S&P Global Ratings

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Volkswagen AG

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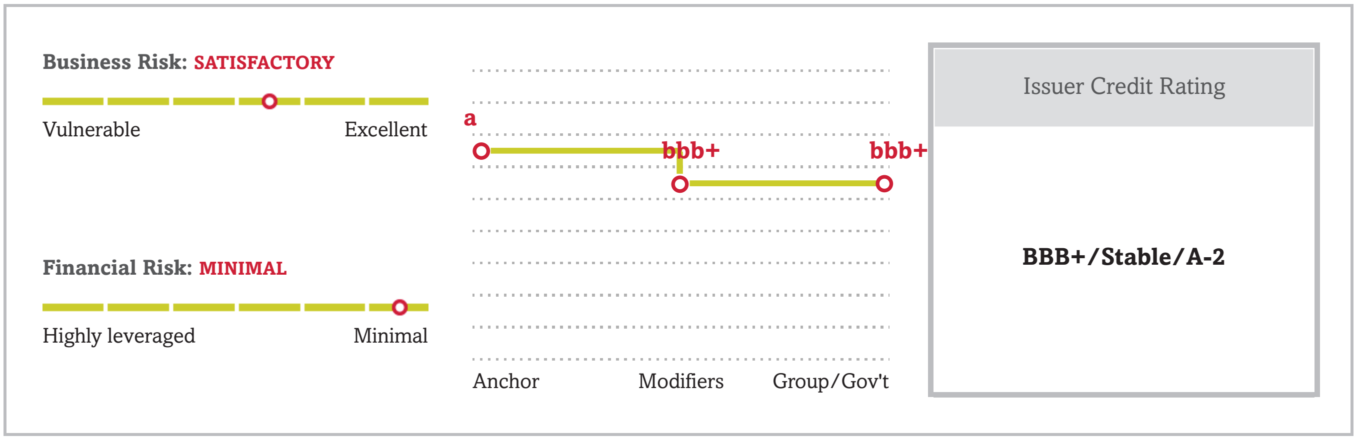
Table Of Contents

Volkswagen AG



Credit Highlights

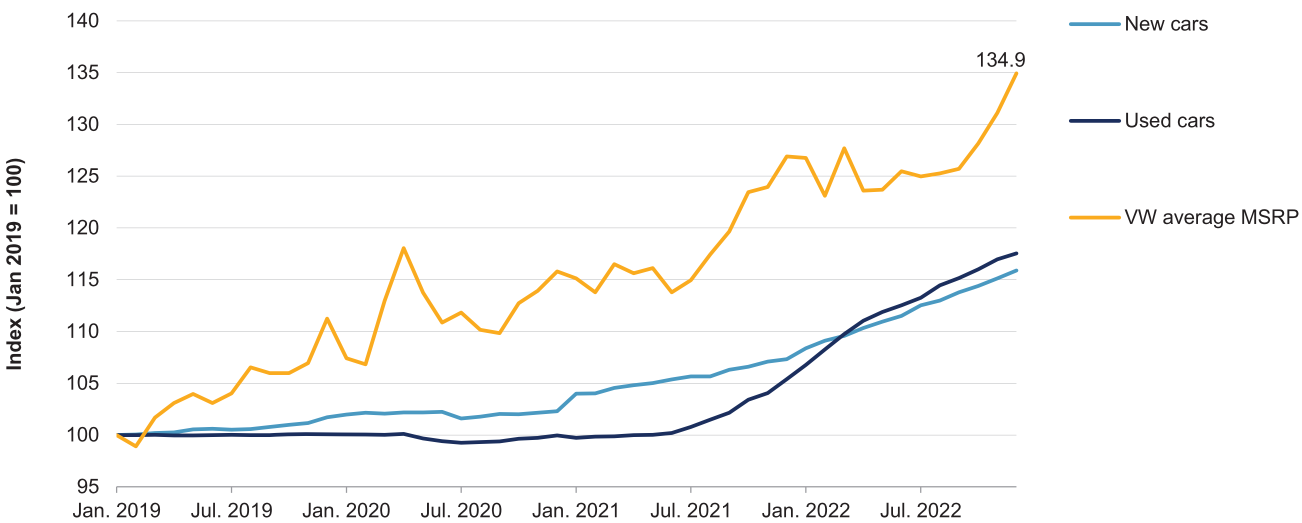
Overview

Key strengths	Key risks
No. 2 global automaker, with around 10% light vehicle (LV) market share (2022), and market leader in China with more than 13% share.	Weaker pricing during the impending economic slowdown and rising labor and energy costs are likely to weigh on profitability and cash flow in 2023–2024.
Battery electric vehicle (BEV) challenger with 21.3% market share in Europe (2022), 5.5% in the U.S., and 3.4% in China.	VW's shareholder and governance structure could complicate the rapid transformation and adjustment of the production footprint needed for an accelerated transition to EVs.
Strong balance sheet (more than €5 billion adjusted net cash expected for 2022) and sizeable free cash flow generation are enabling VW to fund investments in battery supply, mobility services, and vehicle electronics and software.	Missteps or delays in executing VW's ambitious strategy in vehicle software, battery technology, and supply chain could dent its EV competitiveness in major markets.
Product breadth and diversity, ranging from volume to premium passenger cars, light and medium-/heavy-duty commercial vehicles, may add to earnings stability if all assets operate efficiently.	Particularly intense competition in the Chinese BEV segment, where VW held 3.4% market share in 2022, casts uncertainty over VW's long-term market position in China.
High degree of localization of production and supply chain, with only about 10% of volume in VW's top-three markets being import sales.	Cost efficiency and profitability of VW's LV volume brands portfolio and MAN CVs (commercial vehicles) remains structurally below peers and the group average.
Well-established captive finance operations support vehicle sales and leasing effectively and had a penetration rate of 32% in the first nine months of 2022.	

Benign pricing conditions and successful mix management are supporting VW's profitability. Like other carmakers, VW is benefiting from favorable new and used car pricing, which has increased rapidly from 2021 (chart 1 for Europe). However, VW also successfully prioritized its higher-margin premium and luxury brands recently when production was hampered by shortages of components. We see this in the strong increase in the weighted average retail price (chart 1) and the relatively better performance of 2022 deliveries of the Audi (-3.9%) and Porsche (+2.6%) brands compared to VW's volume segment (-9.0%). Thanks to these factors, we project that our 2022 adjusted EBITDA margin for VW will climb to 12%-13%, from 11% in 2021, despite an overall decline in LV volumes of 7.0%. The margin is likely to enter a path of gradual decline from 2023 onward amid more-clouded industry conditions.

Chart 1

Pricing And Mix Are Supporting VW's Profitability
Volume-weighted average MSRP for VW in Europe and eurozone new and used car price index



Europe refers to Western and Central Europe. MSRP--Manufacturer suggested retail price. Source: S&P Global Mobility, S&P Global Ratings.

Weak consumer sentiment and EV market share battles could put an end to the pricing boon. We foresee gradually deteriorating pricing conditions during 2023, in particular in the volume segment, across VW's major markets. This is due to our expectation that the uncertain economic outlook, household finances squeezed by inflation, and tighter consumer financing conditions will make purchases of big-ticket items less attractive. At the same time, easing supply-chain bottlenecks should alleviate some of the undersupply of cars that has boosted pricing in the last two years. While these factors will affect all powertrains, we think price cuts by up to 20% by Tesla Inc. announced at the start of 2023 for its Model Y and 3 (SUV-D and Car-D), followed by OEMs such as Ford on selected models such the Mustang Mach-E (SUV-D) in the U.S., could mark the start of more intense price competition for BEVs as OEMs jockey for position in this growth segment. Although VW is not currently planning to match such moves, we anticipate pressure on net pricing will increase in the next few quarters--particularly as alternative and cheaper alternatives to VW's BEVs are on the rise in many markets.

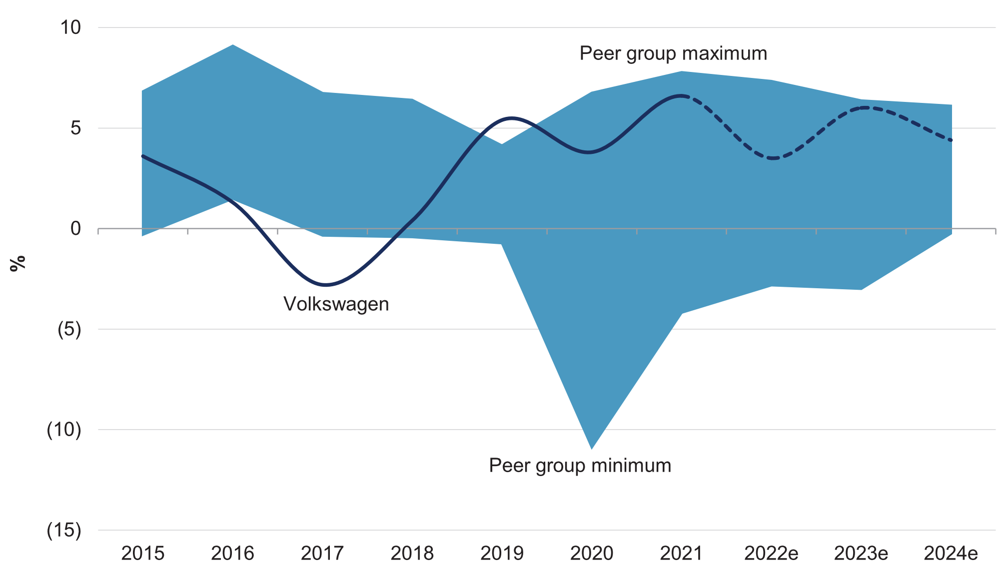
Despite a FOCF blip in 2022, our base case foresees headroom for VW to absorb tougher industry conditions. In addition to risks around demand and pricing, we think the auto industry will continue to grapple with multiple challenges in 2023-2024, including material step-ups in costs of labor, energy, and certain components; profitability dilution from lower-margin EVs; supply-chain hiccups; and the still-looming--albeit diminishing--possibility of the rationing of energy consumption in Europe. The combination of these factors is reflected in our forecast of a 1.0-1.5

percentage point decline in VW's adjusted EBITDA margin over 2023–2024. In addition, over the coming two-to-three years, we think competitive conditions will require VW to maintain capital expenditure (capex) and spending on research and development (R&D) at a high €30 billion-€33 billion annually in our base case. Nonetheless, its FOCF-to-sales ratio should remain 4%-6% in 2023–2024, partly owing to our assumption of €2.5 billion-€3.0 billion in annual dividends from VW's JV in China. We view this as a robust cash conversion for the rating, with some flexibility to accommodate a lull in demand, additional price and cost pressures, or higher investments. We consider VW's cash flow in 2022--which came in below the company's guidance and our October 2022 base case and likely equates to 3%-4% adjusted FOCF as per our definition--to be a temporary weakness caused by working capital swings that we expect to mostly unwind in 2023. We note that VW's FOCF to sales is 1.5-2.0 percentage points lower if we include our assumption for spending on acquisitions and equity participations in strategic areas such as battery cell manufacturing, mobility services, and software and autonomous driving.

