CREDIT OPINION
28 October 2024

Update

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RATINGS

Volkswagen Aktiengesellschaft

Domicile	Wolfsburg, Germany
Long Term Rating	A3
Type	LT Issuer Rating
Outlook	Negative

Please see the ratings section at the end of this report for more information. The ratings and outlook shown reflect information as of the publication date.

Contacts

Perrine Bajolle +49.69.70730.902
VP-Senior Analyst
perrine.bajolle@moodys.com

Christian Hendker, CFA +49.69.70730.735
Associate Managing Director
christian.hendker@moodys.com

Jingchao Zhao, CFA +49.69.70730.812
Sr Ratings Associate
jingchao.zhao@moodys.com

Volkswagen Aktiengesellschaft

Update on Key Credit Considerations

Summary

In October 2024, we changed Volkswagen Aktiengesellschaft's (Volkswagen, or VW) outlook to negative from stable and affirmed its A3 long-term ratings. The outlook change to negative was prompted by a weakening trend in VW's operating performance, accelerated in the last months by the recent deterioration of the market environment in the auto sector. The negative outlook reflects the challenges to turn around the current weak margin and negative Moody's adjusted free cash flow and to execute the strategic shifts initiated by the management in recent months. We positively recognize the company's strong financial flexibility, including its sizeable liquidity position, scale and diversification, which provides some cushion throughout the more challenging market environment.

VW's A3 long-term ratings are supported by its robust portfolio of highly recognizable brands (including Volkswagen, Audi and Porsche) and established market positions in Western Europe and China; its geographical diversification and good product offering and the company's sizeable liquidity position.

VW's ratings are currently weakly positioned, given the following constraining factors: the high cyclicality of the automotive industry; the group's declining market share in China, its largest single market; the significant divergence in profitability across passenger car brands, with particular weak margins at VW's brand group "Core" somewhat mitigated by strong margins at the premium brands Audi and Porsche; need for high investments to cope with globally increasing environmental standards and the transition to electric vehicles (including EV battery business), and to develop a group-wide vehicle software architecture; and high governance risks according to our ESG criteria, due to the organizational complexity within the group.

Over the last months, VW management launched key strategic initiatives aiming at turning around its weakening positioning in China thanks to its new localized strategy announced in April 2024, improve its software development capabilities thanks to the Rivian partnership announced in June 2024 and sustainably reduce its cost structure with plants closure in Europe as revealed in Summer 2024. All these initiatives include significant execution risks, but if successful, could sustainably improve profitability, cash flow generation and time to market of new models in the mid-term. We do not expect to see the benefits of these actions before early 2026.

The negative outlook indicates that downward rating pressure could increase if the operating performance worsens significantly more than currently expected into 2025 and if there's no evidence within the next 18 months that strategic initiatives will lead to lasting performance improvements.

Credit strengths

» Robust and diversified business profile, with strong positions in the global automotive market and a portfolio of highly recognizable brands

» Geographical diversification and good product offering

» Underlying profitability expected to benefit from VW's scale and operating leverage, modular tool kit strategy and cost reductions

» Ability to offer attractive financing, which is a key component of VW's business model

» Sizeable liquidity position and stability of credit metrics historically

Credit challenges

» Difficult market environment for the automotive industry globally, including its high cyclicality and a highly competitive market environment, including China, where VW has lost market share

» Strong divergence in profitability across passenger car brands, especially weak profitability at the VW brand

» Need for high investments to cope with stricter emission regulation, to develop and produce alternative fuel vehicles (including BEVs) and a group-wide vehicle software architecture that enables connectivity, driving assistance and autonomous driving features

» Corporate governance issues (according to Moody's ESG criteria), including highly complex group structure and history of high management turnover

» Credit metrics somewhat weaker than those of its rated peers

Rating outlook

The negative outlook reflects the current weak positioning of the rating and the execution risks linked to the turnaround of recent weakening trend in profit margin and free cash flow generation, in a worsening market environment.

Factors that could lead to an upgrade

We could consider to change the outlook to stable in case VW would demonstrate its ability to turn around the currently weakening profitability and free cash flow trajectory. A stable outlook would require a Moody's adjusted EBITA margin around 6.5-7.0%, a Moody's adjusted leverage well below 2x, free cash flow returning to positive territory and a sizeable liquidity position.

Given the negative outlook, there is currently no upward rating pressure. Nonetheless, we would consider upgrading VW's ratings if (1) it demonstrates its ability to, at least, protect its market share in the major markets where it operates, especially in Western Europe and China, regardless of potential changes in global macroeconomic conditions, (2) there is a significantly improved competitive position for the Volkswagen Passenger Cars brand and in the US market, (3) more stringent corporate governance structures are implemented, (4) VW generates robust cash flow on a sustained basis, despite elevated capital spending, with Moody's-adjusted FCF/debt of around 10% and (5) VW's Moody's-adjusted EBITA margin is comfortably above 7% on a sustained basis.

Factors that could lead to a downgrade

VW's ratings could be downgraded in case of an operational weakness or more aggressive financial policies resulting in: (1) Moody's-adjusted EBITA margin sustainably well below 7%, (2) Moody's-adjusted debt/EBITDA above 2.0x, or (3) FCF/debt (Moody's-adjusted) remaining below mid-single-digit percentages for a prolonged period. Also, an erosion in VW's market shares in its core markets, as well as its inability to enhance the profitability of Volkswagen's brand group “Core” to a more competitive level of above 5% on a sustained basis, delays in the transformation towards electrification as well as higher than expected R&D and capex requirements to achieve this, and a weakening of the company's liquidity profile could lead to a rating downgrade.

Key indicators

Exhibit 1
Volkswagen Aktiengesellschaft

	2019	2020	2021	2022	2023	LTM Jun-24	2024F	2025F
EBITA Margin %	8.3%	6.0%	6.9%	7.5%	6.8%	6.6%	3.9%	4.2%
EBITA Margin % excl. JVs	6.7%	4.5%	5.8%	6.5%	5.9%	6.0%	3.5%	4.0%
Debt / EBITDA	1.9x	2.8x	2.3x	1.4x	1.6x	1.8x	2.1x	2.0x
Debt / EBITDA excl. JVs	2.1x	3.2x	2.6x	1.5x	1.7x	1.9x	2.2x	2.0x
(Cash + Marketable Securities) / Debt	60.0%	63.7%	69.2%	124.5%	110.4%	87.4%	92.1%	87.3%
RCF / Debt	43.0%	21.1%	28.9%	14.7%	43.3%	34.9%	25.3%	32.8%
FCF / Debt	15.9%	4.4%	14.8%	-17.8%	13.4%	4.6%	-5.2%	-3.4%
EBITA / Interest Expense	10.4x	7.1x	9.2x	6.1x	6.6x	6.3x	3.6x	3.9x
EBITDA Margin %	13.8%	12.8%	12.9%	13.7%	10.9%	10.7%	8.9%	9.2%

All figures and ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations. Periods are financial year-end unless indicated. LTM = Last 12 months. Moody's forecasts are Moody's opinion and do not represent the views of the issuer.
Sources: Moody's Financial Metrics™ and Moody's Ratings forecasts

Profile

Volkswagen Aktiengesellschaft, headquartered in Wolfsburg, Germany, is Europe's largest car manufacturer in terms of passenger car unit sales, with a market share of 26% in 2023 in Europe (according to the European Automobile Manufacturers Association), and one of the two largest globally, marginally below Toyota Motor Corporation (A1/P-1 positive).

