

A Work Project, presented as part of the requirements for the Award of a Master Degree in Finance from the
NOVA – School of Business and Economics.

PORSCHE AG EQUITY RESEARCH - THE ICONIC SPORTS CAR BRAND DRIVEN BY PERFORMANCE,
INNOVATION, AND RELIABILITY

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Abstract

Porsche is an iconic German automotive manufacturer founded in 1931. Its history is rich, and its image has been consistent throughout its existence, Porsche being known for creating stylish cars which are both exciting to drive and reliable. For the last decades, Porsche was under control of the Volkswagen group, but in 2022 it was listed on the Frankfurt Stock Exchange, after an IPO. This analysis serves to provide a comprehensive report on Porsche's performance, its competitive environment and vision for the future, finally providing a recommendation for potential investors.

Keywords: Porsche AG, Equity Research, Valuation, Automotive

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This report is part of the Porsche AG Equity Research report (annexed), developed by Luís Garcia and Dinis Torres and should be read as an integral part of it.

Introduction

Through this work, me and my pair try to provide an extensive report on Porsche AG and subsequently value the company, which has recently been listed in a public stock exchange and for that reason lacks publicly available information on this aspect. Past, present, and future of Porsche have been analysed, beginning with its rich history and how it evolved to become one of the most well-known brands in the world, let alone its own industry, comparing how it has been performing in recent years against some of its peers, through the analysis of financial results and ratios, how its industry has been changing and which trends are expected to become standards in the future, which external factors affect the environment Porsche lives in and their potential danger, finally providing a forecast of Porsche's future performance, both in terms of revenues and costs, which are essential in determining a valuation of the company. Moreover, to test the robustness of our forecasts, a series of tests were conducted to observe the resulting change in valuation, after which we provided a recommendation to potential investors based on all these factors. Our analysis led us to the conclusion that Porsche's decision to separate from Volkswagen and go public was well taken. Porsche is very well positioned strategically and is preparing to capture important trends in the industry, which have the potential to catapult Porsche into a global leader in the luxury automotive industry. Its sense of innovation and commitment to sustainability are highlighted. Porsche's financials are solid and still present margin for improvement. We concluded the market's current valuation far understates the company's intrinsic valuation, representing a great investment opportunity.

In this individual report, we will go through the foundation stone of our joint report. Firstly, we will dive into Porsche's rich history, going from small projects and consulting services to building some of the most appreciated cars. Then, we will analyse its recent IPO and its subsequent shareholder structure, trying to understand how that will affect Porsche's valuation, without forgetting to mention its current business model. Afterwards, we will investigate important financial indicators comparing with its peers, to determine how it has performed in managing liquidity and how efficient its processes are, while also understanding how it has decided to finance its operations and investments, and most importantly, how profitable it has been. Having understood its past, we will then look at how Porsche will evolve, seeing if and how it will manage to grow its sales and improve its production processes to increase profitability.

The comprehension of this part will prepare us to dive deep into the valuation of Porsche, covered by my pair, which opens with an important analysis of the competitive setting it is inserted in, identifying the competitors and trends. Then, a small analysis of macroeconomic factors affecting Porsche will also be provided. Afterwards, the whole process leading to the valuation of Porsche will be covered, from which a share price will be extracted and run through a series of tests, seeing how it will react to changes in important factors, which simultaneously test the robustness of our assumptions. Finally, a final recommendation will be provided.

Company Description

Company History



Fig. 1: Ferdinand Porsche, company founder
Source: Wikipedia



Fig. 2: (Left) Egger-Lohner C.2 Phaeton, Porsche's first contribution. (Right) Lohner-Porsche Electromobile, designed by Porsche, first hybrid-electric car
Sources: Flickr, Supercars.net



Fig. 3: Volkswagen "Beetle", the design that catapulted Porsche
Source: Wikipedia



Fig. 4: Several generations of Porsche 911, the icon of the Porsche brand
Source: Road & Track

The story of Porsche begins with its founder, Ferdinand Porsche. A young inventive engineer from Czech Republic with a passion for electricity, started working at Bela Egger & Co in Vienna, where he built the company's first electric wheel-hub motor. Around this time, automobiles were beginning to appear in the region. In 1898 he moved to Jakob Lohner & Co, where he helped develop a car for the first time, the Egger-Lohner C.2 Phaeton, a wooden carriage with an electric motor attached to it. In 1890, Porsche added an Internal Combustion Engine to power the electric motors, thus creating the first gasoline-electric hybrid car in history, the Lohner-Porsche Electromobile. Over time, Ferdinand Porsche became known as one of the best engineers and car designers of his era. This led Ferdinand to create his own car company in 1931, Porsche GmbH. Initially, Porsche only offered consulting and motor development projects for other car manufacturers. Later, a special request from the German government to create the "Volkswagen", the people's car, would change the path for the Porsche company. The idea was to build a car so cheap many engineers considered impossible to build. Ferdinand Porsche's design won the contract and built what would become one of the most successful cars in history, the Volkswagen Type 1, also known as "Beetle". During the Second World War, Porsche helped the war effort by designing some military vehicles. Porsche GmbH grew substantially during this time, going from earning 3000 Reichsmarks in profits in 1934 to over 2 million by 1944. After the war, Ferdinand was arrested by the French Government and sent to prison for war crimes, due to his SS membership, making his son, Ferry Porsche, assume the company's leadership. His business savviness led him to establish agreements with Volkswagen, which gave the Porsche company the financial resources needed to develop its own vehicles, leading to the first car in 1948, the Porsche 356, a car heavily based on the VW Beetle. Porsche's cars went on to winning several motorsport events, such as the 24 Hours of Le Mans, and the Formula One French Grand Prix. In 1964, Porsche introduced the Porsche 911, known today as one of the most iconic sports cars in modern history, and the brand's flagship model until this day. This car was not only fast, but it was also so reliable that it is estimated that over 70% of all 911 built till this day are still on the road. Porsche built a strong reputation for sports luxury cars, but it has not been afraid to challenge this image and entering new segments, proved by its successful ventures into the SUV segment, introducing the Porsche Cayenne in 2002, which became its first four door vehicle, the sedan segment, with the Porsche Panamera

in 2009, and in the fully electric vehicle segment with the Porsche Taycan in 2019. Today Porsche is an iconic brand known for luxury, performance, and reliability. It has production plants in Zuffenhausen and Leipzig in Germany and has recently opened its first plant outside of Europe, in Kedah, Malaysia. In 2022, Porsche had 39162 employees, and sold over 300 thousand vehicles.

IPO



Fig. 5: (Left to right) Lutz Meschke, Deputy Chairman, and Oliver Blume, CEO of Porsche AG in Frankfurt for Porsche's IPO, September 2022
 Source: Porsche

Volkswagen AG announced in February 2022 the intent to realize a spin-off with Porsche. VW's incentive was to raise money to invest in electrification and automation of their cars and return some independence and entrepreneurial freedom to Porsche for it to accelerate its strategy of strengthening their luxury position¹. Around 25% of the preference shares were listed on the Frankfurt Stock Exchange under the trading symbol "P911" and identification number "PAG911" as part of the IPO, meaning only 12.5% of the total shares were floated.² The IPO took place in September of the same year. The IPO was priced at the top end of the price range at €82.50, with a market capitalization around €78 billion, making it the largest IPO ever carried out in Europe³, allowing VW to raise approximately €9.4 billion, which distributed half of those proceeds as special dividends to its investors.

The IPO was largely regarded as a success, based on the deal's order book being oversubscribed within hours of being opened⁴ and the IPO being priced at the top end of the price range. Three months later, in December, Porsche entered the DAX, the leading German stock index which tracks the performance of the largest 40 companies trading on the Frankfurt Stock Exchange, showing its quick rise in the stock market.

According to Porsche's CEO, "The fast entry was a testament to the great confidence of the capital market in our brand, our product strategy and our business model". However, the IPO has received criticism from some investors, due to the limited independence it granted to Porsche, because of sharing the same CEO as Volkswagen's Oliver Blume⁵, and the investors owning public shares of Porsche having no say on how the company is run. Because of this decision, we believe Porsche is not fully exploiting its potential in the financial markets, and a greater participation from owners of Porsche shares in the decision-making of the company, as well as a clear detachment from Volkswagen influence and decision-making, would be seen favourably and improve the public's valuation of the company.

Share Details / Shareholder Structure

Porsche AG's subscribed capital in the form of no-par value bearer shares comprises a total amount of 911 million shares, of which 50% are unlisted ordinary shares and 50% are listed preferred shares without voting rights. Each share represents a notional interest in the share capital of 1 euro, totalling a subscribed capital of €911 million. Holders of non-voting preferred shares receive an additional dividend of €0.01 per preferred share above the dividend allocable to the ordinary share⁶. As can be seen in *figure 6*, 75% of the ordinary shares minus one ordinary share are held by Volkswagen AG (indirectly via Porsche Holding Stuttgart GmbH). Porsche Automobil Holding SE, which is owned by the Porsche-Piëch family, directly holds 25% of the ordinary shares plus one ordinary share, granting it a blocking minority since the IPO.

The Porsche-Piëch family acquired decision-making power and can now better control the destiny of the Porsche brand, which is progressively standing on its own, away from the Volkswagen juggernaut and following its own path to develop faster, which is key in the age of electrification of the automotive industry. It must also be noted that Porsche Automobil Holding SE owns a majority of the voting rights of Volkswagen AG itself, hence, the Porsche-Piëch family holds a firm control over Porsche AG, both directly and indirectly.

This robust system gives Porsche the benefit of stability, and prevents sudden changes in management, mitigating some risks and providing public confidence. However, it comes with a drawback, which is the lack of representation from investors in the decision-making process, fundamentally leading to an undervaluation of the company's shares, as the shares that are accessible to investors are less powerful, only entitling to a portion of the company's capital.

75% of the preferred shares are indirectly held by Volkswagen AG via Porsche Holding Stuttgart GmbH. Followed by VW, the Qatar Investment Authority is the second largest owner, holding 4.99% of the preferred shares, having committed to it since the IPO. The remaining 20.01% of the preferred shares, or 10% of Porsche's total capital, are in free float.

Fig. 6: Porsche AG ownership structure
 Source: Seeking Alpha

Only 10% of Porsche's total capital is accessible to institutional and retail investors

Model	Segment	Drive-type
911	Sports Car	ICE
718 Boxster/Cayman	Sports Car	ICE
Macan	SUV	ICE
Cayenne	SUV	ICE/PHEV
Panamera	Executive Car	ICE/PHEV
Taycan	Executive Car	BEV

Table 1: Current Porsche line-up

Business Model / Units

Porsche AG's main business purpose is to manufacture and sell luxury sports cars, engines, and all kinds of related parts and components. (*Table 1*) Porsche offers

its customers three different drive systems: fully electric vehicles (BEV), plug-in hybrids (PHEV), and pure internal combustion engines (ICE), under 6 different models, the 718, 911, Cayenne, Macan, Panamera, and Taycan, across the SUV, Sedan, and Coupe category. Each model is available in different versions, for example as a Turbo, Targa or Carrera. In total there are 95 different variants. As such, Porsche operates in two main areas: Automotive and Financial Services.

The automotive segment includes the production, development and sale of vehicles and other related services. The financial services segment, comprising customer and dealer financing, a leasing business, as well as mobility services and other finance-related during the historical period, and expect it to grow in upcoming years (Fig. 7), as will be analysed in the forecasting section of this report. Both segments are directly related to each other.

Porsche has a sales network of 900 sales partners present in more than 120 markets worldwide. (Fig. 8) In 2022, Porsche's largest market was Europe with 30% of sales (63% of those sales being made in Porsche's home country Germany), closely followed by China, representing 30% of sales, and North America with 26% of sales. The Rest of the World accounted for 14%. Porsche presents a well-diversified portfolio of sales all around the globe, although it could improve its position in ROW, where a lot of potential lies for the future of the automotive industry.

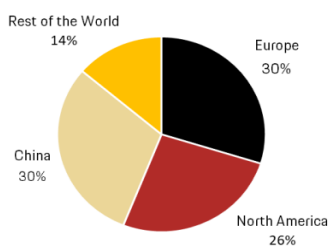


Fig. 8: Porsche AG's sales distribution by region in 2022
 Source: Porsche

Porsche's product strategy aims to electrify its current product portfolio, with a goal of over 50% of new vehicles delivered to be electrified by 2025 and over 80% to be fully electric by 2030. As of most recently, in Q3 2023, Porsche has achieved a 11.6% automotive BEV share, still far from its objective. Additionally, Porsche is investing in the creation of e-fuels⁷, a synthetic fuel, to reduce the CO2 emissions of its ICE vehicles.

Company Analysis

Liquidity Analysis

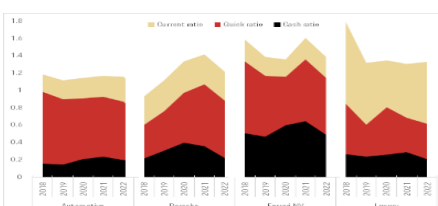


Fig. 9: Historical liquidity ratios of Porsche and peers
 Sources: Porsche, Bloomberg, Refinitiv

Porsche has had a satisfactory situation when it comes to the availability of liquidity in the company. Looking at figure 9, except for 2018, where the global vehicle market experienced a fall in sales which had not been seen since 2009, in all other historical periods analysed, **Porsche has had a current ratio above 1**, meaning it had enough short-term assets on hand to liquidate and cover all short-term liabilities if necessary. Porsche's quick ratio has been similar to its automotive

peers, its **quick ratio has always been below 1 except for 2021**, showcasing some dependence on its inventories and the possibility of facing difficulties in paying its creditors if it were to suffer a sudden interruption, although it has shown an increasing trend since 2018. Its quick ratio is most similar to its automotive peers, better than its luxury peers, which have higher stocks of inventory, but worse than Ferrari, due to the exclusivity factor, where Ferrari practically produces on demand, needing less inventories. Porsche wants to get closer to this principle, and secure a healthier liquidity situation, but it still has room for improvement. Similarly, looking at the cash ratio, which only considers assets which are immediately available to be liquidated, Porsche has maintained a **low cash availability**, similar to its automotive and luxury peers. This ratio has fluctuated around 0.2, meaning that the company only has enough cash to cover roughly a quarter of its current liabilities. This is a dangerous sign, in case of a continued unstable situation in the global economy, as it tries to recover from the downturn caused by the Pandemic while navigating wars and an uncertain financial system, which Porsche will need to address. Porsche should work on increasing its cash reserves closer to Ferrari, which has maintained a cash ratio of around 0.5. This is due to companies focused on luxury goods being more susceptible to the volatility of the economy. Regarding Net Working Capital (NWC) (*fig.10*), apart from 2018 where both Porsche and Ferrari faced difficulties, the **NWC of Porsche and its peers has always been positive**, showing solid financial health. Porsche has had a NWC closer to its luxury peers, but still higher, which could be due to characteristics of the automotive industry, which have far higher NWC.

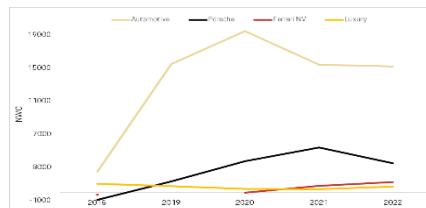


Fig. 10: Historical Net Working Capital of Porsche and peers
 Sources: Porsche, Bloomberg, Refinitiv

Cash Flow Management Analysis

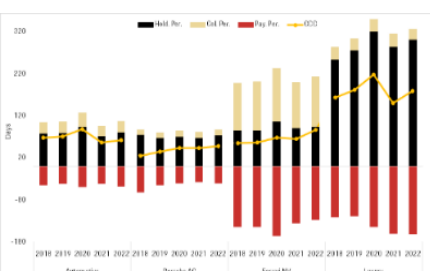


Fig. 11: Historical Cash Flow Management of Porsche and peers
 Sources: Porsche, Bloomberg, Refinitiv

When it comes to how efficient Porsche is in managing cash flows from its operation, this can be analysed by looking at the **average holding, collection, and payable periods**, and finally the **cash conversion cycle** which combines these three metrics. **Porsche has had an impressive performance between 2018 and 2022 among these metrics.** As can be seen in *figure 11*, on average, it has had an average holding period comparable (slightly better, in 2022, 74 vs 82 days) to its automotive peers, meaning it has been able to convert its inventories into sales as quickly as other manufacturers which produce in higher scale and sell at lower prices, having higher inventory turnovers, which is impressive considering Porsche sells more expensive vehicles, which usually take longer to find a buyer. To prove this point, Ferrari had an average holding period of 95 days in 2022, 22% more than Porsche. This performance can be attributed to its great sales network

distribution, being present in over 128 countries with 900 sales centres. Its average collection period has also been impressive, outperforming all of its peers, meaning it has been able to receive payments for its goods and services quicker than everyone else. For example, in 2022, Porsche had an average collection period of 13 days, while Ferrari took 119 days, showing great performance from its financial services segment. Finally, its average payable period has not been as positive as the other metrics. Porsche has had an average payable period comparable to its automotive peers, of around 45 days, while Ferrari and its luxury peers had around 140 days, meaning it can afford less time to pay its suppliers, but perhaps could be a strategic choice made by Porsche to earn trust from its supplier network when times were tough, by paying earlier than most. Overall, between 2018 and 2022, Porsche achieved a very strong cash conversion cycle, taking on average approximately 48 days for an operational cycle to convert into cash, better than all of its peers, which could explain Porsche's low cash ratio, as it is confident on its cash flow efficiency.

However, the most recent data released by Porsche for these metrics, in the first half of 2023, show a very different scenario, where its average holding period has more than doubled, as well as the average collection period doubling, although it did manage to triple its average payable period. Its cash conversion cycle has worsened, almost doubling, meaning Porsche is taking longer to convert sales to cash, but is still showing good signs of performance compared to its peers in 2022. It remains to be seen if its peers have improved their situation during 2023 and diminished Porsche's advantage.

Capital Structure Ratios

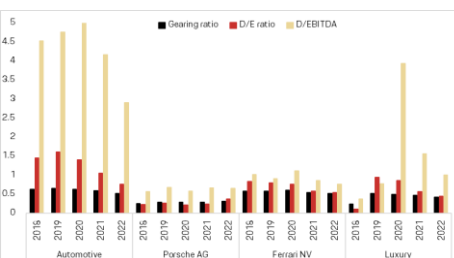


Fig. 12: Historical Capital Structure ratios of Porsche and peers
 Sources: Porsche, Bloomberg, Refinitiv

It is also imperative to analyse the mix of debt and equity that a company uses to finance its operations and growth. Looking at Porsche (*fig.12*), compared to its peers, it has opted to follow a rather **conservative capital structure**. This is seen by three main ratios. Firstly, the **gearing ratio**, which measures the amount of invested capital which comes from debt, has revolved **around 30%**, with an increasing tendency, against 54% for Ferrari, 58% for automotive peers and 45% for luxury peers, which have all shown decreasing trends. Regarding the **debt-to-equity ratio**, Porsche revolved around 0.25, having made a jump to **0.38 in 2022**, following its IPO. This value is still lower than Ferrari (0.54), Luxury peers (0.45) and Automotive peers (0.77). We can expect Porsche to increase this ratio in upcoming years, as its independence from Volkswagen, and its transformative projects, will require a higher level of leverage. The **debt-to-EBITDA** ratio has

shown the same tendency, Porsche exhibiting a lower ratio than its peers, which is more or less stable at around 2022's value of **0.65**.