Chart 2

Volkswagen's Cash Conversion (Before Mergers And Acquisitions) Is Robust For The Rating

Free operating cash flow to sales for Volkswagen AG and peers



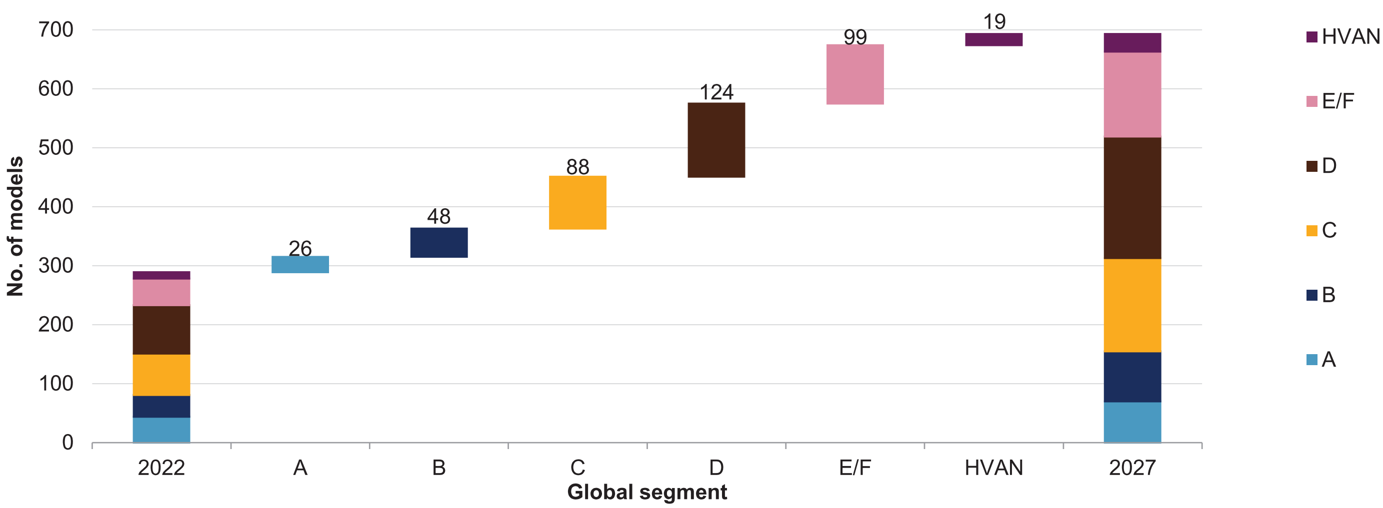
Peers include: BMW, Mercedes-Benz, Stellantis, Renault, Volvo Car, Ford, General Motors, Toyota, Honda.
e--Estimate. Source: S&P Global Ratings.

VW's software strategy needs better execution to protect the company's competitiveness. The group's software development, spearheaded by the centralized unit CARIAD in cooperation with its various brands, has grappled with setbacks in the last few years. These have resulted in delayed model launches, such as for the flagship BEV ID.3, and quality problems with vehicles in use. Under its new CEO, VW is adjusting its software roadmap with a view to reallocating responsibilities between CARIAD and the brands and setting more-realistic product milestones. This will also entail several years' delay to the release of VW's future universal software platform E3 2.0, which is meant to support all car models in the group as well as level 4 autonomous driving. This delay will allow VW to concentrate its near-term efforts on the existing E3 1.1 and E3 1.2 platform (to be launched from this year). We understand that this will also shift series production of VW's future electric Scalable Systems Platform (SSP) out by one-to-two years while, in the interim, VW will invest in upgrading its existing MEB electric platform and the related software. At a time when many new OEMs are entering the BEV market with fresh and competitive platforms, and customers' BEV choices are rapidly expanding (chart 3), we think it will be ever more crucial for VW's future market position to avoid software-related delays of model launches and ensure its software keeps pace with benchmarks set by peers in terms of features and quality.

Chart 3

Increase In Number Of BEV Models In Production Over 2022-2027

BEV models >1,000 units per year in production globally by segment



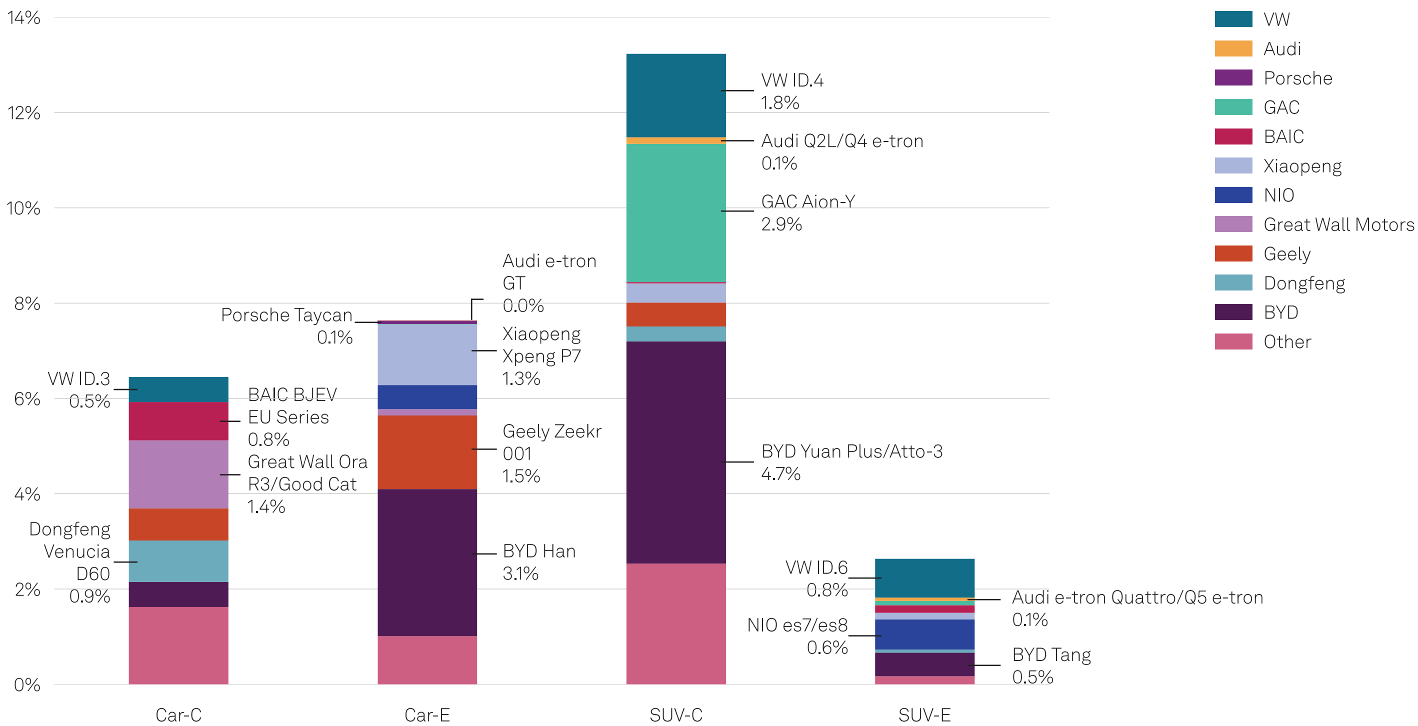
BEV--Battery electric vehicle. Source: S&P Global Mobility, S&P Global Ratings.

The ascendancy of local OEMs and BEV players poses a threat to VW's long-term market position in China. The Chinese car market is rapidly shifting toward EVs; we expect them to account for 35%-40% of total Chinese light vehicle sales by 2025, with the vast majority BEVs. This segment continues to see an array of new entrants, and is currently dominated by BYD (19.2% market share in 2022), SAIC-GM-Wuling (11%), and Tesla (9.5%), whereas VW has less than 4% market share. Moreover, we note that VW's market share in BEV segments where it has a product available, such as the ID.3 in the Car-C segment and the ID.4 in the SUV-C segment, trails local players like BYD, Great Wall, GAC or Dongfeng (chart 4). We think this likely reflects a competitive disadvantage in terms of product positioning, technology--including the relative age of the MEB platform which entered series production at the end of 2019 and underpins most of VW's current BEVs--and in some cases pricing. In our view, it is crucial for VW to double down on a competitive technology proposition to close the gap with market leaders, invest in the local adaption of vehicles, and continuously fine-tune its go-to-market approach, pricing strategy, and model portfolio. While VW has led the overall LV market in China for many years, its share in this important market (accounting for 39% of its global deliveries in 2022) has dropped from a peak of 17% in 2019 to below 14% in 2022.

