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EQUITY RESEARCH: FERRARI - A LUXURY MANUFACTURER IN ADAPTATION TO THE NEW
MARKET DEMANDS

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Abstract

Ferrari is an Italian car manufacturer founded in 1929. Since then, it has become one of the most notable luxury car manufacturers in the world, known for its high-performance cars and its presence in the racing world, more precisely in Formula 1. This report focuses on valuing Ferrari, analyzing its performance, standalone and in comparison with its competitors and the remaining industry. Our valuation model yielded a target price of €266.10 for FY 2022, resulting in a BUY recommendation.

Keywords: Valuation, Finance, Equity Research, Ferrari

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This report is part of the Ferrari Equity Research report (annexed) and should be read as an integral part of it.

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Company Overview

Company Description

Ferrari is likely to be the most famous sports car manufacturer in the world, a clear leader in its sector, setting the market trends both from an automobile and from a luxury and status standpoint.

In 1929, Enzo Ferrari formed Scuderia Ferrari, a racing team intended to enter amateur drivers in local and national racing car competitions. In 1933, one of the events that leapfrogged the Scuderia to becoming such an historical racing team occurred. Alfa Romeo, experiencing financial instability, ended its in-house racing team, and Scuderia Ferrari became Alfa Romeo's official racing team. After 1937, Alfa Romeo changed strategy and transferred its racing activity to Alfa Corse, its new racing team. In disagreement with the strategy, Enzo Ferrari left and decided to found Ferrari in September 1939. This is the company and racing team that still stands today.

Ferrari is based in Maranello (in Emilia-Romagna, Italy), where it has one of its 2 manufacturing facilities (with the other one being in Modena, also in the Emilia-Romagna region). Adjacent to Maranello's production facilities is the Fiorano Circuit, a racetrack owned by Ferrari and used for development and testing purposes. However, Ferrari's most famous track is the Mugello circuit, which is the home of numerous racing events (ex: it is part of the MotoGP's set of annual tracks) and is the track used as the main F1 testing grounds.

Both Ferrari's history and its infrastructure set the grounds and contextualize its widespread success and its growth strategy, always connected to its roots. Ferrari has become more than a mere racing team or racing brand. It has become an icon in the automobile and racing universe, manufacturing the most famous racing and road cars in the world.

Business Model

Ferrari's business model is set on two pillars: Branding and Exclusivity.

Branding strategy is mainly made through Formula One with Scuderia Ferrari, "the oldest and most successful in the history of Formula 1"¹, and its long history and pedigree in racing competitions. Ferrari's presence in F1 exudes the sentiment of adventure, speed, and high performance. F1 also provides a platform for R&D and testing, with the innovations found in racing cars transitioning to their commercial cars. This synergy provides a fructuous cost saving

¹ Ferrari. Ferrari N.V., 2021, Annual Report 2020, https://corporate.ferrari.com/sites/ferrari15ipo/files/ar_2020_ferrari_web.pdf. Accessed 8 Dec. 2021

mechanism, when compared with manufacturers that do not benefit from similar testing platforms.

This strong Branding positioning is complemented by the feeling of Exclusivity when owning a Ferrari. Through the promotion of yearly events, that gather current owners of Ferraris, it manages to increase the relationship they have with and their loyalty to the brand. Additionally, parallel to the car-making business, Ferrari commercializes high-end luxury products (such as clothing and accessories), expanding their customer base beyond those who are capable of owning a Ferrari car.

Both the Branding and Exclusivity positioning are essential for defining and explaining Ferrari's market positioning. Through low volumes, customer loyalty, and customization, or through "deprivation marketing"², as Stefan H. Thomke coined it, Ferrari is able to be a price setter and charge large premia over the cars it sells. This key capability largely sets the ground for Ferrari's resilience in years to come, as it ensures both the attraction of new customers, as well as a loyal customer base that is highly likely to acquire additional cars (a strategy in which automakers do not usually rely on. In addition, demand for Ferrari cars clearly exceed the available supply, meaning that Ferrari operates on a waiting list basis. So, in case a customer wants to buy a Ferrari, he is faced by a considerable waiting time before it is delivered. This mechanism results in a clear view for Ferrari of its future expected volume of production and consequent cash flows, strengthening Ferrari's share resilience to other market factors.

Factors like these are essential for understanding Ferrari's market positioning and revenue volume and evolution.

Company Analysis

SWOT Analysis

o Strengths

The major Ferrari strength is its incredibly strong brand. According to Brand Finance Global 500³, Ferrari is currently the 2nd strongest brand in the world. This brand strength measure reflects the efficacy of Ferrari's "brand performance on intangible measures, relative to its competitors"⁴. That is, despite having competitors with larger market value (due to the natural differences between Ferrari and its competitors, as Ferrari aims for a niche target market), it displays outstanding performance among the three evaluated criteria in the above-mentioned ranking: marketing investment, stakeholder equity, and business performance. This

² "The Ferrari Way." *Harvard Business School Working Knowledge*, Michael Blanding, 21 Mar. 2019, <https://hbswk.hbs.edu/item/the-ferrari-way>.

³ *Brand Finance Global 500 2021 report*, <https://brandirectory.com/download-report/brand-finance-global-500-2021-preview.pdf>

⁴ *ibidem*

performance is notable mainly in the stakeholder equity section. Ferrari's clients perceive the cars they buy, and the underlying maintenance and relationship they build with Ferrari, to be just perfect. The cars live up to their name, and Ferrari ensures after-sale services just as good as the cars they sell. This behaviour culminates in an especially good relationship with clients and a high client retention.

As Ferrari puts it, "the prestige, identity, and appeal of the Ferrari brand depend on the continued success of Scuderia Ferrari racing team in F1"⁵. Ferrari has a strong presence in the racing world, which tends to be a source of good reputation and a key marketing strategy. Through F1, Ferrari demonstrates its capabilities in car manufacturing, namely in what concerns performance, safety, and design.

○ Weaknesses

Ferrari's high standards in what concerns its commercial network, both the sale and after-sale segments, may be a source of weaknesses. Ferrari sells its cars mainly through car dealerships it does not own, and that are required to meet Ferrari's demanding standards. As such, Ferrari tends to have a hard time establishing new dealerships in new geographies. The idea of shipping cars into a geographic location where its customers may not have the possibility to resort to quality after-sale services (maintenance and repairing services), is not of the likelihood of Ferrari. It poses a potential for reputational risk, as the lack of maintenance may result in underperforming cars, which is not the experience Ferrari wants to provide its customers. Underserved geographies include Central and South America, Africa, and Asia (with the exception of China), and tend to hinder Ferrari's potential to grow.