VW manufactures mass-market and premium vehicles under the Volkswagen Passenger Cars, SKODA, SEAT, Cupra, Audi, Bentley, Lamborghini and Porsche (VW share 75%) brands, as well as commercial vehicles under the Volkswagen Commercial Vehicles brands. VW also produces trucks and buses via its publicly listed subsidiary TRATON SE (Baa2 positive, VW share 89.7%), which produces vehicles under the MAN, Scania, International Motors (f.k.a. Navistar) and VW Truck & Bus brands. In addition, VW's subsidiary Audi has a 100% stake in the premium motorcycle manufacturer, Ducati.

In 2023, VW delivered 9.2 million vehicles to its customers (8.3 million in 2022). Volkswagen generates the vast majority of its unit sales in Europe (44% in LTM March 2024) as well as Asia-Pacific (39%, predominantly China), followed by North America (11%) and South America (6%).

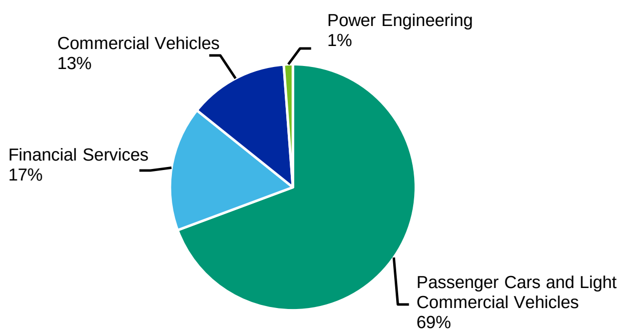
VW also provides a full range of banking, leasing, insurance and mobility services mainly through its subsidiaries Volkswagen Financial Services AG (A3/P-2 negative) and Volkswagen Bank GmbH (Bank Deposits A1, BCA baa3). Volkswagen Bank GmbH holds a banking licence and offers wholesale and retail banking services.

Detailed credit considerations

Robust and diversified business profile, with strong positions in the global automotive market, weakening positioning in China though

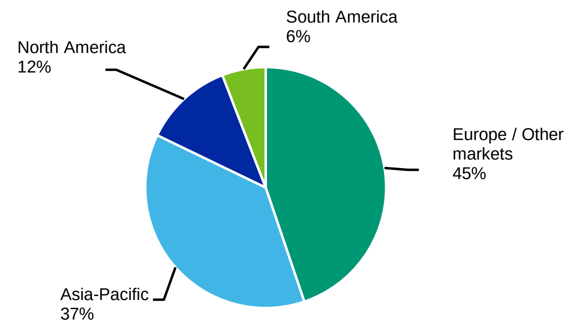
VW has a strong business profile, with leading and established market positions in Europe (number one position with 25.9% market share in 2023, well before Stellantis N.V. (Baa1 negative), with a share of 16.6%, according to ACEA), China (number one position achieved through joint ventures [JVs] with local partners) and Brazil (second position, behind Stellantis and just before General Motors Company (Baa2 stable). Given its broad and attractive product and service offering (including the ability to provide customer financing), as well as a strong product pipeline, we expect the company to maintain a market share in Europe at the current level of around 24%-26% in the medium term.

Exhibit 2
Revenue breakdown by segment (LTM Jun-24)



Does not include the Chinese joint venture revenue. Breakdown by sales revenue, excluding internal reconciliation. LTM = Last 12 months.
Source: Company filings

Exhibit 3
Vehicle sales by region (LTM Jun-24)



Does include the Chinese joint ventures. LTM = Last 12 months.
Source: Company filings

VW's presence in both passenger cars and commercial vehicles brings a degree of diversification to its business risk profile. We expect cooperation between VW's commercial vehicle brands to increase. VW has bundled its commercial vehicle activities under its publicly listed subsidiary TRATON SE (Baa2 positive; VW share: 89.7% as of December 2023), comprising Scania, MAN, International Motors and VW Truck & Bus.

Since 2019, VW's competitive positioning has been weakening in China because the company did not manage to effectively compete with fierce local competition on the rapidly growing new energy vehicles (NEVs) segment — which includes BEVs, PHEVs and fuel cell electric vehicles (FCEVs). As a result, VW's market share declined from 19.3% in 2020 to 14.5% in 2023 and its proportionate operating result coming from the Chinese JV decreased from €4.4 billion in 2019 to €2.6 billion in 2023. In order to defend its challenged position in China, VW released a new strategy in April 2024. The company intends to localize some of the decision making processes and leverage capabilities of the local JV partners as well as the new partnership with Xpeng for the electronic architecture. Thanks to this new set up the company expects to reduce time to market by 30% and become cost competitive with local players on BEV and ICE by 2026. As of today, VW's exposure to China including profits from locally produced cars in the joint-venture as well as profits from imported cars - mainly Porsche and Audi - represents around 30% of the group's profit, down from 50% at peak.

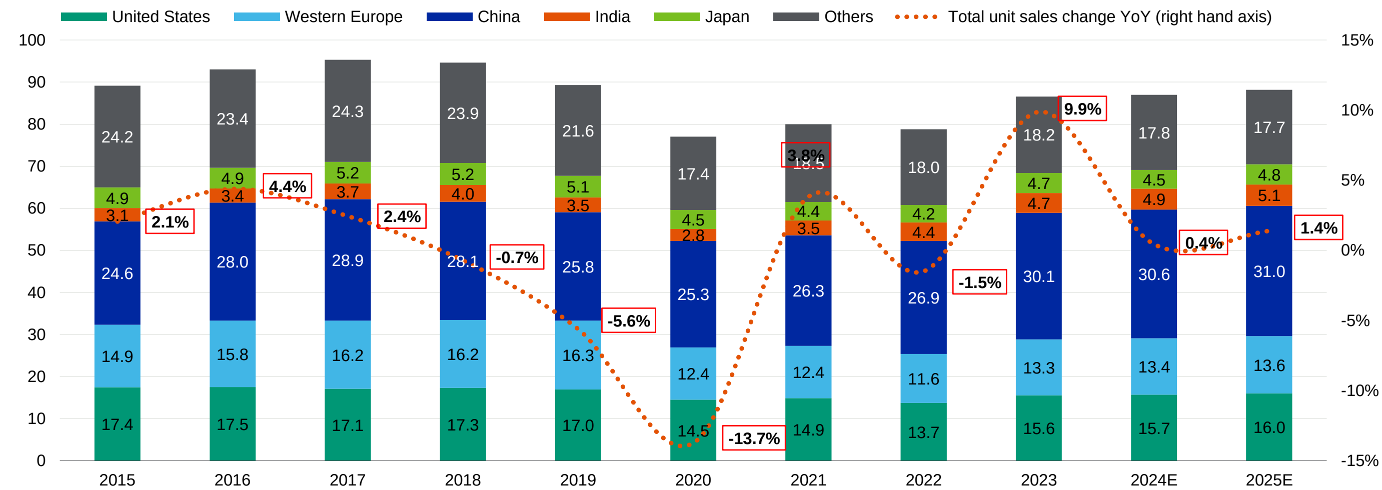
Difficult environment for the global automotive industry, which is highly cyclical and highly competitive

VW, like all major automakers, is exposed to the cyclicality of the global automotive industry. After several years of continuous growth since the beginning of the decade, global light vehicle sales peaked at around 95 million units in 2017-18. In 2019, global light vehicle sales declined by around 6% to around 90 million units, driven mainly by an 8% decline in China. The COVID-19 pandemic caused a severe 14% plunge in 2020, with only a modest recovery in 2021. In 2022 global light vehicle sales declined by a minor 1.5% because of production constrains stemming from the global shortage of semiconductors. Light vehicle sales saw a strong rebound in 2023 as the supply constrains eased and registered a 10% YoY growth. Less demand this year drove a slowdown in sales which accelerated over the last months. We forecast global light vehicle sales to grow 0.4% this year and 1.4% next. Global annual unit sales have yet to match their pre-pandemic level though, so that slower growth will be off a lower base. Companies are in the midst of a difficult transition, cutting production to limit price pressure while also supporting simultaneously combustion and electric vehicle strategies because of the slower transition to zero-emission vehicles.