Chart 4

Battery Electric Vehicle Market Share In China

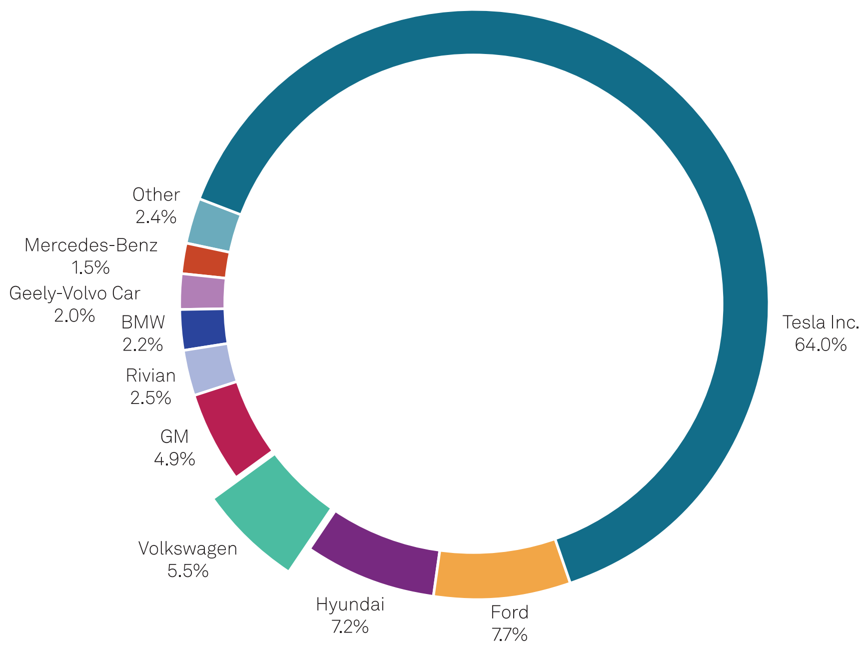
By segment and selected model (2022)



Market share is the share in the total battery electric vehicle market. Source: EV Volumes, S&P Global Ratings.

VW's foray into the U.S. BEV market holds growth opportunities, but it will take time to reap the rewards. We expect EV penetration in the U.S. market to rise to 18%-23% by 2025 from about 7% in 2022 (BEV and PHEV). Supported by an expanding EV line-up, this may provide an opening for VW to regain a foothold in this market where, in the wake of the diesel scandal, its overall market share has hovered at or below 4% for many years. Today, with its 5.5% share, VW is a distant no. 4 in the Tesla-dominated U.S. BEV market (chart 5) but plans to grow its market share to 10% by 2030. In our view, profitable diversification into the U.S. would be credit-positive as it would allow VW to somewhat side-step intense EV competition in China and Europe and further balance its regional exposure. However, this will likely require VW to make investments in its regional supply chain to qualify for subsidies under the U.S. Inflation Reduction Act (IRA), which for some of its models is important to be able to sustainably compete with U.S. carmakers, in our view. For example, while VW's locally assembled ID.4 model is currently eligible for the maximum EV subsidy of $7,500, the benefit may decrease from 2023 as the IRA stipulates new requirements with respect to local battery cell and raw material sourcing, which VW is seeking to address by setting up a local battery cell production site. We also anticipate that Ford, GM, and other key players in the U.S. market will rapidly expand their EV portfolios, which will make it harder for VW to gain market share.

Battery Electric Vehicle Market Share In The U.S.
By brand (2022)

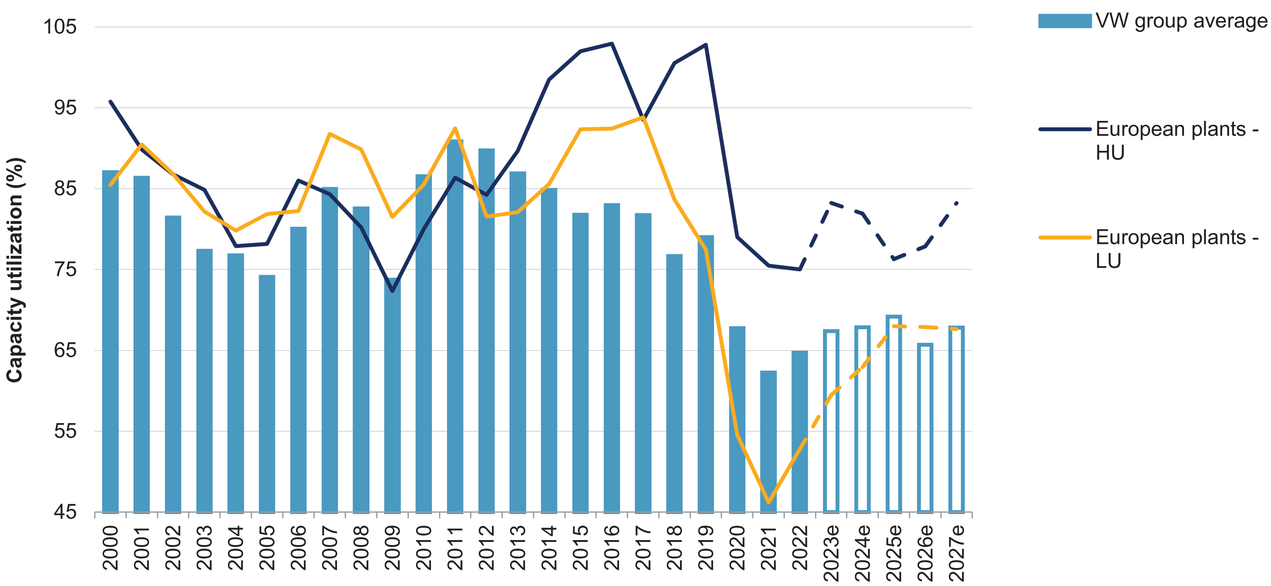


Source: EV Volumes, S&P Global Ratings.

VW's governance set-up may slow down strategic decisions at a critical time for the industry. The rapid shift to EVs is putting pressure on established OEMs to repurpose plants for the assembly of EV models, while the lower contribution margins on these models and fresh competition is forcing carmakers to trim cost structures to stay competitive and safeguard profitability. These developments may also require selective downsizing of capacity or relocating production and supply chains between regions. We note, for example, increasing disparities in the capacity utilization of VW's key European plants (with annual output of 250,000 vehicles or more). While utilization at the company's plants in Slovakia, Czechia, and Spain is well above group average, key domestic plants such as Wolfsburg 1, Hanover, Emden, and Ingolstadt 1 are currently operating well below capacity (chart 6). If improvements do not materialize as currently expected, for example due to intense competition in EVs denting market shares combined with a declining market for ICE vehicles, VW might have to respond with additional restructuring measures, in our view. However, we see a risk that material adjustments to its production footprint, or degree of vertical integration, or product portfolio could be complicated by its ownership and decision-making structures. This applies in particular to potential workforce or relocation measures that are likely to face resistance from the state of Lower Saxony and VW's workers council, which can jointly wield an effective veto of key decisions.

Chart 6

Some Of VW's European Plants Are Underutilized
Capacity utilization at key European plants with high and low utilization*



*Plants >= 250,000 units/year capacity. HU/LU = Utilization more than 5 percentage points above/below VW group average in 2021-2022. e--Estimate. Source: S&P Global Mobility, S&P Global Ratings.

Outlook: Stable

The stable outlook reflects our expectation that VW will continue to make progress with its NEW AUTO strategy and successfully contain the financial impact of volatile auto production, cost inflation, and deteriorating economic conditions. This should enable VW to achieve S&P Global Ratings-adjusted FOCF of more than 3% of adjusted revenue while maintaining leverage below 0.5x.

Downside scenario

Ratings downside could materialize if we observe missteps in the execution of VW's strategy for electrification, vehicle software development, autonomous driving, and mobility services, which, combined with more intense competition in its key markets in Europe and China, lead to persisting pressure on market shares for EVs or in other key segments. Alternatively, although we see comfortable headroom in the group's credit metrics, risks could mount if weaker pricing, increasing input costs, materially higher spending on acquisitions and partnerships, plus cash outflows for legal cases cause:

- A material contraction in S&P Global Ratings-adjusted EBITDA margin to below 10% without prospects for swift recovery;
- FOCF to sales falling to 3% for a prolonged period, with continued higher spending on joint ventures (JVs) and partnerships in key areas of VW's strategy; and
- Debt to EBITDA to approach 1.5x.

Upside scenario

We could upgrade VW if it successfully strengthens its positions in its key EV markets across its premium and volume brands, supported by a competitive model line-up, progress in vehicle software development, and development of its supply chain for battery cells and EV components. This would help VW restore competitiveness in the Chinese EV market, solidify its market position in Europe, and yield market share growth in the U.S. We would expect VW to achieve this without materially compromising profitability and while maintaining FOCF to sales of 4%-5% with spending on JVs, partnerships, and acquisitions in line with our base case, as well as debt to EBITDA below 1.5x.

Our Base-Case Scenario

Assumptions

- Eurozone real GDP growth to stay flat in 2023, down from 3.3% growth in 2022 and 5.0% in 2021, before recovering to 1.4% in 2024. In China, we expect real GDP growth of 4.8% in 2023, after 3.2% in 2022 and 8.1% in 2021, followed by 4.7% in 2024. For the U.S., we expect a shallow recession with real GDP contracting by 0.1% in 2023, after growth of 1.8% in 2022 and 5.9% in 2021, re-accelerating to 1.4% in 2024.
- 4%-6% annual growth in global light vehicle sales in 2023-2024, after a decline of about 1% in 2022 and 4% growth in 2021.
- Payments in connection with legal cases of €2 billion-€3 billion in 2022 and €1 billion-€2 billion annually in 2023 and 2024 (about €1 billion in 2021).
- Payments for dividends to VW's common and preferred shareholders and hybrid coupons of about €4.3 billion in 2022, increasing to €5.0 billion-€6.5 billion annually in 2023-2024. This also includes our assumption of dividends to the minority owners of Porsche of about €230 million in 2023 and €300 million-€450 million in 2024.
- €9.3 billion net inflows from the divestment of about 24% of preferred and 25% plus one share of common shares in Porsche, after payment of a special dividend of about €9.6 billion in early 2023, IPO costs, and a special bonus to certain employees of VW.
- Annual spending on acquisitions and investments in JVs and partnerships of €3 billion-€4 billion in 2022 and €4 billion-€6 billion in 2023-2024, after €3.2 billion in 2021.