Additionally, despite Ferrari's comparative good performance in terms of margins (as we will see below) when compared to its automotive competitors, we believe it could even fare better. When considering the supply of technological key components with high specifications, Ferrari tends to adopt synergic relationships with its suppliers, considering them "key strategic innovation partners"⁶. As such, it relies on a reduced number of suppliers, which possess higher than expected bargaining power against Ferrari, thus slightly increasing some Ferrari's production costs.

○ Opportunities

The main opportunity, which Ferrari is already exploring, and which is a potential source for large future revenue, is the expansion to new segments of the car market. Currently, Ferrari is expanding to the SUV market in 2022 with the launch of Ferrari Purosangue. This is a fairly

⁵ Ferrari. Ferrari N.V., 2021, Annual Report 2020, https://corporate.ferrari.com/sites/ferrari15ipo/files/ar_2020_ferrari_web.pdf. Accessed 8 Dec. 2021

⁶ Ferrari. Ferrari N.V., 2021, Annual Report 2020, https://corporate.ferrari.com/sites/ferrari15ipo/files/ar_2020_ferrari_web.pdf. Accessed 8 Dec. 2021

unexplored segment for ultra-luxury brands like Ferrari. Lamborghini, as a first mover, with the launch of its Urus model in 2018, has made it evident that there is definitely a market for luxury SUVs, with Lamborghini's revenues almost doubling since the launch. Besides the SUV segment, there is also a potential avenue for growth in the F-segment cars, which combine luxury and performance with comfort (such as the BMW 8 Series, the Porsche Panamera, or Mercedes S-Class).

Fast growing economies tend to be an opportunity for selling luxury and status products, as new millionaires are eager to showcase their newly acquired financial power. As such, fast growing Asian economies (such as China, India, Vietnam), in Latin America (Mexico, Brazil) and in Africa (Nigeria), provide a chance for further commercial growth if Ferrari manages to overcome its commercial dispersal difficulties.

○ Threats

Continuous restrictions and the growth of environmental concerns, with considerable changes in public and private policymaking, are a source of business risk to which Ferrari is exposed. To this day, Ferrari has been able to partially avoid environmental restrictions through its status as a small volume manufacturer. However, someday Ferrari will have to converge with other automobile manufacturers and adapt its new cars to comply with environmental policies. This poses a threat from two different perspectives: (i) Ferrari cars may suffer an impact on their performance due the limitations on GHG emissions and average fuel consumption; (ii) it may force Ferrari to further channel R&D resources to develop environment related issues, instead of focusing on the features that its customers tend to value (performance, safety and the design of the cars).

Another potential threat is the potential inability of Ferrari to have high-quality competitive electric engines. That is, Ferrari has a clear reputation in the manufacturing of gas engines and has successfully began introducing hybrid luxury sports cars in the market. However, the transition to electric-only engines is more challenging. The appearance of new brands and branches of existing brands solely focused on the development of this kind of environmentally focused business, is a clear threat. Examples of these cars are: Aspark Owl, Lotus Evija, Ariel P40, or Rimac C_Two.

Industry Analysis

Scope of the Competition

The automotive industry is comprised by the whole range of activities involved in making a car: design, development, manufacturing, marketing, selling and post-selling services. According to Yahoo! Finance⁷, it is the 9th largest industry in the world, with a market value of \$3 trillion and is expected to grow at a 2% annual rate throughout the next decade, according to McKinsey⁸.

Despite being an automobile manufacturer, Ferrari diverges from the average car manufacturer in the industry. That is, it produces high-end luxury sports cars. As such its economic activity is not exactly comparable with its automotive peers. Additionally, as mentioned above, Ferrari also operates within the luxury clothing and accessories industries. Thus, given these two factors, in order to fully capture Ferrari's range of activity and target population, we have to include the luxury apparel industry in our discussion.

According to the Luxury Goods – Global Market Trajectory & Analytics report⁹, the global market for luxury goods was expected to reach \$224.8B market size, and to keep growing at an astonishing 4.8% CAGR throughout the next decade.

As such, we have selected a list of comparable companies, which compete with Ferrari in their activity. For the automotive industry, we have used Aston Martin, Bayerische Motoren Werke (BMW), Daimler, and Volkswagen. As for the Luxury Goods industry, we took into account Burberry, Hermès, Moët Hennessy Louis Vuitton (LVMH), and Prada. Below you can find a brief description of each, and a brief comparison with Ferrari:

- **Aston Martin:** is a British luxury sports car manufacturer, with a historically strong presence in the racing world, alike Ferrari. In terms of business development, Aston Martin is likely to be the closest comparable to Ferrari, as it also marks its presence in the luxury goods industry. The major difference between the two is scale, in 2019 Aston Martin had approximately £1 B in revenues, three times less than Ferrari.
- **Bayerische Motoren Werke:** is a German vehicles manufacturer, focused on the high-end segment. BMW, contrarily to Ferrari, performs in a wider range of the automotive industry, it produces cars and motorcycles, under the brands of BMW, Mini and Rolls-Royce. As such, it produces vehicles that go from the normal

⁷ 10 Biggest Industries in the World in 2021, Yahoo! Finance, <https://finance.yahoo.com/news/10-biggest-industries-world-2021-150703784.html>

⁸ Automotive revolution – perspective towards 2030, Mckinsey, <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/disruptive-trends-that-will-transform-the-auto-industry/de-DE>

⁹ Luxury Goods – Global Market Trajectory & Analytics 2021 report, https://www.researchandmarkets.com/reports/1244796/luxury_goods_global_market_trajectory_and

commercial vehicle to the top-notch luxury comfort cars, with the D and E segments (BMW's specialization) in the middle. BMW maintains a strong presence in the car racing world, mostly with touring and more recently with Formula E.