Exhibit 4

Global light vehicle sales growth will slow to 0.4% this year, 1.4% next year

Our projections for global light vehicle unit sales (in million units)



China unit sales represent auto sales, including those of both passenger and commercial vehicles.

Sources: ACEA, CAAM, LMC and Moody's Ratings estimates

During the first half of 2024, VW's global deliveries were broadly flat but key margin contributors Audi and Porsche delivered less than the same period last year hence hurting group's margin. The delivery of Audi was constrained by the supply shortage of V6 and V8 engines. As conditions in the auto sector worsen this year as evident by low volume growth globally including a weak domestic China, sluggish Western Europe and increasing price pressure, we forecast VW's revenue to decrease by 1.5% in 2024, implying a 3% volume decline. We forecast VW's revenue to increase by 1.5% in 2025, tracking our global volume forecast. A stronger product momentum at Audi and Porsche should boost revenue growth next year.

Weaker profitability than peers, strong divergence in profitability across passenger car brands, management initiatives aim at sustainability improving margins

VW's large scale should help the group to efficiently deploy resources and boost its profitability thanks to operating leverage. But VW's profitability, also stable historically, has remained at weak levels compared with peers. The valuation of derivatives outside hedge accounting has impacted VW's margin historically in a positive or negative way. VW began transferring these derivatives to hedge accounting this year and aims to complete the process by the end of the year. This means that from 2025 fluctuations in commodity prices will no longer affect the income statement through valuation effects of derivatives, but only when profits or losses are realized. From then on the valuation effects will be recognized in the other comprehensive Income (OCI) of the company's equity.

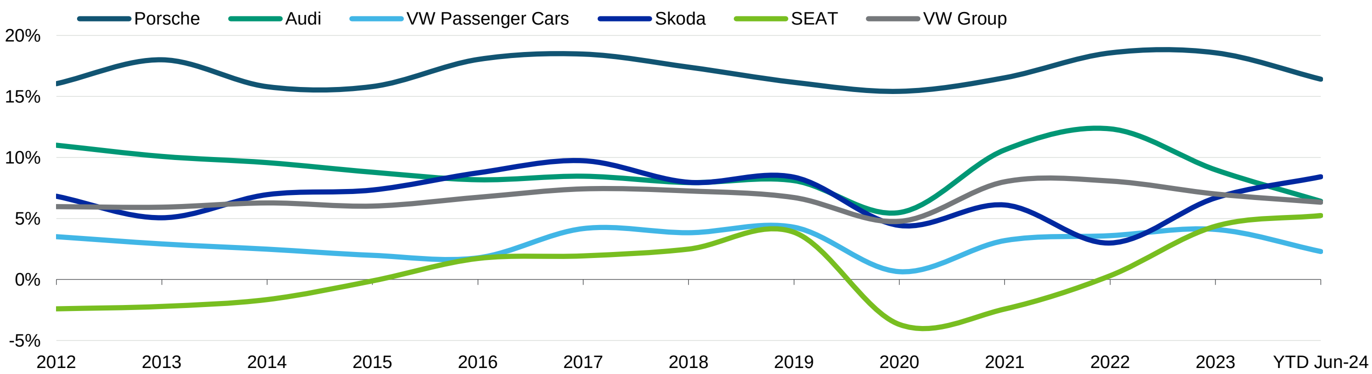
In June 2023, VW management announced a new strategic plan that includes the goal to improve the group's operating margin before special items to 8%-10% by 2027 (7.0% in 2023 or 8.0% excluding hedge accounting) and 9%-11% by 2030. Management intends to improve margin towards 6.5% for VW brand (versus 4.1% in 2023) and 8.0% for the division "Core" by 2027 (versus 5.3% in 2023). We note that VW has been attempting to improve the margins for the brand group "Core" for a long time with a very mixed track record so far. Key drivers of the expected margin improvement include improved product positioning and efficiency measures. Notwithstanding small margin improvement recently, we believe that the management targets have significant execution risks given the mixed track record, the highly competitive automotive sector environment and the high organizational complexity within the group. Moreover, high investments into the software architecture will continue to weigh on profitability.

In 2023, while they accounted only for 24% of group's deliveries, Audi and Porsche represented more than 50% of the group's operating profit (excluding the intercompany profit, special items and results from JVs). While VW's premium brands continue to drive earnings, higher profitability at the group's other brands is key to achieve the management goal of group's margin improvement to 8-10%. The group also aims to cut overhead cost, reduce its total number of model variants, and streamline its modular architectures further, reducing them to four major variants. The group's ongoing strategy to drive economies of scale in unit cost through the global rollout of its MQB (Modularer Querbaukasten) platform is expected to play a key role in enhancing the profitability of its mass-market brands.

Exhibit 5

VW Management targets to improve group profitability to 8-10% by 2027

Reported operating margin by segment



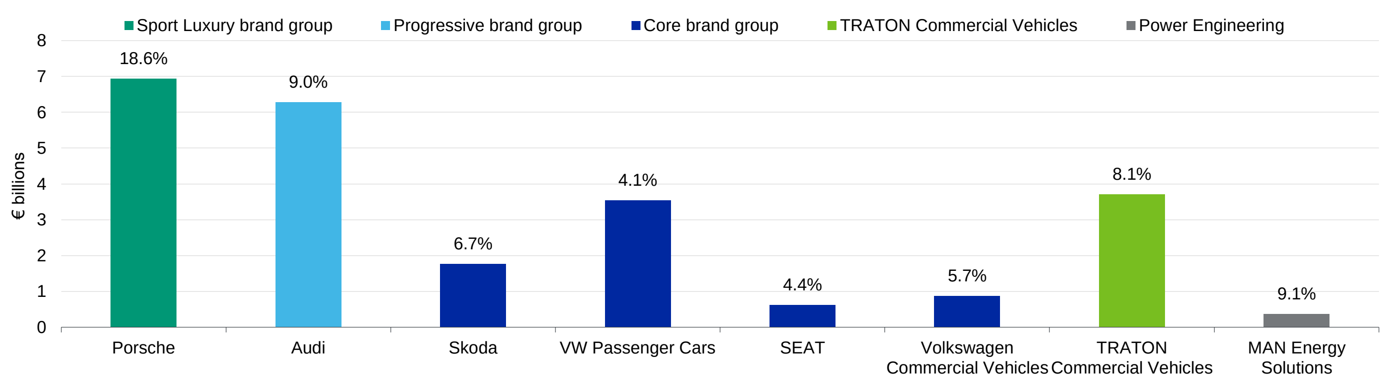
Excluding intercompany profit, special items and results from joint ventures; VW Group's operating margin before special items decreased to 7.0% in 2023 from 8.1% in 2022. YTD = Year to date.