Key metrics

Volkswagen AG--Key Metrics*

	--Fiscal year ended Dec. 31--				
(Bil. EUR)	**2020a**	**2021a**	**2022e**	**2023e**	**2024e**
Share of BEVs + PHEVs in light vehicle sales (%)	about 5	about 9	about 10	14 - 18	20 - 24
Share of BEVs in BEV + PHEV light vehicle sales (%)	54	59	67 - 70	69 - 73	73 - 78
Battery cell volume sourced (GWh)	about 16	about 36	about 47	74 - 84	115 - 130
Revenue	182.1	209.2	234.3 - 236.4	248.3 - 253.0	253.8 - 258.8
Revenue growth (%)	-14.3	14.9	12.0 - 13.0	5.5 - 7.5	1.5 - 3.5
EBITDA	19.4	23	28.2 - 30.6	27.5 - 31.2	26.9 - 30.8
EBITDA margin (%)	10.7	11	12.0 - 13.0	11.0 - 12.5	10.5 - 12.0
Cash flow from working capital	1.1	2.4	(3.8) - (4.3)	1.8 - 2.3	(0.5) - (1.0)
Dividends from equity affiliates	3.2	3	2.6 - 2.9	2.8 - 3.1	2.8 - 3.1
Funds from operations (FFO)	14.4	19.1	24.2 - 26.7	23.8 - 26.8	22.7 - 26.7
Capital expenditure	11.0	10.4	12.4 - 12.9	12.5 - 13.5	12.8 - 13.8
Free operating cash flow (FOCF)	6.9	13.8	7.4 - 8.9	14.0 - 16.0	10.1 - 12.6
Dividends to common shareholders**	3.0	3	4.2 - 4.4	5.5 - 6.5	5.5 - 6.5
Debt	23	18.8	Net cash	Net cash	Net cash
Debt to EBITDA (x)	1.2	0.8	N.M.	N.M.	N.M.

Volkswagen AG--Key Metrics* (cont.)

	--Fiscal year ended Dec. 31--				
(Bil. EUR)	**2020a**	**2021a**	**2022e**	**2023e**	**2024e**
FOCF to sales (%)	3.8	6.6	3.0 - 4.0	5.5 - 6.5	4.0 - 5.0

*All figures adjusted by S&P Global Ratings. **Excluding the special dividend linked to the partial IPO of Posche. a--Actual. e--Estimate. f--Forecast. N.M.--Not meaningful.

We forecast VW's topline growth to decelerate over 2023-2024 amid challenging industry conditions. Our forecast of 12%-13% adjusted revenue growth in 2022 is boosted by currently very strong net pricing for LVs, a shift in mix toward the Audi and Porsche brands, and the first full-year consolidation of U.S. truckmaker Navistar into Traton, as well as some foreign-exchange-rate effects. These factors are set to outweigh our projected 7%-8% decline in VW's 2022 LV wholesale volume (LV deliveries were down 7.6%). Our forecast for slower revenue growth of 5.5%-7.5% in 2023, however, reflects only a modest increase in net pricing in an environment characterized by weak consumer sentiment in key markets, but a return to 1%-3% wholesale volume growth as supply chain bottlenecks gradually ease. We forecast supply chain normalization to support a 3.5%-5.5% LV wholesale volume increase in 2024, partly offset by our assumption of a modest decline in nominal net pricing.

We expect rising input costs and weaker pricing to weigh on VW's profitability in 2023-2024. This is mainly because we foresee mid-single-digit increases in variable costs on a like-for-like basis in 2023, driven particularly by certain components purchased from suppliers, as well as labor and energy, which are not fully recovered through net pricing and efficiency measures related to fixed costs and other overheads. We expect cost pressures to abate in 2024 but margins to be constrained as net pricing continues to weaken. Moreover, we expect a more than twofold increase in the share of EVs (BEVs and PHEVs) in VW's LV sales over 2022-2024 and we estimate the average contribution margin on these vehicles will remain lower than on the respective ICE variants for now. As a result, we project VW's adjusted EBITDA margin to decline to 10.5%-12.0% in 2024 from 12%-13% in 2022. Our adjusted EBITDA forecast also benefits from €2.5 billion-€3.0 billion of annual dividends from equity affiliates (€3.0 billion in 2021 and €3.2 billion in 2020), mostly from VW's JVs in China.

Inventory reduction and lower legal payments should bolster 2023 FOCF. Apart from ongoing payments in connection with diesel-related litigation cases, our 2022 FOCF forecast includes more than €1.0 billion in cash outflows from VW's truck operations linked to a cartel fine and a pension settlement, which we do not expect to recur in 2023-2024. At the same time, supply chain disruptions have inflated VW's inventory levels in 2022, explaining our projected hefty cash drain of €3.8 billion-€4.3 billion from working capital in 2022. We expect the inventory build-up to partly unwind and working capital to turn into a source of cash this year. We expect reasonably constant capex intensity (excluding capitalized R&D) of 5.0%-5.5% over 2022-2024, including spending on repurposing plants for BEV production and for the construction of a battery cell factory in Salzgitter, in addition to the company's regular expenditure.

Company Description

Headquartered in Germany, VW is one of the world's leading auto manufacturers. During 2022, the group delivered 8.3 million passenger cars and commercial vehicles, across the volume, premium, and luxury segments, including vehicles sold by unconsolidated JVs in China. Key brands include:

- Light vehicles: VW, Audi, Porsche, Skoda, SEAT/CUPRA, Bentley, Lamborghini, and VW Commercial Vehicles.
- Trucks: Scania, MAN, Navistar, and VW Truck and Bus.

VW's key geographical markets are Europe and Asia-Pacific, together accounting for more than 80% of total volumes. In the first nine months of 2022, the VW group reported revenue of €203 billion, of which €34.8 billion from financial services. Key shareholders include Porsche Automobil Holding SE, the holding of the Porsche/Piech family (about 31% of shares and 53.3% of voting rights), Qatar Holding LLC (10.5% of shares and 17% of voting rights), and the State of Lower Saxony (11.8% of shares and 20% of voting rights).

Peer Comparison

Table 1

Volkswagen AG--Peer Comparison

Industry sector: Automotive - Oems

	Volkswagen AG	Toyota Motor Corp.	Tesla Inc.	Stellantis N.V.	General Motors Co.
Ratings as of Feb. 21, 2023	BBB+/Stable/A-2	A+/Stable/A-1+	BBB/Stable/--	BBB/Stable/A-2	BBB/Stable/--
	--Fiscal year ended--				
	Dec. 31, 2021	March 31, 2022	Dec. 31, 2021	Dec. 31, 2021	Dec. 31, 2021
(Mil. €)					
Revenue	209,194.0	215,388.3	47,324.2	151,827.0	99,874.7
EBITDA	22,952.0	27,075.0	10,799.9	18,298.0	10,442.9
Funds from operations (FFO)	19,088.7	22,783.4	9,947.5	14,701.0	9,901.4
Interest expense	2,315.5	253.0	451.5	1,035.0	927.5
Cash interest paid	534.3	252.3	359.2	1,447.0	814.1
Cash flow from operations	24,194.0	23,701.5	10,534.8	12,280.0	7,717.3
Capital expenditure	10,419.0	12,486.8	5,680.9	6,692.0	6,579.5
Free operating cash flow (FOCF)	13,775.0	11,214.8	4,854.0	5,588.0	1,137.8
Discretionary cash flow (DCF)	9,970.0	2,568.9	4,712.4	1,384.0	974.3
Cash and short-term investments	62,255.0	45,320.5	15,569.0	49,089.0	21,742.2
Debt	18,810.5	0.0	0.0	0.0	7,545.2
Equity	101,089.5	169,168.5	27,769.5	49,890.0	44,948.4
Adjusted ratios					
EBITDA margin (%)	11.0	12.6	22.8	12.1	10.5
Return on capital (%)	9.1	14.4	24.2	38.6	11.2
EBITDA interest coverage (x)	9.9	107.0	23.9	17.7	11.3
FFO cash interest coverage (x)	36.7	91.3	28.7	11.2	13.2
Debt/EBITDA (x)	0.8	0.0	0.0	0.0	0.7
FFO/debt (%)	101.5	N.M.	N.M.	N.M.	131.2
Cash flow from operations/debt (%)	128.6	N.M.	N.M.	N.M.	102.3
FOCF/debt (%)	73.2	N.M.	N.M.	N.M.	15.1

Table 1

Volkswagen AG--Peer Comparison (cont.)					
DCF/debt (%)	53.0	N.M.	N.M.	N.M.	12.9

N.M.--Not meaningful

We benchmark Volkswagen against Toyota and Stellantis for scale, as well as their prominent positions in the volume segment and their geographic reach. VW is no. 2 in the global OEM ranking by volume after Toyota with about 8 million LVs delivered last year. Compared to Toyota, however, VW manages a larger portfolio of brands ranging across segments. Toyota has not faced the pressure on its overall LV market share that VW has recently, nor has it seen the magnitude of litigation-related charges and cash outflows that VW has since the diesel scandal in 2015. Toyota and Stellantis enjoy stronger market positions in the U.S., whereas VW is the market leader in China. Stellantis displays similar S&P Global Ratings-adjusted profitability despite its smaller scale and share of premium/luxury LV sales.