- Daimler: is a German automotive multinational company, which manufactures vehicles (commercial, high-end and luxury cars, trucks, buses) under the brands of Mercedes, Maybach, Smart, among others. Based on revenue, Daimler is the third biggest automobile producer in the world, with revenues reaching €16 B in 2019 (a combination of large volumes and highly priced, due to their quality, cars). Similarly to Ferrari, it maintains a strong presence in the racing world, mostly in Formula 1.
- Volkswagen: is the famous German car manufacturer, and the largest in the world reaching €46 B in revenue in 2019 (result of high volume, and a worldwide presence). Volkswagen, contrarily to the peers analysed above, is focused in the normal commercial segments, approaching the status of market leader in the A (with the Volkswagen Up!), B (with Polo), C (with Golf and the ID.3) and D (with Passat and Arteon). Its presence in the racing world is only sporadic.
- Burberry: is a British luxury fashion house, focused on designing and manufacturing luxury apparel and accessories. Burberry shares with Ferrari its strong and widely known brand, as well as a preference to equity financing, with low recurrence to debt. Additionally, alike Ferrari, despite the obvious differences in industry, it tends to be a late mover in in what concerns the environmentally friendly business methods.
- Hermès: is a French luxury goods manufacturer, with a focus on leather goods, ready-to-wear clothing, jewellery and perfumery. Despite only doubling Ferrari's revenues, it more than triples its market capitalization, which may be explained by its larger margins. Additionally, both Ferrari and Hermès are alike in what concerns capital structure, with a larger focus on equity financing, reaching Equity/Total Assets ratios of around 70%.
- Moët Hennessy Louis Vuitton (LVMH): is a French multinational, specializing in the manufacturing of luxury goods, marketing their products under some of the best-known luxury brands, like Louis Vuitton, Dom Pérignon, Moët & Chandon, Hennessy, Dior, Marc Jacobs, Loewe, Guerlain, TAG Heuer, Tiffany & Co., among many others. LVMH acts in a wide range of different markets, Wines & Spirits, Fashion & Apparel, Perfumes & Cosmetics, Watches & Jewellery, and Retail. Despite the obvious different sizes, Ferrari and LVMH still have a similar global outreach and convey the same sense of status and luxury, thus targeting mostly the same audience.
- Prada: is an Italian luxury fashion house, specialized in the Fashion & Apparel luxury segment. It shares its geographical origins and global reach with Ferrari.

However, it attracts more of a mass-market audience. Its capital structure resembles that of Ferrari, but in terms of operations Prada displays only tiny margins.

Industry Trends

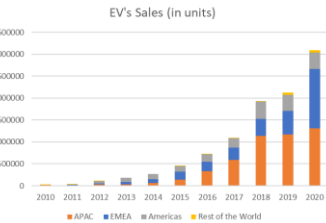


Fig.1: Total EV Sales (in units)
Source: Bloomberg data

Even though both the automotive and the luxury goods industries are essential for Ferrari's valuation purposes, in terms of business development, Ferrari is guided by the trends in automobile manufacturing. And the automotive industry is facing disruptive times, with the wake of several new technologies, business models and a global pandemic bringing new challenges to the previously established companies. Several companies have found ways to stay afloat but Ferrari, being a luxury car company, might need some time to better deal with these challenges, unlike its German counterparts (Mercedes, VW, BMW and Audi) and subsidiaries.

Electrification

The most significant trend right now is the rise of electric vehicles (EV), in detriment of internal combustion engine (ICE) vehicles and, with several countries adopting aggressive measures against the latter (ex: UK and EU's banning the sale of new ICE cars after 2030 and 2035, respectively). Global EV sales have been growing rapidly in the past decade, with APAC and EMEA being the largest regions, and China the single largest market. However, this technology comes with its challenges, the main being the necessary investment in charging infrastructure. According to Reuters, "the (European) Commission estimates 80-120 billion euros (\$95-\$142 billion) will need to be spent on public and private chargers across the EU by 2040"¹⁰. The charging infrastructure is growing at a rapid pace but is still very limited. Investment will have to be carried by both automakers and the public sector, in order to achieve the common goal of reducing dependency on fossil fuels.

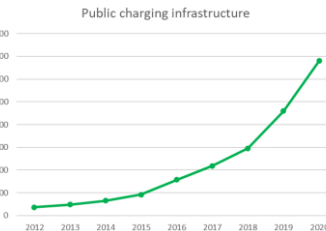


Fig.2: Public charging infrastructure (in thousands of units)
Source: Bloomberg data

Ferrari might be lagging in this trend, as it currently produces only two plug-in hybrid electric vehicle (PHEV), the SF90 Stradale (with its Spider version) and the new 296 GTB. Currently, Porsche is leading the luxury EV market, with its Taycan family, that, by the 1H of 2021, had already sold 39 967 units, and with an electric range of 333 to 463 km, clearly surpassing the SF90's mere 26 km electric range. Porsche's new Macan SUV (a BEV) is also set to be launched in 2022, timing of Ferrari's PHEV Purosangue SUV launch, hardening Ferrari's task of capturing some market share in this segment. Additionally, Ferrari is only set to start selling its first BEV in 2025, and with an increased difficulty when compared to its competitors: many of Ferrari's competitors are part of larger automotive groups, as is the case of Stellantis, producing in scale and leveraging on partnership establishment for electric battery production (Stellantis

¹⁰ "EU Proposes Effective Ban for New Fossil-Fuel Cars from 2035." Reuters, Nick Carey and Christoph Steitz, 14 July 2021, <https://www.reuters.com/business/retail-consumer/eu-proposes-effective-ban-new-fossil-fuel-car-sales-2035-2021-07-14/#main-content>.

has partnered with Samsung SDI for battery production). But this is not an isolate case, with more of these partnerships sprouting. Ferrari faces two different difficulties: (i) it tends to be more independent in conducting these types of new developments when compared to its competitors; (ii) ensuring the adaptation of these newly introduced electric batteries to the sports and high-performance standards its customers are used to.

Still regarding this issue, there are some mitigatory factors, as the Italian government has already stepped in to try to convince the EU to create a special rule for its sports cars manufacturers, in order to protect them from the Union's 2035 ICE ban deadline.



Fig.3: Ferrari SF90 Stradale (above)
and 296GTB (below)
Source: Company website

Connectivity

As technology and connectivity play an increasing role in society and in people's lives, we can expect automakers to incorporate IOT (internet of things) technologies into their cars. McKinsey research suggests that this can result in solutions that can contribute to traffic management, safety and car part necessities, helping automakers to adjusting their production into demand needs¹¹.

While these technologies will give a greater insight into how demand is developing, there is no denying that production itself will be changed, as more technological innovations outside the current scope of what Ferrari possesses will appear. Ferrari stated in its latest Annual Report that they "are increasingly investing in connectivity, which requires significant investments in R&D, we expect that the future generation of cars will feature a high degree of connectivity for purposes of infotainment, safety and regulatory compliance"¹². Whether Ferrari will make these investments by itself or look for a partnership with an original equipment manufacturer (OEM) remains uncertain, but we believe that Ferrari possesses the required conditions for a good performance in this trend.

Autonomous Vehicles and Artificial Intelligence

First efforts in this area were made with cruise control since cars' first years. In 2006, Lexus took a great step in AI, by announcing a self-parking car, which has thereafter been included as an extra in several luxury cars. In 2018, US-based start-up Udelv started using autonomous delivery vehicles (ADV) for last-mile deliveries and, in 2019, Tesla launched its Full Self-Driving (FSD) complement to its cars, helping drivers through a set of cameras and algorithms that process information collected through cameras and sensors. As traffic and car crashes increase globally, AV's have been perceived as the solution to reduce much of road fatalities. In 2020 Annual Report, Ferrari said that "while we do not intend to develop self-driving cars, we will

¹¹ Alsen, Daniel, et al. "The Future of Connectivity: Enabling the Internet of Things." McKinsey & Company, McKinsey & Company, 28 Oct. 2019, <https://www.mckinsey.com/featured-insights/internet-of-things/our-insights/the-future-of-connectivity-enabling-the-internet-of-things>.