Profitability Analysis

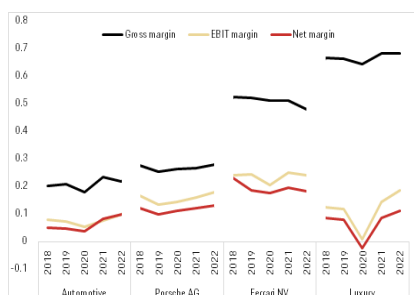


Fig. 13: Historical Profitability ratios of Porsche and peers
 Sources: Porsche, Bloomberg, Refinitiv

Regarding Porsche's operations, after a fall in 2019, it has seen a steady increase since and **reached in 2022 all-time highs of 28% in Gross Margin, 18% in Return of Sales (EBIT margin) and 13% in Net Margin**. These increases correlate with Porsche's separation from Volkswagen, from which point its focus on strengthening its position as a luxury automaker and practising higher average prices could explain this success. However, (*fig.13*) looking at its peers, we can see that there is **still room for improvement**, as companies focused on luxury goods exhibit higher gross margins, allowing for a bigger potential EBIT and Net margins, meaning more profitability, as is well showcased by Ferrari.

Porsche's ROIC and ROE have shown a similar increasing trend after a fall in 2019, showing great signs of profitability.

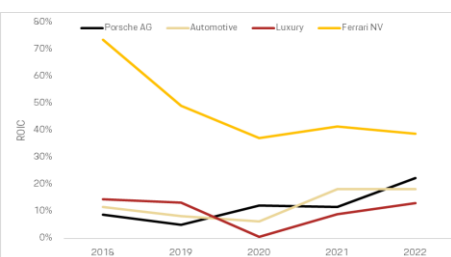


Fig. 14: Historical ROIC of Porsche and peers
 Sources: Porsche, Bloomberg, Refinitiv

Regarding the ROIC (*fig.14*), it has increased due to both the core business and the non-core business. The core ROIC saw an increase due to improvements in operational margin and assets turnover, a testament to Porsche's ability to continuously improve its operational efficiency. The non-core ROIC turned profitable, showing good performance from Porsche's investments. The weighted ROIC has mainly come from its core business, which is to be expected, however, the massive hike seen in 22 % had a great contribution from the non-core ROIC, which could be a result of reorganization post-IPO, improving the performance of Porsche's investments, which were more focused on Porsche itself, detached from the Volkswagen group. Porsche has shown good progress in its ROIC against other peers' ROIC, having overtaken both its automotive and luxury peers between 2018 and 2022 and closing the gap to Ferrari. In 2022, Porsche's ROIC of 22% far exceeds its estimated WACC, meaning it created value through profitable projects.

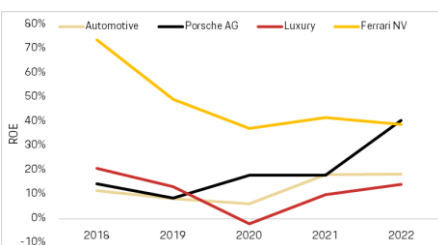


Fig. 15: Historical ROE of Porsche and peers
 Sources: Porsche, Bloomberg, Refinitiv

Regarding Porsche's ROE (*fig.15*), it managed to overtake its luxury peers and Ferrari in 2022. In 2022, Porsche's ROE was 41%, showing that it is able to efficiently use its shareholder's equity to generate income, a great indicator for a company that was recently listed, which should create excitement among investors and create more demand for its shares, if this performance continues.

Forecasting

Sales

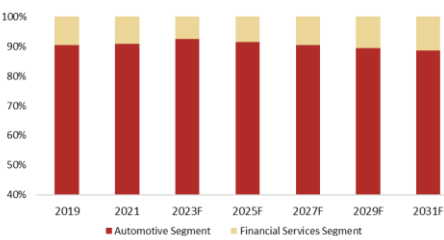


Fig. 19: Weight of each segment on total Revenues

Sources: Analyst Estimates

To breakdown and forecast the sales of the Porsche AG group, we must firstly recognize that Porsche's revenues consist of two different segments, the automotive one, responsible for the manufacture and sale of vehicles and related products, and the financial services, responsible for providing credits and other financial services for Porsche's clients in the acquisition or leasing of a vehicle. Due to the latter being directly dependent on the performance of the former, a simple assumption was made in determining its revenues, (*fig.19*) assuming a 1% decrease in its weight to total revenues in 2023 due to rising interest rates, and a 0.5% increase from 2024 onwards as we expect a continuous improvement in the penetration of financial services globally, especially in China and other rising economies. Secondly, it must be understood that to determine the total sales revenue component, the average vehicle price and the number of vehicles delivered must be estimated.

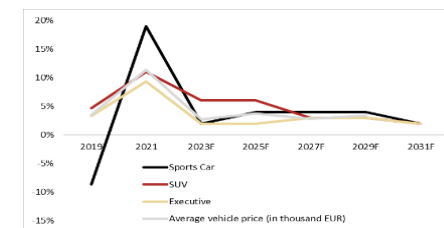


Fig. 20: Porsche's vehicle price growth by segment, historical and forecast, in %

Source: Analyst Estimates

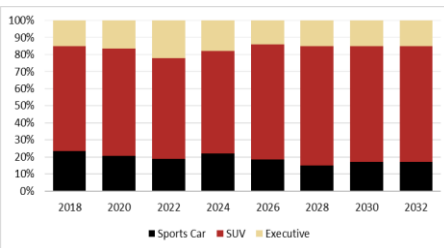


Fig. 21: Porsche's portfolio weight per segment

Sources: Analyst Estimates

To estimate the average vehicle price for Porsche, its vehicle deliveries were broken down among three segments following their model characteristics. The addition of the K1 model to the SUV lineup, expected to release in 2027, was also included in the forecast. We expect all segments to see **their prices increase** (*fig.20*), with the **SUV segment expected to see the highest increase**, with a 4.5% CAGR in average prices between 2024 and 2030, boosted by the addition of the new flagship SUV model, the K1. The Sports Cars segment is expected to see a 4.3% increase, with the addition of a PHEV version 911 expected in 2024 and a BEV version of the 718 expected to **increase average prices**, along with Porsche's aim to position itself as a luxury automaker, similarly to Ferrari, which will equate to more expensive one-off or limited edition models, showcased for example by Porsche's Mission X⁴¹, revealed in June 2023, a hypercar with 1500bhp and the aim of becoming the fastest road-legal car. The Executive/Luxury will see **the lowest increase, at a CAGR of 3.2%**, with only a Panamera BEV version expected to release in 2027. We expect Porsche's **average vehicle price to increase 3.8%** between 2024 and 2030, above inflation expectations. (*Fig.21*) This is boosted by an expected increase in importance of Porsche's SUV sales to the overall portfolio, which will grow from 57% at the end of 2023 to 68% in 2030. From 2030 onwards, the average price of all segments are assumed to grow constantly at the long-term global inflation rate of 2%.

To estimate the number of units delivered by Porsche, we chose to break it down per region (Europe - EU, North America - NA, China - CN, Rest of the World - ROW). Following this, the revenues in the vehicle industry for each region were forecasted using a forecast of the average revenue per vehicle and a forecast of vehicle units sold in the region. (*Fig.22*) In EU and NA, unit sales of vehicles are

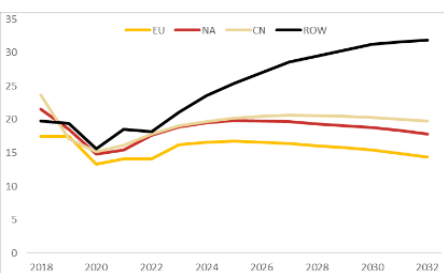


Fig. 22: Automotive Industry Unit Sales per region, in millions

Sources: Statista, Analyst Estimates

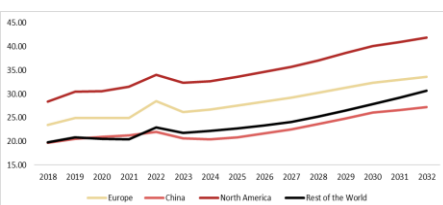


Fig. 23: Automotive Industry Average Revenue per Unit, in thousand Euros
 Sources: Statista, Analyst Estimates

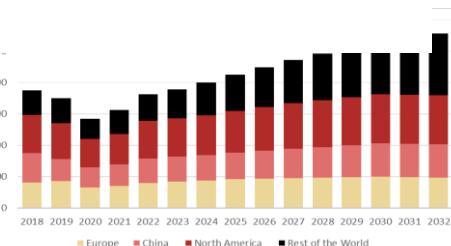


Fig. 24: Global Annual Car Revenues, in Billion Euros
 Sources: Statista, Analyst Estimates

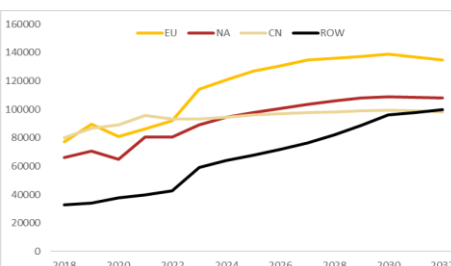


Fig. 25: Porsche's deliveries per market
 Sources: Porsche, Analyst Estimates

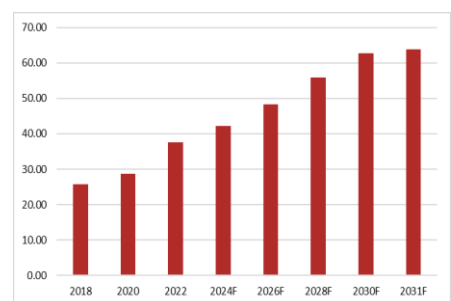


Fig. 26: Porsche's Total Revenues, in billion euros
 Source: Analyst Estimates

expected to drop as soon as 2026, due to several factors, such as aging demographics, rising car prices coupled with drops in real purchasing power, and lower need for private vehicles due to the increase in shared mobility, better developed public infrastructure and new, more efficient ways of transportation. CN is also **expected to fall behind this trend**, but later around 2028. In the long run we **expect falls in unit sales in these markets of around 3.5%, 2.5% and 1.5%** per year respectively. ROW is expected to see a **rapid growth** in the first years of the forecast, as some of the biggest markets in the world, such as India, Nigeria and Brazil accelerate the development of their infrastructure, allowing for a **gradual global convergence** in the vehicle industry to the market leaders (Europe, NA, China). ROW will become the largest market for vehicles, to reflect this, we expect a **growth rate of 1%** of unit sales in the long run. As for the average revenue per vehicle (*fig.23*), NA is expected to continue being the biggest spender, followed by EU. CN and ROW are expected to grow at a faster rate during 2024-2030. In the long run, all markets are assumed to grow in this value driver at the long-term inflation rate. Having obtained the two value drivers, revenues in the automotive industry could be estimated (*fig 24*). Regarding the growth of Porsche's deliveries in each market (*fig.25*), they are expected to be positive in all markets during 2024-2030 (EU: 2.3%, CN: 0.8%, NA: 2.4%, ROW: 7%), as the number of High and Ultra High Net Worth Individuals (HNWI and UHNWI) around the globe is expected to increase, boosting the demand for luxury vehicles. However, Porsche will only partly be able to counter the trend of decreasing unit sales in the long run, as we expect its unit deliveries to fall in all markets (EU: -2%, CN: -0.5%, NA: -1%) except ROW (1%), but at a lower growth rate than the market, reflecting the idea that luxury automakers will have bigger market shares in the long-run, since the overall number of cars sold will be lower and ownership of a new car will be more common among wealthier individuals, due to rising car prices.

Having obtained the expected number of vehicles delivered by Porsche through its growth in each market and the average selling price through the analysis of deliveries per segment, it is possible to obtain the total sales revenue by multiplying the two value drivers. (*Fig. 26*) For the growth stage (2024-2030), we expect a CAGR of 6.8%, which will allow it to increase total sales revenues by almost 50% between these dates. As for the maturing stage (2031-2040), we expect it to be lower at 1.8%, closer to expectations of global GDP growth in the long run.

Operating expenses

Operating expenses include two main items, **cost of sales** and **selling, general and administrative expenses**.

Cost of sales, also known as costs of goods sold (COGS), mainly comprise **cost of production materials**, but also include **Research and development costs** (R&D), depreciation and amortization expenses (D&A), non-staff overheads, personnel expenses, additions to warranty provisions and interest and commission expenses related to the financial services division. It is important to note that D&A and personnel expenses are spread throughout SG&A and cost of sales, with no information on their weighed allocation.

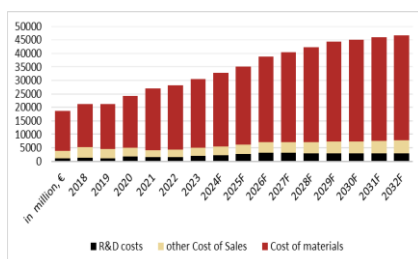


Fig. 27: Cost of Sales Breakdown
 Sources: Analyst Estimates

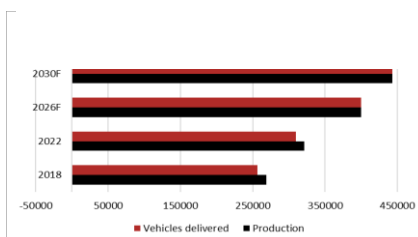


Fig. 28: Deliveries vs Production
 Sources: Analyst Estimates

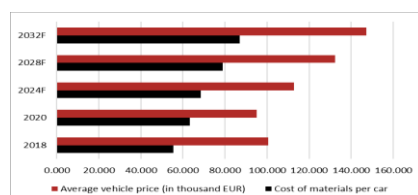


Fig. 29: Average Revenue per unit vs Cost of Material per car (in thousand)
 Sources: Analyst Estimates

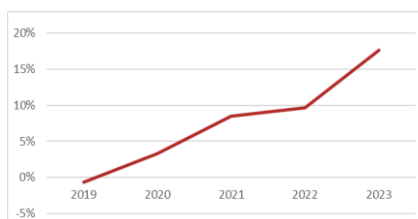


Fig. 30: Historical Total R&D annual growth rate
 Sources: Analyst Estimates

To forecast the COGS, we have broken down the item into cost of production materials, R&D, and other expenses into “other cost of sales”. Other expenses will be maintained at 7.1% throughout the forecasted period (*fig.27*).

The major expense incurred in the COGS is the cost of materials, mainly comprising expenses on raw materials, consumables, supplies, and purchased merchandise, but also incurring expenses on purchased services. We have mixed this item in average cost of material per vehicle and production. This expense rose substantially in the last 3 years recorded by the company (2020-2022), from 56% of revenues in 2019, to 61% in 2022, with its highest growth in its material cost per vehicle, of 11%, in 2022. Factors, such as the disruption in the supply chains, increasing cost of commodities contributed to the increase in this cost margin. Nevertheless, commodities prices are expected to decrease this year, and as such we expect costs of materials per car **to drop by 6%** by the end of 2023. Porsche will capitalize on the decrease in cost of commodities, and is expected to **increase production by the end of this year by 11%**. Looking forward, we expect production of vehicles to **grow at the same rate as deliveries, but one year in advance** (*fig.28*). We expect Porsche to capitalize on the cost of material per vehicle, and widen the margin between material cost and revenue per vehicle, indicative of **Porsche’s pricing power and more efficient manufacturing and operating processes**, and thus, we anticipate the cost of material per vehicle to **grow at a lower rate than the average revenue per vehicle** from 2024 to 2030 (*fig.29*). We have reflected this assumption by **decreasing the cost of material margin by 0.3% from 2024 to 2027 and by 0.2% from 2028 to 2030**, where it will remain the same at **59% of revenues from 2031 onwards**.

Regarding R&D, Porsche has been **increasing** its investment in technological advancements, mainly in pursuing their electrification strategy, but also in digitalization, and autonomous driving processes (*fig.30*). The latest increase in the investment in R&D was **driven primarily by rising expenses for projects**

Model	Segment	Drive-type	Future projects
911	Sports Car	ICE	(added PHEV from 2024 onwards)
718 Boxster/Cayman	Sports Car	ICE	(added BEV from 2025 onwards)
Macan	SUV	ICE	(added BEV from 2024 onwards)
Cayenne	SUV	ICE/PHEV	(added BEV from 2026 onwards)
Panamera	Executive/Lux Car	ICE/PHEV	(added BEV from 2027 onwards)
Taycan	Executive Car	BEV	
KT	SUV	BEV	(expected to release in 2027)

Table 2: Porsche's vehicle line-up by segment roll-out program

Sources: Porsche, Various news outlets

that were close to the start of series production (table 2). Nevertheless, by increasing its capitalization ratio since 2019, it has been able to keep R&D expense margins at an historical average of 4% of total revenue. Despite their ability to maintain cost margins, the capitalization ratio in 2023 was 77%, and as such, there is not much room left to decrease the amount incurred. Looking at the following 4 years, we expect Porsche to heavily invest in R&D, particularly in their expansion of BEV in their various segments, to try and maintain their target release dates of their new BEV models, and sustain their competitive edge. Thus, we expect Porsche AG to **increase R&D expenses margin yearly by 0.5%** until 2027. From 2028 to 2030, when the expected release of the new BEV models is done throughout all its vehicle segments, we expect R&D costs to decrease again, hence assuming a **decrease in the R&D expenses margin of 0.5% per year**. From 2031, onwards, we predict the **R&D margin to be stable at 4% of total revenues**, which is back to their historical average.

Selling, general and administrative expenses (SG&A), other item of operating expenses, is composed by distribution expenses and administrative expenses, as they are the two cost items used in the consolidated income statement of Porsche's annual reports (fig.31).

Distribution expenses comprise D&A charged on distribution, personnel expenses, and non-staff overheads, shipping, marketing and sales promotion expenses. Distribution expenses has seen **a continuous reduction in its ratio**, as % of revenues, since 2018. However, by the end of 2023, an increase is expected in these expenses to 6.89% of total revenues, compared to 6.25% of total revenues in the prior year, primarily related to the **increase in marketing activities, the digitalization strategy, and the stronger involvement in motor sports**⁴³. Nevertheless, not only by following its historical trend, but also knowing that Porsche's future strategy focuses heavily on cost optimization, we believe Porsche will leverage from its digitalization and more efficient distribution processes to reduce this item expenses margin. Thus, we **predict a gradual decrease of this item costs margin of 0.2%** for the forecasted period, until 2030, where it will remain at **5.5% in perpetuity**.

