

### RATING METHODOLOGY

# Global Automobile Manufacturer Industry

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#### Summary

This rating methodology explains Moody's approach to assessing credit risk for automobile manufacturers and is intended to provide a reference tool that can be used when evaluating credit profiles within the sector. It is designed to help issuers, investors, and other interested market participants understand how key qualitative and quantitative risk characteristics may affect rating outcomes. This methodology does not include an exhaustive treatment of all factors that are incorporated into determining Moody's ratings but should enable the reader to understand the qualitative considerations and financial ratios that are important for ratings in this sector.

This rating methodology replaces the Global Automotive Manufacturer Methodology published in December 2007. While reflecting the same core principles as the December 2007 methodology, this updated framework incorporates refinements that better reflect the key credit fundamentals of the automotive manufacturing industry.

Included in this methodology is a detailed rating grid and illustrative mapping against the factors in the grid for each company for which information is available publicly. The grid can be used as a starting point to approximate credit profiles within the automobile manufacturing sector. The grid provides summarized guidance for the factors that are generally most important in assigning ratings for automobile makers. Importantly, the grid is a summary that does not include every rating consideration. Additionally, the illustrative mapping uses historical results while ratings reflect our forward-looking expectations. As a result, the grid-indicated rating is not expected to match the actual rating of each company.

**!** THIS CREDIT RATING METHODOLOGY CONTAINS AN UPDATE IN THE RELATED RESEARCH AT THE END OF THE REPORT. THE CONTENT OF THE CREDIT RATING METHODOLOGY HAS NOT BEEN CHANGED OR UPDATED. ORIGINAL DATE OF PUBLICATION REMAINS THE EFFECTIVE DATE OF THE CREDIT RATING METHODOLOGY.

The grid contains four key factors that are important in our assessments for ratings of automobile manufacturers:

- » Market Position and Trend
- » Leverage and Liquidity
- » Profitability and Returns
- » Cash Flow and Debt Service

Within each of these factors are a number of sub-factors or metrics, which we explain in detail. Since an issuer's scoring on a particular grid factor often will not match its overall rating, in the Appendix we include a discussion of large "outliers" – companies whose grid-indicated rating differs significantly from the actual rating.

This rating methodology is not intended to be an exhaustive discussion of all factors that Moody's analysts consider in the ratings in this sector. Our analysis for ratings in this sector covers factors that are common across all industries (such as ownership, management, liquidity, legal structure and corporate governance) as well as factors that can be meaningful on a company specific basis. Our ratings consider qualitative issues and factors that do not lend themselves to a transparent presentation in a grid format. The grid represents a compromise between greater complexity that would result in grid-indicated ratings that would be designed to map more closely to actual ratings, and simplicity that enhances a transparent presentation of the factors that are most important for ratings in this sector most of the time.

Highlights of this report include:

- I. An overview of the rated universe
- II. Summary of the rating Methodology
- III. Description of key factors
- IV. Comments on the rating methodology's assumptions and limitations, including a discussion of rating considerations that are not included in the grid
- V. Summary of the grid-indicated outcome

The appendices show:

Appendix A: Table summarizing the rating grid criteria

Appendix B: Table that illustrates the application of the methodology grid to representative rated global auto manufacturers

Appendix C: Identification of significant grid outliers and explanatory comments on some of the more significant differences between the grid-implied rating and our actual rating

Appendix D: Brief industry overview

Appendix E: Discussion of key rating issues for global auto manufacturers over the intermediate term

## I About the Rated Universe

Globally in the auto manufacturing industry, Moody's rates 19 companies with approximately \$75 billion of rated debt and credit facilities (exclusive of debt at captive finance subsidiaries). Four of the companies are headquartered in Japan, four in the United States, three in Germany, two in France, two in Korea, two in the United Kingdom, and one each in Italy and India. Companies vary widely in size, with annual revenues from around \$4 billion to over \$200 billion.

The ratings for the companies covered in this methodology range from Aa2 to B2, with a median rating of Baa2. Eleven of the companies carry investment-grade ratings, while eight are rated in the speculative-grade range. As of the date of publication, the ratings of two of the companies were under review for possible downgrade, one held a negative outlook, 13 held stable outlooks and three had positive outlooks.

This report focuses on companies whose principal source of revenues, earnings and cash flow is the design and manufacture of passenger vehicles, including cars, light trucks and motorcycles. The sector is global in scope, with most participants operating in multiple geographic regions; the principal geographic regions include North America, Europe, Japan, Asia-excluding-Japan, Latin America, and Africa/Middle East. While some manufacturers may also be engaged in the production and sale of other products (including large commercial vehicles, automotive components, and other industrial products), the key driver of their operating model, financial position, and credit profile is the production of passenger vehicles.

A number of the automotive companies in this report also have large captive finance operations, which play an important strategic role in supporting the manufacturer's wholesale distribution and retail sales operations. In addition to a very close strategic and operating relationship, there is generally a formal support agreement from the manufacturer for the benefit of the finance company and the holders of the finance company's rated debt. Moody's ratings of the captive finance operations reflect: 1) the benefits resulting from the strategic and operating relationships with the parent; 2) the strength of the formal support agreement; and 3) a thorough analysis of the entity's underwriting standards, portfolio quality, leverage, liquidity, and earnings and capital generating capacity. In most cases, this analysis results in a finance company rating that is equivalent with that of the manufacturer.

Notwithstanding the important strategic role that captive finance units can play in supporting the operations of their parent, they present potential sources of stress on the automaker's financial flexibility. This stress can result from the finance operation's need for adequate equity capital and liquidity. To the extent Moody's analysis of a captive finance subsidiary indicates a shortfall of either equity or liquidity, this shortfall is factored into our assessment and rating of the manufacturing parent.

Moody's financial analysis of automotive manufacturers as presented in this report is based on manufacturing-company stand-alone financial statements, with the finance operations treated on an equity basis. Where publicly available financial information permits, the financial ratios in this report reflect this equity treatment for finance companies. In the cases of Hyundai, Kia and Tata, the ratios are based on fully consolidated figures with no adjustment for the finance operations. Most of Fiat's finance operations are conducted through a joint venture and are consolidated on an equity investment basis. Yamaha Motor does not have material finance operations.

