corporate Methodology, Nov. 19, 2013
- Methodology: Industry Risk, Nov. 19, 2013
- Corporate Methodology: Ratios And Adjustments, Nov. 19, 2013
- Country Risk Assessment Methodology And Assumptions, Nov. 19, 2013
- Methodology For Crude Oil And Natural Gas Price Assumptions For Corporates And Sovereigns, Nov. 19, 2013
- Methodology: Management And Governance Credit Factors For Corporate Entities And Insurers, Nov. 13, 2012
- Principles Of Credit Ratings, Feb. 16, 2011