Source: Company filings

Exhibit 6

Sustainable improvement of the Volkswagen Passenger Cars brand profitability is key to achieving higher operating margins at the group level

Reported operating profit and margin by brand and business field (2023)



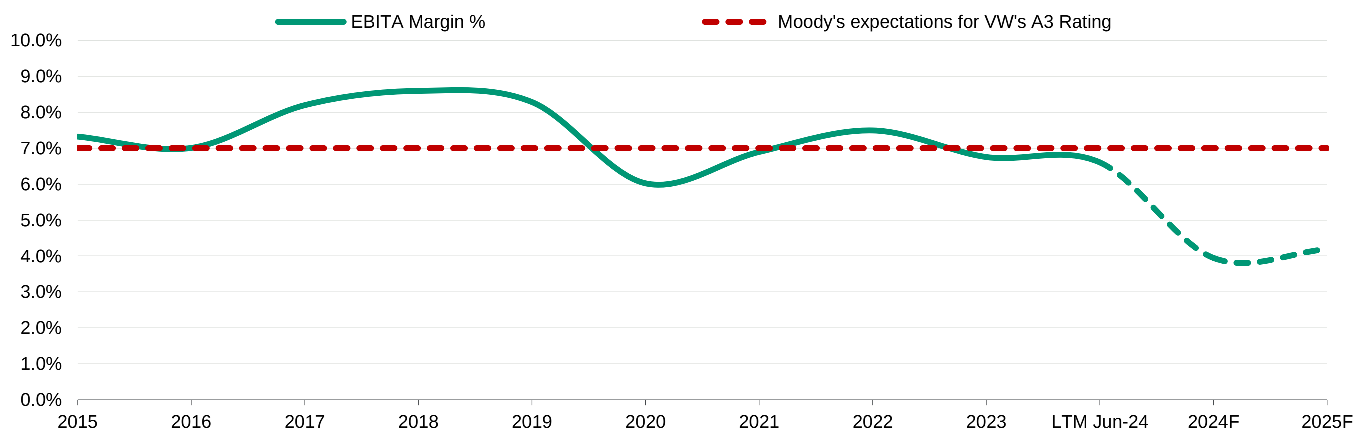
Excluding intercompany profit, special items and results from joint ventures.

Source: Company filings

In July 2024, VW announced its intention to close down its Audi plant in Brussels, one of its most expensive production sites resulting in €1.3 billion restructuring costs booked in Q3. In September, VW announced it expects the European car market to structurally stagnate at 2 million units below the 2019 level, leading to an underutilization of its European production network of at least 500,000 units, in line with VW's market share in Europe. This is equivalent to the size of 2 automotive production plants. Consequently, VW stated that it cannot rule out plant closures as part of its current restructuring.

We expect VW's operating performance to be muted into 2025 driven by low volume growth globally including a weak domestic China and sluggish Western Europe, increasing price pressure, potential fines on EU CO2 emissions, as well as additional restructuring costs. Our forecast includes momentum improvement at Audi and Porsche representing around 50% of VW's profit, into 2025 from a relatively low base in 2024 thanks to a long awaited line-up renewal that started to hit the market in H2 2024. The Moody's adjusted EBITA margin includes the at-equity contribution from the Chinese JV which we forecast at €1.5 billion for this year and €0.9 billion in 2025, down from €2.6 billion in 2023. We expect the performance of Brand Group Core to remain muted. On top of €900 million provision for severance payments booked in Q2 2024 and €1.3 billion provision for restructuring costs at the Brussels plant booked in Q3 2024, we forecast additional restructuring costs to be incurred in H2 2024 and FY 2025. We include in our forecast a total of €4.7 billion restructuring costs in FY 2024 (of which €2.3 billion were announced at half year) and €3.4 billion next year driven by company's efforts to sustainably reduce its cost base. We assume that capex will start reducing to €24 billion (PPE + capitalized development cots) per annum this year and next as the company prioritizes cash generation. In total for the next 12-18 months, we forecast Moody's adjusted EBITA margin to remain weak at around 4% (5.5% excluding restructuring costs), Moody's adjusted free cash flow to remain negative and Moody's adjusted debt / EBITDA to increase close to 2x.

Exhibit 7
VW's profitability will come down this year driven by muted volume, pricing pressure and high restructuring costs
EBITA margins (Moody's adjusted)



Including at equity contribution of Chinese JVs.
All figures and ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations. Periods are financial year-end unless indicated. LTM = Last 12 months. Moody's forecasts are Moody's opinion and do not represent the views of the issuer.
Sources: Moody's Financial Metrics™ and Moody's Ratings forecasts

IPO of Porsche led to substantial cash proceeds, but has made governance more complicated

The IPO of VW's subsidiary Dr. Ing. h.c. F. Porsche AG (Porsche AG) at the end of September 2022 and the sale of a minority stake to Porsche Automobil Holding SE (Porsche Holding) have led to total proceeds of approximately €19.2 billion. Even after the payment of a special dividend of €9.6 billion in early 2023, the transaction has improved VW's financial flexibility, a credit positive. At the same time, credit negative factors are the increased organizational complexity of VW's governance, and the cash leakage within the group due to the new minority shareholders going forward, and the fact that there are now minority shareholders at the most profitable entity within the group. Moreover, Porsche's CEO was also appointed Volkswagen's CEO as of September 2022, which can lead to conflicts of interests between both roles. Our calculation of debt for the VW group does not include the debt that has been incurred at the Porsche Holding level (€7.7 billion, as of June 2024), but, at the same time, debt service at Porsche Holding will have to come primarily from dividend payments from both VW AG as well as Porsche AG.

Since 29 September 2022, Volkswagen's previously wholly owned subsidiary Porsche AG (Porsche) has been publicly listed at the Frankfurt stock exchange. Porsche has been fully embedded in the VW Group and is a technology leader in many categories that are later rolled out to the wider VW group. Porsche's shares are split into 50% ordinary shares and 50% preference shares. 24.2% of the preference shares are owned by free float investors, and 25% plus one share of the ordinary shares are now owned by Porsche Automobil Holding SE (Porsche Holding), Volkswagen's main shareholder.

Strong emphasis on electrification requires ongoing high investments but should help to protect the group's strong market position

Execution risk around the transition to electric vehicles continues to be significant. The global automotive industry remains at an early stage of a significant long-term transition to reduce carbon emissions by improving fuel efficiency and shifting to fully electric vehicles. Key risks for automakers, including VW, include a loss of market share, inability to earn adequate profits and returns on electric vehicles, as well as inability to manufacture vehicles due to potential constraints in the supply of critical materials.

VW has heavily invested into the transition including its in-house battery production capacity under its subsidiary “PowerCo”. Volkswagen has also accelerated the development and production of electric vehicles in recent years. Volkswagen's share of BEVs has increased sharply over the last four years, from less than 1% in 2019 (73,700 units), 2.5% in 2020, 5.1% in 2021, 6.9% in 2022 to 8.3% in 2023 (771,100 units). We believe that Volkswagen has a credible strategy to navigate the EV transition. EV adoption has recently lost momentum in all geographies. We still forecast sales of BEV to grow but at a slower rate than previously expected. VW expects its own BEV penetration to increase to 9-11% by 2024 and targets 50% by 2030 (with a higher share in Europe) fueled by the launch of new models.

Sourcing of batteries is key to Volkswagen’s strategy. The group currently sources from large battery suppliers such as LG Chem, Ltd. (A3 negative), Samsung SDI, SKI (Baa3 negative) and CATL (A3 stable). In 2022, VW founded its subsidiary “PowerCo”, a battery supplier, which is bundling VW's global battery business across the entire value chain. PowerCo will develop sizeable own battery production and thus reduce VW's dependence on external battery supplies. However, ongoing high investments into R&D and capital spending will also weigh on Volkswagen's profit margins and cash flow generation. PowerCo should cover around 50% of the EV battery demand in 2030. Volkswagen has already announced three own plant developments in Salzgitter/Germany (40GWh), Valencia/Spain (40GWh, with 20GWh extension option) and in St. Thomas/Canada (up to 90GWh). Moreover, the group aims to recycle up to 95% of raw materials. Volkswagen also plans to develop a network of 18,000 fast-charging points in Europe with its partners.