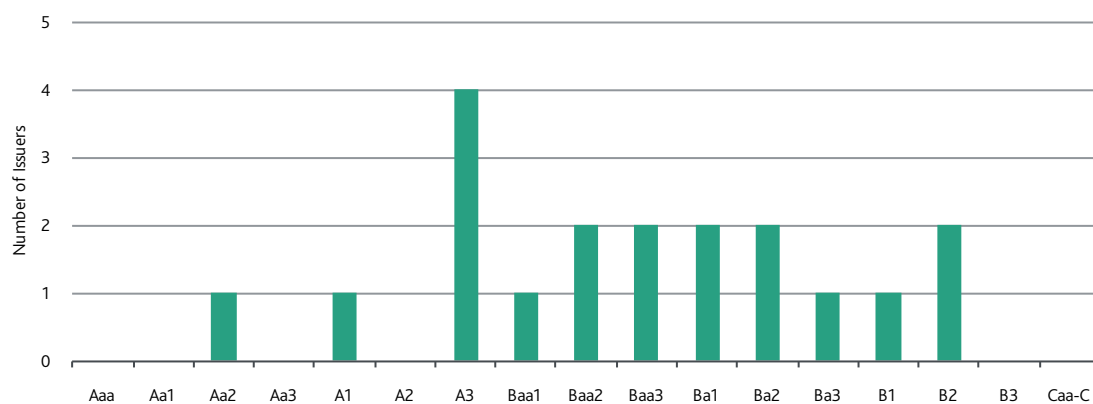
FIGURE 1

**Global Automobile Manufacturer Industry Rating Universe**

Company	Ratings	Rating Outlook	Domicile	LT Rated Debt (US\$ MM)
Toyota Motor Corporation	Aa2/P-1	RUR-Down	Japan	\$6.5
Honda Motor Co., Ltd.	A1/P-1	Stable	Japan	\$0.0
BMW AG	A3/P-2	Stable	Germany	\$2.0
Daimler AG	A3/P-2	Stable	Germany	\$6.9
Volkswagen AG	A3/P-2	Stable	Germany	\$9.0
Yamaha Motor Co., Ltd	A3	Negative	Japan	\$0.0
Harley-Davidson, Inc.	Baa1/P-2*	Stable	United States	\$0.0
Hyundai Motor Company	Baa2	Stable	Korea	\$0.0
Nissan Motor Co., Ltd.	Baa2/P-2	Stable	Japan	\$1.3
Kia Motors Corp.	Baa2	Stable	Korea	\$0.5
Peugeot S.A.	Baa3/P-3	Stable	France	\$4.8
Fiat S.p.A.	Ba1	RUR-Down	Italy	\$13.0
Renault S.A.	Ba1	Positive	France	\$5.8
Ford Motor Company	Ba2	Positive	United States	\$17.0
General Motors Company	Ba2	Stable	United States	\$0.0
Tata Motors Limited	Ba3	Stable	India	\$0.0
Jaguar Land Rover Plc	B1	Stable	United Kingdom	\$1.6
Chrysler Corporation	B2	Positive	United States	\$6.2
Aston Martin Holdings (UK) Ltd	(P)B2	Stable	United Kingdom	\$0.5

\*Rating of Harley-Davidson Funding Corp. based on support agreement from Harley-Davidson, Inc.

FIGURE 2

**Distribution of Auto Manufacturer Ratings**

## II About This Rating Methodology

This report explains the rating methodology for the automobile manufacturing industry in various sections that can be summarized as follows:

### 1. Identification of Grid Factors

The grid in this rating methodology focuses on four broad factors. The four factors are further broken down into various sub-factors that have different weightings.

FIGURE 3

#### Summary Table of Rating Grid Factors

Broad Rating Factor	Factor Weighting	Rating Sub-Factor	Sub-Factor Weighting
Market Position and Trend	35%	Trend in global unit Share over 3 years	5%
		Product Breadth and Strength	30%
Leverage and Liquidity	20%	Debt/EBITDA	10%
		Debt/Capital	5%
		Cash and Marketable Securities/Debt	5%
Profitability and Returns	15%	EBITA Margin	5%
		EBITA/Average Assets	5%
		Net Profit After Tax and Before Unusual Items/Sales	5%
Cash Flow and Debt Service	30%	Free Cash Flow/Debt	10%
		Retained Cash Flow/Debt	10%
		EBITA/Interest	10%

### 2. Measurement or Estimation of the Factors in the Grid

We explain how the sub-factors for each factor are calculated, and the weighting for each individual sub-factor. We also explain the rationale for using specific rating metrics and how we apply them during the ratings process. Much of the information used in assessing performance for the sub-factors is found in or calculated from companies' financials; others are derived from observations or estimates by analysts.

Moody's ratings are meant to be forward looking and incorporate our expectations for future financial and operating performance. We use both historical and projected financial results in the rating process. Historical results are useful in allowing analysts to better understand a company relative to its peers at a point in time. While the rating process includes both historical and anticipated results, this document makes use of historical data only to illustrate the application of the rating methodology grid. The mapping examples use financial or operating results that have been publicly reported for the last 12 months, or at the last fiscal date. All quantitative credit metrics incorporate Moody's standard analytical adjustments to income statement, cash flow statement and balance sheet amounts for (among others) off-balance sheet accounts, receivable securitization programs, under-funded pension obligations, and recurring operating leases.

For definitions of Moody's most common ratio terms please see [Moody's Basic Definitions for Credit Statistics, User's Guide](#) (June, 2007, document #78480). For a description of Moody's standard adjustments, please see [Moody's Approach to Global Standard Adjustments in the Analysis of Financial Statements for Non-Financial Corporations December 2010 \(128137\)](#). These documents can be found at [www.moodys.com](http://www.moodys.com) in the Research and Ratings directory.

### 3. Mapping factors to the rating categories

After identifying the measurement for each factor, the potential outcomes for each of the sub-factors are mapped to a broad Moody's rating category (Aaa, Aa, A, Baa, Ba, B, Caa, Ca).

### 4. Mapping Issuers to the Grid and Discussion of Grid Outliers

In this section (Appendix C) we provide tables showing how each company maps to grid-indicated ratings for each rating sub-factor. We highlight companies whose grid-indicated performance on a specific sub-factor is two or more broad rating categories higher or lower than its actual rating and provide some discussion of the general reasons for such outliers for each sub-factor.

### 5. Assumptions and Limitations and Rating Considerations That Are Not Included in the Grid

This section discusses the limitations in the use of the grid to map against actual ratings, and additional factors that are not included in the grid that can be important in determining ratings. Key assumptions and limitations that pertain to the overall rating methodology are discussed.

### 6. Determining the Overall Grid-Indicated Rating

To determine the overall grid-indicated rating, we convert each of the sub-factor ratings into a numeric value based on the scale below.

#### Ratings Scale

Aaa	Aa	A	Baa	Ba	B	Caa	Ca
1	3	6	9	12	15	18	20

Each sub-factor's numeric value is multiplied by the assigned weight (refer to Figure 3 for weights), and then summed to produce a composite weighted factor score. The composite weighted factor score is then mapped back to an alpha-numeric rating based on the ranges in the table below.

**Factor Numerics**

Grid Output Rating		Sub-Factor Rating	
Indicated Rating	Aggregate Weighted Factor Score	Indicated Rating	Factor Score
Aaa	< 1.5	Aaa	1
Aa1	1.5 < 2.5	Aa	3
Aa2	2.5 < 3.5		
Aa3	3.5 < 4.5		
A1	4.5 < 5.5	A	6
A2	5.5 < 6.5		
A3	6.5 < 7.5		
Baa1	7.5 < 8.5	Baa	9
Baa2	8.5 < 9.5		
Baa3	9.5 < 10.5		
Ba1	10.5 < 11.5	Ba	12
Ba2	11.5 < 12.5		
Ba3	12.5 < 13.5		
B1	13.5 < 14.5	B	15
B2	14.5 < 15.5		
B3	15.5 < 16.5		
Caa1	16.5 < 17.5	Caa	18
Caa2	17.5 < 18.5		
Caa3	18.5 < 19.5		
Ca	$\geq$ 19.5	Ca	20

For example, an issuer with a composite weighted factor score of 10.8 would have a Ba1 grid-indicated rating. We use a similar procedure to derive the grid-indicated ratings in the tables embedded in the discussion of each of the four broad grid factors.

**III The Grid Factors**

The grid that is used as part of the rating methodology for automotive companies focuses on four broad factors:

1. Market Position and Trend
2. Leverage and Liquidity
3. Profitability and Returns
4. Cash Flow and Debt Service

## Factor 1: Market Position and Trend (35% Weight)

### A. Trend in Global Unit Share Over Three Years (5% Weight)

#### *Why it Matters*

Market share trends are an important indicator of an automotive manufacturer's ability to sustain its competitive business position. Operating performance and key financial metrics are often correlated with changes in market share. In assessing market share trends, Moody's recognizes that share can vary over time based on the phase of a company's new product introduction cycle. The introduction of a high-profit, strategically important vehicle can boost share position and operating performance. As that product ages, share position and performance can weaken until the next reintroduction of the product. In assessing this sub-factor, Moody's attempts to recognize a distinction between companies that are experiencing a long-term competitive erosion in their product portfolio and those that are experiencing a cyclical erosion that is likely to be reversed in the near future with product renewals.