Administrative expenses **mainly include personnel expenses**, but also non-staff overheads and D&A in the administrative function. While personnel expenses are not reported as a separated line of item, being partially incurred in both Cost of Sales and SG&A, they are the **main value driver for this item**. To forecast these expenses, we have divided them by the **number of full-time employees (FTE's)**, and the **average cost per worker**. High investment on more efficient and productive production facilities, plus their focus on digitalization, we believe that

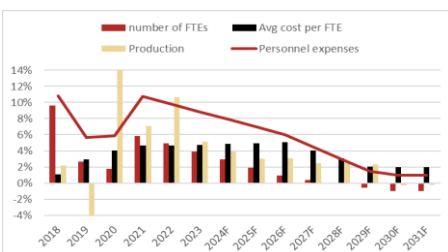


Fig. 32: Personnel Costs Growth Breakdown
 Source: Analyst Estimates

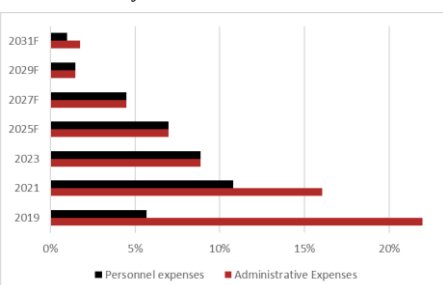


Fig. 33: Administrative Costs Growth Breakdown
 Sources: Analyst Estimates

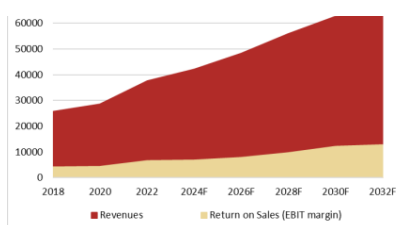


Fig. 34: Porsche's Return on Sales projections
 Sources: Analyst Estimates

many jobs will slowly be replaced and eventually cease to exist. While there are going to be new jobs that will be created, we expect that the number of employees needed for such areas will not cover the amount of jobs that will slowly disappear (factory workers, customer service)⁴². As such, for the forecast, we assumed it to **grow at a decreasing rate of 1% per year**, of its the historical CAGR, from 2024 to 2027, and from 2028 to 2030 a **decreasing rate of 0.5%**. In the maturing stage, we assumed a **decline in the number of FTE's of 1%** in perpetuity. Despite a slower growth rate and eventual decline in the number of new FTEs in our forecasted period, the emerging workforce will demand higher education, experience, and specialization. This shift is attributed to the increasing role of automation, innovative technologies, and strong focus on sustainability. The jobs to be created will be **more aligned with these advanced skill sets**, contrasting the jobs being replaced, which are predominantly mechanical. As such, we forecast the average cost per employee to grow by and **increasing rate 0.1%** annually, from 2024 to 2027. From 2027 to 2030, we believe average cost per employee will **grow at a decreasing rate of 1% per year** from 2028 to 2030, and and from 2031 onwards, **average cost per employee's growth rate will be at 2%**, in line with global inflation. By multiplying these two value drivers, it gives us the personnel expenses for the forecasted period (*fig.32*). As this is the main expense item of administrative expenses, we have **assumed that it will follow the same growth trend as the costs in personnel** (*fig.33*). This results in an increase in administrative expenses margin until 2026 (**4.9%**), and from 2027 to 2030 will decrease, to a **perpetuity administrative cost margin of 4.4%**.

These assumptions resulted in a lower total operating cost margin, of 80.5%, and a subsequent return on sales of 19.5% (*fig.34*).

CAPEX

Apart from strategic investments in up-and-coming companies in the energy sector and development of batteries, Porsche has also made significant efforts in the area of Research and Development in making its vehicles more environmentally friendly, which has been the biggest factor in driving capital expenditures. In 2022, more than half of R&D expenses were related to the transition of the current lineup to electromobility, particularly in the development of a fully electric Macan, Cayenne and 718 and hybrid-combustion models for the 911, Cayenne and Panamera. In the area of R&D, Porsche AG increased its employee count from 5807 in 2021 to 6299 in 2022, showcasing a strong commitment. Furthermore, in 2022, Porsche has also added a further development location in Shanghai, with the aim of strengthening the level of understanding of Chinese customers and

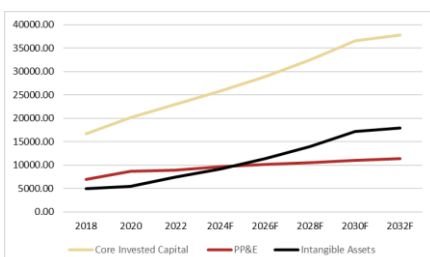


Fig. 35: Historical and forecasted CAPEX items

Sources: Analyst Estimates

knowledge of their requirements, as it tries to tackle the complex Chinese market, and opened a small-scale assembly plant in Kedah, Malaysia, which will match local requirements and, for now, will only be available for Malaysia⁴². These developments are also caused by Porsche's split from Volkswagen. Although the two companies will continue their industrial and strategic cooperation, Porsche will need to strengthen its own capacities to stand on its own feet and **tackle the challenge of electrification of the vehicle industry**. In the forecasted periods, (fig.35) the Intangible Assets were assumed to continue **growing strongly at the historical rate** (CAGR of 2018-2022: 11%), as Porsche continues seeking its objective of obtaining 80% of sales from BEVs by 2030. After 2030 this item is assumed to grow at the **long-term growth rate of the economy** (2%), as Porsche maintains some R&D capacity in a constantly evolving industry.

As for PP&E, Porsche has increased its investment growth in 2022, which is shown by the examples of the R&D centre in China and assembly plant in Malaysia. It has also made a 250 million euros investment in extensive upgrades in the Zuffenhausen production plant for the future, to continuously improve processes and accommodate newer EV models. This investment is expected to continue in the future, especially with the new K1 model, we can expect Porsche to invest substantially in the first years of this transformation. (Fig. 35) We expect the growth in **PP&E to be stronger, by the end of 2023 than in 2022, at 4%**, at which point it will start decreasing its growth rate by **0.5%** until 2027. From 2027 onwards we expect the investment in PP&E to slow down to the long-term global GDP **growth rate of 2%**.

These assumptions will lead to a long-term lagged core **return on Invested Capital of 24.2%**

Capital Structure

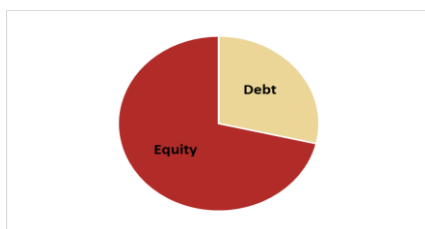


Fig. 36: Porsche's fixed Capital Structure Projection (Book Value)

Sources: Analyst Estimates

When Porsche was a subsidiary of Volkswagen AG, it opted for a capital structure with low leverage, **with a D/E of around 23%**. However, since its IPO, Porsche has shifted to a higher level of leverage, with data obtained in 2023 indicating a ratio of around **40%**, which we assumed to remain constant. Its independence from the goliath Volkswagen group, as well as its necessity to finance its transition to electric vehicles has dictated a higher level of leverage which we **assume will be maintained through the forecasted periods**, as we believe Porsche will expect to raise future debt through the increase of its equity, which is expected to grow due to **Porsche's strategy of positioning itself as a luxury automaker (fig.36)**.

DR. ING. H.C. F. PORSCHE AG

AUTOMOTIVE INDUSTRY

STUDENTS: DINIS TORRES AND LUÍS GARCIA

COMPANY REPORT

20 DECEMBER 2023

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Porsche AG: Equity Research

*Delving into the Depths of Porsche's Business Strategy
and Corresponding Valuation*

▪ Despite economic uncertainty, followed by the war in Ukraine and other current geopolitical tensions, we expect Porsche to leverage from both, **being a luxury brand and its mass production capacity**, to continue its robust financial performance, and predict Revenues to increase at a CAGR of 5.5% from 2024 to 2032, and a stronger return on sales of 19.5%.

▪ **The transition from Internal Combustion Engines to Electric Vehicles**, remains Porsche's key focal point in its business strategy. Porsche's vision aims for more than 50% of new vehicles delivered to be electrified by 2025, and by 2030, 80% of new vehicles sold to be fully electric.

▪ **High investment in R&D** will be crucial to assure Porsche's scheduled upcoming rollout of electrified versions of its vehicles and guarantee a smooth transition into Electric Vehicles. Thus, despite its challenges, we expect Porsche to continue being one of the leaders in luxury EV manufacturing.

▪ **Its robust sales network of 900 sales partners** present in more than 120 markets, and its unique position, will enable Porsche to leverage from the strong growth of the automotive industry in emerging markets, to increase sales and further gain market share in both its key, and other developing markets worldwide.

Company description

Porsche is an iconic brand known for luxury, performance, and reliability, with a strategic vision towards sustainability. It has production plants in Zuffenhausen and Leipzig in Germany and has recently opened its first plant outside of Europe. In 2022, Porsche had 39162 employees, and sold over 300 thousand vehicles globally.

Recommendation: BUY

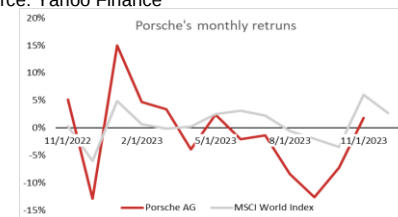
Price Target FY24: 111.88 €

Price (as of 2-Mar-24) 81.26 €

Yahoo Finance

52-week range (€)	80.28-120.45.
Market Cap (€m)	102405.28
Outstanding Shares (m)	911
Other (...)	

Source: Yahoo Finance



Source: Yahoo Finance

(Values in € millions)	2022	2023E	2024F
Revenues	37 630	39 056	42 183
Automotive Revenues	34439	36 134	38 817
Gross Profit	10 546	10 914	11 704
Gross Margin (%)	28	27.9	27.7
EBIT	6 538	6 395	6 892
Return on Sales (EBIT %)	17.4	16.4	16.3
Core Invested Capital	22 941	24 252	25 788
Lagged Core ROIC (%)	21.5	19.8	20.1
EPS	7.58	6.71	6.79
P/E	12.6x	12x	16.6x
Dividends per share	1.01	1.01	1.01

Source: Analyst estimates

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Company Description

Company History



Fig. 1: Ferdinand Porsche, company founder

Source: Wikipedia



Fig. 2: (Left) Egger-Lohner C.2 Phaeton, Porsche's first contribution. (Right) Lohner-Porsche Electromobile, designed by Porsche, first hybrid-electric car

Sources: Flickr, Supercars.net



Fig. 3: Volkswagen "Beetle", the design that catapulted Porsche

Source: Wikipedia



Fig. 4: Several generations of Porsche 911, the icon of the Porsche brand

Source: Road & Track

The story of Porsche begins with its founder, Ferdinand Porsche. A young inventive engineer from Czech Republic with a passion for electricity, started working at Bela Egger & Co in Vienna, where he built the company's first electric wheel-hub motor. Around this time, automobiles were beginning to appear in the region. In 1898 he moved to Jakob Lohner & Co, where he helped develop a car for the first time, the Egger-Lohner C.2 Phaeton, a wooden carriage with an electric motor attached to it. In 1890, Porsche added an Internal Combustion Engine to power the electric motors, thus creating the first gasoline-electric hybrid car in history, the Lohner-Porsche Electromobile. Over time, Ferdinand Porsche became known as one of the best engineers and car designers of his era. This led Ferdinand to create his own car company in 1931, Porsche GmbH. Initially, Porsche only offered consulting and motor development projects for other car manufacturers. Later, a special request from the German government to create the "Volkswagen", the people's car, would change the path for the Porsche company. The idea was to build a car so cheap many engineers considered impossible to build. Ferdinand Porsche's design won the contract and built what would become one of the most successful cars in history, the Volkswagen Type 1, also known as "Beetle". During the Second World War, Porsche helped the war effort by designing some military vehicles. Porsche GmbH grew substantially during this time, going from earning 3000 Reichsmarks in profits in 1934 to over 2 million by 1944. After the war, Ferdinand was arrested by the French Government and sent to prison for war crimes, due to his SS membership, making his son, Ferry Porsche, assume the company's leadership. His business savviness led him to establish agreements with Volkswagen, which gave the Porsche company the financial resources needed to develop its own vehicles, leading to the first car in 1948, the Porsche 356, a car heavily based on the VW Beetle. Porsche's cars went on to winning several motorsport events, such as the 24 Hours of Le Mans, and the Formula One French Grand Prix. In 1964, Porsche introduced the Porsche 911, known today as one of the most iconic sports cars in modern history, and the brand's flagship model until this day. This car was not only fast, but it was also so reliable that it is estimated that over 70% of all 911 built till this day are still on the road. Porsche built a strong reputation for sports luxury cars, but it has not been afraid to challenge this image and entering new segments, proved by its successful ventures into the SUV segment, introducing the Porsche Cayenne in 2002, which became its first four door vehicle, the sedan segment, with the Porsche Panamera

in 2009, and in the fully electric vehicle segment with the Porsche Taycan in 2019. Today Porsche is an iconic brand known for luxury, performance, and reliability. It has production plants in Zuffenhausen and Leipzig in Germany and has recently opened its first plant outside of Europe, in Kedah, Malaysia. In 2022, Porsche had 39162 employees, and sold over 300 thousand vehicles.

IPO



Fig. 5: (Left to right) Lutz Meschke, Deputy Chairman, and Oliver Blume, CEO of Porsche AG in Frankfurt for Porsche's IPO, September 2022
 Source: Porsche

Volkswagen AG announced in February 2022 the intent to realize a spin-off with Porsche. VW's incentive was to raise money to invest in electrification and automation of their cars and return some independence and entrepreneurial freedom to Porsche for it to accelerate its strategy of strengthening their luxury position¹. Around 25% of the preference shares were listed on the Frankfurt Stock Exchange under the trading symbol "P911" and identification number "PAG911" as part of the IPO, meaning only 12.5% of the total shares were floated.² The IPO took place in September of the same year. The IPO was priced at the top end of the price range at €82.50, with a market capitalization around €78 billion, making it the largest IPO ever carried out in Europe³, allowing VW to raise approximately €9.4 billion, which distributed half of those proceeds as special dividends to its investors.

The IPO was largely regarded as a success, based on the deal's order book being oversubscribed within hours of being opened⁴ and the IPO being priced at the top end of the price range. Three months later, in December, Porsche entered the DAX, the leading German stock index which tracks the performance of the largest 40 companies trading on the Frankfurt Stock Exchange, showing its quick rise in the stock market.

According to Porsche's CEO, "The fast entry was a testament to the great confidence of the capital market in our brand, our product strategy and our business model". However, the IPO has received criticism from some investors, due to the limited independence it granted to Porsche, because of sharing the same CEO as Volkswagen's Oliver Blume⁵, and the investors owning public shares of Porsche having no say on how the company is run. Because of this decision, we believe Porsche is not fully exploiting its potential in the financial markets, and a greater participation from owners of Porsche shares in the decision-making of the company, as well as a clear detachment from Volkswagen influence and decision-making, would be seen favourably and improve the public's valuation of the company.

Share Details / Shareholder Structure

Porsche AG's subscribed capital in the form of no-par value bearer shares comprises a total amount of 911 million shares, of which 50% are unlisted ordinary shares and 50% are listed preferred shares without voting rights. Each share represents a notional interest in the share capital of 1 euro, totalling a subscribed capital of €911 million. Holders of non-voting preferred shares receive an additional dividend of €0.01 per preferred share above the dividend allocable to the ordinary share⁶. As can be seen in *figure 6*, 75% of the ordinary shares minus one ordinary share are held by Volkswagen AG (indirectly via Porsche Holding Stuttgart GmbH). Porsche Automobil Holding SE, which is owned by the Porsche-Piëch family, directly holds 25% of the ordinary shares plus one ordinary share, granting it a blocking minority since the IPO.

The Porsche-Piëch family acquired decision-making power and can now better control the destiny of the Porsche brand, which is progressively standing on its own, away from the Volkswagen juggernaut and following its own path to develop faster, which is key in the age of electrification of the automotive industry. It must also be noted that Porsche Automobil Holding SE owns a majority of the voting rights of Volkswagen AG itself, hence, the Porsche-Piëch family holds a firm control over Porsche AG, both directly and indirectly.

This robust system gives Porsche the benefit of stability, and prevents sudden changes in management, mitigating some risks and providing public confidence. However, it comes with a drawback, which is the lack of representation from investors in the decision-making process, fundamentally leading to an undervaluation of the company's shares, as the shares that are accessible to investors are less powerful, only entitling to a portion of the company's capital.

75% of the preferred shares are indirectly held by Volkswagen AG via Porsche Holding Stuttgart GmbH. Followed by VW, the Qatar Investment Authority is the second largest owner, holding 4.99% of the preferred shares, having committed to it since the IPO. The remaining 20.01% of the preferred shares, or 10% of Porsche's total capital, are in free float.

Only 10% of Porsche's total capital is accessible to institutional and retail investors

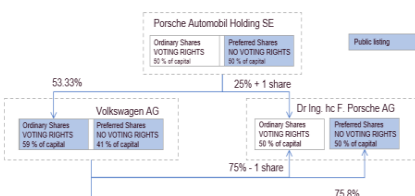


Fig. 6: Porsche AG ownership structure

Source: Seeking Alpha

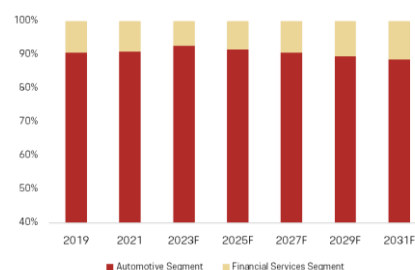
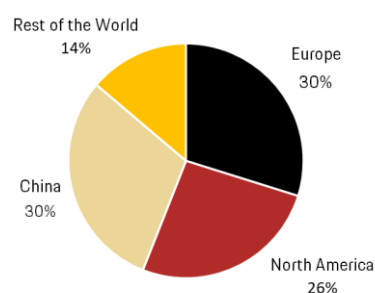
Business Model / Units

Porsche AG's main business purpose is to manufacture and sell luxury sports cars, engines, and all kinds of related parts and components. (*Table 1*) Porsche offers

Model	Segment	Drive-type
911	Sports Car	ICE
718 Boxster/Cayman	Sports Car	ICE
Macan	SUV	ICE
Cayenne	SUV	ICE/PHEV
Panamera	Executive Car	ICE/PHEV
Taycan	Executive Car	BEV

Table 1: Current Porsche line-up

Source: Porsche


Fig. 7: Porsche revenue distribution by segment

Fig. 8: Porsche AG's sales distribution by region in 2022
 Source: Porsche

its customers three different drive systems: fully electric vehicles (BEV), plug-in hybrids (PHEV), and pure internal combustion engines (ICE), under 6 different models, the 718, 911, Cayenne, Macan, Panamera, and Taycan, across the SUV, Sedan, and Coupe category. Each model is available in different versions, for example as a Turbo, Targa or Carrera. In total there are 95 different variants. As such, Porsche operates in two main areas: Automotive and Financial Services.

The automotive segment includes the production, development and sale of vehicles and other related services. The financial services segment, comprising customer and dealer financing, a leasing business, as well as mobility services and other finance-related during the historical period, and expect it to grow in upcoming years (Fig. 7), as will be analysed in the forecasting section of this report. Both segments are directly related to each other.

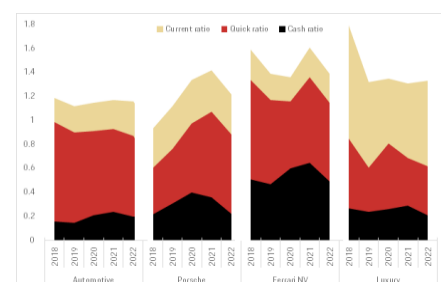
Porsche has a sales network of 900 sales partners present in more than 120 markets worldwide. (Fig. 8) In 2022, Porsche's largest market was Europe with 30% of sales (63% of those sales being made in Porsche's home country Germany), closely followed by China, representing 30% of sales, and North America with 26% of sales. The Rest of the World accounted for 14%. Porsche presents a well-diversified portfolio of sales all around the globe, although it could improve its position in ROW, where a lot of potential lies for the future of the automotive industry.

Porsche's product strategy aims to electrify its current product portfolio, with a goal of over 50% of new vehicles delivered to be electrified by 2025 and over 80% to be fully electric by 2030. As of most recently, in Q3 2023, Porsche has achieved a 11.6% automotive BEV share, still far from its objective. Additionally, Porsche is investing in the creation of e-fuels⁷, a synthetic fuel, to reduce the CO2 emissions of its ICE vehicles.