The group is planning significant investments into R&D and capital spending of €165 billion for the years 2025-29, equivalent to 12% of sales on average over the period and exceeds the company's investment target of around 9%, seen as a continuous baseline, given temporary additional investments into competitiveness (around 1%), EV batteries (around 1%) and other strategic topics. The sizeable investments illustrate Volkswagen's strong commitment to electrification and to reduce emissions of its fleet, which is subject to increasingly stricter environmental regulation (see our separate ESG section). The plan includes a front-loaded investment plan with investment ratio (R&D and capital expenditure) of peaking at 13.5-14.5% in 2024, gradually declining to below 11% by 2027.

Rivian transaction highlights strategic shift of software strategy

VW's ongoing high investment spending, including the 13.5-14.5% planned for 2024, indicate the need for substantial investment spending to implement the group's electrification and digitisation strategy, including high investments into software. VW's dedicated software subsidiary CARIAD was founded in 2020 and is pooling the group's software expertise to create a standardized operating system (VW.OS) for the group's vehicles. CARIAD, which employs 6,500 (as of 2023) specialists, is responsible for the development of connectivity, infotainment, driver assistance and autonomous driving systems. The process to develop such software has slowed down recently given the high complexity of the task.

In June 2024, VW announced the intention to form a new partnership with the American automotive manufacturer Rivian that includes the creation of a 50/50 JV and an equity investment into Rivian. The JV will provide E/E architectures and software for electric vehicles of both partners. The JV will serve all VW Group in Western regions while XPeng will remain VW's E architecture development partner for the VW brand in the Chinese market. VW intends to invest in total $5 billion in Rivian and the new JV until 2026 based on certain milestones. VW's in-house software subsidiary CARIAD, founded in 2020, faced operational issues which caused delays of key model launches in particular at Audi and Porsche. CARIAD reported €2.4 billion and €2.1 billion operating losses in 2023 and 2022 respectively. Also subject to significant execution risks, the Rivian transaction is a positive in our view as it is an attempt to reduce software development costs and time to market of new models going forward. The $5 billion cash outflow expected during 2024-26 can be absorbed by VW's sizeable cash balance. VW indicated that it might finance part of the $5 billion investment by divestment of non-core assets.

Steady credit metrics historically, although somewhat weaker than those of its peers

Since 2022, VW maintained an adjusted gross debt/EBITDA well below 2.0x (upper limit set for the A3) on the back of increased EBITDA and decreased pension deficit from €40.1 billion as of 2021 to €29.1 billion as of 2023 due to higher interest rates. The pension adjustment is the largest adjustment we make to Volkswagen's gross debt which amounts €46.1 billion in total. We forecast VW'

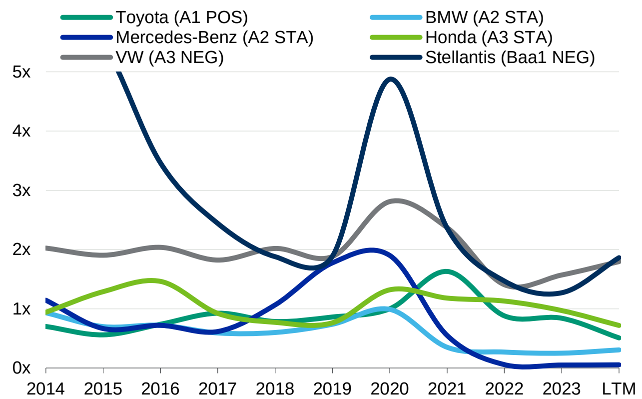
Moody's adjusted debt / EBITDA to increase towards 2x over the next 12-18 months. VW remains somewhat higher levered compared to its single-A rating peers.

Free cash flow turned negative in 2022 to around -€8 billion due to the payment of €10 billion of special dividend as part of the Porsche IPO that we include according to our standard definition as outflow in our FCF calculation. Without this effect, Moody's-adjusted free cash flows amounted to around €2 billion in 2022, a level lower than 2021 mainly due to increase in capital expenditure by €4 billion to €22.5 billion in 2022. In 2023, VW's free cash flow (Moody's adjusted) reached €6.1 billion. We forecast free cash flow to turn negative this year driven by muted operating performance, peak in investment and working capital outflow.

Exhibit 8

Peer comparison

Moody's-adjusted gross debt/EBITDA

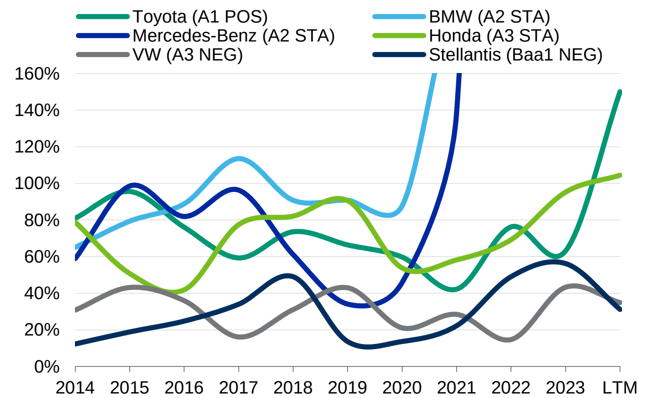


All figures and ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations. Periods are financial year-end unless indicated. Toyota's and Honda's financial year ends on 31 March. LTM = Last 12 months. Toyota's LTM refers to FY Mar-24; all other companies' LTM is as of Jun-24.
Stellantis' historical metrics until 2020 are based on FCA standalone.
Y-axis is capped at 5x.
Source: Moody's Financial Metrics™

Exhibit 9

Peer comparison

Moody's-adjusted retained cash flow/debt



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Stellantis' historical metrics until 2020 are based on FCA standalone.
Y-axis is capped at 160%.
Source: Moody's Financial Metrics™

Emissions issue-related cost consumed significant amounts of capital, but most of the payments have already been made

Despite the substantial provisions to settle the diesel issue (as Exhibit 5 shows) and the difficult market conditions, we positively note the solid operating performance of the Volkswagen Group over the last years (predominantly driven by the Porsche and Audi brands). However, we believe that the funds paid to resolve the diesel issue otherwise could have been used for investments in future products or to strengthen the company's credit metrics.

At this stage, most of the payments related to the diesel issue, totaling to cost of around €33 billion, were already made in 2016-20 (€28.8 billion). In 2021 and 2022, outflows amounted only to another €1 billion each. Lawsuits in many regions worldwide are still ongoing but given VW's sizeable liquidity position, we expect that remaining outflows for the diesel issue will remain manageable, assuming that the current level of provisions is sufficient. The balance sheet provisions to account for legal risks related to the diesel issue amounted to €0.9 billion in December 2023.