#### *How We Measure or Estimate it for the Grid*

Because of the need to consider where a company is in its new product cycle, we assess the trend in market share over a three-year period. Many auto manufacturer renew their models on a five- to seven-year timeframe, and attempt to stagger the scheduled renewals of different models to avoid having a large portion of their product offering being renewed in a single year. Interim product refreshes are often used to keep models current from year to year without the extensive cost of a full model renewal. By utilizing a three-year trend in market share we are able to observe how model renewals and refreshes affect a company's image with car buyers over time. If shorter time periods were used, year-to-year share moves unrelated to product changes could lead to inaccurate conclusions. It is the sustained trend in share movement over several years that we are seeking to assess under this factor.

The rating ranges used for scoring under this factor are summarized in the following table.

FIGURE 4

#### Criteria for Trend in Share over Three Years (5% weight)

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa	Ca
3 Year Change in Market Share	5%	Increase > 2%	Increase >1% but ≤2%	Increase > .25% but ≤ 1%	Increase ≤ .25% to decrease ≤ .25%	Decrease >.25% but ≤ 2%	Decrease > 2% but ≤ 3%	Decrease > 3% but ≤4 %	Decrease > 4%

### B. Product Breadth and Strength (30% weight)

#### *Why it Matters*

Ultimately, the strength of a company's product portfolio is the most critical driver of its ability to sustain its competitive position and to generate strong earnings and cash flow. Automakers must make continuous investment in new technologies related to vehicle safety and performance in order to differentiate their products in the marketplace. Vehicles must be continually refreshed and updated to avoid consumer sentiment of stale or outdated product features. Failing to maintain a strong product image could lead to market share erosion over time, and ultimately weaken a company's credit profile. Automakers with greater product diversity are considered better positioned to withstand changes in market demand than are those with significant reliance on specific sub-segments. Factors such as fuel prices, regulatory schemes and consumer sentiment regarding environmental issues can lead to shifts in

demand for specific vehicle types. For instance, large trucks and SUVs could be at risk in a period of very high fuel prices. Consequently, automakers with a narrow product range are considered more vulnerable to such changes in demand patterns than are automakers that offer a full range of products.

*How We Measure or Estimate it for the Grid*

The Product Breadth and Strength sub-factor reflects Moody's assessment of the historic and the prospective strength of a company's product portfolio in relation to the following three areas:

1. **Product Range and Geographic Diversification:** A manufacturer's ability to offer a broad and diverse range of products within its key geographic markets will enhance both its competitive position and its ability to contend with potential volatility in demand. This ability to contend with volatility is further strengthened to the extent that a broad product range is offered across multiple geographic regions.
2. **Breadth of Profitability Across Product Range:** Moody's takes into consideration the degree to which a manufacturer is able to generate healthy profitability across its product range. A concentration of profitability within a narrow range of products exposes a manufacturer to shifts in demand away from that sector; it also leaves the manufacturer vulnerable to an increase in competition within that sector. In contrast, diversity of earnings across a broad product line supports a much more defensible and sustainable stream of profits.
3. **Product Renewal Rate:** A robust and steady product renewal rate is critical to sustaining a sound competitive position within the automotive sector. Companies that have uneven renewal schedules - with very high renewal rates in some years and weak rates in others - are subject to volatility in market share, operating performance and credit metrics. In assessing a company's product renewal rate, Moody's attempts to be prospective and to take into consideration the benefits that might result from the pending launch of a strategically important product or from an anticipated acceleration in the pace of new product introductions.

The rating ranges used for scoring under this factor are summarized in the following table.

FIGURE 5

**Criteria for Product Breadth and Strength (30% weight)**

Aaa      Aa      A      Baa      Ba      B      Caa      Ca

FIGURE 5

## Criteria for Product Breadth and Strength (30% weight)

	Aaa	Aa	A	Baa	Ba	B	Caa	Ca
Product Range and Geographic Diversification	Strong competitive and market share position in at least two of the four key global geographic regions (North America, Europe, Japan or Asia-excluding Japan) and strong product offering in all segments relevant to those markets (luxury, mid-price and economy cars; trucks and SUV's; crossover vehicles; and alternative fuel vehicles).	Strong competitive and market share position in at least two of the four key global geographic regions. While highly competitive in its entirety, there may be some gaps/areas of weakness in the product portfolio.	Strong competitive and market share position in at least two of the four key global geographic regions. While highly competitive in its entirety, there may be some gaps/areas of weakness in the product portfolio.	Strong market share and competitive position may be concentrated in one of the four key geographic regions identified. Product range might not cover all relevant segments within a geographic region, but the company maintains a competitive position in most segments in which it does compete.	Strong market share and competitive position may be concentrated in one of the four key geographic regions identified. Product range might not cover all relevant segments within a geographic region, but the company maintains a competitive position in most segments in which it does compete.	Company may need to significantly strengthen or expand its position in key geographic regions or product categories	Long-term viability in one or more key geographic regions or product categories could be threatened by intense competitive pressure.	Long-term viability in one or more key geographic regions or in a critical product segment is at clear risk
Breadth of Profitability Across Product Range	and Ability to generate competitive returns in the majority of the product segments and geographic regions in which it competes	and Ability to generate competitive returns in the majority of the product segments and geographic regions in which it competes	and Ability to generate competitive returns in the majority of the product segments and geographic regions in which it competes	and Returns and profitability may be weighted toward specific products or categories, or returns for key products or categories have come under periodic pressure.	and Returns and profitability may be weighted toward specific products or categories, or returns on key products or categories have come under periodic pressure.	And Returns and profitability are weak or eroding across much of the product line.	and Returns and profitability throughout the portfolio may not be able to sustain adequate reinvestment needs and significant financial and operational restructuring is required.	and returns and profitability throughout the portfolio are inadequate or negative
Product Renewal Rate	and Robust and relatively stable rate of new product introductions.	and Robust and relatively stable rate of new product introductions.	and Company may experience modest year-to-year variation in rate of new product introductions	and Company may experience modest year-to-year variation in rate of new product introductions	and Material year-to-year variation in product renewal rate or an extended time frame for the renewal of critical models has resulted in periodic erosion of competitive position in key segments or product categories	and Material and chronic year-to-year variation in product renewal rate or an extended time frame for the renewal of critical models has resulted in a long-term erosion of competitive position in key segments or product categories	and Material and chronic year-to-year variation in product renewal rate or an extended time frame for the renewal of critical models has resulted in a long-term erosion of competitive position in key segments or product categories	and inadequate product renewal

A chart that illustrates grid mapping results for Factor 1 is included in Appendix B.

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## Factor 2: Leverage and Liquidity (20% Weight)

### a) Debt/EBITDA (10% weight)

#### *Why it Matters*

Leverage is a highly important rating consideration, as it reflects the magnitude of financial risk in the company's balance sheet. Because of the capital-intensive and cyclical nature of the auto manufacturing business, companies with excessive levels of underlying financial leverage may be at greater risk during economic downturns. The relationship between outstanding indebtedness and EBITDA is important when determining financial strength, particularly when considering the ongoing need for product reinvestment. However, it is noted that the metric has limitations in that EBITDA is not a measure of cash flow because it does not incorporate all potential uses of cash, such as working capital. Consistently low leverage can be a competitive advantage, as better-capitalized firms have greater flexibility to manage through industry cycles.