Company Analysis

Liquidity Analysis

Porsche has had a satisfactory situation when it comes to the availability of liquidity in the company. Looking at figure 9, except for 2018, where the global vehicle market experienced a fall in sales which had not been seen since 2009, in all other historical periods analysed, **Porsche has had a current ratio above 1**, meaning it had enough short-term assets on hand to liquidate and cover all short-term


Fig. 9: Historical liquidity ratios of Porsche and peers

Sources: Porsche, Bloomberg, Refinitiv

liabilities if necessary. Porsche's quick ratio has been similar to its automotive peers, its **quick ratio has always been below 1 except for 2021**, showcasing some dependence on its inventories and the possibility of facing difficulties in paying its creditors if it were to suffer a sudden interruption, although it has shown an increasing trend since 2018. Its quick ratio is most similar to its automotive peers, better than its luxury peers, which have higher stocks of inventory, but worse than Ferrari, due to the exclusivity factor, where Ferrari practically produces on demand, needing less inventories. Porsche wants to get closer to this principle, and secure a healthier liquidity situation, but it still has room for improvement. Similarly, looking at the cash ratio, which only considers assets which are immediately available to be liquidated, Porsche has maintained a **low cash availability**, similar to its automotive and luxury peers. This ratio has fluctuated around 0.2, meaning that the company only has enough cash to cover roughly a quarter of its current liabilities. This is a dangerous sign, in case of a continued unstable situation in the global economy, as it tries to recover from the downturn caused by the Pandemic while navigating wars and an uncertain financial system, which Porsche will need to address. Porsche should work on increasing its cash reserves closer to Ferrari, which has maintained a cash ratio of around 0.5. This is due to companies focused on luxury goods being more susceptible to the volatility of the economy. Regarding Net Working Capital (NWC) (*fig.10*), apart from 2018 where both Porsche and Ferrari faced difficulties, the **NWC of Porsche and its peers has always been positive**, showing solid financial health. Porsche has had a NWC closer to its luxury peers, but still higher, which could be due to characteristics of the automotive industry, which have far higher NWC.

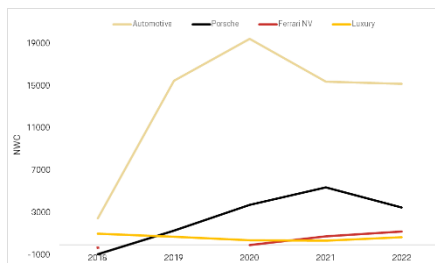


Fig. 10: Historical Net Working Capital of Porsche and peers
 Sources: Porsche, Bloomberg, Refinitiv

Cash Flow Management Analysis

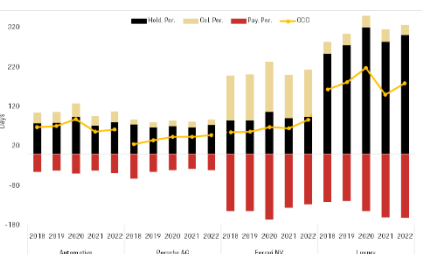


Fig. 11: Historical Cash Flow Management of Porsche and peers
 Sources: Porsche, Bloomberg, Refinitiv

When it comes to how efficient Porsche is in managing cash flows from its operation, this can be analysed by looking at the **average holding**, **collection**, and **payable periods**, and finally the **cash conversion cycle** which combines these three metrics. **Porsche has had an impressive performance between 2018 and 2022 among these metrics.** As can be seen in *figure 11*, on average, it has had an average holding period comparable (slightly better, in 2022, 74 vs 82 days) to its automotive peers, meaning it has been able to convert its inventories into sales as quickly as other manufacturers which produce in higher scale and sell at lower prices, having higher inventory turnovers, which is impressive considering Porsche sells more expensive vehicles, which usually take longer to find a buyer. To prove this point, Ferrari had an average holding period of 95 days in 2022, 22%

more than Porsche. This performance can be attributed to its great sales network distribution, being present in over 128 countries with 900 sales centres. Its average collection period has also been impressive, outperforming all of its peers, meaning it has been able to receive payments for its goods and services quicker than everyone else. For example, in 2022, Porsche had an average collection period of 13 days, while Ferrari took 119 days, showing great performance from its financial services segment. Finally, its average payable period has not been as positive as the other metrics. Porsche has had an average payable period comparable to its automotive peers, of around 45 days, while Ferrari and its luxury peers had around 140 days, meaning it can afford less time to pay its suppliers, but perhaps could be a strategic choice made by Porsche to earn trust from its supplier network when times were tough, by paying earlier than most. Overall, between 2018 and 2022, Porsche achieved a very strong cash conversion cycle, taking on average approximately 48 days for an operational cycle to convert into cash, better than all of its peers, which could explain Porsche's low cash ratio, as it is confident on its cash flow efficiency.

However, the most recent data released by Porsche for these metrics, in the first half of 2023, show a very different scenario, where its average holding period has more than doubled, as well as the average collection period doubling, although it did manage to triple its average payable period. Its cash conversion cycle has worsened, almost doubling, meaning Porsche is taking longer to convert sales to cash, but is still showing good signs of performance compared to its peers in 2022. It remains to be seen if its peers have improved their situation during 2023 and diminished Porsche's advantage.

Capital Structure Ratios

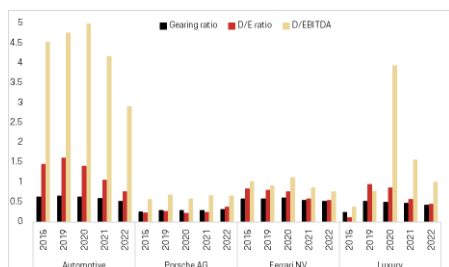


Fig. 12: Historical Capital Structure ratios of Porsche and peers
 Sources: Porsche, Bloomberg, Refinitiv

It is also imperative to analyse the mix of debt and equity that a company uses to finance its operations and growth. Looking at Porsche (*fig.12*), compared to its peers, it has opted to follow a rather **conservative capital structure**. This is seen by three main ratios. Firstly, the **gearing ratio**, which measures the amount of invested capital which comes from debt, has revolved **around 30%**, with an increasing tendency, against 54% for Ferrari, 58% for automotive peers and 45% for luxury peers, which have all shown decreasing trends. Regarding the **debt-to-equity ratio**, Porsche revolved around 0.25, having made a jump to **0.38 in 2022**, following its IPO. This value is still lower than Ferrari (0.54), Luxury peers (0.45) and Automotive peers (0.77). We can expect Porsche to increase this ratio in upcoming years, as its independence from Volkswagen, and its transformative

projects, will require a higher level of leverage. The **debt-to-EBITDA** ratio has shown the same tendency, Porsche exhibiting a lower ratio than its peers, which is more or less stable at around 2022's value of **0.65**.

Profitability Analysis

Regarding Porsche's operations, after a fall in 2019, it has seen a steady increase since and **reached in 2022 all-time highs of 28% in Gross Margin, 18% in Return of Sales (EBIT margin) and 13% in Net Margin**. These increases correlate with Porsche's separation from Volkswagen, from which point its focus on strengthening its position as a luxury automaker and practising higher average prices could explain this success. However, (*fig.13*) looking at its peers, we can see that there is **still room for improvement**, as companies focused on luxury goods exhibit higher gross margins, allowing for a bigger potential EBIT and Net margins, meaning more profitability, as is well showcased by Ferrari.

Porsche's ROIC and ROE have shown a similar increasing trend after a fall in 2019, showing great signs of profitability.

Regarding the ROIC (*fig.14*), it has increased due to both the core business and the non-core business. The core ROIC saw an increase due to improvements in operational margin and assets turnover, a testament to Porsche's ability to continuously improve its operational efficiency. The non-core ROIC turned profitable, showing good performance from Porsche's investments. The weighted ROIC has mainly come from its core business, which is to be expected, however, the massive hike seen in 22 % had a great contribution from the non-core ROIC, which could be a result of reorganization post-IPO, improving the performance of Porsche's investments, which were more focused on Porsche itself, detached from the Volkswagen group. Porsche has shown good progress in its ROIC against other peers' ROIC, having overtaken both its automotive and luxury peers between 2018 and 2022 and closing the gap to Ferrari. In 2022, Porsche's ROIC of 22% far exceeds its estimated WACC, meaning it created value through profitable projects.

Regarding Porsche's ROE (*fig.15*), it managed to overtake its luxury peers and Ferrari in 2022. In 2022, Porsche's ROE was 41%, showing that it is able to efficiently use its shareholder's equity to generate income, a great indicator for a company that was recently listed, which should create excitement among investors and create more demand for its shares, if this performance continues.

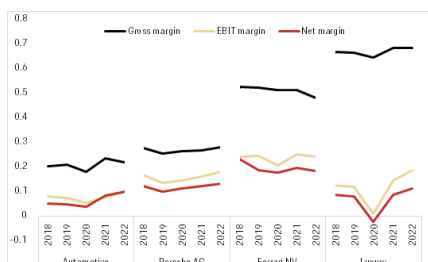


Fig. 13: Historical Profitability ratios of Porsche and peers

Sources: Porsche, Bloomberg, Refinitiv

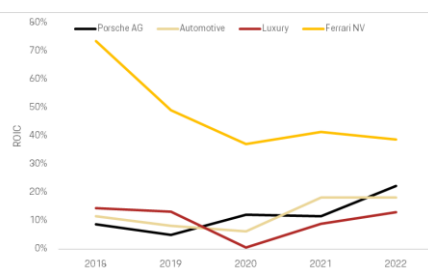


Fig. 14: Historical ROIC of Porsche and peers

Sources: Porsche, Bloomberg, Refinitiv

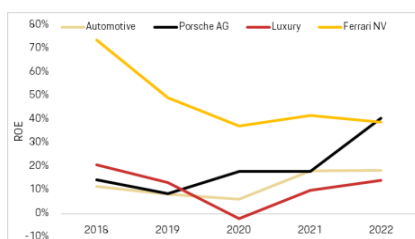


Fig. 15: Historical ROE of Porsche and peers

Sources: Porsche, Bloomberg, Refinitiv

Industry Analysis

The automotive industry is regarded as the **4th largest industry** heading into 2023, with a market capitalization of approximately 2.7 trillion dollars⁸, and its vehicle unit sales are expected to grow at an annual growth rate of around 2% by 2030⁹.

The personal luxury goods industry, as of 2023, has global revenues amounting to 354 billion, and is expected to grow annually by 3.38%, from 2023 to 2028¹⁰.

Competitive Landscape

Porsche AG's product portfolio is unlike the one of the average automobile manufacturers, as most of its sales are from luxury vehicles (sports, premium SUVs and executive cars). In fact, in the pursuit of its initial public offering (IPO), one of its visions was to capitalize on the evolving luxury landscape, using its unique brand heritage, and redefine modern luxury, further solidifying its position as a prominent luxury brand¹¹. Its CEO even stated in 2022 that Porsche is a global and iconic luxury brand. This is why we believe that the company is more alike to the **luxury automotive industry**, which is a sub-sector of the personal luxury goods. In such case, **Ferrari N.V is expected to be the closest competitor** to Porsche AG as it is also in the luxury automotive segment. Nevertheless, Porsche is also relatively different from the pure luxury automotive segment because the company not only benefits from being an exclusive sports car brand, but it **also benefits from economies of scale and mass production** from its strategic partnership with the Volkswagen group, explaining the difference observed in their financial ratios, and excluding in some level the scarcity premium, which is a fundamental luxury principle. As such, to better analyse the economic activity of Porsche AG, we have opted to compare it among **three different types of peers**. Firstly, we will compare it with its peers in the **Automotive industry**. For this case, BMW AG, Mercedes Benz Group and Volkswagen AG were selected for their similarities with Porsche among product offerings, customer target, production risks, and financial performance. Then, we will compare it with its closest peer, Ferrari NV, which will represent the niche **Luxury Automotive segment**. Thereafter, we will compare Porsche with its peers in the **Luxury goods industry**. To represent this industry, Prada SPA, LVMH Moët Hennessy Louis Vuitton SE,

and Hugo Boss AG were selected due to their similar customer target, macroeconomic risks, and financial performance.

BMW AG is a German vehicles manufacturer that performs in a wider range of the automotive industry than Porsche AG, as it produces from mainstream to luxury cars and motorcycles. However, they have similarities, as they both operate in the luxury sector of the automotive industry, focusing on high-end vehicles, and both brands have a history of producing iconic sports cars (911 GT3 and M3). Additionally, they both expanded their product lines to include luxury SUVs, such as Porsche Cayenne and BMW X5. Finally, both companies have ventured to the EV market, with Porsche's Taycan and BMW's I3 and I8 models.

Mercedes Benz Group is a widely known German automotive enterprise, focused on the manufacturing of a wider range of vehicles than Porsche AG, including commercial and luxury cars and trucks. Additionally, it presents a very different capital structure than the one of Porsche AG. Nevertheless, both companies are known for producing high-quality, luxury vehicles with a strong focus on engineering excellence and performance and are known for their German engineering and precision in automotive manufacturing.

Volkswagen AG is the largest car manufacturer in the world. Contrary to Porsche's other peers, it is more focused on the commercial vehicle segment, focusing on high volume and wider presence worldwide, and showcasing a higher debt structure than Porsche. Nevertheless, we believe it is important as a comparable because it is a market leader for the automotive segment, and because it has 75.4% ownership stake of Porsche AG¹².

Ferrari NV is a luxury sports car manufacturer known for producing high performance and visually striking sports cars, with a rich history in motorsports, particularly in Formula 1. While Ferrari focuses exclusively on sports cars and limited-edition models, and Porsche AG offers a broader range of models, they are still the most similar comparable companies, as they both aim on targeting high-end consumers, and both brands have a prestigious image in the automotive world, being associated with luxury, speed, and precision.

LVMH Moët Hennessy Louis Vuitton SE is the leading French multinational, specialized in the manufacturing and marketing of luxury goods under some of the best-known luxury brands, such as Louis Vuitton, Hennessy, Dior, and many more. It also participates in various markets of luxury goods, such as Fashion and Apparel, Perfumes and Cosmetics, Watches and Jewellery, and Retail. Despite their size differences, and difference in their type of products, both Porsche AG and Louis Vuitton are known for their strong and prestigious brand images. Both brands

are associated with luxury, quality, and a certain lifestyle, and thus, target the same consumers. Nevertheless, as it is in the pure luxury goods segment, it presents slightly higher multiples and ratios.

Prada SPA is an Italian luxury fashion house, specialized in the Fashion & Apparel luxury segment. Prada SPA is a good comparable to Porsche AG, due to their brand prestige and their focus on luxury and quality, despite selling different types of goods.

Hugo Boss AG is a German luxury fashion and lifestyle brand, founded in 1924 by Hugo Ferdinand Boss. Originally, their focus was on uniforms, but now it has expanded into a global fashion powerhouse, known for its premium menswear, womenswear, and accessories. Its similarities with Porsche come from its powerful luxury image, and their presence in the same key markets.

Industry Trends

- Electrification and Sustainability

The most important and significant trend in the luxury car segment right now, is the increasing focus on electrification and sustainability. Electric Vehicle sales are expected to **grow 32% annually this decade**, and EV's are expected to comprise more than **half of Global Sales by 2035**¹³.

This transition to EV's, is driven by both demand and supply-side factors. From a demand perspective, current luxury car consumers would not mind shifting their preferences from internal combustion engines (ICEs) to Battery Electric Vehicles (BEVs) for their future purchases, due to an **increasing commitment to sustainability and environmental concerns**. Demand for SUVs is expected to **dominate the luxury EV market**, especially in two of its biggest markets, China and the US¹⁴. On the supply perspective, luxury car manufacturers have taken advantage of the shift to BEVs and are investing heavily in BEVs and sustainable technologies to both reduce manufacturing expenses, and match or surpass performance, in comparison to ICE's, actively positioning themselves as industry leaders in the advancement of EV technology. Additionally, several countries have been adopting aggressive measures against ICE's, in favour of EVs.

China has the single largest market share of EV vehicles, with 55% of global vehicle sales in the first half of 2023, and a growth rate of 43% compared to the previous period. However, this is a notable decrease compared to the growth of 118% seen in H1 2022, which may be explained by China's end of EV's support

scheme, which caused disruptions, uncertainty, and enabled a price war. With a 24% share, Europe has the second largest market share of EV's, recording a growth of 34% in H1 2023, compared to 2022's growth of just 9%, **due to higher shipments and the easing of supply chain disruptions**. Additionally, it has the greatest incentives to electrify due to the high consumer demand for sustainable solutions, and heavy regulatory pressure by governments, such as the **EU's "Fit for 55" program, and the UK's legislation to ban sales in new ICE cars by 2030**, to meet zero-emission targets¹⁵. USA has become one of **the fastest growing EV markets worldwide**, with a growth of 97% in H1 2023. This is mainly due to the new EV subsidies in the US, such as President Joe Biden's commitment to have EV's make up roughly 50% by 2030¹⁶. Nevertheless, it is still behind Europe and China, with only 13% market share.

Porsche AG is highly in line with this trend, due to its **high invested capital into its electrification strategy** in its pursuit of being a leader in luxury EV technology. Its Taycan model is currently Porsche's only fully electric model as of 2023, and the Panamera and Cayenne already have hybrid vehicles (PHEV). The high investment in EV vehicles can be seen, as since the launch of its Taycan Model, Porsche has increasingly grown the amount of investment in R&D, as its growth rate has been increasing exponentially every year, from 3% in 2020, to 18% in H1 2023, with more than half of its investment being towards its EV strategy. Additionally, BEVs are expected to surge for the other models, such as the SUV Macan model in 2024 and 718 Boxter/Cayman in 2025, Panamera and Cayenne in 2027 and 2028, respectively, and the expected release of the K1 SUV model in 2027. This is in line with the Porsche's previously mentioned electrification strategy, capitalizing on demand for electric vehicles in its key markets (China, US, and Europe), to increase sales and gain competitive advantage¹⁷. However, Porsche **may struggle to grow in China's EV market** due to a decline in sales for many luxury brands. Chinese consumers increasingly prefer domestic brands, posing a challenge for Porsche to gain market share in this saturated market¹⁸. Nevertheless, Porsche aims on investing on these technologies, and thus, continues to follow the path towards **leadership in the luxury EV technology**, looking at this trend as a great opportunity to gain market share in key and emerging markets, and enhance consumer satisfaction.

▪ Purchasing Power and Demographics

Regarding the future of the demographics of the automotive industry, we must note that some factors, such as aging demographics, rising car prices, and real purchasing power expected to decrease, will have a **negative effect in volume sales** of this sector¹⁹.

Nevertheless, this reflects only a part of Porsche's customers. Another crucial customer group for the personal luxury goods, which includes luxury cars, are **High net worth customers**, and which are individuals with a net worth equal or above \$1 million. The number of high-net-worth individuals has grown 44% from 2017 to 2022 and is expected to grow by **56.9%** over the next 5 years, to over 100 million people. This growth is mainly driven by China, the USA and Europe, which are Porsche's key markets²⁰. Additionally, the luxury goods market has been seeing an influx of **younger consumer groups**, particularly Millennials and Gen Z, in which they prioritise sustainable and digital solutions²¹, and of the female gender, which increases the household's income and further **expanding the customer base**²². Even so, we still have to account that such growth in high-net-worth individuals is not sustainable in the long run. As Porsche is positioning itself as a luxury car manufacturer, and we expect the luxury automotive will be the last subsector of the automotive industry to capture its negative trend, due to differences in the type of consumers, it will **leverage from its position to gain market share**.

▪ Connectivity and digitalization

Connectivity and digitalization are a rising trend disrupting the automotive industry as it has seen increasing demand from consumers, especially younger consumers. Such technology has been increasingly vital in society, and as such, nowadays customers expect it to be incorporated into their cars.

As technology and connectivity play an increasing role in society and in people's lives, we can expect automakers to incorporate technologies into their cars. People willing to switch from their current OEM to another manufacturer they trust if it was the only one that offered a car with full access to apps, data, and media, rose from 20 to 37 percent across all geographies within just one year, **showing the willingness of consumers to switch car brands for connectivity**²³. This shows that digitalization and connectivity has transitioned into **an imperative feature for every car brand**.