Exhibit 10
VW's remediation and litigation overview

Year	Amount
2015	Legal €7.0 billion Other items €9.2 billion
2016	Mainly legal risks €6.4 billion
2017	Buyback/retrofit program + legal €3.2 billion
2018	Legal €3.2 billion (includes a fine imposed by the public prosecutor in Braunschweig and Munich)
2019	€2.3 billion (includes a fine imposed by the Stuttgart Public Prosecutor on Porsche AG of €0.5 billion and further additions to reserves for legal risks)
2020	€0.9 billion additional legal cost
2021	€0.7 billion special items
2022	€0.3 billion special items
2023	no special items booked
H1 2024	no special items booked
Total	**€33.2 billion**

Source: Company filings

Ability to offer attractive financing is a key component of VW's business model

VW's issuer rating incorporates our assessment of the company's captive finance operations because these operations represent an integral part of the group's business model as the availability of financing support is an important element in promoting product sales and maintaining its competitive position. Our approach is to analyse the finance business as a standalone entity and consider what capital or liquidity support may be necessary in a stress scenario, which is then considered in the context of VW's overall rating. In 2023, the Financial Services Division (including Volkswagen Financial Services as well as the financial services activities of Scania, International Motors and Porsche Holding Salzburg) had total assets of about €294 billion (49% of the broader group's assets) and an equity ratio of 14.8%, and generated an operating profit of €3.8 billion, down from €5.6 billion a year earlier driven by higher interest expenses and adverse effect from derivatives which had a positive effect in the previous year.

In its leasing business, Volkswagen is exposed directly to residual value risk worldwide. In addition, Volkswagen also bears indirect residual value risk through the health of its dealerships. However, the continued solid operating and asset-quality performance of Volkswagen's Financial Services division will reflect Volkswagen's success in maintaining stable or growing levels of demand for and pricing power of its automotive brands. In addition, so far, residual values have not suffered significantly from the diesel-related issues and the transition to electric vehicles.

ESG considerations

Volkswagen Aktiengesellschaft's ESG credit impact score is CIS-4

Exhibit 11
ESG credit impact score

CIS-4

ESG considerations have a discernible impact on the current rating, which is lower than it would have been if ESG risks did not exist. The negative impact of ESG considerations on the rating is higher than for an issuer scored CIS-3.

Source: Moody's Ratings

VW's **CIS-4** indicates that the rating is lower than it would have been if ESG risk exposures did not exist. We downgraded VW to A3 when the Diesel issue emerged in 2015. Since then, the company has spent more than €30 billion for litigation and compensation payments, which otherwise could have been invested into the business. The main ESG risks relate to carbon transition and the high costs to manage it, and to company's relatively weak governance, which are both constraints to the rating.

Exhibit 12
ESG issuer profile scores

Source: Moody's Ratings

Environmental

VW's **E-4** is driven by carbon transition, which is a high risk for the global auto sector in terms of stricter environmental regulation and the trend towards low and zero emission vehicles. VW has, however, taken mitigating actions by developing and successfully launching electrified vehicles (plug-in hybrids and battery electric vehicles) and investing sizeable amounts into future technologies. Since 2021, Volkswagen Group fleet CO2 emissions complied with EU targets but remained flat; further improvement needed by 2025 when EU regulation becomes stricter.

Social

VW's **S-4** is driven by high risks in three categories: Human capital risks incorporate the strong reliance on a highly skilled workforce and high strike risks, given the high degree of unionization of production workforce. Responsible production risks are also high, given the complexity of the global supply chain and very high requirements for vehicle product quality. The high risks in terms of Demographic & Societal Trends include the heightened environmental awareness among consumers and the risk that brand loyalty among younger consumers might gradually fall.

Governance

VW's **G-4** is driven by the highly complex group structure, with multiple stakeholders, including the family owners, the German State of Lower Saxony and workers unions, and the existence of minority shareholders in key businesses, like Porsche AG, TRATON SE and the JVs in China. The history of high management turnover within the group, including the early replacement of the CEO in September 2022, and the early replacement of the divisional CEO of Audi in June 2023, result in a weak management credibility and track record under Moody's ESG criteria, with the need to build credibility. We note that there was no management turnover since then, an improvement. These weaknesses are only partially mitigated by the company's conservative financial strategy and risk management.

ESG Issuer Profile Scores and Credit Impact Scores for the rated entity/transaction are available on Moodys.com. In order to view the latest scores, please click here to go to the landing page for the entity/transaction on MDC and view the ESG Scores section.

Carbon transition is Volkswagen's key environmental risk

We assess Volkswagen's environmental risks as high, in line with sector-wide risks of the automotive industry (see our environmental heat map). Environmental considerations are particularly relevant because these restrict the company's ability to reduce certain investments: Continued tightening of emissions standards and regulations across most major markets, because of environmental concerns, require investments into greater efficiency and electrification to maintain compliance and avoid fines or additional costs.

Volkswagen, like its competitors, faces stricter CO_2 emission targets set by the EU. Efforts to achieve these targets (as Exhibit 10 shows) and Volkswagen's aim of playing a leading role in the strategic areas for the future of connectivity, autonomous driving, mobility services and electric drive, as well as in the intelligent linking up of these areas, require substantial capital investments. We expect automotive manufacturers to continue to invest substantial amounts in R&D and capital spending to meet increasingly stringent hurdles imposed by CO_2 emissions regulations worldwide, as well as electrification expectations set by governments in the major automotive markets globally.

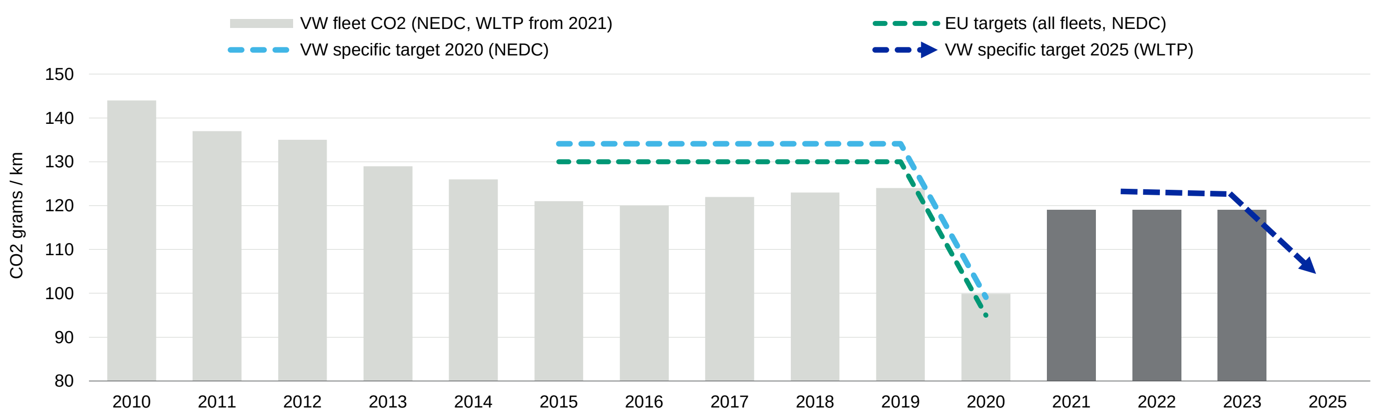
Committed to the Paris Agreement, Volkswagen wants to become a net carbon-neutral company by 2050. By 2030, the company wants to reduce the carbon footprint of its passenger cars and light commercial vehicles by 30% per vehicle compared with 2018 without any offset measures. Within its €170 billion five-year investment plan for capital spending and R&D, Volkswagen has allocated a significant amount into the development of BEVs.

Since the beginning of this decade, Volkswagen managed to reduce CO2 emissions of the group's new passenger car fleet in the EU. In 2020, when the EU limit was lowered to 95 gram (g) CO per kilometre (km), implying Volkswagen's company-specific target of 99g/km, the company managed to reduce its fleet emissions by as much as 20%, missing the stricter target by only 0.8g/km. This significant improvement was driven by substantially higher sales of electrified vehicles (battery electric vehicles and plug-in hybrids), and lower sales volumes of conventional combustion engines during the pandemic. In 2021, the calculation of CO2 emissions was changed from the old testing standard NEDC to the new standard WLTP. According to the WLTP standard, which typically leads to higher emissions, Volkswagen's emissions amounted to 119 g/km, and thus fully complied with the stricter regulatory maximum of 121 g/km. This was achieved due to various measures, including the continued launch of new electrified models (both, battery electric and plug-in electric vehicles), the launch of more efficient conventional models with internal combustion engines and the termination of production of older, inefficient models.