*How We Measure or Estimate it for the Grid*

Debt to EBITDA as presented in the illustrative examples for the grid in this document is the sum of adjusted debt divided by the EBITDA for the last 12 months. Analysts may use pro-forma EBITDA in the grid presentation if there were significant changes in the gross earnings of the company over the last 12 months. Commonly, an adjustment of this type would arise if there was a recent debt-financed acquisition and the debt is included in the most recent financial statements but the full-year impact of the EBITDA of the acquired business is not.

**b) Debt/Capital (5.0%)***Why it Matters*

An additional measure of leverage used in this methodology grid is the ratio of debt to capital. The debt-to-capital ratio can have a number of shortcomings as a measure of leverage in that it does not reflect a company's current debt servicing capabilities as well as the ratio of debt to EBITDA. Moreover, the flow of other comprehensive income (OCI) adjustments through the equity account can result in significant volatility in the debt-to-capital ratio. Nevertheless, for auto makers, which must make long-term investments in new model programs and which often have embedded captive finance subsidiaries, the ratio of debt to capital can provide some useful insight. A strong equity capital base will support an automaker's ability to make the ongoing large investments in new technologies and new model programs that are necessary for success in the industry. A sound capital structure is also important in supporting the funding activities for a captive finance operation. A capital structure that is too heavily reliant on shorter-term capital sources from debt markets may not provide the stability necessary for an auto manufacturer, particularly given the cyclical nature of the industry.

*How We Measure or Estimate it for the Grid*

Debt to Capital as presented in the illustrative examples for the grid in this document is the sum of adjusted debt divided by the sum of adjusted capital. Moody's standard adjustments consider the impact of operating leases, underfunded pensions, hybrid securities, and other items on the debt and equity balances.

**c) Cash and Marketable Securities to Debt (5%)***Why it Matters*

Comparing the amount of cash to debt provides an indication of management's liquidity strategy, and provides a snapshot of cash immediately available through periods of distress or inability to access the capital markets.

The amount of cash that management elects to hold may be an indication of the cushion for unexpected liquidity needs or provide assurance of cash on hand to meet near-term debt obligations. A substantial amount of strategic cash holdings can also reduce the reliance on refinancing to meet maturing debt obligations. We evaluate the strategic cash position within the framework of a Liquidity Risk Assessment for investment-grade companies or Speculative-Grade Liquidity ratings for high-yield issuers.

Often, companies will pre-fund a near-term debt maturity to limit the risk of raising capital during unfavorable market conditions when the debt is due. This was a common practice over the last year, when a number of the larger companies pre-funded debt maturities well in advance of the scheduled due date.

*How We Measure or Estimate it for the Grid*

Cash and Marketable Securities to Debt as presented in the illustrative examples for the grid in this document is the sum of Cash, Marketable Securities and other short-term investments divided by adjusted debt. Analysts may reduce the numerator if there is a view that a certain amount of cash is restricted or otherwise blocked, or that the investments could not be quickly converted to cash.

The rating ranges used for scoring under this factor are summarized in the following table.

FIGURE 6

**Criteria for Leverage and Liquidity (20% Weight)**

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa	Ca
Debt to EBITDA	10%	<0.75x	0.75x to <1.75x	1.75x to <2.75x	2.75x to <3.75	3.75x to <5.0x	5.0x to <6.5x	6.5x to <8.0x	≥ 8.0x
Debt to Capital	5%	<15%	15% to <35%	35% to <50%	50% to <60%	60% to <70%	70% to <80%	80% to <90%	≥ 90%
Cash and Marketable Securities to Debt	5%	≥160%	120% to <160%	90% to <120%	70% to <90%	50% to <70%	40% to <50%	30% to <40%	< 30%

A chart that illustrates grid mapping results for Factor 2 is included in Appendix B.

**Factor 3: Profitability and Returns (15% Weight)****A. EBITA Margin (5% Weight)***Why it Matters*

Profitability measures capture the degree of success a company has achieved in many critical areas of its operating and competitive model. These areas include: manufacturing efficiencies; the ability to maintain an effective and mutually beneficial relationship with suppliers; the degree to which market share can be maintained without reliance on excessive incentives; consumers' view of the value inherent in a manufacturer's vehicles; and, the quality of vehicles as reflected in warranty expenditures. Ultimately, profitability is the key measure of an automotive manufacturer's success, or lack thereof, in developing, implementing, and maintaining a successful business model. Moody's notes, however, that a manufacturer's profitability may experience periodic cyclical downturns or temporary erosion. A company's ability to rebound from an earnings downturn is often a function of its brand strength and product renewal cycle.

*How We Measure or Estimate it for the Grid*

The primary measure of profitability is the earnings before interest, taxes and amortization (EBITA) margin. This is a measure of underlying operational profitability before considering financial structure and taxation. The EBITA margin as presented in the illustrative examples for the grid in this document is calculated as consolidated EBITA generated over the last 12 months (LTM) divided by LTM consolidated revenue. We calculate the EBITA margin on a consolidated basis incorporating Moody's standard adjustments. Consideration is given to the recurring nature of any unusual expenses. For a company that has a single restructuring event that results in a special charge, the EBITA margin might be assessed on a before restructuring charges basis to get a view of the underlying trend in the company's ongoing operations. However, in the case of a company that is a serial restructurer, with annual restructuring charges, such charges might be deemed to be ongoing costs and the EBITA margin would be assessed inclusive of the restructuring costs.

## B. Net Profit After Tax and Before Unusual Items/Sales (Weight 5%)

### *Why it Matters*

An alternate measure of profitability is the ratio of net profits after tax and before unusual items to sales. By measuring profitability after interest costs and taxes, this metric not only assesses the efficiency of operations (as seen in the EBITA margin) but also the efficiency of the company's capital structure and tax planning. It excludes unusual items such as special charges and restructuring actions and gives a clean picture of return available to shareholders from ongoing operations, and in so doing can indicate a company's ability to attract incremental capital.

### *How We Measure or Estimate it for the Grid*

The ratio of net profit after tax and before unusual items to sales as presented in the illustrative examples for the grid in this document is calculated as after-tax profits adjusted to exclude any unusual items such as restructuring charges or write-offs divided by total revenue for the last 12 months.

## C. EBITA/Average Assets (5% Weight)

### *Why it Matters*

Along with EBITA margins, we look at Return on Assets (ROA) as a measure of the company's ability to generate a level of profit consistent with its asset base. As mentioned, asset intensity in the industry remains high and the ROA, therefore, provides a measure of a company's ability to consistently invest in earnings-generating assets in its core business. Importantly, we believe that a weak ratio of EBITA to Average Assets, relative to peers, may motivate managements to seek their returns through opportunistic investments and/or financial leverage, and may presage asset writedowns or business restructuring.

### *How We Measure or Estimate it for the Grid*

The EBITA/Average Assets ratio as presented in the illustrative examples for the grid in this document is calculated as the company's earnings before interest, taxes, amortization and non-recurring items divided by the average of the past two years of total assets. Note that Moody's standard adjustments gross up assets for operating leases, making the asset base of different companies more comparable regardless of the financing method used.

The rating ranges used for scoring under this factor are summarized in the following table.

FIGURE 7

### Criteria for Profitability and Returns (15% Weight)

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa	Ca
EBITA Margin	5%	≥16.0%	13% to < 16%	10% to < 13%	7% to < 10%	4% to < 7%	1% to < 4%	0.0% to < 1%	< 0.0%
NPATBUI Sales	5%	≥11.0%	8% to < 11%	5% to < 8%	3% to < 5%	1% to < 3%	-1% to < 1%	-3% to < -1%	< -3%
EBITA/Average Assets	5%	≥15%	11% to < 15%	7% to < 11%	5% to < 7%	3% to < 5%	2% to < 3%	1% to < 2%	< 1%

A chart that illustrates grid mapping results for Factor 3 is included in Appendix B.