Porsche AG is looking at this trend as an opportunity. Lately it has been shifting in **pursuing digital solutions**, as part of its strategy, to satisfy demand and enhance

efficiency. This goes from Connect services to digital sales. It already presents connectivity features such as Porsche Connect, which is a suite of services and apps that offer remote vehicle control, real-time traffic information, and includes a mobile app that allows the driver to interact with their Porsche remotely and already has a “digital family” of over 2500 members. With its partnership with Vodafone, it has also established **an advanced 5G network at Weissach**, facilitating instant communication, and establishing the fastest 5G network in Europe. This enhances development conditions and supports vital network slicing for automotive projects, **increasing distribution and production efficiency**²⁴. Looking forward, with the incorporation of AI and machine learning, we expect Porsche to further cut costs by increasing distribution and production efficiency, as their strategic vision includes developing new exciting digital solutions in and around the car, successfully integrating hardware and software development, emphasizing **connectivity and digitalization as key trends for future success**²⁵.

- Autonomous driving

Autonomous vehicles are currently a significant trend in this industry because it is a type of technology that could substantially improve road safety and revolutionize transportation in long-term. With the recent exponential increase in AI and machine learning technologies, it will not be long until fully autonomous driving vehicles are available to consumers. Although car manufacturers have introduced many new advanced driver-assistance-systems features, such as automatic braking and adaptive cruise control, which are already incorporated in many passenger vehicles, highly autonomous vehicles (level 4 cars) are also expected to hit the road until sometime between this year and 2025, with places such as Japan already giving the green light for these autonomous level 4 cars to hit public roads²⁶. The expected growth will depend on a variety of factors, including improvements in core technologies, pricing, public acceptance of self-driving cars, and the ability of automobile manufacturers and suppliers to address concerns on safety and the potential for hacking. Nevertheless, by 2035, autonomous driving could **generate \$300 to \$400 billion in revenue**²⁷.

Porsche AG, on the other hand, being in the luxury automotive segment, regards human driving as a privilege, as it stands for performance, perfect handling, and pure driving pleasure, and thus, targets consumers who want to drive the cars themselves. As stated by Porsche’s CFO, its sports cars will be one of the last automobiles with a steering wheel. Nevertheless, the company has been looking at this trend as an opportunity to complement driving experience, and has already integrated assisting driving systems, such as **Porsche InnoDrive**, and has also developed a prototype for a remote parking pilot, allowing vehicles to self-drive and

self-park in a parking lot ²⁸. Additionally, Porsche has **recently partnered with Mobileye**, the autonomous driving unit of Intel, and aims to integrate Mobileye's SuperVision technology platform into Porsche's future vehicles, enabling new advanced driver assistance systems²⁹. Looking forward, Porsche is launching a **new division** dedicated to autonomous driving and intelligent vehicle software development, based near its Nardo Technical Center in southern Italy. The division will focus on highly automated driving solutions and vehicle-to-everything (V2X) technology³⁰. Also, Porsche AG **is transforming its Zuffenhausen production plant for the future**, investing 250 million euros in extensive upgrades, with the main focus being on accommodating the production of the next 718 generation electric sports cars alongside traditional two-door Porsche sports cars with boxer engines. The innovative measures include the implementation of automated guided vehicles (AGVs) for sports car production, enhancing efficiency and flexibility, which aligns with **Porsche's strategy for mixed production of combustion-engine and electric sports cars on a single line**, showcasing the brand's commitment to incorporating autonomous driving technologies in its manufacturing processes, **increasing operating efficiency**, and commitment to increase customer satisfaction, as Porsche views highly automated driving systems as a **complementary on enhancing driving experience**, without changing the nature of Porsche ³¹.

▪ Shared Mobility

The shared mobility industry has been a key trend in the automotive sector, as consumers are increasingly looking to more efficient and sustainable ways to move around. It has been a rising trend since its improvements in connectivity and digitalization, which have **been crucial to enable shared mobility services** such as e-hailing, public transit, vehicle sharing and micro-mobility³². As such, revenue in shared mobility market is projected to reach 1.43 trillion dollars in 2023, and to show a CAGR of 4.11%, from 2023 to 2027³³.

We expect this trend to pose a threat for Porsche in the future, as shared mobility services **impact negatively the sales volume of private vehicles** and has been especially **rising in Porsche's key markets**. Nevertheless, the first vehicles to disappear will be the cheaper ones, as their owners are the most susceptible to switching to shared mobility, and as such, we believe luxury brands will see their market shares increase in the automotive sector. Porsche, being in the luxury automotive segment, even if it may not avoid the decrease in unit sales in its key markets, **it may be able to dampen it, and gain market share**. Additionally, we expect Porsche to **explore new emerging markets**, where these industrial

developments are slower to appear, creating some room for expansion, and thus, increase volume sales in these regions.

Macroeconomic Outlook

According to the IMF, the global economy is expected **to grow at a slower pace**, of 3% in 2023 and 2.9% in 2024, compared to 2022, where it grew 3.5%³⁴. Developed economies are expected to grow 1.5% and 1.4% in 2023 and 2024, and developing economies are projected to grow faster, at 4% in both years (*fig.16*). Looking at Porsche's key markets, China's GDP growth was very high before the pandemic, where it saw a particular decline, to 2.2% in 2020, as China was the epicentre of the pandemic. Nevertheless, in 2021, real GDP grew 8.4%, but in 2022 and 2023, growth rates decreased again, and the economy has not yet fully recovered. This is linked to a **significant post-pandemic drop in household spending**. Anticipated spending surges didn't materialize, leaving spending levels below the pre-pandemic norm. Additional factors, such as a peak in debt-driven real estate investments, global economic shifts affecting exports, and uncertain consumer confidence, **pose threats to China's financial stability**³⁵. Europe, followed by the substantial decrease in real GDP in 2020, of 6.1%, has been slowly increasing since. In 2024, real GDP growth is expected to be at a 1.2%, and from 2024 to 2028, growth rates are expected to increase but never passing the 2% growth rate mark, with growth expectations being lower than the ones projected for the global real GDP growth. North America, similar to Europe, **saw a decrease in real GDP** of 3.5% in 2020 due to the same factor, and has registered positive growth in a decreasing rate since. Moreover, it has been **growing at a slower pace than the world's real GDP**, in all these years. Additionally, it is expected to grow at a slower pace in 2024 and 2025, and at a steady real GDP growth rate of approximately 2.1% for subsequent years (*fig.17*).

Global inflation, measured by the average consumer price index, is forecasted to decrease from 8.7% in 2022, to 6.9% in 2023 and 5.8% in 2024. Europe and North America registered in 2022, higher inflation rates, of 9.9% and 6.9%, respectively. This rise in inflation was because of the outstanding increase in commodity prices during the same year, which was aggravated by the war in Ukraine. Nevertheless, international commodity prices seem to be reducing and stabilizing again and are expected to continue reducing in the following year³⁶. Moreover, recent tighter monetary policies are expected to slow down economic growth and curb

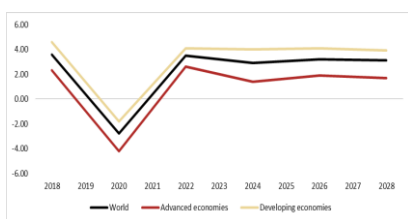


Fig. 16: Real GDP growth rate (in %)
 Source: International Monetary Fund

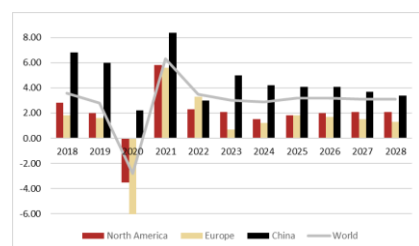


Fig. 17: Real GDP growth rate per region (in %)
 Source: International Monetary Fund

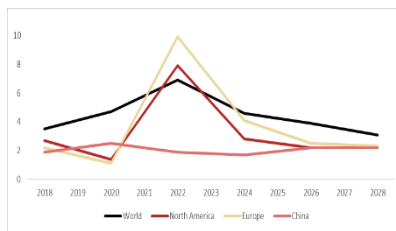


Fig. 18: Inflation rate, average consumer price index (% change)
 Source: International Monetary Fund

inflationary pressures³⁷. China's inflation rate, on the other hand, **has been very low since the pandemic**, due to weak domestic demand recovery and lack of fiscal stimulus, and experts believe this may be a problem to recover from their high levels of debt³⁸. Nevertheless, the IMF expects China's inflation rate to increase in 2024 and **remain stable at around the same rate as EU and NA by 2028 (fig.18)**.

Even though there have been signs of economic resilience earlier this year, and progress reducing inflation, the global economy is **still falling short of pre-pandemic projections**, especially in developing markets, and inflation is not expected to return to target until 2025³⁹. Additionally, Porsche is dependent on macroeconomic factors such as **geopolitical tensions** (trade war) between China and the West, that will shape the future of the economy⁴⁰.

This will be reflected in the luxury goods and automotive markets, that are **pro-cyclical to the world's economic growth** and display higher volatility in revenues, especially the luxury goods market, due to their **high-income elasticity of demand**.

Forecasting

Sales

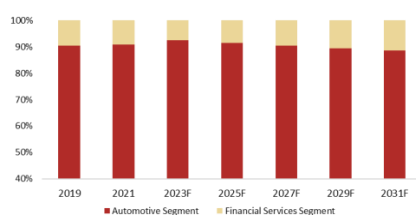


Fig. 19: Weight of each segment on total Revenues
 Sources: Analyst Estimates

To breakdown and forecast the sales of the Porsche AG group, we must firstly recognize that Porsche's revenues consist of two different segments, the automotive one, responsible for the manufacture and sale of vehicles and related products, and the financial services, responsible for providing credits and other financial services for Porsche's clients in the acquisition or leasing of a vehicle. Due to the latter being directly dependent on the performance of the former, a simple assumption was made in determining its revenues, (fig.19) assuming a 1% decrease in its weight to total revenues in 2023 due to rising interest rates, and a 0.5% increase from 2024 onwards as we expect a continuous improvement in the penetration of financial services globally, especially in China and other rising economies. Secondly, it must be understood that to determine the total sales revenue component, the average vehicle price and the number of vehicles delivered must be estimated.

To estimate the average vehicle price for Porsche, its vehicle deliveries were broken down among three segments following their model characteristics. The addition of the K1 model to the SUV lineup, expected to release in 2027, was also

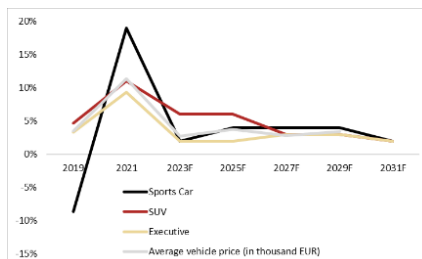


Fig. 20: Porsche's vehicle price growth by segment, historical and forecast, in %
 Source: Analyst Estimates

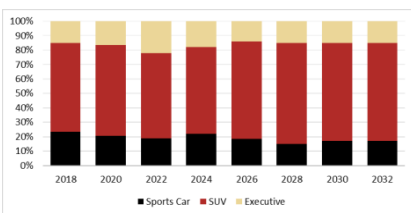


Fig. 21: Porsche's portfolio weight per segment
 Sources: Analyst Estimates

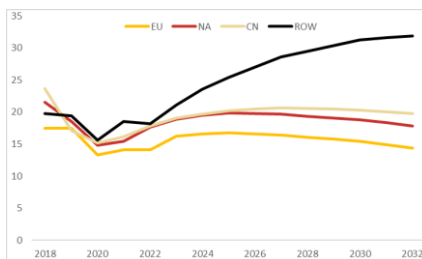


Fig. 22: Automotive Industry Unit Sales per region, in millions
 Sources: Statista, Analyst Estimates

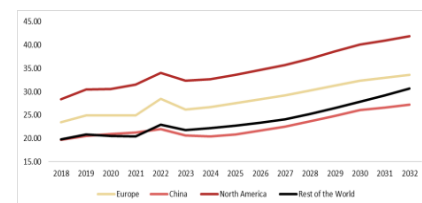


Fig. 23: Automotive Industry Average Revenue per Unit, in thousand Euros

included in the forecast. We expect all segments to see **their prices increase** (fig.20), with the **SUV segment expected to see the highest increase**, with a 4.5% CAGR in average prices between 2024 and 2030, boosted by the addition of the new flagship SUV model, the K1. The Sports Cars segment is expected to see a 4.3% increase, with the addition of a PHEV version 911 expected in 2024 and a BEV version of the 718 expected to **increase average prices**, along with Porsche's aim to position itself as a luxury automaker, similarly to Ferrari, which will equate to more expensive one-off or limited edition models, showcased for example by Porsche's Mission X⁴¹, revealed in June 2023, a hypercar with 1500bhp and the aim of becoming the fastest road-legal car. The Executive/Luxury will see **the lowest increase, at a CAGR of 3.2%**, with only a Panamera BEV version expected to release in 2027. We expect Porsche's **average vehicle price to increase 3.8%** between 2024 and 2030, above inflation expectations. (Fig.21) This is boosted by an expected increase in importance of Porsche's SUV sales to the overall portfolio, which will grow from 57% at the end of 2023 to 68% in 2030. From 2030 onwards, the average price of all segments are assumed to grow constantly at the long-term global inflation rate of 2%.

To estimate the number of units delivered by Porsche, we chose to break it down per region (Europe - EU, North America - NA, China - CN, Rest of the World - ROW). Following this, the revenues in the vehicle industry for each region were forecasted using a forecast of the average revenue per vehicle and a forecast of vehicle units sold in the region. (Fig.22) In EU and NA, unit sales of vehicles are **expected to drop** as soon as 2026, due to several factors, such as aging demographics, rising car prices coupled with drops in real purchasing power, and lower need for private vehicles due to the increase in shared mobility, better developed public infrastructure and new, more efficient ways of transportation. CN is also **expected to fall behind this trend**, but later around 2028. In the long run we **expect falls in unit sales in these markets of around 3.5%, 2.5% and 1.5%** per year respectively. ROW is expected to see a **rapid growth** in the first years of the forecast, as some of the biggest markets in the world, such as India, Nigeria and Brazil accelerate the development of their infrastructure, allowing for a **gradual global convergence** in the vehicle industry to the market leaders (Europe, NA, China). ROW will become the largest market for vehicles, to reflect this, we expect a **growth rate of 1%** of unit sales in the long run. As for the average revenue per vehicle (fig.23), NA is expected to continue being the biggest spender, followed by EU. CN and ROW are expected to grow at a faster rate during 2024-2030. In the long run, all markets are assumed to grow in this value driver at the

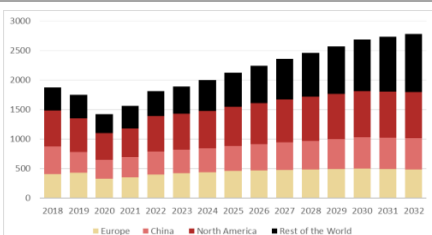


Fig. 24: Global Annual Car Revenues, in Billion Euros

Sources: Statista, Analyst Estimates

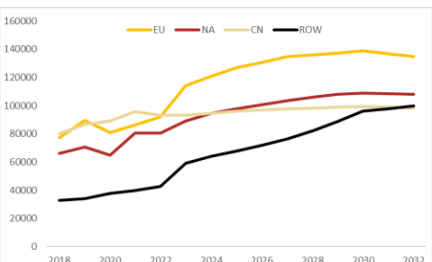


Fig. 25: Porsche's deliveries per market

Sources: Porsche, Analyst Estimates

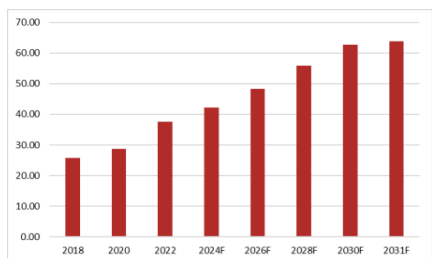


Fig. 26: Porsche's Total Revenues, in billion euros

Source: Analyst Estimates

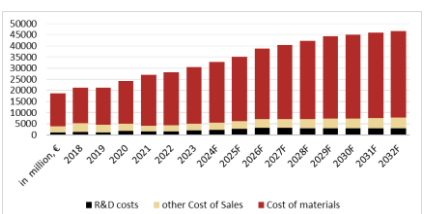


Fig. 27: Cost of Sales Breakdown

Sources: Analyst Estimates

long-term inflation rate. Having obtained the two value drivers, revenues in the automotive industry could be estimated (fig 24). Regarding the growth of Porsche's deliveries in each market (fig.25), they are expected to be positive in all markets during 2024-2030 (EU: 2.3%, CN: 0.8%, NA: 2.4%, ROW: 7%), as the number of High and Ultra High Net Worth Individuals (HNWI and UHNWI) around the globe is expected to increase, boosting the demand for luxury vehicles. However, Porsche will only partly be able to counter the trend of decreasing unit sales in the long run, as we expect its unit deliveries to fall in all markets (EU: -2%, CN: -0.5%, NA: -1%) except ROW (1%), but at a lower growth rate than the market, reflecting the idea that luxury automakers will have bigger market shares in the long-run, since the overall number of cars sold will be lower and ownership of a new car will be more common among wealthier individuals, due to rising car prices.

Having obtained the expected number of vehicles delivered by Porsche through its growth in each market and the average selling price through the analysis of deliveries per segment, it is possible to obtain the total sales revenue by multiplying the two value drivers. (Fig. 26) For the growth stage (2024-2030), we expect a CAGR of 6.8%, which will allow it to increase total sales revenues by almost 50% between these dates. As for the maturing stage (2031-2040), we expect it to be lower at 1.8%, closer to expectations of global GDP growth in the long run.

Operating expenses

Operating expenses include two main items, **cost of sales** and **selling, general and administrative expenses**.

Cost of sales, also known as costs of goods sold (COGS), mainly comprise **cost of production materials**, but also include **Research and development costs** (R&D), depreciation and amortization expenses (D&A), non-staff overheads, personnel expenses, additions to warranty provisions and interest and commission expenses related to the financial services division. It is important to note that D&A and personnel expenses are spread throughout SG&A and cost of sales, with no information on their weighed allocation.

To forecast the COGS, we have broken down the item into cost of production materials, R&D, and other expenses into "other cost of sales". Other expenses will be maintained at 7.1% throughout the forecasted period (fig.27).