VW expects its own BEV penetration to increase to 9-11% by 2024 and to 50% by 2030 fueled by the launch of new models. VW reported an EU CO2 emission of 119g CO2/km last year, stable since 2021, versus a regulatory target of less than 122g. The EU regulatory target will be tighten as from 2025 (15% reduction versus 2021) meaning a CO2 target of less than 100g. Given the trend over the last three years, we believe that it will be difficult for VW to comply with the 2025 regulatory target without additional efforts to boost volume, for example in terms of discounts or the need to pay for CO2 credits (pooling).

Exhibit 13

Volkswagen Group fleet CO_2 emissions complied with targets since 2021 but remained flat; further improvement needed for 2025



Sources: Company filings and Moody's Ratings

Liquidity analysis

In our theoretical scenario of no access to the capital markets for its manufacturing and financial services activities, Volkswagen had a coverage of more than 12 months of its corporate needs as of end June 2024. The group's liquidity position is supported by cash on balance sheet and short-term marketable securities (after a 20% haircut) of around €70 billion as of June 2024. We apply a 25% haircut on Porsche AG's cash & cash equivalents. In addition, VW has access to a significant amount of long-term committed credit facilities, totaling around €31.3 billion, out of which only €0.4 billion was drawn (as of December 2023).

Methodology and scorecard

For the ratings of VW, we have applied our Automobile Manufacturer Industry rating methodology. The scorecard-indicated outcome for the forward view indicates Baa2, two notches below the actually assigned rating of A3 indicating a weak positioning of the rating.

Exhibit 14

Rating factors

Volkswagen Aktiengesellschaft

Auto Manufacturer Industry Scorecard	Current LTM Jun-24		Moody's 12-18 month forward view	
Factor 1 : Business Profile (40%)	**Measure**	**Score**	**Measure**	**Score**
a) Trend in Global Unit Share Over Three Years	Baa	Baa	Baa	Baa
b) Market Position and Product Breadth/Strength	A	A	A	A
Factor 2 : Profitability and Efficiency (20%)				
a) EBITA Margin	6.6%	Ba	4.2%	Ba
Factor 3 : Leverage and Coverage (30%)				
a) Debt / EBITDA	1.8x	A	2x	A
b) (Cash + Marketable Securities) / Debt	87.4%	Baa	87.3%	Baa
c) RCF / Debt	34.9%	Baa	32.8%	Baa
d) FCF / Debt	4.6%	B	-3.4%	Caa
e) EBITA / Interest Expense	6.3x	A	3.9x	Baa
Factor 4 : Financial Policy (10%)				
a) Financial Policy	A	A	A	A
Rating:				
a) Scorecard-Indicated Outcome		Baa1		Baa2
b) Actual Rating Assigned				(P)A3

All figures and ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations. LTM = Last 12 months. Moody's forecasts are Moody's opinion and do not represent the views of the issuer.
Sources: Moody's Financial Metrics™ and Moody's Ratings forecasts

Appendix

Exhibit 15

Peer comparison

Volkswagen Aktiengesellschaft

	Volkswagen Aktiengesellschaft			Toyota Motor Corporation			Bayerische Motoren Werke Aktiengesellschaft			Mercedes-Benz Group AG			Stellantis N.V.		
	(P)A3 Negative			A1 Positive			(P)A2 Stable			A2 Stable			Baa1 Negative		
	FY	FY	LTM	FY	FY	FY	FY	FY	LTM	FY	FY	LTM	FY	FY	LTM
(in $ billions)	Dec-22	Dec-23	Jun-24	Mar-22	Mar-23	Mar-24	Dec-22	Dec-23	Jun-24	Dec-22	Dec-23	Jun-24	Dec-22	Dec-23	Jun-24
Revenue	244.9	290.0	288.8	259.3	254.7	289.9	133.6	146.5	146.6	129.7	136.8	133.4	189.3	205.0	190.6
Total Debt	47.9	50.9	55.2	29.7	28.5	26.1	5.0	5.3	5.8	1.3	1.2	1.1	37.9	39.4	42.4
Cash + Marketable Securities	59.7	56.2	48.3	52.1	48.1	71.1	18.1	18.2	17.6	21.4	21.0	17.8	54.2	55.8	44.1
EBITA Margin %	7.5%	6.8%	6.6%	11.3%	10.4%	16.1%	10.0%	10.6%	9.3%	14.5%	14.0%	12.4%	10.9%	12.1%	9.2%
EBITA / Interest Expense	6.1x	6.6x	6.3x	48.4x	35.8x	56.6x	49.8x	68.4x	51.9x	88.0x	200.1x	169.5x	11.3x	12.5x	8.1x
(Cash + Marketable Securities) / Debt	124.5%	110.4%	87.4%	175.6%	168.9%	272.6%	359.8%	341.6%	304.3%	1,625.9%	1,818.6%	1,586.8%	142.8%	141.6%	104.0%
Debt / EBITDA	1.4x	1.6x	1.8x	0.9x	0.8x	0.5x	0.3x	0.2x	0.3x	0.1x	0.0x	0.1x	1.5x	1.3x	1.9x
FCF / Debt	-17.8%	13.4%	4.6%	23.4%	29.1%	98.1%	-8.9%	-30.5%	-31.2%	232.7%	439.6%	289.6%	21.9%	24.6%	-6.6%
RCF / Debt	14.7%	43.3%	34.9%	76.2%	63.1%	150.1%	187.4%	229.1%	181.1%	858.8%	917.0%	771.9%	49.0%	56.2%	31.2%

All figures and ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations. LTM = Last 12 months.
Source: Moody's Financial Metrics™

Exhibit 16

Moody's-adjusted debt reconciliation

Volkswagen Aktiengesellschaft

(in € millions)	2019	2020	2021	2022	2023	LTM Jun-24
As reported debt	**10,280**	**12,831**	**14,402**	**10,918**	**9,409**	**15,486**
Pensions	38,195	44,853	40,750	26,916	29,122	29,122
Hybrid Securities	6,332	7,857	7,220	7,061	7,578	6,876
Non-Standard Adjustments	574	0	0	0	0	0
Moody's-adjusted debt	**55,381**	**65,541**	**62,372**	**44,895**	**46,109**	**51,484**

All figures and ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations. Periods are financial year-end unless indicated. LTM = Last 12 months.
Source: Moody's Financial Metrics™

Exhibit 17

Moody's-adjusted EBITDA reconciliation

Volkswagen Aktiengesellschaft

(in € millions)	2019	2020	2021	2022	2023	LTM Jun-24
As reported EBITDA	**33,613**	**28,957**	**34,495**	**38,973**	**40,738**	**40,091**
Pensions	(23)	(91)	(2)	22	(14)	(14)
Capital Development Costs	(5,171)	(6,473)	(7,836)	(9,723)	(11,142)	(11,103)
Interest Expense - Discounting	(238)	-	-	-	(304)	(304)
Unusual Items	1,237	900	(20)	2,676	-	-
Moody's-adjusted EBITDA	**29,418**	**23,293**	**26,637**	**31,948**	**29,278**	**28,670**