¹² Ferrari. Ferrari N.V., 2021, Annual Report 2020, https://corporate.ferrari.com/sites/ferrari15ipo/files/ar_2020_ferrari_web.pdf. Accessed 8 Dec. 2021

adopt certain features of autonomous driving technology in response to regulatory developments and customer preferences, especially in the GT segment”¹³. Ferrari has already taken a few steps into adopting these technologies, “such as predictive braking and automatic cruise control on current models”¹⁴, and it will be “carefully monitoring the evolution of autonomous driving technologies”¹⁵. We also believe that it is not in Ferrari’s best interests (as well as many other luxury sports cars brands) to build self-driving cars, since that would remove the driving experience from their customers.

Shared Mobility

As the name suggests, shared mobility is a system where people share a vehicle either concurrently or over time. The current market for shared mobility exceeds \$60B in its three main markets: China, US and Europe and it is expected to grow at around 20% annually until 2030, according to McKinsey research¹⁶. However, it points out several challenges that might interfere with the development and growth of this trend: the business models to adopt for each city and country, customer preferences, which still prefer using their private vehicles, and difficulty in implementing shared mobility business models in rural areas. The same report says though autonomous vehicles could be the solution, since “self-driving cars would enable mobility, reducing the fixed cost base. Autonomy would also let companies target different user segments via smaller differentiated fleets”¹⁷.

We believe that trend won’t affect Ferrari as much as it affects its peers, for their main customers don’t use this type of services and prefer having access to premium and exclusive vehicles. However, McKinsey has a good argument on shared mobility providing opportunities for luxury brands to become available to wider audiences through sharing or pay-per-minute business models, sharing the experience of driving exclusive cars while also pooling the burden of paying for them among many users.

Macroeconomic Outlook

According to International Monetary Fund’s latest World Economic Outlook report, in July 2021¹⁸, global economy is projected to grow at 6.0% in 2021 and 4.9% in 2022. These expectations are mostly driven by the economic upsurge after 2020’s Covid pandemic, which resulted in a global negative real GDP growth of -3.3% for that year. Both industries

¹³ Ferrari. *Ferrari N.V., 2021, Annual Report 2020*, https://corporate.ferrari.com/sites/ferrari15ipo/files/ar_2020_ferrari_web.pdf. Accessed 8 Dec. 2021

¹⁴ *ibidem*

¹⁵ *ibidem*

¹⁶ “How Shared Mobility Will Change the Automotive Industry.” McKinsey & Company, Anne Grosse-Ophoff, Saskia Hausler, Kersten Heineke and Timo Moller, 18 Apr. 2017, <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/how-shared-mobility-will-change-the-automotive-industry>.

¹⁷ *ibidem*

¹⁸ International Monetary Fund, *World Economic Outlook Update*, July 2021

(Automotive and Luxury Goods) that are important for the company in analysis, display figures that tend to be more volatile than the global economy, with this aspect being particularly relevant for the Luxury Goods industry. A fall of around 16% in automobiles and of 23% in luxury goods consumption in 2020, is expected to be matched with a 7.7% and 15% rebound in 2021, according to Moody's¹⁹ and Bain & Co.²⁰, respectively.

Growth rebound both globally and at the industry level is mostly explained by the relief in lockdown rules and of economic and social restrictions. This has an important effect in both the supply and demand-side of the market, with companies resuming the pre-pandemic production levels, and with consumption being incentivized by the natural needs associated with a less "domestic life" and the accumulated household savings accumulated during pandemic period. Also, falling levels of local Covid transmission, and the growing vaccination rates, are expected to accelerate and empower these trends.

Long-term real GDP is expected to eventually stabilize and converge to around 2%, according to OECD's long-term data on global real GDP data²¹.

Valuation

Relative Valuation

Framing Ferrari as a Luxury or Automotive company

So far, we have seen that Ferrari, in terms of margins and ratios, resembles much more its Luxury peers (ex: Hermes, Moncler, LVMH, etc.) than its Automotive peers (ex: BMW, Daimler, VW, etc.), mainly due to the fact that most of its Automotive peers do not produce exclusively luxury models, having mass production models as well. We will conduct a small backward test, to verify if, in terms of multiples, Ferrari is closer to Luxury or Auto companies, by comparing its last fiscal year (LFY) EV/EBITDA and P/E ratios with that of its peers. For the Luxury peers, we picked Burberry, Hermès, LVMH, Prada, Moncler and Richemont, whereas we picked Aston Martin, BMW, Daimler, Stellantis, Ford and Volkswagen as Auto peers.

From an EV/EBITDA point, Luxury peers had an average of 25.74x, much closer to Ferrari's 39.01x, compared to the Auto peers average of 11.98x. In fact, if we exclude Aston Martin, who is the closest Auto company to Ferrari, with an EV/EBITDA ratio of 40.26x, the average of the other Auto peers would decrease to 6.33x. From the P/E ratio, we reach a similar conclusion, with Luxury companies having an average P/E ratio of 55.35x, whereas Auto companies have only an average P/E ratio of 15.50x. Comparing to Ferrari's P/E ratio of 78.04x, it is once again clear that Ferrari is much closer to its Luxury peers.

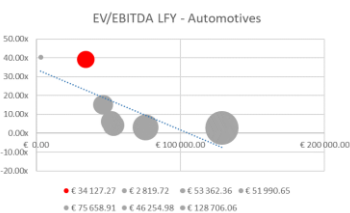


Fig.4: EV/EBITDA LFY Auto (in %) Source: Companies data

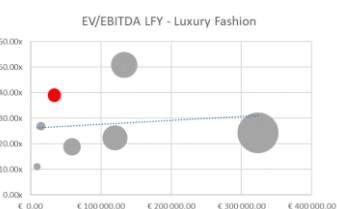


Fig.5: EV/EBITDA LFY Luxury (in %) Source: Companies data

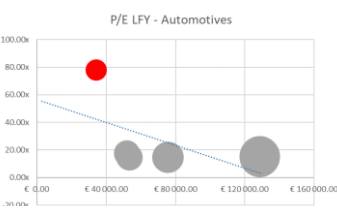


Fig.6: P/E LFY Auto (in %) Source: Companies data

¹⁹ Automotive Sector Outlook: Recovering after traumatic 2020, <https://think.ing.com/articles/automotive-sector-outlook-recovering-after-traumatic-2020/>