The major expense incurred in the COGS is the cost of materials, mainly comprising expenses on raw materials, consumables, supplies, and purchased merchandise, but also incurring expenses on purchased services. We have mixed

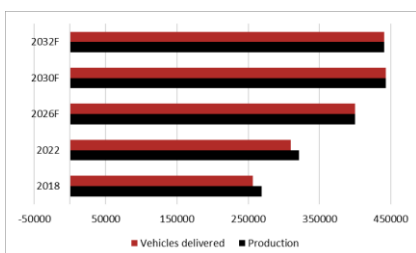


Fig. 28: Deliveries vs Production
 Sources: Analyst Estimates

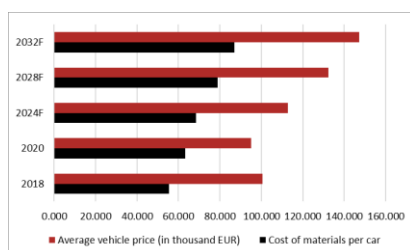


Fig. 29: Average Revenue per unit vs Cost of Material per car (in thousand EUR)
 Sources: Analyst Estimates

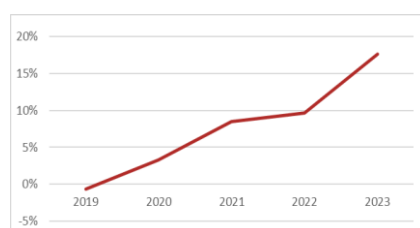


Fig. 30: Historical Total R&D annual growth rate
 Sources: Analyst Estimates

Model	Segment	Drive-type	Future projects
911	Sports Car	ICE	(added PHEV from 2024 onwards)
718 Boxster/Cayman	Sports Car	ICE	(added BEV from 2025 onwards)
Macan	SUV	ICE	(added BEV from 2024 onwards)
Cayenne	SUV	ICE/PHEV	(added BEV from 2026 onwards)
Panamera	Executive/Lux Car	ICE/PHEV	(added BEV from 2027 onwards)
Taycan	Executive Car	BEV	
KT	SUV	BEV	(expected to release in 2027)

Table 2: Porsche's vehicle line-up by segment roll-out program
 Sources: Analyst Estimates

this item in average cost of material per vehicle and production. This expense rose substantially in the last 3 years recorded by the company (2020-2022), from 56% of revenues in 2019, to 61% in 2022, with its highest growth in its material cost per vehicle, of 11%, in 2022. Factors, such as the disruption in the supply chains, increasing cost of commodities contributed to the increase in this cost margin. Nevertheless, commodities prices are expected to decrease this year, and as such we expect costs of materials per car **to drop by 6%** by the end of 2023. Porsche will capitalize on the decrease in cost of commodities, and is expected to **increase production by the end of this year by 11%**. Looking forward, we expect production of vehicles to **grow at the same rate as deliveries, but one year in advance (fig.28)**. We expect Porsche to capitalize on the cost of material per vehicle, and widen the margin between material cost and revenue per vehicle, indicative of **Porsche's pricing power and more efficient manufacturing and operating processes**, and thus, we anticipate the cost of material per vehicle to **grow at a lower rate than the average revenue per vehicle** from 2024 to 2030 (fig.29). We have reflected this assumption by **decreasing the cost of material margin by 0.3%** from 2024 to 2027 and by **0.2%** from 2028 to 2030, where it will remain the same at **59% of revenues from 2031 onwards**.

Regarding R&D, Porsche has been **increasing** its investment in technological advancements, mainly in pursuing their electrification strategy, but also in digitalization, and autonomous driving processes (fig.30). The latest increase in the investment in R&D was **driven primarily by rising expenses for projects that were close to the start of series production (table 2)**. Nevertheless, by increasing its capitalization ratio since 2019, it has been able to keep R&D expense margins at an historical average of 4% of total revenue. Despite their ability to maintain cost margins, the capitalization ratio in 2023 was 77%, and as such, there is not much room left to decrease the amount incurred. Looking at the following 4 years, we expect Porsche to heavily invest in R&D, particularly in their expansion of BEV in their various segments, to try and maintain their target release dates of their new BEV models, and sustain their competitive edge. Thus, we expect Porsche AG to **increase R&D expenses margin yearly by 0.5%** until 2027. From 2028 to 2030, when the expected release of the new BEV models is done throughout all its vehicle segments, we expect R&D costs to decrease again, hence assuming a **decrease in the R&D expenses margin of 0.5% per year**. From 2031, onwards, we predict the **R&D margin to be stable at 4% of total revenues**, which is back to their historical average.

Selling, general and administrative expenses (SG&A), other item of operating expenses, is composed by distribution expenses and administrative expenses, as

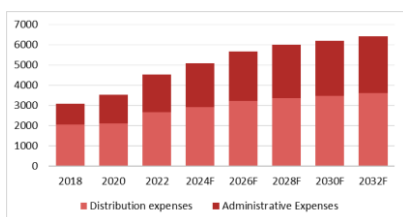


Fig. 31: Porsche's SG&A Breakdown
 Source: Analyst Estimates

they are the two cost items used in the consolidated income statement of Porsche's annual reports (*fig.31*).

Distribution expenses comprise D&A charged on distribution, personnel expenses, and non-staff overheads, shipping, marketing and sales promotion expenses. Distribution expenses has seen **a continuous reduction in its ratio**, as % of revenues, since 2018. However, by the end of 2023, an increase is expected in these expenses to 6.89% of total revenues, compared to 6.25% of total revenues in the prior year, primarily related to the **increase in marketing activities, the digitalization strategy, and the stronger involvement in motor sports**⁴³. Nevertheless, not only by following its historical trend, but also knowing that Porsche's future strategy focuses heavily on cost optimization, we believe Porsche will leverage from its digitalization and more efficient distribution processes to reduce this item expenses margin. Thus, we **predict a gradual decrease of this item costs margin of 0.2%** for the forecasted period, until 2030, where it will remain at **5.5% in perpetuity**.

Administrative expenses **mainly include personnel expenses**, but also non-staff overheads and D&A in the administrative function. While personnel expenses are not reported as a separated line of item, being partially incurred in both Cost of Sales and SG&A, they are the **main value driver for this item**. To forecast these expenses, we have divided them by the **number of full-time employees (FTE's)**, and the **average cost per worker**. High investment on more efficient and productive production facilities, plus their focus on digitalization, we believe that many jobs will slowly be replaced and eventually cease to exist. While there are going to be new jobs that will be created, we expect that the number of employees needed for such areas will not cover the amount of jobs that will slowly disappear (factory workers, customer service)⁴². As such, for the forecast, we assumed it to **grow at a decreasing rate of 1% per year**, of its the historical CAGR, from 2024 to 2027, and from 2028 to 2030 a **decreasing rate of 0.5%**. In the maturing stage, we assumed a **decline in the number of FTE's of 1%** in perpetuity. Despite a slower growth rate and eventual decline in the number of new FTEs in our forecasted period, the emerging workforce will demand higher education, experience, and specialization. This shift is attributed to the increasing role of automation, innovative technologies, and strong focus on sustainability. The jobs to be created will be **more aligned with these advanced skill sets**, contrasting the jobs being replaced, which are predominantly mechanical. As such, we forecast the average cost per employee to grow by and **increasing rate 0.1%** annually, from 2024 to 2027. From 2027 to 2030, we believe average cost per employee will **grow at a decreasing rate of 1% per year** from 2028 to 2030, and

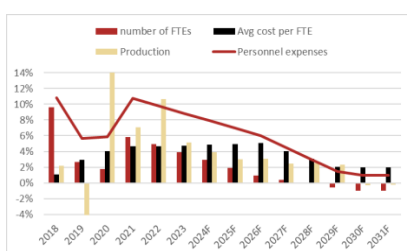


Fig. 32: Personnel Costs Growth Breakdown
 Sources: Analyst Estimates

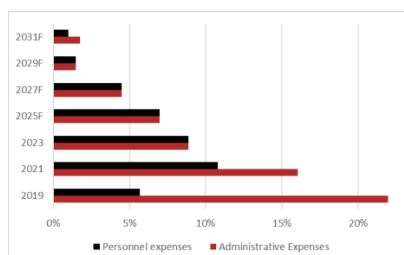


Fig. 33: Administrative Costs Growth Breakdown
 Sources: Analyst Estimates

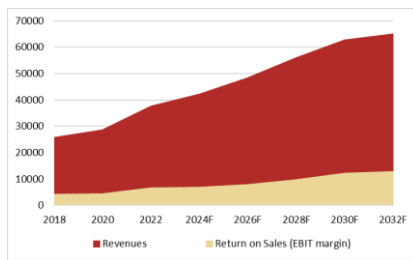


Fig. 34: Porsche's Return on Sales projections

and from 2031 onwards, **average cost per employee's growth rate will be at 2%**, in line with global inflation. By multiplying these two value drivers, it gives us the personnel expenses for the forecasted period (*fig.32*). As this is the main expense item of administrative expenses, we have **assumed that it will follow the same growth trend as the costs in personnel** (*fig.33*). This results in an increase in administrative expenses margin until 2026 (**4.9%**), and from 2027 to 2030 will decrease, to a **perpetuity administrative cost margin of 4.4%**.

These assumptions resulted in a lower total operating cost margin, of 80.5%, and a subsequent return on sales of 19.5% (*fig.34*).

CAPEX

Apart from strategic investments in up-and-coming companies in the energy sector and development of batteries, Porsche has also made significant efforts in the area of Research and Development in making its vehicles more environmentally friendly, which has been the biggest factor in driving capital expenditures. In 2022, more than half of R&D expenses were related to the transition of the current lineup to electromobility, particularly in the development of a fully electric Macan, Cayenne and 718 and hybrid-combustion models for the 911, Cayenne and Panamera. In the area of R&D, Porsche AG increased its employee count from 5807 in 2021 to 6299 in 2022, showcasing a strong commitment. Furthermore, in 2022, Porsche has also added a further development location in Shanghai, with the aim of strengthening the level of understanding of Chinese customers and knowledge of their requirements, as it tries to tackle the complex Chinese market, and opened a small-scale assembly plant in Kedah, Malaysia, which will match local requirements and, for now, will only be available for Malaysia⁴². These developments are also caused by Porsche's split from Volkswagen. Although the two companies will continue their industrial and strategic cooperation, Porsche will need to strengthen its own capacities to stand on its own feet and **tackle the challenge of electrification of the vehicle industry**. In the forecasted periods, (*fig.35*) the Intangible Assets were assumed to continue **growing strongly at the historical rate** (CAGR of 2018-2022: 11%), as Porsche continues seeking its objective of obtaining 80% of sales from BEVs by 2030. After 2030 this item is assumed to grow at the **long-term growth rate of the economy (2%)**, as Porsche maintains some R&D capacity in a constantly evolving industry.

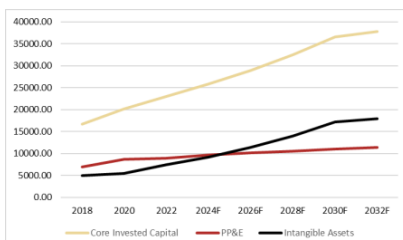


Fig. 35: Historical and forecasted CAPEX items

Sources: Analyst Estimates

As for PP&E, Porsche has increased its investment growth in 2022, which is shown by the examples of the R&D centre in China and assembly plant in Malaysia. It has

also made a 250 million euros investment in extensive upgrades in the Zuffenhausen production plant for the future, to continuously improve processes and accommodate newer EV models. This investment is expected to continue in the future, especially with the new K1 model, we can expect Porsche to invest substantially in the first years of this transformation. (Fig. 35) We expect the growth in **PP&E to be stronger, by the end of 2023 than in 2022, at 4%**, at which point it will start decreasing its growth rate by **0.5%** until 2027. From 2027 onwards we expect the investment in PP&E to slow down to the long-term global GDP **growth rate of 2%**.

These assumptions will lead to a long-term lagged core **return on Invested Capital of 24.2%**

Capital Structure

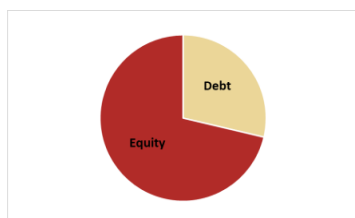


Fig. 36: Porsche's fixed Capital Structure Projection (Book Value)

When Porsche was a subsidiary of Volkswagen AG, it opted for a capital structure with low leverage, **with a D/E of around 23%**. However, since its IPO, Porsche has shifted to a higher level of leverage, with data obtained in 2023 indicating a ratio of around **40%**, which we assumed to remain constant. Its independence from the goliath Volkswagen group, as well as its necessity to finance its transition to electric vehicles has dictated a higher level of leverage which we **assume will be maintained through the forecasted periods**, as we believe Porsche will expect to raise future debt through the increase of its equity, which is expected to grow due to **Porsche's strategy of positioning itself as a luxury automaker (fig.36)**.

Intrinsic Valuation

Free Cash Flows

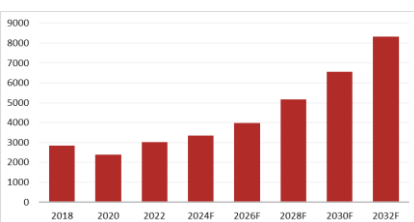


Fig. 37: Free Cash flow projections
Sources: Analyst Estimates

After an incredible growth in 2022, of 18.7% in the core free cash flows, we expect a decrease in the growth of the cash flows by the end of 2023, to 7.1%, which is because of the increasing amount of expenses that year (**increased by 1% of revenues**), compared to the prior year. We expect a continuous growth, primarily by maintaining **high revenue growth** and by **increasing operating efficiency**, and thus, widening operating margins. In 2031, as we believe the company reaches the maturing stage, and full integration of the new technological development and production lines, with the investment rate stabilizing at 7%, there is a high decrease in new invested capital, and thus an **exponential increase in the cash flows, of 24.8%**. In 2032, as the company reaches its steady state, free cash flows **stabilize and converge to an annual growth rate of 1.7%** (fig.37).

WACC

To discount the free cash flows, we have decided to use the fixed leverage ratio approach, which also known as the **WACC method**, as a foundation for the valuation of the Porsche AG, because it is the method use when companies are expected to maintain a relatively stable capital structure, which we believe it will, for our forecast. To calculate the cost of capital, estimations of the target D/V, cost of debt, and cost of equity must be made.

We have decided to use the CAPM to calculate the cost of equity, as it is first choice among most practitioners. As such, the formula to calculate the cost of equity using the CAPM, is expressed as: $Re = rf + \beta_e(Rm - rf)$, where Re is the cost of equity, β_e is the equity beta, rf is the risk-free rate, Rm is the expected return of the market (*fig 38*). For the rf , considering the geographic location of Porsche AG's headquarters (Stuttgart, Germany), and how we have modelled our projections on a 10-year period, we assumed the **10-year German Government bond of 2,2%**, as it is perceived as one of the safest investments available, and therefore the closest to a risk-free security. Additionally, we used the **MSCI world index returns** as a proxy for the market (used iShares MSCI World UCITS ETF to track the performance of the MSCI world index, by tracking stock prices from 23 developed countries worldwide). We used a 5y average annualized return of this index fund as the expected market return, which was of 9.33%, and therefore, resulted in a MRP of 6.45%. For the target D/E, we have seen that since the IPO, D/V (based on market values) has been increasing (*fig.39*), and we predict it to increase and converge to 20%, and as such we assumed the current market **D/V to remain fixed at 20%** (D/E of 25%), for our forecast period. To estimate β_e we computed in two ways to further understand the sensitivity of the company's stock price movement to the broader market. Firstly, we regressed Porsche AG's historical stock price daily returns, since its IPO, in September 2022, with the MSCI's world index, which retrieved us a **Bloomberg-adjusted equity beta of approximately 1.04**, and unlevered beta of 0.84. To enhance precision of the equity beta, we gathered more data for our estimations. As such, in a second approach, we regressed the historical stock returns of our industry's peers (luxury and automotive) with the same market index fund, but on a 5-year monthly basis, and estimated their levered betas, with a subsequent Bloomberg adjustment. By using the median of the unlevered betas, as we believe it is a more robust statistic for these estimations, because it is less sensitive to the extreme values, compared to the average, the industry retrieved us a slightly lower unlevered beta, of 0.82, **and**

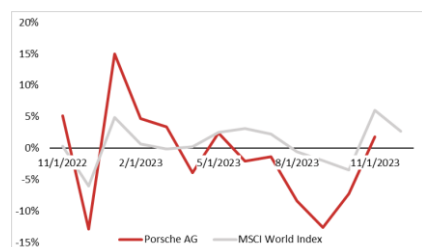


Fig. 38: Porsche's Historical monthly Returns

Sources: Yahoo Finance

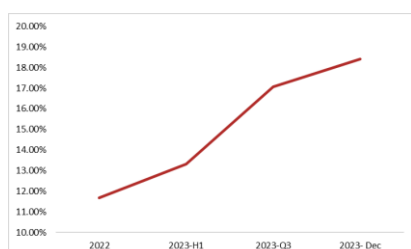


Fig. 39: Porsche's Historical D/V (Market Value)

Sources: Yahoo Finance

Beta Equity Breakdown

Multiple R	0.48
R Square	0.23
Adjusted R Square	0.23
Standard Error	0.02
Observations	248.00
Beta equity	1.06
Adjusted beta equity (1st approach)	1.039
Beta Asset (1st approach)	0.84
Beta Asset (2nd approach)	0.83
Adjusted beta equity (2nd approach)	1.028
Beta equity	1.033

Table 3: Beta Equity Breakdown

Sources: Analyst Estimates

Cost of Equity Breakdown

risk free rate	2.21%
MRP	7.07%
Beta Equity	1.03
Cost of Equity	9.52%

Table 4: Cost of Equity Breakdown

Sources: Analyst Estimates

Cost of debt Breakdown	
Bond YTM on long-term debt (rf)	2.2%
T-note rate on short-term debt	3.64%
Long-term debt	6762
Short-term debt	3681
weight og long-term debt	65%
weight on short term debt	35%
weighed average YTM	2.71%
Default grade	IG4
Probability of default	0%
Loss given default	35%
Debt Adjustment factor*	1.38
Pre-Tax cost of debt	3.73%
Corporate tax rate	29.96%
Cost of debt	2.61%

Table 5: Cost of Debt Breakdown

Sources: Bloomberg, Analyst Estimates

WACC Breakdown	
D/V	20.00%
E/V	80.00%
Cost of Debt	2.61%
Cost of Equity	9.52%
WACC	8.14%

Table 6: WACC Breakdown

Sources: Analyst Estimates

Stock Price Breakdown	
Sum of DCFs	€ 31,270.87
Terminal Value	€ 69,249.83
Core Enterprise Value	€ 100,520.69
Total Enterprise Value	€ 111,248.57
Net Debt	€ 9,319.51
Market Value of Equity	€ 101,921.39
# shares outstanding	€ 911.00
Stock Price 2024	€ 111.88
Stock Price 2023	81.26

Table 7: Stock Price 2024 Breakdown

Sources: Analyst Estimates

relevered beta of approximately 1.03. After computing the average of our estimated equity betas, it resulted in a final value of **approximately 1.03**, meaning the company's stock moves very closely with market, being only slightly more volatile (*table 3*). Finally, using CAPM, we could predict that the **cost of equity for Porsche is approximately 9.5%** (*table 4*). For the cost of debt, we used the yield bond approach, with a Bloomberg debt adjustment factor. Regarding the YTM, there is no information provided on any yield bond for Porsche, and as such we assumed the bond rate to be equal to our risk-free rate, the 10-year German Government bond of 2,2%, as the rate for the long-term debt, which has a weight of 65%. The short-term debt has a **T-note rate of 3.64%** (Retrieved from Bloomberg) and a weight of 35% of total debt. As such the weighted average YTM for our total debt was of 2.71%. By deducting the expected loss (PD x LGD), and considering the debt adjustment factor of 1.38 (retrieved from Bloomberg and used to adjust the cost of debt based on Porsche's specific credit risk), yields us a pre-tax cost of debt of 3.75%. Taking the effective corporate tax rate of 29.96% into account, we estimated the after-tax **cost of debt, to be of approximately 2.61%** (*table 5*). Following all the calculations mentioned before (*table 6*), our estimated **WACC is of 8.14%** ($WACC = D/V \times rd + E/V \times re$).

DCF and Final Share Price

After the calculation of the cost of capital we then used its constant rate to discount the Core Cash Flows for 2025 until 2032, and from 2032 onwards we assumed a constant **terminal growth rate of 1.69%** for the perpetuity period, which corresponds to the yearly growth rate of core free cash flows as it stabilizes. For the non-core items, as we believe them to not be crucial, in terms of estimations, for the valuation of this company, we have decided to just add its 2024 book value (Non-Core Invested Capital).

As such, after discounting the mentioned forecasted period, and adding the Non-Core Invested capital of 2024, we obtained an **Enterprise Value of 111.248 billion euros**. Subtracting the value of the **Net Debt (9.319 billion euros)**, we obtain predicted the **market Equity value of 101.921 billion euros**, as of 31/12/2024, which after dividing by the 911 million outstanding shares (455.5 of ordinary shares and 455.5 of preferred shares), gives us an estimated **share price of 111.88 euros, and a 38.92% predicted return** (*table 7*).