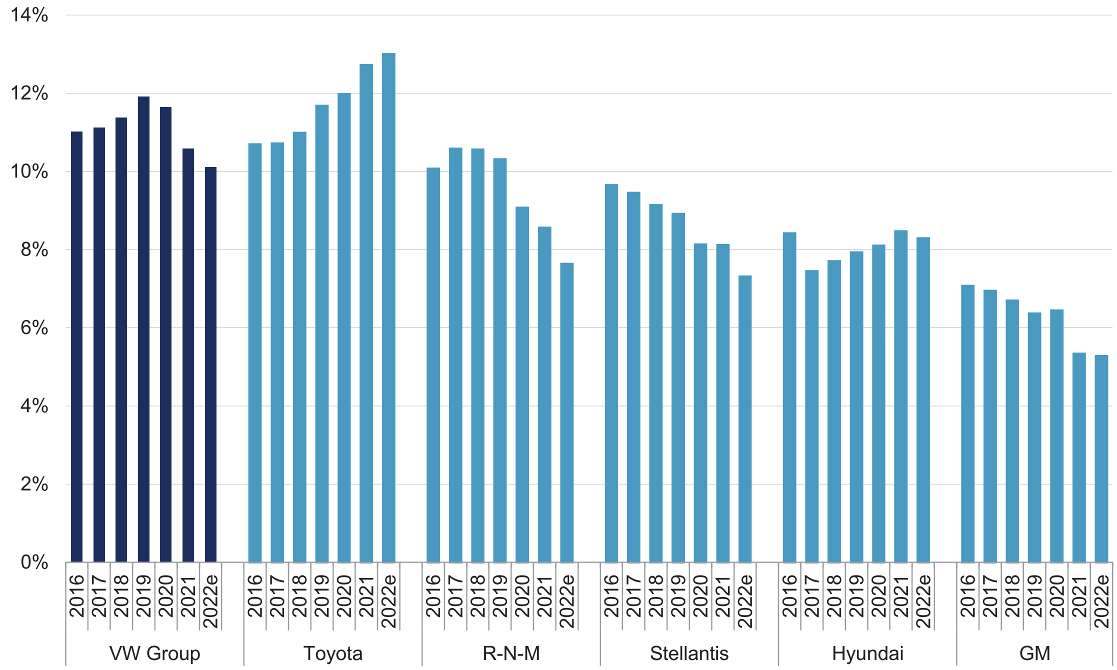
VW benchmarks itself to Tesla in terms of its aspirations as a future mobility tech company, for example in areas such as proprietary software and autonomous driving features, EV and battery technology, and the operational efficiency of Tesla's highly integrated vertical business model. Relative to Tesla, VW exhibits larger scale and greater breadth and depth of model offerings across the entire range of LV segments and can count on extensive captive finance operations to support the sales and leasing of its vehicles. At the same time, Tesla is the global BEV market leader and VW trails its market shares in this segment by a significant margin in all regions. Also, parts of VW's portfolio could be more challenging to electrify. Moreover, VW's adjusted EBITDA margin and cash conversion is well below Tesla's. Tesla has also had its own proprietary battery cell technology for many years and is further ahead, in our view, with respect to the development of software-defined vehicle architectures.

Business Risk: Satisfactory

VW enjoys an established position as the world's second-largest carmaker. Our view of VW's business risk factors in the group's commanding position as one of the top two global carmakers, after Toyota, with a total LV sales volume of 8 million in 2022. VW's global LV market share (based on S&P Global Mobility data) held fairly steady at 10%-12% over 2016-2020 (see chart 7). It has declined somewhat in the last two years as VW faced more pronounced supply chain difficulties than some of its peers and headwinds to its market share in China, but VW remains ahead of other volume OEMs such as Stellantis and Hyundai. Its main strongholds are in Europe, with market share around 21% in 2022, and China, where VW is the market leader with a share of more than 13% (2022). For an OEM like VW that pursues high vertical integration and a lot of proprietary development, we think scale of operations is a supporting factor as investments can be recovered more easily through high volumes, provided synergies are realized across platforms and brands.

Chart 7

Global LV Market Share Development For Key Original Equipment Manufacturers
2016-2022e

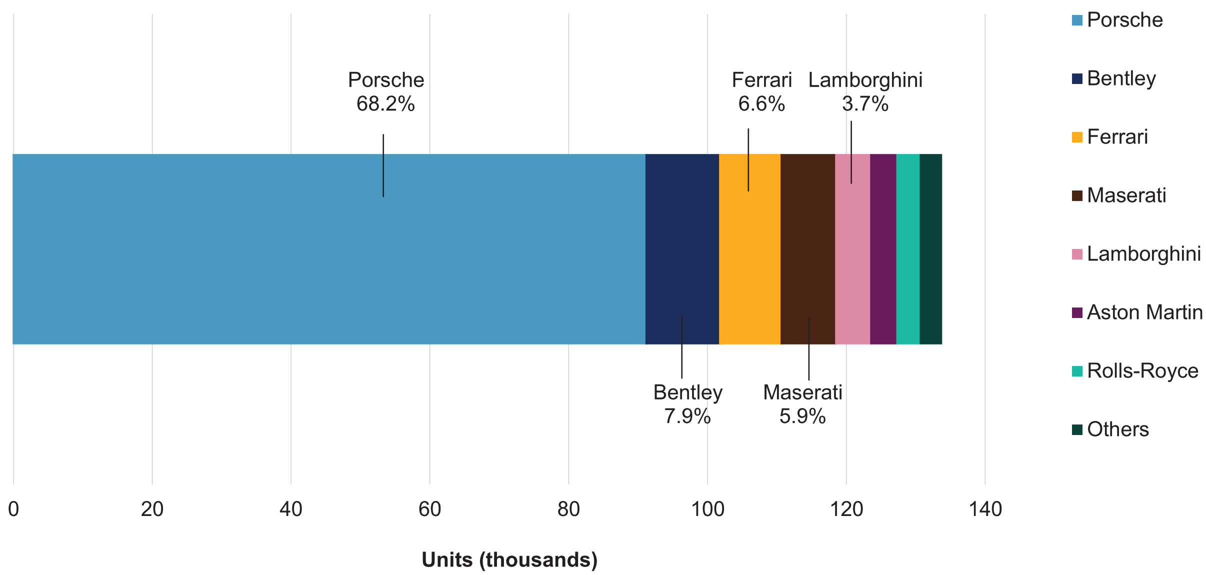


e--Estimate. LV--Light vehicle. Source: S&P Global Mobility, S&P Global Ratings.

Positions in premium and luxury LVs and commercial vehicles diversify VW's earnings base. VW is also the third-largest global premium car OEM, with a market share of about 18% (2022) after BMW and Mercedes-Benz (both about 21%), mainly based on its Audi and Porsche brands and small volumes of premium car sales under the VW brand. Furthermore, VW's Porsche, Bentley, and Lamborghini brands jointly dominate the global luxury and super luxury market (chart 8). We view the contribution of the premium and luxury segments to VW's sales as favorable thanks to their lower price elasticity and moderately better long-term growth prospects compared with other car segments. Commercial vehicles (Traton) further add to the diversity of VW's portfolio, accounting for 17% of nine-months 2022 automotive revenue (see our full analysis on Traton SE, published Dec. 14, 2022, on RatingsDirect). We note, however, that Traton's profitability remains below group average at this stage, so its contribution to the stability of group earnings hinges on further operational improvements.

Chart 8

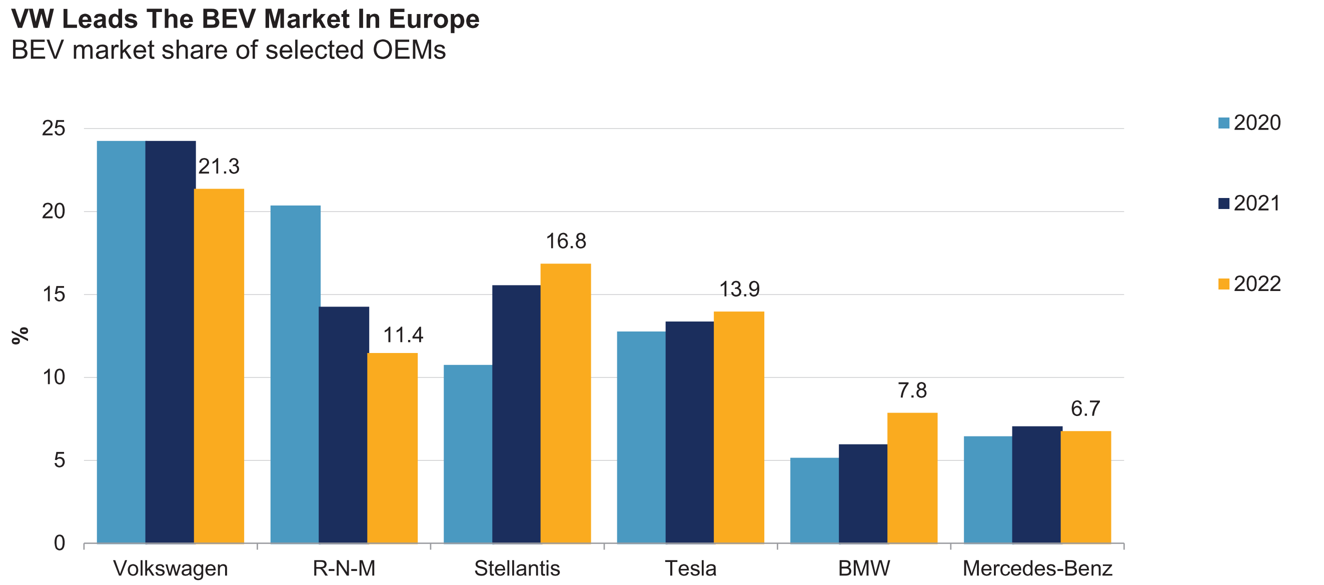
Luxury Segment Market Shares By Brand
2022e



e--Estimate. Source: S&P Global Mobility, S&P Global Ratings.

VW leads the European BEV market, but we see tough competition ahead. VW held about 21% of the European BEV market in 2022 (chart 9), reflecting the increasing breadth of its BEV line-up, with top sellers including the VW ID.3 (Car-C), ID.4 and ID.5 (both SUV-C), CUPRA Born (Car-C), Skoda Enyaq (SUV-C), Audi e-tron Quattro (SUV-E) and Audi Q4 e-tron (SUV-C), and Porsche Taycan (Car-E). This is an important step toward a durable BEV market position in Europe, in our view. That said, competition from BEV launches by other incumbent OEMs is increasing, exemplified by Hyundai with its Ioniq 5 and Kia with its EV6 model (both SUV-D). Moreover, in addition to competition from BEV players like Tesla, we expect more Chinese OEMs to follow BYD and NIO with market entries in Europe. This is likely to intensify competition on pricing and increase headwinds for VW's market share.