²⁰ Luxury market expected to grow 15% in 2021, <https://journal.hautehorlogerie.org/en/luxury-market-expected-to-grow-15-in-2021/>

²¹ OECD data on Real GDP long-term forecast, <https://data.oecd.org/gdp/real-gdp-long-term-forecast.htm>

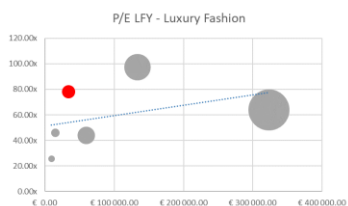


Fig 7: P/E LFY Luxury (in %)
Source: Companies data

(in € millions)	2022
EBITDA 2022	€ 1 432.31
EV/EBITDA FY+1 (Hermès+ Luxury Peers Average)	25.36x
EV 2022	€ 36 319.63
Net Debt 2022	€ 2 233.34
Equity 2022	€ 34 086.29
Nº shares 2022	183490155
Share Price 2022	€ 185.77

Table 1: EV/EBITDA FY+1 using Hermès and Luxury Peers average
Source: Companies data

(in € millions)	2022
EBITDA 2022	€ 1 432.31
EV/EBITDA FY+1 (Hermès)	34.63x
EV 2022	€ 49 600.64
Net Debt 2022	€ 2 233.34
Equity 2022	€ 47 367.30
Nº shares 2022	183490155
Share Price 2022	€ 258.15

Table 2: EV/EBITDA FY+1 using only Hermès
Source: Companies data

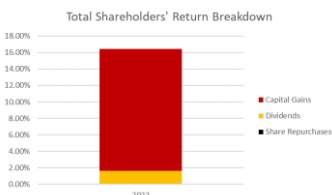


Fig.8: TSR Breakdown in 31/12/2022 (in %)
Source: Company data, Analyst estimation

Multiple Valuation

As seen above, we believe that the set of Luxury companies that we selected will bear a more realistic approach to Ferrari’s case. Nevertheless, we are going to include in our set of peers Aston Martin, for two reasons: it is the only Automotive peer besides Ferrari that sells exclusively luxury sports vehicles and showed similar ratios to that of Ferrari. With this said, we will compute a forward-looking average between Hermès and the average Luxury EV/EBITDA, resulting in an EV/EBITDA ratio of 25.36x. This results in an enterprise value of €34,086.29 million and a €185.77 share price for 2022.

This is a great fall from the €266.10 we predicted with our APV valuation, showing that Ferrari is clearly outperforming its peers, with the exception of Hermès, which presented an EV/EBITDA FY+1 in 34.63x and a P/E FY+1 of 60.21x, which would result in a share price for Ferrari of €258.15 and €225.42, respectively, more in line with our APV valuation, showing that Hermès might be the closest peer to Ferrari and the one for Ferrari to look up to.

We believe Ferrari will be able to keep its premium position over its peers due to its Predictability, given that all demand and production are known in advance by the company, which will help Ferrari in defining its strategy; its Brand and Pricing Power, as Ferrari was voted second strongest brand by Brand Finance Global 500²² in 2021 , only behind WeChat; its High Profitability, given its Special Series and Icona models, and its Loyal Customer Base.

Conclusion, Risks and Recommendations

Driven by its historically strong performance and its resilient business case for the next decade, our recommendation is Buy, with a predicted return of 16.44% for FY2022. This value can be broken down into 14.81% from Capital Gains, 1.61% from Dividends and 0.02% from Share Repurchases.

Multiple valuation also suggests that the share price is highly undervalued, given that all its peers, with the exception of Hermès, have too low P/E and EV/EBITDA ratios, when compared to Ferrari. Nevertheless, it should be remembered that our share price will be highly volatile to fluctuations in the MRP, which could change our recommendation to Hold (or even Sell in a more extreme scenario).

In terms of its operations, Ferrari’s overreliance in its two factories, both located in Italy, might be troublesome in case the COVID-19 pandemic starts worsening again and forces a temporary closing of the manufacturing operations (a factor that is intensified by the fact that a large percentage of Ferrari’s workers are unionized, thus, if worker’s safety is at stake, unions will not

²² Brand Finance Global 500 2021 report, <https://brandirectory.com/download-report/brand-finance-global-500-2021-preview.pdf>

hesitate in pushing for temporary factory closure). Although this seems unlikely now, with the development of vaccines, this scenario would hit deliveries as well as developments in the electric vehicle project which, as seen in the “Sensitivity Analysis” section, could have a significant negative impact in the share price (which would potentially force a change in our recommendation to a Sell). Ferrari is looking to address this by investing more in non-manufacturing segments, such as their Financial and Sponsorship, Commercial and Brand segments, which would ensure Ferrari some cash-inflows, mainly from services and online deliveries.

Another risk factor will be possible changes in European policy in terms of greenhouse gases emissions which would ban ICE vehicles even sooner. Ferrari and Lamborghini have been aided by the Italian government on this, with the latter stating that a special regime should be implemented for these luxury sports cars companies (similar to the one currently existing for low volume producing automakers). Despite this eminent risk, we believe the lobby for high-end luxury cars will prevail and manage to bargain more flexible conditions in the transition to a cleaner automotive industry, mainly in the deadlines to stop commercializing non-electric vehicles.

On the other hand, as we have said in the “Costs” section, we were highly conservative in our costs structure, since we have assumed that Ferrari will bear all its costs, mainly in R&D, by itself. This is indeed an unlikely scenario but given the level of relative uncertainty on how Ferrari will conduct its electric transition strategy, we prefer showcasing the upside potential for Ferrari’s shareholders in a highly conservative cost-bearing scenario.

However, our true beliefs lean for Ferrari’s strong brand, and its ability to get good partnerships for both general supply of goods and research conduction. This would further enforce our Buy recommendation and our conviction for next decade strong business plan.

Finally, while new model ranges (ex: Roma, Purosangue, etc.) might have an impact on Ferrari’s image of exclusivity, the company will still produce high-end sports models (ex: Special Series, Icona, etc.) and develop its personalization programs to please its regular customers. This strategy gets the best of both worlds, Ferrari keeps its pricing power and margins, and most important of all it manages to escape its niche sports and high-performance highly luxurious market. It now has models that can compete with slightly less luxurious manufacturers such as Aston Martin and Porsche, in both the comfort and the sports segments. Ferrari is now in the path to capture the whole segments of the high-end car market. All this reinforces our Buy recommendation.