All figures and ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations. Periods are financial year-end unless indicated. LTM = Last 12 months.
Source: Moody's Financial Metrics™

Exhibit 18

Overview on selected historical and forecasted Moody's-adjusted financial data

Volkswagen Aktiengesellschaft

(in € billions)	2019	2020	2021	2022	2023	LTM Jun-24	2024F	2025F
INCOME STATEMENT								
Revenue	212.5	182.1	206.2	232.4	268.2	267.0	264.1	268.1
EBIT	16.9	10.0	13.2	16.2	16.7	16.2	4.1	4.8
EBITA	17.6	11.0	14.2	17.4	18.1	17.6	10.4	11.2
EBITDA	29.4	23.3	26.6	31.9	29.3	28.7	23.6	24.6
BALANCE SHEET								
Cash & Cash Equivalents	33.2	41.7	43.2	55.9	50.9	45.0	44.7	42.4
Total Debt	55.4	65.5	62.4	44.9	46.1	51.5	48.6	48.6
CASH FLOW								
Capital Expenditures	(15.0)	(12.2)	(11.7)	(13.8)	(15.1)	(15.4)	(13.9)	(14.8)
Dividends	(1.3)	(3.0)	(3.3)	(13.9)	(4.7)	(5.4)	(4.9)	(2.4)
Retained Cash Flow (RCF)	23.8	13.8	18.0	6.6	19.9	18.0	12.3	15.9
RCF / Debt	43.0%	21.1%	28.9%	14.7%	43.3%	34.9%	25.3%	32.8%
Free Cash Flow (FCF)	8.8	2.9	9.2	(8.0)	6.2	2.4	(2.5)	(1.7)
FCF / Debt	15.9%	4.4%	14.8%	-17.8%	13.4%	4.6%	-5.2%	-3.4%
PROFITABILITY								
% Change in Sales (YoY)	5.7%	-14.3%	13.3%	12.7%	15.4%	5.1%	-1.5%	1.5%
SG&A % of Sales	12.8%	13.4%	12.6%	11.3%	11.3%	11.7%	n.a.	n.a.
EBIT Margin %	8.0%	5.5%	6.4%	7.0%	6.2%	6.1%	1.5%	1.8%
EBITA Margin %	8.3%	6.0%	6.9%	7.5%	6.8%	6.6%	3.9%	4.2%
EBITDA margin %	13.8%	12.8%	12.9%	13.7%	10.9%	10.7%	8.9%	9.2%
INTEREST COVERAGE								
EBIT / Interest Expense	10.0x	6.5x	8.6x	5.6x	6.1x	5.8x	1.4x	1.7x
EBITA / Interest Expense	10.4x	7.1x	9.2x	6.1x	6.6x	6.3x	3.6x	3.9x
EBITDA / Interest Expense	17.3x	15.1x	17.3x	11.1x	10.7x	10.3x	8.1x	8.5x
(EBITDA - CAPEX) / Interest Expense	8.5x	7.2x	9.7x	6.3x	5.2x	4.8x	3.4x	3.4x
LEVERAGE								
Debt / EBITDA	1.9x	2.8x	2.3x	1.4x	1.6x	1.8x	2.1x	2.0x
Debt / (EBITDA - CAPEX)	3.8x	5.9x	4.2x	2.5x	3.2x	3.9x	5.0x	4.9x
LIQUIDITY								
(Cash + Marketable Securities) / Debt	60.0%	63.7%	69.2%	124.5%	110.4%	87.4%	92.1%	87.3%

All figures and ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations. Periods are financial year-end unless indicated. LTM = Last 12 months.

Source: Moody's Financial Metrics™

Ratings

Exhibit 19

Category	Moody's Rating
VOLKSWAGEN AKTIENGESELLSCHAFT	
Outlook	Negative
Issuer Rating	A3
Sr Unsec Bank Credit Facility -Dom Curr	A3
Senior Unsecured MTN -Dom Curr	(P)A3
Commercial Paper -Dom Curr	P-2
VOLKSWAGEN FINANCIAL SERVICES N.V.	
Outlook	Negative
Bkd Senior Unsecured	A3
Bkd Commercial Paper	P-2
Bkd Other Short Term	(P)P-2
VOLKSWAGEN BANK GMBH	
Outlook	Negative
Bank Deposits	A1/P-1
Issuer Rating	A1
Senior Unsecured MTN	(P)A1
Subordinate MTN	(P)Baa1
Commercial Paper -Dom Curr	P-1
Other Short Term -Dom Curr	(P)P-1
VOLKSWAGEN FINANCIAL SERVICES AG	
Outlook	Negative
Issuer Rating	A3
Senior Unsecured -Dom Curr	A3
Commercial Paper	P-2
Other Short Term	(P)P-2
VOLKSWAGEN GROUP OF AMERICA FINANCE, LLC	
Outlook	Negative
Bkd Senior Unsecured	A3
Bkd Commercial Paper	P-2
VOLKSWAGEN FINAN. SERVICES AUSTRALIA PTY LTD	
Outlook	Negative
Bkd Senior Unsecured -Dom Curr	A3
Bkd Other Short Term -Dom Curr	(P)P-2
VOLKSWAGEN FINANCIAL SERVICES JAPAN LTD.	
Outlook	Negative
Bkd Senior Unsecured -Dom Curr	A3
Bkd Commercial Paper -Dom Curr	P-2
Bkd Other Short Term	(P)P-2
VOLKSWAGEN INTERNATIONAL FINANCE N.V.	
Outlook	Negative
Bkd Senior Unsecured	A3
Bkd Jr Subordinate -Dom Curr	Baa2
Bkd Commercial Paper -Dom Curr	P-2
Bkd Other Short Term -Dom Curr	(P)P-2
VOLKSWAGEN FINANCIAL SERVICES OVERSEAS AG	
Outlook	Negative
Issuer Rating	A3
Senior Unsecured MTN	(P)A3
Commercial Paper	P-2
Other Short Term	(P)P-2
VW CREDIT, INC.	
Outlook	Negative
Bkd Commercial Paper	P-2
Bkd Other Short Term	(P)P-2
VOLKSWAGEN LEASING GMBH	

Outlook	Negative
Bkd Senior Unsecured -Dom Curr	A1
VW CREDIT CANADA, INC.	
Outlook	Negative
Bkd Senior Unsecured -Dom Curr	A3
Bkd Commercial Paper -Dom Curr	P-2
Bkd Other Short Term	(P)P-2
TRATON FINANCE LUXEMBOURG S.A.	
Outlook	Positive
Bkd Senior Unsecured	Baa2
SKOFIN S.R.O.	
Outlook	No Outlook
Bkd Commercial Paper	P-2
PORSCHE HOLDING GESELLSCHAFT M.B.H.	
Outlook	No Outlook
Bkd Commercial Paper -Dom Curr	P-2
VOLKSWAGEN INTERNATIONAL LUXEMBURG S.A	
Outlook	No Outlook
Bkd Commercial Paper -Dom Curr	P-2
TRATON SE	
Outlook	Positive
Issuer Rating	Baa2
Senior Unsecured MTN	(P)Baa2
ST Issuer Rating	P-2
VOLKSWAGEN INTERNATIONAL BELGIUM S.A.	
Outlook	No Outlook
Commercial Paper -Dom Curr	P-2
VOLKSWAGEN GROUP CANADA, INC.	
Outlook	No Outlook
Bkd Commercial Paper -Dom Curr	P-2
VOLKSWAGEN GROUP OF AMERICA, INC.	
Outlook	No Outlook
Bkd Commercial Paper	P-2

Source: Moody's Ratings

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CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454