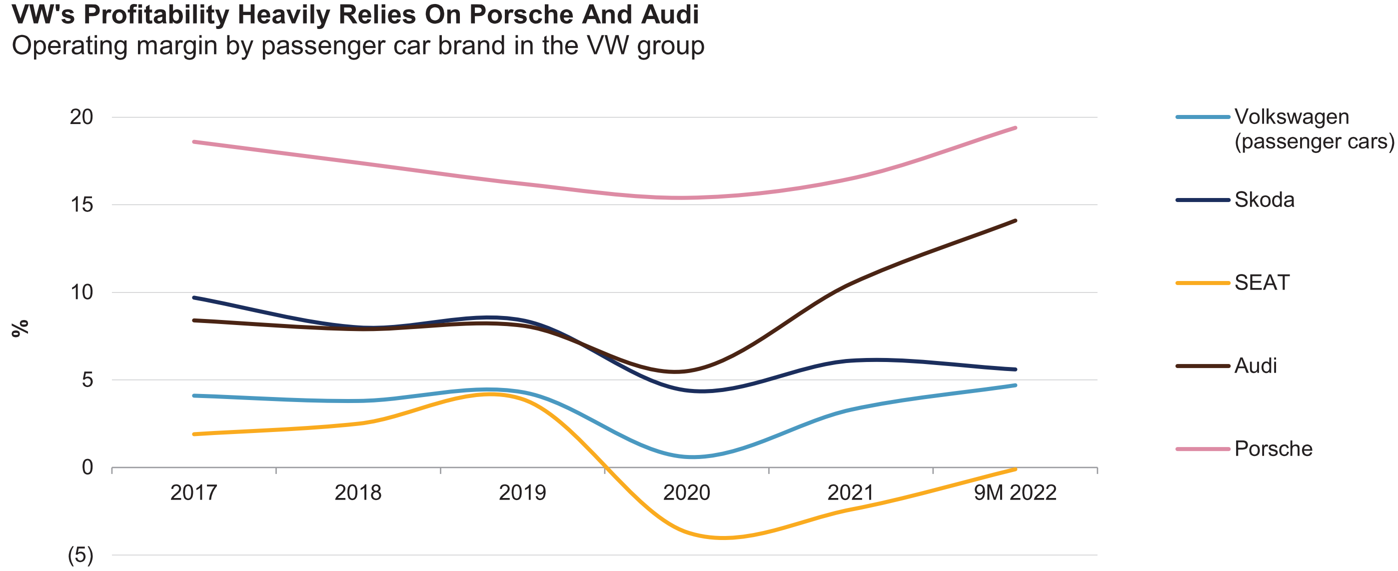
Chart 9



Source: EV Volumes, S&P Global Mobility, S&P Global Ratings.

VW's volume brands' profitability lags peers and the group average. We consider this to be unfavorable from a credit perspective because it detracts from the diversification benefit of VW's extensive brand portfolio and leaves the group overly dependent on the earnings and cash flows of Porsche, of which VW owns only 75%, and--to a lesser extent--Audi. Porsche usually contributes more than one-third of total operating income in the group's passenger car segment and its reported operating margin of 15% and 20% (chart 10) has been several times higher than that of SEAT, Skoda, and Volkswagen Passenger Cars for many years. We think the sub-par profitability of VW Passenger Cars and SEAT in particular underscores VW's difficulties in fully exploiting synergies across the group, inefficiencies in brands' own cost structures, and some overlap in brand positioning. If this disparity persists, we think this could prompt VW to initiate additional restructuring measures or materially scale back its portfolio of models and variants of certain brands.

Chart 10

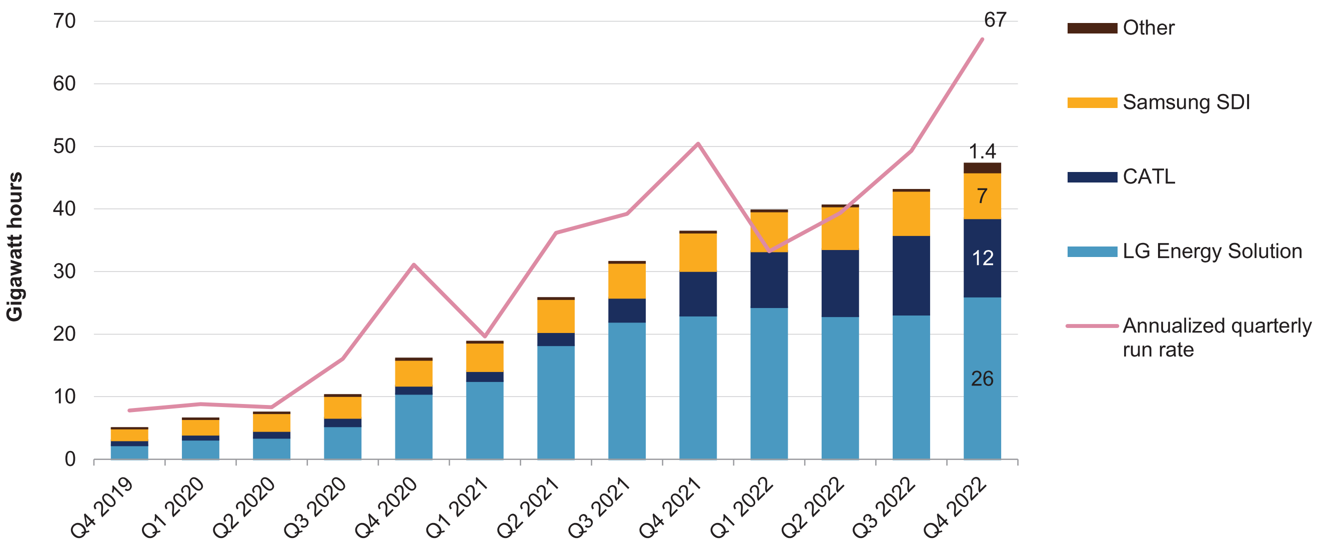


9M--First nine months. Source: Company reports, S&P Global Ratings.

VW's battery cell and raw material supply chain ambitions require substantial investments, but could yield medium-term benefits. We foresee VW's global demand for battery cells surging in lockstep with EV penetration, from the current annual run-rate of about 67 GWh as of fourth-quarter 2022 to well above 100 GWh by 2024 (based on a 75%/25% BEV/PHEV split; chart 11). Most of VW's demand for battery cells currently emanates from Europe where the company estimates its total needs at about 240 GWh by 2030. Key to sourcing these volumes will be VW's subsidiary PowerCo, which will develop, manufacture, and supply the group with EV batteries. PowerCo will set up six battery cell factories with a production capacity of 40 GWh each, of which five in Europe and one in the U.S. The factories will begin operations in 2025–2029 and gradually replace volumes sourced through contractual agreements. Apart from the fully-owned factory in Salzgitter, Germany, PowerCo will operate through partnerships and JVs. Over time, we estimate that similar battery capacity could be needed for VW's EV strategy in China. In China, VW is employing a comparable investment model by building a proprietary battery production plant in Anhui in addition to developing local partnerships. VW is complementing this approach with selective investments in the area of raw materials, such as an agreement to set up a cathode material processing and production JV with materials technology and recycling company Umicore. VW estimates its total investment needs for cell manufacturing and raw materials at about €30 billion (€20 billion for cell manufacturing and €10 billion for raw materials sourcing). We currently think VW's balance sheet will be able to stomach these investments, to be spread over many years. Moreover, we believe VW's greater vertical integration compared to other OEMs, combined with having standardized competitive proprietary battery cell technology produced at scale, is likely to result in stronger security of supply and potentially lower battery sourcing costs over time.

Chart 11

VW's Battery Cell Needs Are On The Rise
Last 12 months battery cell demand by supplier

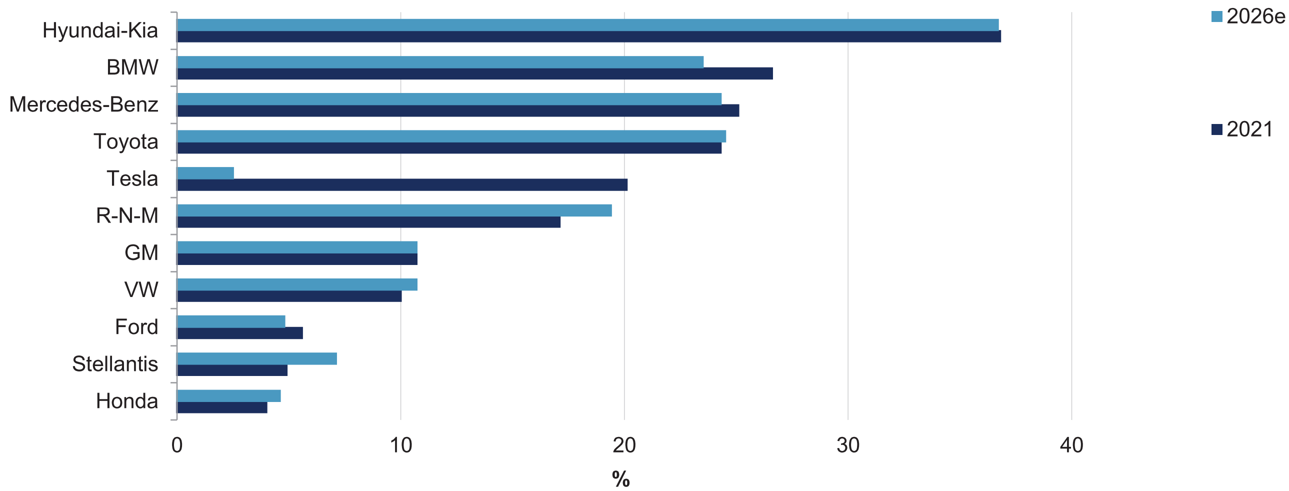


Source: EV Volumes, S&P Global Ratings.

VW's high degree of localization offers some protection against geopolitical risks. In our view, the auto industry is facing heightened geopolitical risks, particularly relating to a deterioration in political and trade relationships between the U.S., China, and to some extent Europe. The effects will likely be felt through worsening macroeconomic conditions and their repercussions for auto demand, as well as rising trade barriers. The latter may also take the shape of heightened local content requirements and subsidies for domestic production--which we saw with the public support for locally produced EV models and batteries under the U.S. Inflation Reduction Act. We think VW's exposure to these risks is somewhat lower than for most other OEMs thanks to its highly regionalized footprint, with only about 10% of its sales volumes in its top three markets stemming from imports, according to S&P Global Mobility (chart 12). We note, however, that Porsche's import dependency is higher at 65%-70%. We currently view scenarios such as the worsening of relationships up to the point of the expropriation of foreign automakers in certain markets as tail risks, noting that such events would pose a risk to ratings if they materialized.

Chart 12

VW's Share Of Import Sales Is Lower Than Peers
Share of imports in LV sales in Europe, North America, and Greater China (2021/2026e)



e--Estimate. Source: S&P Global Mobility, S&P Global Ratings.