Going past our risk discussion, we are confident that the business plan for the next decade will confirm the expectations of Ferrari’s customers and shareholders, assuring high-quality standards both in company performance and in the cars they deliver. Concluding, we issue a Buy recommendation for Ferrari.

FERRARI S.P.A.

AUTOMOTIVE INDUSTRY

STUDENTS: BERNARDO FARIA AND
JOÃO DRUMOND

COMPANY REPORT

17 DECEMBER 2021

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Equity Research: Ferrari

Deep-diving into Ferrari's business strategy and respective valuation

Outstanding historical performance, Covid relief, and a renovated approach - We are confident that Ferrari is in the path to success, and its share is expected to experience a significant upside. Multiple factors contribute to realising this potential:

1.Branding and reputation: Ferrari's undisrupted supply chain (as happened with multiple competitors due to microchip shortages), recent F1 performances, and the continuous ability to being a price setter in the market, build up Ferrari's reputation for exclusivity, and may have a yet unrealized impact in Ferrari's perception for its customers.

2.Reaching a larger audience within the luxury segment: with the launch of the Ferrari Purosangue in 2022, Ferrari extends its reach to the luxury SUV/comfort segment, which has enormous amounts of untapped potential (as the Lamborghini Urus revealed). We believe the impact of this launch is still undervalued by the market (and the consequent reaction in price is still to come, as launch date comes closer).

3.R&D and the new industry: Ferrari may be lagging behind its competitors in launching a fully electric vehicle, but we are confident that, once launched, Ferrari will maintain its high standards and be able to fully adapt its positioning to the new industry trends, keeping its existing market share and margins.

Company description

Ferrari is the most famous automobile manufacturer in the world. It was founded in 1929 as a racing division and in 1939 as a manufacturer by Enzo Ferrari. It is known by its emblematic presence in the racing world, most importantly through its Formula One team. It is publicly traded both in the New York Stock Exchange and in the Borsa Italiana since October 2015 and January 2016, respectively.

Recommendation: BUY

Price Target FY22: 266.10 €

Price (as of 30-Nov-21) 231.70 €

Bloomberg Terminal

52-week range (€)	154.70 – 246.30
Market Cap (€m)	42,667.786
Outstanding Shares (m)	184.151

Source: Bloomberg Terminal



5-year total returns – Ferrari vs Stoxx600
Source: Bloomberg Terminal

(Values in € millions)	2020	2021F	2022F
Revenues	3,459.79	4,403.45	4,671.92
Revenue growth (%)	-8.15%	27.28%	6.10%
Gross Margin (%)	63.60%	62.44%	60.19%
EBITDA	1,143.13	1,696.94	1,432.31
Total Comprehensive Income	608.88	955.01	734.29

THIS REPORT WAS PREPARED EXCLUSIVELY FOR ACADEMIC PURPOSES BY BERNARDO FARIA AND JOÃO DRUMOND, MASTER'S IN FINANCE STUDENTS OF THE NOVA SCHOOL OF BUSINESS AND ECONOMICS. THE REPORT WAS SUPERVISED BY A NOVA SBE FACULTY MEMBER, ACTING IN A MERE ACADEMIC CAPACITY, WHO REVIEWED THE VALUATION METHODOLOGY AND THE FINANCIAL MODEL. (PLEASE REFER TO THE DISCLOSURES AND DISCLAIMERS AT END OF THE DOCUMENT)

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Company Overview

Company Description

Ferrari is likely to be the most famous sports car manufacturer in the world, a clear leader in its sector, setting the market trends both from an automobile and from a luxury and status standpoint.

In 1929, Enzo Ferrari formed Scuderia Ferrari, a racing team intended to enter amateur drivers in local and national racing car competitions. In 1933, one of the events that leapfrogged the Scuderia to becoming such an historical racing team occurred. Alfa Romeo, experiencing financial instability, ended its in-house racing team, and Scuderia Ferrari became Alfa Romeo's official racing team. After 1937, Alfa Romeo changed strategy and transferred its racing activity to Alfa Corse, its new racing team. In disagreement with the strategy, Enzo Ferrari left and decided to found Ferrari in September 1939. This is the company and racing team that still stands today.

Ferrari is based in Maranello (in Emilia-Romagna, Italy), where it has one of its 2 manufacturing facilities (with the other one being in Modena, also in the Emilia-Romagna region). Adjacent to Maranello's production facilities is the Fiorano Circuit, a racetrack owned by Ferrari and used for development and testing purposes. However, Ferrari's most famous track is the Mugello circuit, which is the home of numerous racing events (ex: it is part of the MotoGP's set of annual tracks) and is the track used as the main F1 testing grounds.

Both Ferrari's history and its infrastructure set the grounds and contextualize its widespread success and its growth strategy, always connected to its roots. Ferrari has become more than a mere racing team or racing brand. It has become an icon in the automobile and racing universe, manufacturing the most famous racing and road cars in the world.

Share Details

Ferrari, as of 31st December 2020 had 184 747 890 issued common shares (and approximately 184 151 000 as of 1st December 2021). The main shareholders are Exor N.V. which owns 24.05% of Ferrari's common shares, Piero Ferrari with 10.23%, T. Rowe Price Associates (4.33%) and BlackRock (3.85%). Although main shareholders hold a minority position in terms of common share ownership, they have a majority position in voting power. Ferrari has a policy called the 'Loyalty Voting Program'. Common shares, *per se*, do not hold voting

power. Under this program shareholders are eligible to ask for a special voting share, for each of its common shares held by a period of more than 3 years. Special voting shares cannot be traded, and common shares within the 'Loyalty Voting Program' must be deregistered from the program before being traded, hindering the liquidity of common shares.

Ferrari shares are listed both on the New York Stock Exchange (quoted in US dollars) and on the Mercato Telematico Azionario (quoted in euros). Dual listing has the obvious consequence of a price differential, due to differences in trading schedules, and volatility of the EUR-USD exchange rate.

Despite liquidity and price difference consequences, share ownership and trading design provides Ferrari with a robust system, as it prevents sudden attempts to change its management. This stability-enabling system mitigates some risks and is key to ensure public confidence (which ultimately has a reflex on share price, as it, among other things, may contribute for cheaper financing).

Business Model

Ferrari's business model is set on two pillars: Branding and Exclusivity.

Branding strategy is mainly made through Formula One with Scuderia Ferrari, "the oldest and most successful in the history of Formula 1"¹, and its long history and pedigree in racing competitions. Ferrari's presence in F1 exudes the sentiment of adventure, speed, and high performance. F1 also provides a platform for R&D and testing, with the innovations found in racing cars transitioning to their commercial cars. This synergy provides a fructuous cost saving mechanism, when compared with manufacturers that do not benefit from similar testing platforms.