## Factor 4: Cash Flow and Debt Service (30% Weight)

### A. Retained Cash Flow to Debt (10% Weight)

#### *Why it Matters*

Cash flow metrics provide indicators of an issuer's capability to generate cash flow in comparison with its existing debt. The ratio of Retained Cash Flow to Debt considers the adequacy of cash flow after subtracting dividends but before other business reinvestment needs in relation to the outstanding debt of the company. Particularly for investment-grade companies, maintaining steady dividend payments is a high priority, and can be thought of as a fixed cost of their capital structure. This ratio provides a measure of the cash flow available after all capital costs for reinvestment in the business and for debt principal repayment.

#### *How We Measure or estimate it for the Grid*

The ratio of Retained Cash Flow to Debt as presented in the illustrative examples for the grid in this document is calculated as Funds From Operations (FFO; net income adjusted for non-cash earnings and non-cash expenses) less dividends for the last 12 months, divided by the total debt of the company. When assessing cash flow metrics we refer to gross debt. Although we do not normally rely on net debt figures, as cash may be trapped in the operating activity or disappear fairly quickly from a company's balance sheet, we give partial benefit to liquid assets, as certain companies in the industry maintain a relatively high amount of cash that has remained stable over the year.

### B. Free Cash Flow to Debt (10% Weight)

#### *Why it Matters*

An alternative cash flow metric is the ratio of Free Cash Flow to Debt. This metric assesses the adequacy of cash flow after dividends and business reinvestment needs (working capital and CAPEX) in relation to the debt of the company. By looking at cash flow after business reinvestment it is possible to get a better sense of the cash flow that is available for debt reduction, or if the company so chooses, for acquisition or share repurchase activity. Higher levels of free cash flow relative to debt indicate a lower level of refinancing risk, which supports the ratings.

#### *How We Measure or Estimate it for the Grid*

The ratio of Free Cash Flow to Debt as presented in the illustrative examples for the grid in this document is calculated as Free Cash Flow (FFO plus/minus changes in working capital less capital expenditure less dividends) for the last 12 months divided by the total debt of the company.

### C. EBITA to Interest (10% Weight)

#### *Why it Matters*

Coverage of debt service costs is a standard financial metric in many rating methodologies. The EBITA/Interest metric measures the capacity of a company to meet the carrying costs of its financial obligations from its operating results. The higher the ratio, the greater the flexibility to absorb an earnings decline before impairing the ability to make timely interest payments.

*How We Measure or Estimate it for the Grid*

EBITA to interest expense as presented in the illustrative examples for the grid in this document is measured as earnings before interest, taxes and amortization divided by the gross interest expense for the last 12 months. Interest expense is not netted against interest income from investments.

FIGURE 8

**Criteria for Cash Flow and Debt Service (30% Weight)**

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa	Ca
Retained Cash Flow/Debt	10%	≥100.0%	70% to < 100%	40% to < 70%	20% to < 40%	10% to < 20%	5% to < 10%	0.0% to < 5%	< 0.0%
Free Cash Flow/Debt	10%	≥70.0%	40% to < 70%	20% to < 40%	10% to < 20%	5% to < 10%	0% to < 5%	-5% to < 0%	< -5%
EBITA/Interest	10%	≥20x	12x to < 20x	6x to < 12x	3.5x to < 6x	1.75x to < 3.5x	0.75x to < 1.75x	0.0 x to < 0.75x	< 0x

A chart that illustrates grid mapping results for Factor 4 is included in Appendix B.

**IV Assumptions and Limitations, and Rating Considerations Not Covered in the Grid**

The grid, which forms an important part of this rating methodology, incorporates a trade-off between simplicity that enhances transparency and greater complexity that would enable the grid to map more closely to actual ratings. The four factors in the grid do not constitute an exhaustive treatment of all of the considerations that are important for the ratings of automobile manufacturers.

1. Sub-factors selected for the grid do not cover all rating issues: In choosing metrics for this rating methodology grid, we did not include certain important factors that are common to all companies in any industry. Examples include the quality and experience of management, the evaluation of corporate governance and the quality of financial reporting and information disclosure. Assessment of these factors can be highly subjective and ranking them by rating category in a grid would, in some cases, suggest too much precision in the relative ranking of particular issuers against all other issuers that are rated in various industry sectors.

As well, ratings may include additional factors that are difficult to quantify or that only have a meaningful effect in differentiating credit quality in some cases. Such factors could include regulatory and litigation risk or potential for significant acquisitions, or even unusual shareholder enhancement activities.

In the automobile manufacturing sector, for example, a company's ability to effectively manage such widely diverse risks as foreign exchange exposure, joint venture relationships, or customer sales finance activities can be difficult to quantify, yet are critical elements for steady financial performance.

2. Weightings may differ depending on the circumstances: Ratings may also reflect circumstances in which the weighting of a particular factor will be different from the weighting suggested by the grid. For example, financial leverage could have an impact on the rating that is greater than would be suggested by the point-in-time measurement shown in the illustrative grid mapping in this document, if the rating committee believes that the leverage is not sustainable or could be markedly different going forward. Similarly, the profits or cash flow in any measurement period

could have an outcome implied by the grid that differs from the actual rating if the rating committee views the period performance as inconsistent with longer-term company prospects.

3. Variation in weighting of a rating consideration can also apply to factors that we chose not to represent in the grid: For example, liquidity is a rating consideration that can sometimes be critical to ratings, while under other circumstances it may not have a substantial impact in discriminating between two issuers with a similar credit profile. Ratings can be heavily affected by extremely weak liquidity that magnifies default risk. However, two identical companies might be rated the same if their only differentiating feature is that one has good liquidity while the other has an extremely good liquidity position.
4. Ratings incorporate assumptions about future developments: The examples above illustrate some of the limitations of using grid-indicated ratings to predict rating outcomes. In addition, our ratings incorporate expectations for future performance, while the financial information that is used to illustrate the mapping in the grid is mainly historical. In some cases, our expectations for future performance may be informed by confidential information that we cannot publish. In other cases, we estimate future results based upon past performance, industry trends, demand and price outlook, competitor actions and other factors.

In either case, predicting the future is subject to the risk of substantial inaccuracy. Assumptions that can cause our forward-looking expectations to be incorrect include unanticipated changes in any of the following: the macroeconomic environment and general financial market conditions, industry competition, new technology, regulatory actions, or changes in industry drivers such as overall vehicle demand or consumer preferences for different types of vehicles.

## V Conclusion: Summary of Grid-Indicated Rating Outcomes

The grid-indicated ratings for the 19 representative auto manufacturers are based on the financial and operating information available publicly for a quarter closest to March 31, 2011. The grid-implied ratings map to current assigned ratings as follows (see appendix B for the details):

- » Two companies (11% of the total) map to the assigned rating
- » Seven companies (37%) have a grid-indicated rating within one alpha-numeric notch from their assigned ratings
- » Five companies (26%) have grid-indicated ratings within two alpha-numeric notches from their assigned ratings
- » Five companies (26%) have an indicated rating that is three or four notches from their assigned ratings

Overall, these results indicate that there are 12 companies where the grid-indicated rating is above the actual rating versus five that are below the actual rating. There are more indicated ratings above the actual rating because in the current recovery phase of the auto industry, the point-in-time financial metrics presented in the grid mapping examples are resulting in relatively strong outcomes under the grid, while our ratings consider expected performance over a longer period. In a period of declining auto sales, the grid could demonstrate outcomes that are below the assigned ratings.