Financial Risk: Minimal

VW's strong balance sheet provides a cushion against industry headwinds, and firepower for investments. VW has steadily reduced leverage in the last few years from about €24 billion of adjusted debt in 2019 to what we forecast will be a net cash position of €3 billion-€6 billion over 2022-2024. This stems from ongoing leverage reduction through FOCF, underpinned by a predictable dividend policy targeting pay-outs of 30% of net income, as well as the recent boost from a shrinking pension deficit and more than €9 billion of retained net proceeds from the IPO and sale of about 25% of its subsidiary Porsche AG. We think this creates headroom for VW's balance sheet to absorb the impending economic slowdown and likely weakening auto demand, alongside potentially unstable auto production. Moreover, it provides VW with the flexibility to step up investments in key areas of its strategy, including EV technology and supply chain, charging, software and autonomous driving, or mobility services, if necessary.

We expect the use of JVs will incrementally dilute the quality of VW's credit metrics. We believe VW will pursue a sizable share of the aforementioned strategic investments through partnerships and JVs. Many of these are unlikely to be consolidated, but they will target areas that are vital for VW's competitiveness and substitute for spending on R&D and capex. We could therefore decide to monitor FOCF generation more holistically, both including and excluding spending on acquisitions and participations. We may also decide to proportionally consolidate partnerships such as JVs or equity affiliates if these are crucial to the implementation of VW's strategy and material for our credit metrics and comparability with peers.

VW's financial services operations do not affect our view of the group's financial risk. VW has a substantial financial services business that supports the sale and leasing of its vehicles. On Sept. 30, 2022, the group had captive finance receivables and operating lease assets of about €208 billion. We regard the asset quality of the €148 billion of finance receivables--primarily vehicle-financing term loans--as excellent, based on annual net credit losses of less than 1% in recent years. To finance its captive's earning assets, VW has incurred sizable debt obligations. These were about €193 billion on Sept. 30, 2022, and represented almost all the group's total reported gross debt of €204 billion (including lease liabilities). Leverage (debt to equity) in the captive finance operations as per our definition was 4.7x, well below the upper limit of 12x for our current assessment of the captive operations' asset leverage risk. We expect that VW will maintain it at a similar level. Given low credit losses and relatively moderate leverage, VW's financial services division does not modify our view of the group's overall financial risk.

Lease assets of about €61 billion on Sept. 30, 2022, expose the financial services business to the risk of residual value losses. These arise when the proceeds from the sale of the assets at the end of the lease term are lower than expected at contract inception. Such losses can be significant during market downturns, thereby potentially weakening the group's overall creditworthiness. For VW, lease assets comprise a rising share of its total captive-finance-related assets (29% as of Sept. 30, 2022, which was stable compared to 2021 but up from about 26% in 2020 and 24% in 2019). However, this is somewhat lower than for peers such as Mercedes-Benz Group AG and BMW AG who have a share of lease assets in net earning assets of well above 30%.

Our main accounting adjustments relate to the captive finance operations and capitalized R&D. In calculating adjusted debt as of Dec. 31, 2021, we deduct from total reported gross debt of €210.2 billion (including lease liabilities) €196 billion of financial services debt and €39.6 billion of accessible cash. We add about €32 billion for unfunded pension liabilities and €4.3 billion for diesel-related contingent liabilities. VW is one of the largest corporate issuers of hybrid instruments. Because we typically consider these instruments to have intermediate equity content, we have allocated 50% of the outstanding principal to debt and 50% to equity in our adjusted debt figure. We also removed from our adjusted 2021 metrics captive finance revenue of €41 billion, EBITDA of €15.1 billion, and operating cash flow of €6.2 billion. Our other main adjustments to VW's EBITDA include the deduction of about €7.8 billion capitalized development costs, which we treat as an expense, a €3.0 billion add-back for dividends received from equity affiliates, mostly its JVs in China, and the deduction of €2.5 billion unrealized fair value gains on derivatives mainly related to VW's automotive segment.

Financial summary

Table 2

Volkswagen AG--Financial Summary

Industry sector: Automotive - Oem'S

	--Fiscal year ended Dec. 31--				
	2021	**2020**	**2019**	**2018**	**2017**
(Mil. €)					
Revenue	209,194.0	182,106.0	212,472.0	201,067.0	196,949.0
EBITDA	22,952.0	19,399.0	25,832.0	24,469.0	24,228.5
Funds from operations (FFO)	19,088.7	14,358.1	20,972.0	20,338.5	20,339.2
Interest expense	2,315.5	2,518.9	2,618.0	2,155.1	2,460.3

Table 2

Volkswagen AG--Financial Summary (cont.)

Industry sector: Automotive - Oem'S	--Fiscal year ended Dec. 31--				
	2021	2020	2019	2018	2017
Cash interest paid	534.3	3,032.0	2,672.0	345.5	374.3
Cash flow from operations	24,194.0	17,893.1	25,494.0	14,027.4	7,049.2
Capital expenditure	10,419.0	11,000.0	13,939.0	13,157.0	12,548.0
Free operating cash flow (FOCF)	13,775.0	6,893.1	11,555.0	870.4	(5,498.8)
Discretionary cash flow (DCF)	9,970.0	4,231.0	8,656.0	(1,532.6)	(6,830.8)
Cash and short-term investments	62,255.0	55,071.0	42,692.0	46,018.0	34,396.0
Gross available cash	43,165.0	41,726.0	33,226.0	37,546.0	27,337.0
Debt	18,810.5	22,971.1	23,945.8	25,875.7	31,754.0
Equity	101,089.5	87,624.5	85,810.5	81,958.0	75,538.0
Adjusted ratios					
EBITDA margin (%)	11.0	10.7	12.2	12.2	12.3
Return on capital (%)	9.1	7.3	14.3	12.8	13.5
EBITDA interest coverage (x)	9.9	7.7	9.9	11.4	9.8
FFO cash interest coverage (x)	36.7	5.7	8.8	59.9	55.3
Debt/EBITDA (x)	0.8	1.2	0.9	1.1	1.3
FFO/debt (%)	101.5	62.5	87.6	78.6	64.1
Cash flow from operations/debt (%)	128.6	77.9	106.5	54.2	22.2
FOCF/debt (%)	73.2	30.0	48.3	3.4	(17.3)
DCF/debt (%)	53.0	18.4	36.1	(5.9)	(21.5)

Reconciliation

Table 3

Volkswagen AG--Reconciliation Of Reported Amounts With S&P Global Ratings' Adjusted Amounts (Mil. €)

	--Fiscal year ended Dec. 31, 2021--									
Volkswagen AG reported amounts										
	Debt	Shareholders' equity	Revenue	EBITDA	Operating income	Interest expense	S&P Global Ratings' adjusted EBITDA	Cash flow from operations	Dividends	Capital expenditure
Reported	203,957.0	144,449.0	250,200.0	46,611.0	19,275.0	1,617.0	22,952.0	38,633.0	3,022.0	18,498.0
S&P Global Ratings' adjustments										
Cash taxes paid	--	--	--	--	--	--	(4,216.0)	--	--	--
Cash interest paid	--	--	--	--	--	--	(2,471.0)	--	--	--
Reported lease liabilities	6,245.0	--	--	--	--	--	--	--	--	--
Intermediate hybrids reported as equity	7,219.5	(7,219.5)	--	--	--	269.5	(288.0)	(288.0)	(288.0)	--

Table 3

Volkswagen AG--Reconciliation Of Reported Amounts With S&P Global Ratings' Adjusted Amounts (Mil. €) (cont.)

Postretirement benefit obligations/deferred compensation	31,949.0	--	--	(1.0)	(1.0)	352.0	--	--	--	--
Accessible cash and liquid investments	(39,565.0)	--	--	--	--	--	--	--	--	--
Capitalized interest	--	--	--	--	--	77.0	(77.0)	(77.0)	--	(77.0)
Capitalized development costs	--	--	--	(7,843.0)	(2,793.0)	--	--	(7,843.0)	--	(7,843.0)
Dividends received from equity investments	--	--	--	2,960.0	--	--	--	--	--	--
Captive finance operations	(195,799.0)	(37,845.0)	(41,006.0)	(15,129.0)	(6,134.0)	--	3,188.7	(6,231.0)	--	(159.0)
Nonoperating income (expense)	--	--	--	--	3,198.0	--	--	--	--	--
Noncontrolling interest/minority interest	--	1,705.0	--	--	--	--	--	--	--	--
Debt: Guarantees	504.0	--	--	--	--	--	--	--	--	--
Debt: Contingent diesel liabilities	4,300.0	--	--	--	--	--	--	--	--	--
EBITDA: Derivatives	--	--	--	(2,456.0)	(2,456.0)	--	--	--	--	--
EBITDA: Business divestments	--	--	--	(124.0)	(124.0)	--	--	--	--	--
EBITDA: Gains/losses on PP&E disposals, depreciation of lease assets	--	--	--	(1,066.0)	(1,066.0)	--	--	--	--	--
Depreciation and amortization: Other	--	--	--	--	548.0	--	--	--	--	--
Total adjustments	(185,146.5)	(43,359.5)	(41,006.0)	(23,659.0)	(8,828.0)	698.5	(3,863.3)	(14,439.0)	(288.0)	(8,079.0)
S&P Global Ratings' adjusted amounts										
	Debt	**Equity**	**Revenue**	**EBITDA**	**EBIT**	**Interest expense**	**Funds from operations**	**Cash flow from operations**	**Dividends paid**	**Capital expenditure**
Adjusted	18,810.5	101,089.5	209,194.0	22,952.0	10,447.0	2,315.5	19,088.7	24,194.0	2,734.0	10,419.0

Liquidity: Strong

Our short-term rating on VW is 'A-2'. We assess the group's liquidity as strong because we expect liquidity sources to cover uses by at least 1.5x in the next and the following 12 months, excluding financial services. Our view is further supported by VW's large diversification of funding sources across markets and instruments, including hybrid debt, and track record of issuing these instruments in a variety of market conditions. VW also enjoys well-established and solid banking relationships, evidenced by diverse and sizable revolving credit facilities (RCFs) and other bank debt across the different group divisions.