This strong Branding positioning is complemented by the feeling of Exclusivity when owning a Ferrari. Through the promotion of yearly events, that gather current owners of Ferraris, it manages to increase the relationship they have with and their loyalty to the brand. Additionally, parallel to the car-making business, Ferrari commercializes high-end luxury products (such as clothing and accessories), expanding their customer base beyond those who are capable of owning a Ferrari car.

Both the Branding and Exclusivity positioning are essential for defining and explaining Ferrari's market positioning. Through low volumes, customer loyalty,

¹ Ferrari. Ferrari N.V., 2021, Annual Report 2020, https://corporate.ferrari.com/sites/ferrari15ipo/files/ar_2020_ferrari_web.pdf. Accessed 8 Dec. 2021

and customization, or through “deprivation marketing”², as Stefan H. Thomke coined it, Ferrari is able to be a price setter and charge large premia over the cars it sells. This key capability largely sets the ground for Ferrari’s resilience in years to come, as it ensures both the attraction of new customers, as well as a loyal customer base that is highly likely to acquire additional cars (a strategy in which automakers do not usually rely on. In addition, demand for Ferrari cars clearly exceed the available supply, meaning that Ferrari operates on a waiting list basis. So, in case a customer wants to buy a Ferrari, he is faced by a considerable waiting time before it is delivered. This mechanism results in a clear view for Ferrari of its future expected volume of production and consequent cash flows, strengthening Ferrari’s share resilience to other market factors.

Factors like these are essential for understanding Ferrari’s market positioning and revenue volume and evolution.

Company Analysis

SWOT Analysis

- Strengths

The major Ferrari strength is its incredibly strong brand. According to Brand Finance Global 500³, Ferrari is currently the 2nd strongest brand in the world. This brand strength measure reflects the efficacy of Ferrari’s “brand performance on intangible measures, relative to its competitors”⁴. That is, despite having competitors with larger market value (due to the natural differences between Ferrari and its competitors, as Ferrari aims for a niche target market), it displays outstanding performance among the three evaluated criteria in the above-mentioned ranking: marketing investment, stakeholder equity, and business performance. This performance is notable mainly in the stakeholder equity section. Ferrari’s clients perceive the cars they buy, and the underlying maintenance and relationship they build with Ferrari, to be just perfect. The cars live up to their name, and Ferrari ensures after-sale services just as good as the cars they sell. This behaviour culminates in an especially good relationship with clients and a high client retention.

² “The Ferrari Way.” Harvard Business School Working Knowledge, Michael Blanding, 21 Mar. 2019, <https://hbswk.hbs.edu/item/the-ferrari-way>.

³ Brand Finance Global 500 2021 report, <https://brandirectory.com/download-report/brand-finance-global-500-2021-preview.pdf>

⁴ *Ibidem*.

As Ferrari puts it, “the prestige, identity, and appeal of the Ferrari brand depend on the continued success of Scuderia Ferrari racing team in F1”⁵. Ferrari has a strong presence in the racing world, which tends to be a source of good reputation and a key marketing strategy. Through F1, Ferrari demonstrates its capabilities in car manufacturing, namely in what concerns performance, safety, and design.

○ Weaknesses

Ferrari’s high standards in what concerns its commercial network, both the sale and after-sale segments, may be a source of weaknesses. Ferrari sells its cars mainly through car dealerships it does not own, and that are required to meet Ferrari’s demanding standards. As such, Ferrari tends to have a hard time establishing new dealerships in new geographies. The idea of shipping cars into a geographic location where its customers may not have the possibility to resort to quality after-sale services (maintenance and repairing services), is not of the likelihood of Ferrari. It poses a potential for reputational risk, as the lack of maintenance may result in underperforming cars, which is not the experience Ferrari wants to provide its customers. Underserved geographies include Central and South America, Africa, and Asia (with the exception of China), and tend to hinder Ferrari’s potential to grow.

Additionally, despite Ferrari’s comparative good performance in terms of margins (as we will see below) when compared to its automotive competitors, we believe it could even fare better. When considering the supply of technological key components with high specifications, Ferrari tends to adopt synergic relationships with its suppliers, considering them “key strategic innovation partners”⁶. As such, it relies on a reduced number of suppliers, which possess higher than expected bargaining power against Ferrari, thus slightly increasing some Ferrari’s production costs.

○ Opportunities

The main opportunity, which Ferrari is already exploring, and which is a potential source for large future revenue, is the expansion to new segments of the car market. Currently, Ferrari is expanding to the SUV market in 2022 with the launch of Ferrari Purosangue. This is a fairly unexplored segment for ultra-luxury brands like Ferrari. Lamborghini, as a first mover, with the launch of its Urus model in 2018, has made it evident that there is definitely a market for luxury SUVs, with

⁵ Ferrari. Ferrari N.V., 2021, Annual Report 2020, https://corporate.ferrari.com/sites/ferrari15ipo/files/ar_2020_ferrari_web.pdf. Accessed 8 Dec. 2021

⁶ *Ibidem*.

Lamborghini’s revenues almost doubling since the launch. Besides the SUV segment, there is also a potential avenue for growth in the F-segment cars, which combine luxury and performance with comfort (such as the BMW 8 Series, the Porsche Panamera, or Mercedes S-Class).

Fast growing economies tend to be an opportunity for selling luxury and status products, as new millionaires are eager to showcase their newly acquired financial power. As such, fast growing Asian economies (such as China, India, Vietnam), in Latin America (Mexico, Brazil) and in Africa (Nigeria), provide a chance for further commercial growth if Ferrari manages to overcome its commercial dispersal difficulties.

o Threats

Continuous restrictions and the growth of environmental concerns, with considerable changes in public and private policymaking, are a source of business risk to which Ferrari is exposed. To this day, Ferrari has been able to partially avoid environmental restrictions through its status as a small volume manufacturer. However, someday Ferrari will have to converge with other automobile manufacturers and adapt its new cars to comply with environmental policies. This poses a threat from two different perspectives: (i) Ferrari cars may suffer an impact on their performance due the limitations on GHG emissions and average fuel consumption; (ii) it may force Ferrari to further channel R&D resources to develop environment related issues, instead of focusing on the features that its customers tend to value (performance, safety and the design of the cars).

Another potential threat is the potential inability of Ferrari to have high-quality competitive electric engines. That is, Ferrari has a clear reputation in the manufacturing of gas engines and has successfully began introducing hybrid luxury sports cars in the market. However, the transition to electric-only engines is more challenging. The appearance of new brands and branches of existing brands solely focused on the development of this kind of environmentally focused business, is a clear threat. Examples of these cars are: Aspark Owl, Lotus Evija, Ariel P40, or Rimac C_Two.