It is also important to note that in the cases of the North American auto manufacturers, the balance sheet restructurings completed over the last several years (through bankruptcy reorganizations for GM and

Chrysler) have contributed to the relatively strong metrics demonstrated by these companies. While the rating grid presentation measures the financial metrics at a point in time, the assigned ratings seek to look through business cycles. Accordingly, in the current recovery phase of the auto cycle, the current bias of grid-indicated rating above the assigned ratings is an expected outcome. It is also important to note that the grid does not include all factors that are important in determining a company's actual rating.

Appendix A

FIGURE 9  
Global Automotive Manufacturer Methodology Grid

Weight		Aaa	Aa	A	Baa	Ba	B	Caa	Ca	
<b>Factor 1: Market Position and Trend (35%)</b>										
3 Year Change in Market Share	5%	Increase > 2%	Increase > 1% but ≤ 2%	Increase > .25% but ≤ 1%	Increase ≤ .25% to decrease ≤ .25%	Decrease > .25% but ≤ 2%	Decrease > 2% but ≤ 3%	Decrease > 3% but ≤ 4%	Decrease > 4%	
Product Breadth and Strength	30%	Product Range and Geographic Diversification	Strong competitive and market share position in at least two of the four key global geographic regions (North America, Europe, Japan or Asia-excluding Japan) and strong product offering in all segments relevant to those markets (luxury, mid-price and economy cars; trucks and SUV's; crossover vehicles; and alternative fuel vehicles).	Strong competitive and market share position in at least two of the four key global geographic regions. While highly competitive in its entirety, there may be some gaps/areas of weakness in the product portfolio.	Strong competitive and market share position in at least two of the four key global geographic regions. While highly competitive in its entirety, there may be some gaps/areas of weakness in the product portfolio.	Strong market share and competitive position may be concentrated in one of the four key geographic regions identified. Product range might not cover all relevant segments within a geographic region, but the company maintains a competitive position in most segments in which it does compete.	Strong market share and competitive position may be concentrated in one of the four key geographic regions identified. Product range might not cover all relevant segments within a geographic region, but the company maintains a competitive position in most segments in which it does compete.	Company may need to significantly strengthen or expand its position in key geographic regions or product categories	Long-term viability in one or more key geographic regions or product categories could be threatened by intense competitive pressure.	Long-term viability in one or more key geographic regions or in a critical product segment is at clear risk
			Breadth of Profitability Across Product Range	...and Ability to generate competitive returns in the majority of the product segments and geographic regions in which it competes	...and Ability to generate competitive returns in the majority of the product segments and geographic regions in which it competes	...and Ability to generate competitive returns in the majority of the product segments and geographic regions in which it competes	...and Returns and profitability may be weighted toward specific products or categories, or returns for key products or categories have come under periodic pressure.	...and Returns and profitability may be weighted toward specific products or categories, or returns on key products or categories have come under periodic pressure.	...and Returns and profitability are weak or eroding across much of the product line.	...and Returns and profitability throughout the portfolio may not be able to sustain adequate reinvestment needs and significant financial and operational restructuring is required.

FIGURE 9

## Global Automotive Manufacturer Methodology Grid

Weight		Aaa	Aa	A	Baa	Ba	B	Caa	Ca
	Product Renewal Rate	...and Robust and relatively stable rate of new product introductions.	...and Robust and relatively stable rate of new product introductions.	...and Company may experience modest year-to-year variation in rate of new product introductions	...and Company may experience modest year-to-year variation in rate of new product introductions	...and Material year-to-year variation in product renewal rate or an extended time frame for the renewal of critical models has resulted in periodic erosion of competitive position in key segments or product categories	...and Material and chronic year-to-year variation in product renewal rate or an extended time frame for the renewal of critical models has resulted in a long-term erosion of competitive position in key segments or product categories	...and Material and chronic year-to-year variation in product renewal rate or an extended time frame for the renewal of critical models has resulted in a long-term erosion of competitive position in key segments or product categories	...and inadequate product renewal
<b>Factor 2: Leverage and Liquidity (20%)</b>									
Debt to EBITDA	10%	< 0.75x	0.75x to < 1.75x	1.75x to < 2.75x	2.75x to < 3.75x	3.75x to < 5.0x	5.0x to < 6.5x	6.5x to < 8.0x	≥ 8.0x
Debt to Capital	5%	< 15%	15% to < 35%	35% to < 50%	50% to < 60%	60% to < 70%	70% to < 80%	80% to < 90%	≥ 90%
Cash and Marketable Securities to Debt	5%	≥ 160%	120% to < 160%	90% to < 120%	70% to < 90%	50% to < 70%	40% to < 50%	30% to < 40%	< 30%
<b>Factor 3: Profitability and Returns (20%)</b>									
EBITA Margin	5%	≥ 16%	13% to < 16%	10% to < 13%	7% to < 10%	4% to < 7%	1% to < 4%	0.0% to < 1%	< 0.0%
NPATBUI Sales	5%	≥ 11%	8% to < 11%	5% to < 8%	3% to < 5%	1% to < 3%	-1% to < 1%	-3% to < -1%	< -3%
EBITA/Average Assets	5%	≥ 15%	11% to < 15%	7% to < 11%	5% to < 7%	3% to < 5%	2% to < 3%	1% to < 2%	< 1%
<b>Factor 4: Cash Flow and Debt Service (25%)</b>									
Retained Cash Flow/Debt	10%	≥ 100%	70% to < 100%	40% to < 70%	20% to < 40%	10% to < 20%	5% to < 10%	0.0% to < 5%	< 0.0%
Free Cash Flow/Debt	10%	≥ 70%	40% to < 70%	20% to < 40%	10% to < 20%	5% to < 10%	0% to < 5%	-5% to < 0%	< -5%
EBITA/Interest	10%	≥ 20x	12x to < 20x	6x to < 12x	3.5x to < 6x	1.75x to < 3.5x	0.75x to < 1.75x	0.0x to < 0.75x	< 0x

## Appendix B

FIGURE 10

## Grid-Indicated Ratings

Company	LTM Period Ending	Current Rating	Outlook	Grid Indicated Rating	Factor 1.		Factor 2.			Factor 3.			Factor 4.		
					Market Position and Trend		Leverage and Liquidity			Profitability and Returns			Cash Flow and Debt Service		
					Trend in global unit share over 3 years	Product breadth and strength	Debt / EBITDA (Point in Time)	Debt / Book Capital (Point in Time)	(Cash & Marketable Securities) / Debt (Point in Time)	EBITA Margin (Point in Time)	EBITA / Avg Assets (Point in Time)	NPATBUI / Sales (Point in Time)	FCF / Debt (Point in Time)	RCF / Debt (Point in Time)	EBITA / Interest Expense (Point in Time)
BMW AG	3/31/11	A3	Stable	Aa3	Baa	A	Aaa	Aaa	Aaa	A	Aa	A	Aaa	Aaa	Aaa
Chrysler Group LLC	3/31/11	B2	Positive	B1	Ba	B	Ba	Ca	Ba	B	Ba	Caa	Baa	Ba	B
Daimler AG	3/31/11	A3	Stable	A1	Baa	A	Aa	Aa	Aa	Baa	A	Baa	Aa	Aaa	A
Fiat S.p.A.	12/31/10	Ba1	RUR-Down	B1	Ba	Ba	Caa	Ba	Ba	Ba	B	B	B	B	B
Ford Motor Company	3/31/11	Ba2	Positive	Baa3	Ba	Baa	Baa	Ca	Ba	Ba	A	Baa	Baa	Baa	Ba
General Motors Co.	3/31/11	Ba2	Stable	Baa3	Ba	Baa	A	Baa	Baa	Ba	Baa	Baa	Ba	Ba	Ba
Harley-Davidson, Inc.	3/27/11	Baa1	Stable	A1	Aaa	A	Aa	Aa	A	A	Aaa	Aa	Aa	Aa	Baa
Honda Motor Co., Ltd.	12/31/10	A1	Stable	Aa3	Ba	Aa	Aa	Aa	A	A	Aa	A	A	A	Aaa
Hyundai Motor Co.	12/31/10	Baa2	Stable	Baa1	Aa	Baa	Baa	Baa	Caa	Baa	A	Baa	A	Baa	A
Jaguar Land Rover Plc	3/31/10	B1	Stable	Caa2	Baa	B	Ca	Ca	Ca	Ca	Ca	Ca	Ca	Ca	Ca
Kia Motors Corp.	12/31/10	Baa2	Stable	A3	Aa	Baa	Aa	A	B	Baa	Aa	A	A	A	A
Nissan Motor Co., Ltd.	12/31/10	Baa2	Stable	A3	A	Baa	Aa	Aa	Ba	Baa	A	Baa	A	A	Aa
Peugeot S.A.	12/31/10	Baa3	Stable	Ba1	Baa	Baa	Ba	Ba	Baa	B	Ba	B	Ba	Ba	Ba