Scenario Analysis

After having obtained a "base case" scenario, where all our assumptions take place, we decided to test our assumptions and see how Porsche's share price

would fluctuate with changes to our assumptions according to scenarios which could occur in the future. Consequently, we decided to calculate Porsche's share price according to a "pessimistic scenario" and another one for a "optimistic scenario".

Firstly, for the pessimistic scenario, the risk coming from Porsche's bet on EV cars was taken into account. Porsche is hopeful that EV adoption will be fast, which will allow it to achieve 80% of its vehicles sold by 2030 to be electrified. However, there is the possibility that EV adoption is slower than expected, factors such as government subsidies, potential material shortages, or even slow customer adoption of recent technologies could affect this. Hence for this scenario, we took into account that Porsche would be **selling less EVs**, which have a higher average selling price, meaning it would see a **slower increase in the average price** of its vehicles. Another crucial factor is China. Although Porsche has not manifested it yet, it has been losing market share in this market, and China is progressively losing importance in Porsche's geographic distribution of vehicle deliveries. As mentioned before, competition in China is growing a lot, and Chinese customers seem to be giving preference to Chinese brands. For this scenario, we took into account that Porsche might continue struggling with this environment, seeing its **growth of deliveries decrease**, to a point where its presence in China would become unprofitable, forcing it to pull out of the market, as other big brands have already done. Consequently, we assumed that **from 2028 onwards**, Porsche would **stop its deliveries of vehicles** to this market. Furthermore, we also considered the possible aggravation in geopolitical tensions between the western world and China, which would cause bigger disruptions in supply chains, **increasing cost of materials and distribution expenses**. Another factor important for our analysis is the growth of the ROW. This market is growing rapidly and represents a great opportunity for Porsche. However, so far Porsche seems to focus on three main markets, Europe, USA, and China. Although Porsche has a large sales distribution around the world, it is spread thin in smaller markets. Thus, for this scenario, we took into consideration the possibility of Porsche ignoring these markets and foregoing crucial investments, which would in turn **decrease its capability of capturing market share**, decreasing the growth of deliveries here. Finally, we also considered the possibility that Porsche might be too ambitious in the scheduled roll-out of the new electrified versions of its current line-up, hence **we pushed it forwards by 1 year** and **cancelled the roll-out of its new ambitious SUV project, the K1**, as Porsche have not shown much progress in its development. We assigned a probability of this scenario occurring of **20%**. Porsche's **share price for this scenario is 88.39€**.

	Scenario		
	Pessimistic	Base Case	Optimistic
Avg. Revenue Growth (2024-2032, %)	1.95%	5.84%	7.70%
Avg. Return on Sales (2024-2032, %)	14%	18%	19%
Avg. Gross Margin (2024-2032, %)	28%	28%	28%
Avg. Asset Turnover (2024-2032, %)	70%	81%	84%
Avg. Core ROIC (2024-2032, %)	15%	22%	33%
Enterprise Value (million €)	89820	111249	153039
Equity Value (million €)	80523	101921	143638
Equity Value per Share	88.39	111.88	157.67
Probability	20%	70%	10%
Expected Value per Share	111.76		

Table 8: Porsche Scenario Analysis

Source: Analyst Estimates

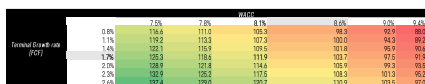
Secondly, for the optimistic scenario, we took into account the possibility that with Porsche's strong brand image and positioning as a luxury automaker, it would be able to **increase average selling prices** without needing to reduce the number of vehicles sold due to the luxury principle of scarcity. This would require exceptional knowledge of the market and expert marketing. With this assumption, Porsche would be able to obtain **gross margins much closer to its luxury peers**, truly benefiting from its positioning to increase profitability. Another factor which Porsche lagged behind its luxury peers was the payable period. In this scenario, we considered the possibility that its strong positioning as a luxury automaker would allow it to renegotiate contracts with suppliers to **increase the payable period**, allowing the company to have more cash available. Additionally, we considered the possibility that Porsche's new R&D center in China for market research would provide insightful information about the Chinese markets which would help it reverse its situation in this market, this time managing to beat increasing competition off and **capturing market share**. We gave this scenario a probability of **10%** to occur. **The resulting share price is 157.67€.**

In conclusion, our test for different scenarios resulted in an **expected share price of 111.76 (table 8)**, which is slightly under our target price for the base case, but the difference is negligible, which reinforces our argument for our target price.

Sensitivity Analysis

To further reinforce our conclusions, we **conducted two sensitivity tests for the share prices**, and **one sensitivity test for the WACC**, to changes in our valuation forecasts. For the share price, we conducted a test on the resistance of share prices in two areas, such as **changes in the terminal growth and cost of capital** simultaneously, and changes in **the Market Risk premium**. For the WACC, we did a sensitivity analysis to changes in cost of debt and beta equity, and for the return on sales we did a sensitivity analysis on the changes in SG&A and Cost of Sales margin.

WACC and terminal growth rate are huge drivers in the change of the share price, as such we have conducted a sensitivity test on the share price, to changes in both WACC and terminal growth rate, as this change significantly the share price, and in very extreme scenarios, could instead result in a hold or sell recommendation. As presented, when WACC remains constant and terminal growth rate increases, the share price increases as well. The inverse relation happens with the WACC, and an increase in % would decrease the share price of Porsche, ceteris paribus. Looking at the **extremes** of our sensitivity test, the highest share price in this analysis, is when the WACC is at its lowest (7.0%), and the terminal growth rate at



	0.8%	7.0%	7.8%	8.1%	8.6%	9.2%	9.4%
Terminal Growth rate (TGR)	176.6	111.0	105.1	98.5	92.9	88.2	84.3
1.1%	199.2	113.3	107.3	100.0	94.3	89.2	85.0
1.4%	221.7	115.9	109.5	101.8	95.9	90.4	86.0
1.7%	245.3	118.6	111.9	103.7	97.5	91.9	87.3
2.0%	269.9	121.8	114.6	105.9	99.5	93.8	89.0
2.3%	295.9	125.2	117.5	108.3	101.9	96.1	91.2
2.6%	323.4	129.0	120.7	110.9	104.5	98.6	93.6

Table 9: Porsche's stock price sensitivity test (WACC and Terminal growth)

Source: Analyst Estimates

its highest (2.6%), **which derives a share price of 137.4€**. If the reverse happens, and WACC is at 9.4%, and growth is at 0.8%, **the share price would be of 88 euros**, which would result in a **hold recommendation** (table 9).

It is very important to conduct a sensitivity analysis to **changes in the MRP** as well, because estimations on the MRP are hard to make, as they may vary substantially, depending on the chosen market index fund for the estimations.

As observed, the share price is highly sensitive to changes in MRP. An increase in MRP leads to a **decrease in the share price**. Nevertheless, **at a 9% MRP, would result in a hold recommendation** (table 10).

Even though a thorough analysis was conducted on the beta equity (used two different, but very detailed approaches to get the estimated beta) it is still an estimation, and as such it is important to see how sensible the WACC is on its changes. Even though, in general, cost of debt is not hard to estimate, for Porsche, as there are very few credits information, and our estimations were highly based on the cost of debt estimation approach retrieved from Bloomberg, we believe that a test should be made on the **resistance of WACC to changes in cost of debt and equity beta** (table 11).

As such, after conducting the analysis, the WACC range **goes from 7.44%** (lowest tested values from both variables), **to 8.78%** (highest values tested from both variables). We can assess that if the beta remains constant, and the after-tax cost of debt changes by 0.4%, the WACC changes by 0.08%. A change in Beta equity of 0.03, results in a change in WACC of approximately 0.17%, ceteris paribus. Nevertheless, this sensitivity tests only further **reinforces our buy recommendation**, as only in extreme assumption scenarios of our test would result in a hold, being very unlikely.

Multiples Valuation

As mentioned above, despite being a car manufacturer, Porsche AG resembles more its luxury peers than its automotive peers in many ways. On the other hand, it was also mentioned that Porsche also diverges structurally from the luxury automobiles such as Ferrari N.V, because it also benefits from economies of scale and mass production, resembling more, in this case, other automotive manufacturers such as BMW AG, and Mercedes Benz Group. It is very difficult to conduct a comparable valuation because Porsche does not fully integrate structurally in neither the automotive nor the pure luxury segment. Nevertheless, after careful consideration, for our multiple valuation, regarding 2024, we chose

MRP	Share Price (€)
2%	137.4
9%	88

Table 10: Porsche's stock price sensitivity test (MRP)

Source: Analyst Estimates

Beta Equity \ Cost of Debt	1.8%	2.2%	2.6%	3.0%
0.94	7.44%	7.52%	7.61%	7.69%
0.97	7.51%	7.59%	7.68%	7.76%
1.00	7.58%	7.66%	7.75%	7.83%
1.03	7.65%	7.73%	7.82%	7.90%
1.06	7.72%	7.80%	7.89%	7.97%
1.09	7.79%	7.87%	7.96%	8.04%
1.12	7.86%	7.94%	8.03%	8.11%

Table 11: Porsche's WACC sensitivity test (Beta equity and Cost of Debt)

Source: Analyst Estimates

BMW AG, Mercedes Benz Group, Ferrari N.V., and **Volkswagen AG** for the automotive peers, and for the luxury peers, we chose **LVMH, HUGO BOSS AG**, and **Prada SPA** as the peer comparables (multiples from peers were retrieved from Bloomberg), and we have decided to combine both industries by doing a weighted average for our multiple valuation, and for the comparable valuation we used two types of multiples, a cash flow based value multiple (**EV/Sales**), and a cash flow based price multiple (**P/E multiples**), regarding the forward year of 2024.

EV/Sales, which stands for enterprise value to sales, is one of the multiple valuations chosen, because it provides a direct measure of how efficiently a company is generating revenue, with a comparison to its enterprise value, and revenue generation is a crucial factor in both the auto and the luxury goods industries, particularly in the luxury goods market where sales growth and brand image are paramount.

Looking at the EV/Sales multiple ratios of year 2024, while Porsche's multiple ratio is of **2.64x**, the auto industry's peers derived multiple was of **2.6x**, and the one of the luxury's peers was of **2.8x**. While the auto industry's peer's multiple is close to Porsche's, it is **because of Ferrari N.V's multiple of 9.1x**, which is increasing the average auto industry peer's multiple substantially, and without this luxury automotive peer, the multiple would have a significant decrease.

By combining them (weighed average), the derived multiple was of 2.7x **and the resulting share price, of 114.8**. Compared to our DCF valuation using the fixed leverage ratio approach, looking at this luxury industry's peer multiple valuation, it shows that by valuing the company, by comparing it to the overall Market (similar companies), **is 3% higher**. Nevertheless, such comparable valuation also shows that the stock price in 2024 will follow the same positive trend in both types of valuation (*table 12*).

The P/E ratio, which stands for price to earnings, is a valuable metric for assessing a company's valuation, especially in the automotive and the luxury industries, where earnings and growth prospects play a significant role, and therefore was chosen for this report.

Looking at this ratio in 2024 (*table 13*), the auto industry's peers possess an average multiple of **13.8x**, being lower as well, than the one derived from Porsche's 16.8x, while the luxury industry's multiple ratio is higher (**19.5x**). Nevertheless, as Porsche is not fully inserted into both industries individually, by combining both, using a 50/50 weighted average for the valuation, **the multiple ratio calculated is of 15.9x**, and the corresponding share price yielded is of **107.8**. The estimated price is also close the one derived from the one of the DCF using the WACC

EV/Sales	Auto	Luxury	Mix of both
Multiple	2.6	2.8	2.7
Sales	€ 42,182.77	€ 42,182.77	€ 42,182.77
EV	€ 109,675.19	€ 118,111.75	€ 113,893.47
Net Debt	€ 9,319.51	€ 9,319.51	€ 9,319.51
Equity	€ 100,355.69	€ 108,792.24	€ 104,573.96
Nr Shares	911.0	911.0	911.0
Share Price	110.2	119.4	114.8

Table 12: EV/Sales Multiple Valuation

Source: Bloomberg, Analyst Estimates

P/E Ratio	Auto	Luxury	Mix of both
Multiple	13.8	18.0	15.9
EPS	6.8	6.8	6.8
Share Price	93.5	122.0	107.8

Table 13: P/E Multiple Valuation

Source: Bloomberg, Analyst Estimates

method (**4% lower**), meaning that the stock price in 2024 using the DCF approach and the P/E multiple approach, yield very similar returns, and further reinforcing our conclusions that the stock price is, in fact, **estimated to increase in 2024**.

Conclusion, Risks and Recommendations

To conclude, Porsche's current market valuation appears significantly undervalued. This could be due to several factors, some of them structural, such as the sharing of Volkswagen's CEO and limited investor influence due to a shareholder structure where shareholders have limited presence and no voting rights, which may have impacted the company's perceived worth. Porsche's recent listing in the stock market after an IPO is in itself a factor contributing to this. Valuation methods from multiples, including P/E and EV/Sales, and the expected share price from our scenario analysis, consistently support the current undervaluation, and reinforce confidence in our estimated share price for 2024. Nevertheless, we should pay attention to the sensitivity of Porsche's share price to **changes in MRP, WACC, and terminal growth rate**, as it is highly sensitive to their fluctuations, which in extreme scenarios, could change our recommendation. Furthermore, potential risks such as delays in electric vehicle adoption, challenges in sustaining market share in China or failure of gaining traction in emerging markets, and geopolitical tensions between China and the West pose threats. These factors may impact sales in key markets, disrupt supply chains, and increase commodity prices, which impacts operating expenses, potentially decreasing profitability, as shown in the scenario analysis. Nevertheless, Porsche's historical performance suggests it has outperformed the automotive industry during crises, such as the COVID-19 pandemic, showing consistent risk management through financial instruments and innovation. Not only that, but Porsche's strategic positioning in the luxury EV market, being considered a top competitor, coupled with its strategic collaboration with Volkswagen, enhances profitability. As such, despite the risks associated with the company, we are confident that Porsche's strategy will transform it into a luxury automotive leader, which will surpass many of its automotive peers. As such, with the substantial decrease in the stock price this last quarter and our intrinsic valuation of Porsche leading to a price of **111.88€**, our analysis leads us to a **"buy" recommendation** for Porsche AG in 2024 (*fig.40*), predicting a robust **return of 38.92%** in the next year driven by both **capital gains (37.68%)** and **dividend yield (1.24%)**.

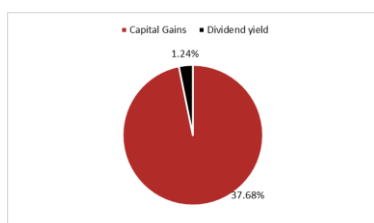


Fig. 40: Stock Return Breakdown
Sources: Analyst Estimates

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Appendix 1:

Financial Statements

1-Reformulated Income Statement Forecast (2018-2032)