VW's captive finance operations rely heavily on short-term financial liabilities, which stood at about €92 billion on Sept. 30, 2022. We see these liabilities as relatively concentrated in terms of duration, but consider them to broadly match short-term finance receivables and other liquid short-term assets. At this point, we do not believe that the liquidity of the captive finance division poses additional liquidity risk for the group.

Following its IPO, Porsche will continue to participate in the cash pool of the VW group.

We calculate the following liquidity sources as of Sept. 30, 2022, for VW, excluding its financial services business, for the next 24 months:

Principal liquidity sources

- Cash and cash equivalents and marketable securities of about €39 billion in the auto business, after excluding our estimate of about €3.6 billion of cash that is not immediately accessible for debt repayment.
- €14.5 billion of undrawn RCFs, consisting of a €10 billion RCF in the VW group and a €4.5 billion RCF at Traton SE, both maturing in December 2026.
- Cash funds from operations of €33 billion-€35 billion annually over the next and subsequent 12 months.
- More than €9.0 billion net cash inflow from the Porsche IPO, after deducting the special dividend of about €9.6 billion paid in early 2023.

Principal liquidity uses

- Our estimate of debt maturities in the auto division of up to €4.5 billion over the next 12 months and up to €3.5 billion in the subsequent 12 months.
- Capex (including capitalized R&D) of €21.7 billion-€23.7 billion in the next 12 months and €22 billion-€24 billion in the subsequent 12 months.
- Nonseasonal working-capital-related inflows of up to €1.0 billion in the next 12 months and negative €0.5 billion-€0.5 billion in the subsequent 12 months, plus peak intra-year working capital swings of up to €5 billion in each period.
- Dividend payouts of €5.5 billion-€6.5 billion in each period, including hybrid coupons and dividends to minority owners of Porsche.
- Our assumption of €2.0 billion-€3.0 billion in each period for committed investments in partnerships and JVs.
- €1.5 billion outflow linked to the repayment of the hybrid security with a first call date in December 2022.

Debt maturities

Maturities for the entire group, excluding leases, deposits, and hybrids, as of September 2022:

- Current: €51 billion
- Non-current: €120 billion

Covenant Analysis

There are no financial maintenance covenants in the documentation for the €10 billion syndicated facility issued by VW AG expiring in December 2026, nor in the group's other debt documentation, including for its unsecured bonds, asset-backed securities, commercial paper, and bank debt.

Environmental, Social, And Governance

ESG Credit Indicators

E-1	E-2	**E-3**	E-4	E-5	S-1	**S-2**	S-3	S-4	S-5	G-1	G-2	**G-3**	G-4	G-5

Environmental	Social	Governance
- Climate transition risk	- N/A	- Risk management, culture and oversight

N/A--Not applicable. ESG credit indicators provide additional disclosure and transparency at the entity level and reflect S&P Global Ratings' opinion of the influence that environmental, social, and governance factors have on our credit rating analysis. They are not a sustainability rating or an S&P Global Ratings ESG Evaluation. The extent of the influence of these factors is reflected on an alphanumerical 1-5 scale where 1 = positive, 2 = neutral, 3 = moderately negative, 4 = negative, and 5 = very negative. For more information, see our commentary "ESG Credit Indicators: Definition And Applications," published Oct. 13, 2021.

Environmental factors are a moderately negative consideration in our credit rating analysis of VW. We expect VW's share of BEVs in global LV sales (about 7% in 2022) will steadily increase toward its target of 50% by 2030, and the lower profitability will initially dilute VW's profitability unless mitigated by cost and revenue optimization measures. We also expect regulation; intense EV competition; the goal to become net carbon neutral in its LV division by 2050; and its ambitions with respect to battery cell production will require continued high investments in EV models and technology, plant upgrades, and the EV and battery supply chain. We estimate these at 12%-14% of adjusted sales (R&D plus capex in 2022-2024), complemented by substantial spending on partnerships in areas such as battery cell production. In our view, the shift toward EVs continues to provide opportunities for new players to enter the market, which intensifies competition in VW's key car markets, notably China and Europe.

Governance factors are also a moderately negative consideration. VW's ownership structure and the composition of its supervisory board implies that important decisions often require a careful balancing act to reconcile the interests of key constituents, namely Porsche Automobil Holding SE, workers' representatives, the State of Lower Saxony, and Qatar Holding, whereas stakeholders not affiliated with these parties lack independent representation. This could slow down or--from a creditor's perspective--adversely influence important business decisions, for example with respect to footprint adjustments, restructuring and capacity reduction measures, vertical integration, or the disposal of assets, as seen in the partial IPO of Porsche. VW has made progress in overhauling its internal compliance and control structures and processes and has successfully emerged from the compliance monitorship mandated by the U.S. Department of Justice in 2020. However, it remains exposed to a certain level of litigation risk in connection with the diesel scandal as demonstrated by a contingent liability (€4.3 billion in 2021), which we include in our adjusted debt.

Issue Ratings - Subordination Risk Analysis

Capital structure

VW AG had €204 billion of financial debt on Sept. 30, 2022, of which €10.7 billion relates to the automotive business, and the remainder to VW's financial services business.

Analytical conclusions

Our issue ratings on the senior unsecured debt issued by Volkswagen International Finance N. V. and other entities that we consider core subsidiaries of the group are 'BBB+', at the same level as the issuer credit rating. In view of VW's solid financial risk profile, we believe that structural subordination does not pose a material risk at this stage. The issue rating on VW's hybrid instruments is 'BBB-', two notches below the issuer credit rating because of contractual subordination and deferability of interests. We assign intermediate equity content to the outstanding hybrid instruments, which we see as a permanent layer in VW's capital structure representing less than 15% of the group's adjusted capital.

Ratings Score Snapshot

Issuer Credit Rating

BBB+/Stable/A-2

Business risk: Satisfactory

- **Country risk:** Low
- **Industry risk:** Moderately high
- **Competitive position:** Strong

Financial risk: Minimal

- **Cash flow/leverage:** Minimal

Anchor: a

Modifiers

- **Diversification/portfolio effect:** Neutral (no impact)
- **Capital structure:** Neutral (no impact)
- **Financial policy:** Neutral (no impact)
- **Liquidity:** Strong (no impact)
- **Management and governance:** Fair (-1 notch)
- **Comparable rating analysis:** Negative (-1 notch)

Related Criteria

- General Criteria: Hybrid Capital: Methodology And Assumptions, March 2, 2022
- General Criteria: Environmental, Social, And Governance Principles In Credit Ratings, Oct. 10, 2021
- General Criteria: Group Rating Methodology, July 1, 2019
- Criteria | Corporates | General: Corporate Methodology: Ratios And Adjustments, April 1, 2019
- Criteria | Corporates | General: Reflecting Subordination Risk In Corporate Issue Ratings, March 28, 2018
- General Criteria: Methodology For Linking Long-Term And Short-Term Ratings, April 7, 2017
- Criteria | Corporates | General: Methodology: The Impact Of Captive Finance Operations On Nonfinancial Corporate Issuers, Dec. 14, 2015
- Criteria | Corporates | General: Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers, Dec. 16, 2014
- Criteria | Corporates | General: Corporate Methodology, Nov. 19, 2013
- General Criteria: Methodology: Industry Risk, Nov. 19, 2013
- General Criteria: Country Risk Assessment Methodology And Assumptions, Nov. 19, 2013
- General Criteria: Methodology: Management And Governance Credit Factors For Corporate Entities, Nov. 13, 2012
- General Criteria: Principles Of Credit Ratings, Feb. 16, 2011

Business And Financial Risk Matrix

	Financial Risk Profile					
Business Risk Profile	**Minimal**	Modest	Intermediate	Significant	Aggressive	Highly leveraged
Excellent	aaa/aa+	aa	a+/a	a-	bbb	bbb-/bb+
Strong	aa/aa-	a+/a	a-/bbb+	bbb	bb+	bb
Satisfactory	**a/a-**	bbb+	bbb/bbb-	bbb-/bb+	bb	b+
Fair	bbb/bbb-	bbb-	bb+	bb	bb-	b
Weak	bb+	bb+	bb	bb-	b+	b/b-
Vulnerable	bb-	bb-	bb-/b+	b+	b	b-

Ratings Detail (As Of February 21, 2023)*

Volkswagen AG	
Issuer Credit Rating	BBB+/Stable/A-2
Issuer Credit Ratings History	
28-Apr-2021	BBB+/Stable/A-2
26-Mar-2020	BBB+/Negative/A-2
06-Nov-2017	BBB+/Stable/A-2

Ratings Detail (As Of February 21, 2023)*(cont.)	
Related Entities	
Banco Volkswagen S.A.	
Issuer Credit Rating	
Brazil National Scale	brAAA/Stable/--
Navistar Financial, S.A. de C.V. SOFOM, E.R.	
Issuer Credit Rating	
CaVal (Mexico) National Scale	mxAA+/Stable/mxA-1+
Senior Unsecured *CaVal (Mexico) National Scale*	mxAA+
Short-Term Debt *CaVal (Mexico) National Scale*	mxA-1+
Scania AB (publ.)	
Issuer Credit Rating	BBB/Stable/A-2
Nordic Regional Scale	--/--/K-2
South Africa National Scale	zaAAA/--/zaA-1+
TRATON SE	
Issuer Credit Rating	BBB/Stable/--
Volkswagen Bank GmbH	
Issuer Credit Rating	BBB+/Stable/A-2
Commercial Paper	
Local Currency	A-2
Senior Subordinated	BBB
Senior Unsecured	BBB+
Short-Term Debt	A-2
Volkswagen Financial Services AG	
Issuer Credit Rating	BBB+/Stable/A-2
Volkswagen Finans Sverige AB	
Issuer Credit Rating	
Nordic Regional Scale	--/--/K-1
Volkswagen International Belgium S.A.	
Issuer Credit Rating	BBB+/Stable/A-2
Volkswagen Leasing S.A. de C.V.	
Senior Secured *CaVal (Mexico) National Scale*	mxAAA
Short-Term Debt *CaVal (Mexico) National Scale*	mxA-1+

*Unless otherwise noted, all ratings in this report are global scale ratings. S&P Global Ratings' credit ratings on the global scale are comparable across countries. S&P Global Ratings' credit ratings on a national scale are relative to obligors or obligations within that specific country. Issue and debt ratings could include debt guaranteed by another entity, and rated debt that an entity guarantees.