FIGURE 10

## Grid-Indicated Ratings

Company	LTM Period Ending	Current Rating	Outlook	Grid Indicated Rating	Factor 1.		Factor 2.			Factor 3.			Factor 4.		
					Market Position and Trend		Leverage and Liquidity			Profitability and Returns			Cash Flow and Debt Service		
					Trend in global unit share over 3 years	Product breadth and strength	Debt / EBITDA (Point in Time)	Debt / Book Capital (Point in Time)	(Cash & Marketable Securities) / Debt (Point in Time)	EBITA Margin (Point in Time)	EBITA / Avg Assets (Point in Time)	NPATBUI / Sales (Point in Time)	FCF / Debt (Point in Time)	RCF / Debt (Point in Time)	EBITA / Interest Expense (Point in Time)
Renault S.A.	12/31/10	Ba1	Positive	Baa3	Baa	Baa	Baa	A	Baa	Ba	Ba	Baa	Baa	Ba	Ba
Tata Motors Limited	3/31/10	Ba3	Stable	B1	B	Ba	Ba	Caa	Ca	Ba	Baa	Ba	Caa	Ba	B
Toyota Motor Corp	3/31/10	Aa2	RUR-Down	A3	B	Aa	A	Aa	A	B	B	Ba	A	Baa	A
Volkswagen AG	3/31/11	A3	Stable	A2	A	A	Aa	A	Baa	A	Aa	A	A	A	A
Yamaha Motor Co.	3/31/11	A3	Negative	A3	Aa	A	A	Baa	B	Baa	Aa	Baa	Baa	Baa	Aa

## Appendix C

FIGURE 11

Outliers for Grid Mapping<sup>1</sup>

Company	LTM Period Ending	Current Rating	Outlook	Grid Indicated Rating	Factor 1.		Factor 2.			Factor 3.			Factor 4.		
					Market Position and Trend		Leverage and Liquidity			Profitability and Returns			Cash Flow and Debt Service		
					Trend in global unit share over 3 years	Product breadth and strength	Debt / EBITDA (Point in Time)	Debt / Book Capital (Point in Time)	(Cash & Marketable Securities) / Debt (Point in Time)	EBITA Margin (Point in Time)	EBITA / Avg Assets (Point in Time)	NPATBUI/Sales (Point in Time)	FCF / Debt (Point in Time)	RCF / Debt (Point in Time)	EBITA / Interest Expense (Point in Time)
BMW AG	3/31/11	A3	Stable	Aa3	Baa	A	Aaa	Aaa	Aaa	A	Aa	A	Aaa	Aaa	Aaa
Chrysler Group LLC	3/31/11	B2	Positive	B1	Ba	B	Ba	Ca	Ba	B	Ba	Caa	Baa	Ba	B
Daimler AG	3/31/11	A3	Stable	A1	Baa	A	Aa	Aa	Aa	Baa	A	Baa	Aa	Aaa	A
Fiat S.p.A.	12/31/10	Ba1	RUR-Down	B1	Ba	Ba	Caa	Ba	Ba	Ba	B	B	B	B	B
Ford Motor Company	3/31/11	Ba2	Positive	Baa3	Ba	Baa	Baa	Ca	Ba	Ba	A	Baa	Baa	Baa	Ba
General Motors Co.	3/31/11	Ba2	Stable	Baa3	Ba	Baa	A	Baa	Baa	Ba	Baa	Baa	Ba	Ba	Ba
Harley-Davidson, Inc.	3/27/11	Baa1	Stable	A1	Aaa	A	Aa	Aa	A	A	Aaa	Aa	Aa	Aa	Baa
Honda Motor Co., Ltd.	12/31/10	A1	Stable	Aa3	Ba	Aa	Aa	Aa	A	A	Aa	A	A	A	Aaa
Hyundai Motor Co.	12/31/10	Baa2	Stable	Baa1	Aa	Baa	Baa	Baa	Caa	Baa	A	Baa	A	Baa	A
Jaguar Land Rover Plc	3/31/10	B1	Stable	Caa2	Baa	B	Ca	Ca	Ca	Ca	Ca	Ca	Ca	Ca	Ca
Kia Motors Corp.	12/31/10	Baa2	Stable	A3	Aa	Baa	Aa	A	B	Baa	Aa	A	A	A	A
Nissan Motor Co., Ltd.	12/31/10	Baa2	Stable	A3	A	Baa	Aa	Aa	Ba	Baa	A	Baa	A	A	Aa
Peugeot S.A.	12/31/10	Baa3	Stable	Ba1	Baa	Baa	Ba	Ba	Baa	B	Ba	B	Ba	Ba	Ba
Renault S.A.	12/31/10	Ba1	Positive	Baa3	Baa	Baa	Baa	A	Baa	Ba	Ba	Baa	Baa	Ba	Ba
Tata Motors Limited	3/31/10	Ba3	Stable	B1	B	Ba	Ba	Caa	Ca	Ba	Baa	Ba	Caa	Ba	B

<sup>1</sup> Outliers are defined as companies whose factor scores deviate two full rating categories from the company's senior debt rating. All quantitative measures are based on 'As Adjusted' financial data and incorporate Moody's standard adjustments

FIGURE 11

Outliers for Grid Mapping<sup>1</sup>

Company	LTM Period Ending	Current Rating	Outlook	Grid Indicated Rating	Factor 1.	Factor 2.	Factor 3.	Factor 4.							
					Market Position and Trend		Leverage and Liquidity			Profitability and Returns			Cash Flow and Debt Service		
					Trend in global unit share over 3 years	Product breadth and strength	Debt / EBITDA (Point in Time)	Debt / Book Capital (Point in Time)	(Cash & Marketable Securities) / Debt (Point in Time)	EBITA Margin (Point in Time)	EBITA / Avg Assets (Point in Time)	NPATBUI/Sales (Point in Time)	FCF / Debt (Point in Time)	RCF / Debt (Point in Time)	EBITA / Interest Expense (Point in Time)
Toyota Motor Corp	3/31/10	Aa2	RUR-Down	A3	B	Aa	A	Aa	A	B	B	Ba	A	Baa	A
Volkswagen AG	3/31/11	A3	Stable	A2	A	A	Aa	A	Baa	A	Aa	A	A	A	A
Yamaha Motor Co.	3/31/11	A3	Negative	A3	Aa	A	A	Baa	B	Baa	Aa	Baa	Baa	Baa	Aa

Green Highlight = Positive Outlier

Red Highlight = Negative Outlier

Fourteen companies have grid-implied ratings that are within two refined notches of the assigned rating. There are five cases where the grid-implied rating is three or more notches away from the assigned rating. These are BMW, Fiat, Harley-Davidson, Jaguar Land Rover, and Toyota. In two cases, Fiat and Toyota, the assigned ratings are currently under review for possible downgrade, and the resolution of those reviews may narrow the magnitude of difference between the assigned rating and the grid-implied rating. In the cases of BMW and Harley-Davidson, the assigned ratings are below the grid-implied rating. Both of these companies are currently experiencing strong rebounds from very weak performance during the recent recession, and thus their grid-implied ratings have shown significant recent improvement. In the case of Jaguar Land Rover, the grid-implied rating of Caa2 is well below the assigned rating of B1. The financial metrics presented in the grid mapping for 3/31/10 do not reflect the more recent conversion of £1.0 billion of preference shares into common shares. The company's leverage metric would significantly improve with this adjustment to its capital structure and narrow the difference between the assigned rating and the grid-implied rating.