Porsche AG Reformulated Income Statement Forecast €m	Historical period					Forecast period											
	2018	2019	2020	2021	2022	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F	2032F		
Core Business																	
Net Revenues	€ 25,784.00	€ 28,518.00	€ 28,695.00	€ 33,138.00	€ 37,630.00	€ 39,055.69	€ 42,182.77	€ 45,132.69	€ 48,246.15	€ 53,128.42	€ 55,966.69	€ 59,283.01	€ 62,702.36	€ 63,782.82	€ 64,892.42		
% growth	1.1%	1%	15%	14%	12%	3.8%	8.0%	7.0%	6.9%	10.1%	5.3%	5.9%	5.8%	1.7%	1.7%		
Automotive Division Revenue	€ 25,818.00	€ 25,805.00	€ 30,125.00	€ 34,439.00	€ 36,134.35	€ 38,810.61	€ 41,305.47	€ 43,913.08	€ 48,091.88	€ 50,381.25	€ 53,070.19	€ 55,817.00	€ 58,480.59	€ 57,118.35	€ 57,118.35		
% of net revenues	91%	90%	91%	92%	93%	93%	92%	92%	91%	91%	90%	89%	89%	89%	89%		
Financial Division revenues	€ 2,700.00	€ 2,800.00	€ 3,013.00	€ 3,191.00	€ 2,921.34	€ 3,366.18	€ 3,827.22	€ 4,332.47	€ 5,036.54	€ 5,585.44	€ 6,212.82	€ 6,884.88	€ 7,322.23	€ 7,774.07	€ 7,774.07		
% growth	9%	10%	8%	8%	7%	7%	8%	8%	9%	9%	10%	10%	11%	11%	12%		
% of net revenues	9%	10%	9%	8%	7%	7%	8%	8%	9%	9%	10%	10%	11%	11%	12%		
Operating expenses	€ (21,633.00)	€ (24,329.00)	€ (24,291.00)	€ (27,818.00)	€ (31,092.00)	€ (32,660.29)	€ (35,290.92)	€ (37,777.31)	€ (40,384.84)	€ (44,376.83)	€ (46,222.97)	€ (48,352.72)	€ (50,463.78)	€ (51,333.34)	€ (52,226.37)		
% growth	84%	16%	15%	16%	17%	14%	16%	16%	16%	16%	17%	18%	19%	19%	18%		
Cost of Sales	€ (18,829.00)	€ (21,256.00)	€ (21,155.00)	€ (24,281.00)	€ (27,084.00)	€ (28,141.58)	€ (30,479.18)	€ (32,700.90)	€ (35,053.25)	€ (38,708.72)	€ (40,382.77)	€ (42,360.88)	€ (44,385.06)	€ (45,129.54)	€ (45,914.84)		
% of net revenues	72%	74.8%	73.7%	73.3%	72.0%	72.1%	72%	72%	73%	73%	72.2%	71.8%	70.8%	70.8%	70.76%		
SG&A	€ (3,004.00)	€ (3,073.00)	€ (3,136.00)	€ (3,537.00)	€ (4,008.00)	€ (4,518.67)	€ (4,811.70)	€ (5,076.41)	€ (5,331.80)	€ (5,670.12)	€ (5,840.20)	€ (5,992.04)	€ (6,098.72)	€ (6,203.80)	€ (6,311.73)		
% of net revenues	11.7%	10.8%	10.9%	10.7%	10.7%	11.6%	11.4%	11%	11%	11%	10%	10%	10%	10%	9.73%		
Core Result before taxes (EBIT)	€ 4,151.00	€ 4,189.00	€ 4,404.00	€ 5,320.00	€ 6,538.00	€ 6,395.44	€ 6,891.85	€ 7,355.38	€ 7,861.31	€ 8,751.59	€ 9,743.72	€ 10,930.29	€ 12,238.58	€ 12,449.47	€ 12,666.05		
% growth	16%	15%	15%	16%	17%	16%	16%	16%	16%	17%	18%	18%	19%	19%	18%		
Statutory Taxes	€ (1,245.30)	€ (1,256.70)	€ (1,321.20)	€ (1,598.00)	€ (1,901.40)	€ (1,918.83)	€ (2,067.55)	€ (2,206.61)	€ (2,358.39)	€ (2,625.48)	€ (2,923.12)	€ (3,279.09)	€ (3,671.58)	€ (3,734.84)	€ (3,709.82)		
% of net revenues	5%	4%	4%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%		
Tax adjustments core	€ (62.37)	€ (38.03)	€ 88.24	€ 25.72	€ 8.32	€ 55.74	€ 60.06	€ 64.10	€ 68.51	€ 76.27	€ 84.91	€ 95.28	€ 106.60	€ 108.49	€ 110.38		
% of net revenues	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
Core Result	€ 2,843.33	€ 2,894.27	€ 3,171.04	€ 3,749.72	€ 4,584.92	€ 4,532.55	€ 4,884.35	€ 5,212.87	€ 5,571.43	€ 6,202.38	€ 6,905.52	€ 7,746.46	€ 8,673.67	€ 8,823.13	€ 8,976.62		
% of net revenues	11%	10%	11%	11%	12%	11.6%	11.6%	11.6%	11.6%	11.7%	12%	13%	13.8%	14%	14%		
% growth	2%	2%	10%	18%	22%	-1%	7.8%	7%	7%	11%	12%	12%	12%	1.7%	1.7%		
Non-Core Business																	
Share of profit or loss of equity-accounted investments	€ 3.00	€ (1.00)	€ (10.00)	€ (22.00)	€ (7.00)	€ 7.00	€ 7.00	€ 7.00	€ 7.00	€ 7.00	€ 7.00	€ 7.00	€ 7.00	€ 7.00	€ 7.00		
% growth	30%	-100%	-100%	-100%	-100%	30%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
Other operating result	€ 138.00	€ (327.00)	€ (227.00)	€ (8.00)	€ 232.00	€ 301.00	€ 307.02	€ 313.16	€ 319.42	€ 326.81	€ 332.33	€ 338.97	€ 345.75	€ 352.67	€ 359.72		
% growth	30%	-2%	-2%	-2%	30%	30%	2%	2%	2%	2%	2%	2%	2%	2%	2%		
Other financial result	€ (58.00)	€ (75.00)	€ (47.00)	€ 129.00	€ (40.00)	€ (17.80)	€ (17.80)	€ (17.80)	€ (17.80)	€ (17.80)	€ (17.80)	€ (17.80)	€ (17.80)	€ (17.80)	€ (17.80)		
% growth	-30%	-30%	-30%	30%	-30%	-30%	-30%	-30%	-30%	-30%	-30%	-30%	-30%	-30%	-30%		
Non-Core Result Before taxes	€ 85.00	€ (403.00)	€ (284.00)	€ 101.00	€ 185.00	€ 290.20	€ 296.22	€ 302.36	€ 308.62	€ 315.01	€ 321.53	€ 328.17	€ 334.95	€ 341.87	€ 348.92		
% growth	30%	-30%	-30%	30%	30%	30%	2%	2%	2%	2%	2%	2%	2%	2%	2%		
Statutory Taxes	€ (25.50)	€ 120.90	€ 85.20	€ (30.30)	€ (55.50)	€ (87.00)	€ (88.87)	€ (90.71)	€ (92.59)	€ (94.50)	€ (96.46)	€ (98.45)	€ (100.49)	€ (102.56)	€ (104.68)		
% of net revenues	0.10%	0.42%	0.30%	-0.09%	-0.15%	-0.22%	-0.21%	-0.20%	-0.19%	-0.18%	-0.18%	-0.17%	-0.16%	-0.16%	-0.16%		
Tax adjustments non-core	€ (1.28)	€ 3.60	€ (5.60)	€ 0.40	€ 0.24	€ 0.12	€ 0.12	€ 0.12	€ 0.13	€ 0.13	€ 0.13	€ 0.13	€ 0.14	€ 0.14	€ 0.14		
% of net revenues	0.01%	0.01%	-0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		
Other Comprehensive Income	€ (753.00)	€ (1,302.00)	€ 467.00	€ 64.00	€ 1,947.00	€ 1,250.00	€ 932.00	€ 932.00	€ 932.00	€ 932.00	€ 932.00	€ 932.00	€ 932.00	€ 932.00	€ 932.00		
% of net revenues	-2.92%	-4.57%	1.63%	0.19%	5.17%	3.20%	2.21%	2.07%	1.93%	1.75%	1.67%	1.57%	1.49%	1.46%	1.44%		
Non-Core Result	€ (694.78)	€ (1,580.44)	€ 262.51	€ 135.19	€ 2,076.74	€ 1,453.26	€ 1,139.47	€ 1,143.78	€ 1,148.16	€ 1,152.64	€ 1,157.20	€ 1,161.86	€ 1,166.60	€ 1,171.45	€ 1,176.39		
% of net revenues	-3%	-5%	0.9%	0.4%	5.5%	3.7%	2.7%	2.7%	2.4%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%		
% growth	-127%	-117%	-49%	6%	1436%	-30%	-22%	0%	0%	0%	0%	0%	0%	0%	0%		
Financing																	
Interest income	€ 408.00	€ 416.00	€ 406.00	€ 425.00	€ 461.00	€ 431.68	€ 440.30	€ 449.10	€ 458.09	€ 467.25	€ 476.59	€ 486.12	€ 495.85	€ 505.70	€ 515.88		
% growth	2%	2%	0%	4%	8%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%		
Interest expenses	€ (92.00)	€ (148.00)	€ (129.00)	€ (117.00)	€ (114.00)	€ (247.74)	€ (211.04)	€ (243.54)	€ (277.70)	€ (313.68)	€ (352.89)	€ (395.71)	€ (442.85)	€ (494.75)	€ (547.29)		
% growth	-0.36%	-0.52%	-0.45%	-0.35%	-0.30%	-0.63%	-0.50%	-0.54%	-0.58%	-0.59%	-0.59%	-0.59%	-0.59%	-0.59%	-0.59%		
Financing Result before Taxes	€ 316.00	€ 268.00	€ 277.00	€ 308.00	€ 347.00	€ 183.93	€ 229.26	€ 205.56	€ 180.38	€ 153.57	€ 123.70	€ 90.41	€ 53.00	€ 11.02	€ 31.42		
% growth	30.00%	10.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%		
Statutory Taxes	€ (94.80)	€ (80.40)	€ (83.10)	€ (92.40)	€ (104.10)	€ 55.18	€ 68.78	€ 61.67	€ 54.11	€ 46.07	€ 37.11	€ 27.12	€ 15.90	€ 3.31	€ 9.42		
% of net revenues	-0.37%	-0.28%	-0.29%	-0.28%	-0.28%	0.14%	0.16%	0.14%	0.11%	0.09%	0.07%	0.05%	0.02%	0.01%	0.02%		
Tax adjustments financing	€ (4.75)	€ (2.43)	€ 5.55	€ 1.40	€ 0.44	€ 1.80	€ 2.00	€ 1.70	€ 1.57	€ 1.34	€ 1.08	€ 0.79	€ 0.46	€ 0.10	€ (0.27)		
% of net revenues	-0.02%	-0.01%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		
Financing Result	€ 216.45	€ 185.17	€ 199.45	€ 217.09	€ 243.34	€ 130.35	€ 162.48	€ 145.68	€ 127.84	€ 108.84	€ 87.67	€ 64.08	€ 37.56	€ 7.81	€ 22.27		
% growth	8.84%	-14.49%	7.71%	8.84%	12.09%	-16.43%	24.64%	-10.34%	-12.25%	-14.86%	-19.45%	-26.91%	-41.38%	-79.21%	-385.14%		
Total Comprehensive Income Before Taxes	€ 4,552.00	€ 4,054.00	€ 4,397.00	€ 5,729.00	€ 7,070.00	€ 6,869.57	€ 7,417.32	€ 7,863.30	€ 8,350.31	€ 9,220.17	€ 10,188.95	€ 11,348.88	€ 12,626.54	€ 12,802.36	€ 12,983.56		
% of net revenues	17.65%	14.22%	15.32%	17.29%	18.79%	17.59%	17.58%	17.42%	17.31%	17.35%	18.21%	19.14%	20.14%	20.07%	20.01%		
Total Comprehensive Income	€ 2,365.00	€ 1,499.00	€ 3,633.00	€ 4,102.00	€ 6,905.00	€ 6,116.15	€ 6,186.31	€ 6,502.33	€ 6,847.43	€ 7,463.85	€ 8,150.33	€ 8,972.39	€ 9,877.83	€ 10,002.38	€ 10,130.74		
% growth	9.17%	8.26%	12.66%	12.38%	18.35%	15.66%	14.67%	14.41%	14.19%	14.05%	14.56%	15.13%	15.79%	15.68%	15.61%		
% of net revenues	9.17%	8.26%	12.66%	12.38%	18.35%	15.66%	14.67%	14.41%	14.19%	14.05%	14.56%	15.13%	15.79%	15.68%	15.61%		

2- Reformulated Balance Sheet Forecast (2018-2032)

Porsche AG Reformulated Balance Sheet Forecast															
	2018	2019	Historical Period			Forecast									
			2020	2021	2022	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F	2032F
Core Operations															
Cash and Cash Equivalents	515.68	570.36	571.9	662.76	752.6	781.11	841.66	902.65	964.92	1062.57	1119.33	1185.66	1254.05	1275.66	1297.95
% of total revenues	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Trade Receivables	759	842	1081	1199	1290	1305.22	1409.73	1508.31	1612.36	1775.52	1870.38	1981.21	2095.48	2131.59	2168.67
Collection period	11	11	14	13	13	12	12	12	12	12	12	12	12	12	12
Inventories	3889	4013	4108	4517	5504	5521.32	5979.95	6415.85	6877.38	7594.18	7923.02	8311.08	8704.34	8854.32	9008.36
Holding period	76	69	71	68	74	72	72	72	72	72	72	72	72	72	72
Other receivables	593	669	770	692	828	907.48	980.14	1048.68	1121.03	1234.47	1300.42	1377.47	1466.92	1482.03	1507.81
% of total revenues	2.30%	2.35%	2.68%	2.09%	2.20%	2.32%	2.32%	2.32%	2.32%	2.32%	2.32%	2.32%	2.32%	2.32%	2.32%
Leased assets	4929	5085	5437	6190	7473	8292.38	9201.59	10210.50	11330.03	12572.31	13950.80	15480.44	17177.79	17521.35	17871.77
Intangible Assets	6928	3624	8695	8763	8924	9280.96	9605.79	9893.97	10141.32	10344.14	10551.03	10762.05	10977.29	11196.83	11420.77
PP&E		24%	1%	0.8%	1.8%	4.0%	3.5%	3.0%	2.5%	2.0%	2%	2%	2%	2%	2%
Tax receivables	81	95	163	155	87	164.94	178.15	190.61	203.76	224.38	236.36	250.37	264.81	269.37	274.06
% of total revenues	0.31%	0.33%	0.57%	0.47%	0.23%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%
Leased assets	3776	3829	3614	3954	3854	3807.33	3871.78	3844.37	3841.16	3852.44	3845.99	3846.53	3848.32	3846.95	3847.26
Tax payables	-93	-72	-43	-65	-64	-69.10	-74.61	-79.10	-84.00	-92.75	-102.49	-114.16	-127.01	-128.78	-130.60
% of total revenues	-6.81%	-5.92%	-3.26%	-3.78%	-3.02%	-3.35%	-3.35%	-3.35%	-3.35%	-3.35%	-3.35%	-3.35%	-3.35%	-3.35%	-3.35%
Other liabilities	-1489	-1569	-1804	-2131	-2642	-2569.67	-2775.41	-2969.50	-3174.36	-3495.58	-3682.33	-3900.52	-4125.50	-4196.59	-4269.59
% of total revenues	-5.77%	-5.50%	-6.29%	-6.43%	-7.62%	-6.55%	-6.55%	-6.55%	-6.55%	-6.55%	-6.55%	-6.55%	-6.55%	-6.55%	-6.55%
Trade payables	-3134	-2582	-2335	-2447	-2899	-3012.20	-3262.41	-3500.22	-3752.01	-4143.27	-4534.18	-4948.72	-5390.55	-5430.55	-5494.58
Payable period	61	44	40	37	39	39	39	39	39	39	39	39	39	39	39
Income tax provisions	-96	-129	-111	-126	-167	-157.64	-170.26	-182.16	-194.73	-214.04	-232.89	-259.28	-283.08	-257.44	-261.92
% of total revenues	-0.37%	-0.45%	-0.39%	-0.35%	-0.44%	-0.40%	-0.40%	-0.40%	-0.40%	-0.40%	-0.40%	-0.40%	-0.40%	-0.40%	-0.40%
Core Invested Capital	16658.68	18075.06	20148.90	21081.76	22940.60	24262.14	25788.08	27283.98	28896.86	30714.18	32484.15	34406.67	36524.88	37164.74	37818.86
% of total revenues	16%	16%	4%	6%	7%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Non-Core Operations															
Financial services receivables	2186	2683	3636	4542	5920	6393.60	6905.09	7467.50	8054.09	8698.42	9394.30	9582.18	9773.83	9969.30	10168.69
Other financial assets	10690	10765	11631	13949	6247	10656.40	10656.40	10656.40	10656.40	10656.40	10656.40	10656.40	10656.40	10656.40	10656.40
Securities and time deposits	297	451	755	982	1795	1952.78	2109.14	2266.63	2412.31	2656.42	2798.33	2964.15	3135.12	3189.14	3244.62
% of total revenues	1.15%	1.58%	2.63%	2.96%	4.77%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
Assets held for sale					31										
Deferred tax assets	730	1355	817	867	742	967.98	1045.48	1118.59	1195.76	1316.76	1387.11	1469.30	1554.05	1580.82	1608.33
% of total revenues	2.83%	4.75%	2.85%	2.62%	1.97%	2.48%	2.48%	2.48%	2.48%	2.48%	2.48%	2.48%	2.48%	2.48%	2.48%
Equity accounted investments	368	298	167	573	623	679.07	740.19	806.80	855.21	906.52	960.92	980.13	999.74	1019.73	1040.13
Other equity investments	98	146	217	313	636	693.24	755.63	823.64	873.06	925.44	980.97	1000.59	1020.60	1041.01	1061.83
Liabilities associated with assets held for sale					-42										
Other provisions	-2729	-3114	-2788	-3173	-3950	-3956.55	-4273.33	-4572.18	-4897.59	-5382.19	-5669.72	-6005.68	-6352.08	-6461.53	-6673.94
% of total revenues	-10.58%	-10.92%	-9.72%	-10.18%	-10.50%	-10.13%	-10.13%	-10.13%	-10.13%	-10.13%	-10.13%	-10.13%	-10.13%	-10.13%	-10.13%
Deferred tax liabilities	-650	-601	-695	-782	-1605	-1173.26	-1267.20	-1355.82	-1449.35	-1596.02	-1681.28	-1790.90	-1883.62	-1916.08	-1949.42
% of total revenues	-2.52%	-2.39%	-2.39%	-2.35%	-4.27%	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%
Provisions for pensions and similar obligations	-3792	-6438	-5932	-6525	-3668	-4502.84	-5943.51	-6359.15	-6797.79	-7495.68	-7895.61	-8352.82	-8834.66	-8996.82	-9143.19
% of employees	-11.73%	-15.35%	-15.12%	-14.93%	-9.37%	-13.54%	-13.54%	-13.54%	-13.54%	-13.54%	-13.54%	-13.54%	-13.54%	-13.54%	-13.54%
Non-Core Invested Capital	7398	8485	7718	11546	6758	10710.42	10727.87	10832.42	10912.10	10898.08	10941.41	10513.35	10088.37	10081.87	10113.44
Total Invested Capital	24056.68	26840.36	27968.90	32628.76	29699.60	34982.57	36515.97	38116.38	39798.96	41410.28	43045.57	44820.02	46849.05	47268.71	47933.30
Financial Operations															
Excess of cash	2119.32	2940.64	3926.1	4023.24	2966.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	483.78	4822.33	9211.11
Debt	-6043	-7614	-8325	-9727	-9490	-8075.81	-9119.51	-10626.74	-12003.34	-13561.88	-15142.43	-16946.24	-18932.08	-20942.96	-22979.65
D/E	23.81%	26.82%	21.75%	24.87%	38.25%	40.21%	40.21%	40.21%	40.21%	40.21%	40.21%	40.21%	40.21%	40.21%	40.21%
Non-debt related Financial Liabilities	-3656	-3739	-3244	-4271	-6159	-3727.5	-3727.5	-3727.5	-3727.5	-3727.5	-3727.5	-3727.5	-3727.5	-3727.5	-3727.5
Non-controlling interests	-6	-6	-6	-8	-8	-7	-7	-7	-7	-7	-7	-7	-7	-7	-7
Net Financial Liabilities	-7585.68	-8417.06	-7647.8	-8882.76	-12880.6	-14884.44	-15345.40	-15894.54	-16453.26	-17023.77	-17623.84	-18281.67	-18937.83	-19582.33	-20211.11
Equity	16477	17428	20224	22835	17027	20035.1	20173.2	20429.4	20853.1	21335.0	21806.2	22281.4	22758.5	23236.5	23715.8

3- Reformulated Free Cash Flow Statement Forecast (2018-2032)

Porsche AG Forecasted Free Cash Flow Map (€m)	Historical					Forecast									
	2018	2019	2020	2021	2022	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F	2032F
Core business															
Core Result	2843.326	2894.275	3171.04	3749.722	4584.922772	4532.545	4884.354	5212.869	5571.426	6202.379	6905.521	7746.461	8673.667	8823.127	8976.62
% growth		2%	10%	18%	22%	-1%	8%	7%	7%	11%	11%	12%	12%	1.72%	1.74%
Core IC	16658.68	19375.36	20148.90	21363.76	22940.60	24252.14	25788.09	27283.96	28886.86	30714.18	32464.15	34406.67	36524.68	37164.74	37819.86
% growth		16%	4%	6%	7%	6%	6%	6%	6%	6%	6%	6%	6.16%	1.75%	2%
Change in Core IC		2716.68	773.54	1214.86	1576.84	1311.54	1535.95	1495.87	1602.90	1827.31	1749.97	1942.51	2118.02	640.06	655.12
Core FCF	2843.326	177.5945	2397.5	2534.86	3008.082772	3221.00	3348.404	3717.001	3968.524	4375.066	5155.547	5803.946	6555.651	8183.07	8321.502
% growth		-94%	1250%	6%	18%	7%	4%	11%	7%	10%	18%	13%	13%	25%	2%
Non-Core Business															
Non Core result	-694.777	-1580.44	262.5097	135.1883	2076.735502	1453.258	1139.475	1143.776	1148.162	1152.637	1157.201	1161.856	1166.805	1171.448	1176.388
Non Core IC	7398	6465	7718	11546	6759	10710	10728	10832	10912	10698	10941	10513	10069	10092	10113
Change in Non Core IC		-933	1253	3828	-4787	3951	17	105	80	-216	245	-428	-444	23	21
Non-Core FCF	-694.777	-647.442	-990.49	-3693	6863.735502	-2498	1122.028	1039.228	1068.484	1368.65	911.8719	1589.921	1610.584	1148.849	1154.918
Total FCF	2148.548	-469.847	1407.01	-1157.95	9871.818274	722.84	4470.431	4756.228	5037.008	5743.716	6067.419	7393.867	8166.235	9331.919	9476.419
Financing															
Financial Result	216.4517	185.1672	199.4501	217.0892	243.3417256	130.3515	162.4764	145.6834	127.8385	108.8359	87.66806	64.07641	37.55924	7.808587	-22.2653
Change in net debt and other claims		831.68	-769.46	2334.86	2697.84	2203.89	-1539.09	-1650.86	-1741.28	-2120.49	-2079.93	-2071.76	-3264.85	-4338.55	-4388.78
Change in equity		951	2796	2711	-5908	3058	3093	3251	3424	3732	4075	4486	4939	5001	5065
Comprehensive income	2365	1499	3633	4102	6905	6116.155	6186.306	6502.328	6847.427	7463.852	8150.39	8972.394	9877.831	10002.38	10130.74
Financing CF	-2148.55	468.8472	-1407.01	1160.949	-9871.81827	-723.836	-4469.76	-4756.34	-5037.16	-5743.58	-6067.46	-7393.88	-8166.21	-9331.93	-9476.42

Appendix 2:

Disclosures and Disclaimers

Report Recommendations

Buy	Expected total return (including expected capital gains and expected dividend yield) of more than 10% over a 12-month period.
Hold	Expected total return (including expected capital gains and expected dividend yield) between 0% and 10% over a 12-month period.
Sell	Expected negative total return (including expected capital gains and expected dividend yield) over a 12-month period.

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