## Appendix D: Automobile Manufacturing Industry Overview

- Vital Industry:** The automobile manufacturing industry is vital to economic development and growth across the globe. Motor vehicles play an important role in commerce through contributing to the mobility of people and the efficient transport of goods. While the nature of motor vehicles will likely evolve in response to environmental issues (such as the introduction of alternative fuel vehicles) the fundamental role that motor vehicles play in the economy remains unchanged. This vital role will enable auto manufacturers to, at a minimum, sustain demand in developed markets and contribute to continued growth in developing regions. Unlike some industry sectors where technology shifts are threatening the fundamental drivers of demand (the newspaper industry, for example), the auto manufacturing industry should continue to benefit from favorable long-term opportunities. Technology shifts will alter the type of vehicles driven, but not the fundamental need for vehicular transportation.
- Political and Regulatory Influences:** Because of the importance of the automobile industry to economic trends, and because auto manufacturers and their suppliers are large employers, they attract significant political and regulatory attention. Regulatory issues also permeate the industry because of the environmental issues surrounding fuel economy and vehicle emissions. The regulatory and political issues affecting the auto industry can be a two-edged sword. On the one hand, complying with stiffer environmental issues can pose significant challenges and costs for automakers. Yet, because of the importance of auto manufacturing to a country's industrial output and employment, automakers can receive important support in times of stress. The tax incentives offered by European governments to retire older vehicles, and the significant role that the U.S. government played in the restructuring of General Motors and Chrysler are recent examples of the constructive role that political and regulatory influences can have for automakers.
- Earnings and Cash Flow Volatility:** Earnings and cash flows for auto manufacturers are typically more volatile than for many other industries. Generally, this volatility reflects macroeconomic trends (automobile sales are directly correlated with consumer sentiment), but can also reflect specific issues affecting a particular automaker's product offerings. Automaker cash flows are also heavily influenced by product development costs and capital requirements necessary to support the business. During strong economic times, booming sales can drive significant free cash flow generation, but when economic trends weaken, the need to maintain reinvestment in the business can lead to sizable cash consumption by an automaker. Because earnings and cash flow volatility is such an important factor for ratings, management's ability to manage and, if possible, mitigate this volatility is a key rating element.
- Captive Finance Activities Pose Added Complexity:** Many auto manufacturers operate captive finance subsidiaries that assist in funding the wholesale (sales from the auto maker to the dealer network) and retail (sales from the dealers to end consumers) sales of automobiles. These captive finance subsidiaries require continual access to the capital markets, and maintaining a strong capital base and a solid liquidity profile is critical. Many captive finance subsidiaries benefit from support agreements provided by their auto manufacturer parent, and in times of stress the parent can be called upon to provide financial support to the captive. For these reasons, it is essential to consider the implications that the captive finance subsidiary can have on the credit profile of the parent.

5. **Maintenance of a Strong Liquidity Profile is Essential:** Given the volatility that can occur in the cash flows of auto makers, and the potential calls that a captive finance subsidiary can have on its parent, it is essential that automakers maintain a strong liquidity profile that facilitates all potential business investment needs—even during weak economic periods. For this reason, in some instances the liquidity assessment of an auto manufacturer can be more heavily weighted in determining the actual assigned rating than is indicated in the grid.

## Appendix E: Key Rating Issues over the Intermediate Term

### 1. *Cyclicality*

As seen during the recent recessionary environment in North America and Europe, automotive demand remains highly cyclical based on general economic trends in a given region. Deep cyclical downturns can cause staggering financial losses for even the largest automakers. Companies will be able to better contend with this inherent cyclicality by maintaining a strong liquidity position, increasing their geographic diversification, offering competitive products across a broader range of vehicle categories, and maintaining a stable product renewal cycle with a portfolio replacement rate approximating 20% to 25% per year.

### 2. *Long-Term Demand*

In the developed markets of the US, Western Europe and Japan, long-term growth in annual demand will be modest (1% or less), although in any given year cyclical trends will likely result in larger rates of increase or decrease. Most of the industry growth will occur in emerging economies such as China, South America, Asia, India and Eastern Europe, where demand will be driven by rapidly expanding economies, rising disposable income, and continued population growth. Over the longer term, demand in these regions will be much stronger than in developed markets.

### 3. *Product Breadth*

There will be an ongoing trend among most automotive manufacturers to expand their product ranges in an effort to strengthen return measures, to lessen vulnerability to cyclical downturns, and to contend with potential shifts in consumer demand. In addition to expanding product breadth, it will also be important for manufacturers to be able to generate profitability across a broader spectrum of their portfolios. Better breadth and diversification of profitability will lessen the degree to which profits are concentrated within a narrow portion of a product range, and will add much greater stability to earnings, cash generation and key credit metrics.

### 4. *Product Renewal Cycle*

Maintaining a robust and steady product renewal rate will remain one of the most important strategic initiatives of automotive manufactures. An annual product renewal rate approximating 20% is healthy. One of the key risks and competitive disadvantages that an auto manufacturer can face is an uneven product renewal rate; an aging and uncompetitive product line could exacerbate the effects of a cyclical downturn on a given manufacturer, materially weakening its chances of recovery.

### 5. *Global Manufacturing Footprint and Supply Base*

Automotive companies will continue to pursue a more global manufacturing and supply base footprint. Their strategic objectives will include: locating facilities in markets in which vehicles will be sold in order to minimize vulnerability to currency risk and social/political hindrances to product acceptance; taking advantage of low-cost labor rates by locating facilities in regions such as Eastern Europe, Asia-excluding Japan, and Latin America; and expanding relationships with suppliers who can service a more global manufacturing base with local supply facilities.

### 6. *Supplier Relations*

Establishing or maintaining effective and mutually beneficial relationships with global suppliers remains an important determinant of competitive advantage within the automotive sector. Material

costs can represent 65% of the costs of a vehicle. In addition, suppliers can play a critical role in the engineering and design process for an automobile. Consequently, an effective working relationship with suppliers can be a significant source of ongoing cost reductions and can also facilitate a manufacturer's access to cutting-edge technology developed by suppliers.

### **7. *Liquidity***

Because of the significant investment levels that must be funded even during cyclical downturns, auto manufacturers will continue to maintain sizable liquidity positions in order to preserve adequate financial flexibility.

### **8. *Finance Operations***

The ability to provide readily available financing to retail customers and distributor systems throughout all phases of the automotive cycle will remain strategically important to automotive manufacturers. This will be accomplished largely through captive finance operations or joint ventures.

## Moody's Related Research

The credit ratings assigned in this sector are primarily determined by this credit rating methodology. Certain broad methodological considerations (described in one or more secondary or cross-sector credit rating methodologies) may also be relevant to the determination of credit ratings of issuers and instruments in this sector. Potentially related secondary and cross-sector credit rating methodologies can be found [here](#).

For data summarizing the historical robustness and predictive power of credit ratings assigned using this credit rating methodology, see [link](#).

» contacts continued from page 1

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