Profitability Analysis

As Fig.1 suggests, Ferrari’s margins have risen steadily since its IPO in 2016. Its Gross Margin grew from 57.1% in 2016 to 63.6% in 2020, staying resilient even during the first year of the pandemic, which can be attributed to the fact that Ferrari invested heavily on special series models, specially with the launch of its

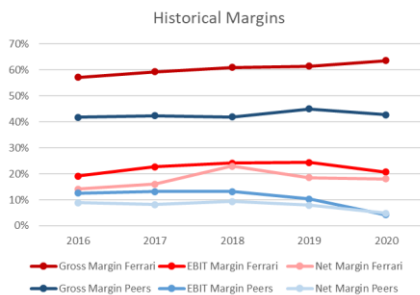


Fig.1: Ferrari historical margins (in %) Source: Company data

Icona line, which are vehicles with greater margins than their regular models. The EBIT Margins kept the same trend, except for 2020, when the EBIT Margin fell from 24.4% to 20.7%, its lowest value since 2016, due to a decrease of 8.1% in their Revenues, while its SG&A Cost and Cost of Sales decreased only 2.1% and 6.6%, respectively, and their R&D Expenses even increased this year by 1.2%. However, the company has already revised its EBIT Margin up to an interval between 22.6% and 23.7% in 2021. This increase in Operating Margins has come mainly as a result of greater factory efficiency, with the implementation of more reliable factories, the digitalization of its operations, which is partially offset by its R&D Expenses, that will most likely continue to grow in the next years, due to the disrupting period being lived in the auto industry.

When comparing to its general peer group, Fig.1 shows that Ferrari outperforms its peers in every margin studied in this period, with the gap between them growing in 2020, meaning that Ferrari thrives under struggling times better than its peers. Going further and analyzing Ferrari against its peer groups by sector, we can see in Fig.2 that Ferrari's margins are much more similar to its Fashion and Luxury peers, reflecting its ability to apply premium prices over its goods, unlike its other Automotive peers, who are much more general automakers than Ferrari. Still, Ferrari manages to keep its EBIT and Net Margin above its Fashion and Luxury peers, emphasizing the advantages of its industry against the fashion one (ex: no need to invest so much in advertising).

Ferrari's overall ROIC fell from 31% in 2016 to 24% in 2020, after reaching a peak of 40% in 2017, following its Weighted Core ROIC, which fell from 35% in 2016 to 27% in 2020. This decrease results mainly of a steady decrease in the Core Asset Turnover, which decreased from 172% in 2017 to 120% in 2020, meaning that the company had to use more of its resources to maintain the same level of revenue. This decrease can be justified by a greater investment by Ferrari in its Fixed Assets, with the conclusion of several new buildings, such as the Ferrari Design Center in 2018 and the New Technical Center in 2019, as well as the implementation of IFRS-16, which prompted all companies to start recognizing leases as fixed assets. Luckily, this movement was partially offset by better margins presented by the company, as mentioned above. Additionally, the Non-Core operations have had continuous negative ROICs, showing that Ferrari's investment strategies haven't been enough to compensate the rise of any adversity faced by the company, such as greater Provisions.

This lower ROIC, came also as a result of a lower RONIC, which in a first analysis may seem that Ferrari's new investments have been destroying value to the company. This can be justified by the amount of research the company is conducting at this disrupting time. Meanwhile, a higher RR further worsens the

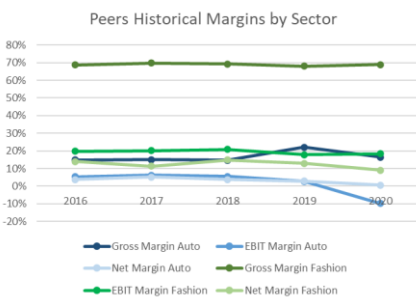


Fig.2: Peers historical margins by sector (in %) Source: Peers data

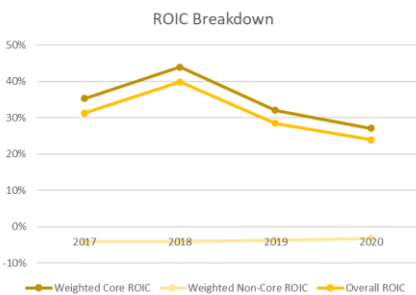


Fig.3: Ferrari ROIC breakdown (in %) Source: Company data

	2016	2017	2018	2019
ROIC		31%	40%	28%
RR (Total Capital)	399%	353%	320%	379%
Growth Rate		25%	41%	-9%
RONIC			122%	-13%
RR (New Capital)			33%	69%
Growth Rate			41%	-9%

Table 1: Ferrari ROIC breakdown (in %) Source: Company data

problem, resulting in a negative growth rate for its Comprehensive Income. This is not to be worrisome, due to the high investment and disrupting times Ferrari and the Automotive industry are facing. That is, investment that is being made in past years is conducted to long-term projects, which are only expected to be yielding their results along the next decade (more precisely in 2022, when the Purosangue is launched and the new SUV production line starts providing some returns, and in 2025 when the first Ferrari’s electric vehicle is expected to be launched). Given the time nature of these projects, it is natural that RONIC performance will tend to decrease before catching up with normal figures.

Whereas ROIC shows what value the company is generating on itself, ROE gives us the perspective of shareholders. ROE has decreased sharply since Ferrari’s IPO in 2016, falling from 168% in 2016 to just 42% in 2020. This comes as a direct result of a fall in its Financing Contribution, which became lower than the ROIC in 2019. As a result, Ferrari’s shareholders now benefit more from the company’s good operating practices than from its financing choices. This fall in Financing Contribution results from the company’s appreciation since its IPO in 2016, which led to a fall of the D/E ratio from 460% in 2016 to 80% in 2020, meaning that a greater investment rests with its shareholders now. This situation might turn around, however, as Ferrari continues its Shares Buyback Program, started in 2017.

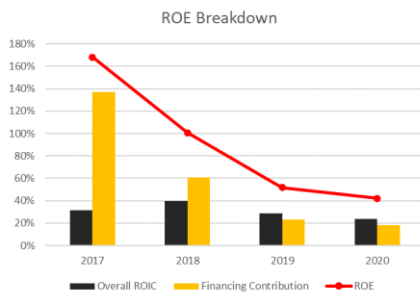


Fig.4: Ferrari ROE breakdown (in %) Source: Company data

Capital Structure

In terms of capital structure, Ferrari has been converging, in the past fiscal years, to a structure in which it sources its assets through 70% liabilities and 30% equity (in accounting figures). In 2020, the ratio Total Equity / Total Assets was 28.57%, and, consequently, the Total Liabilities / Total Assets ratio was 71.43%.

We can see that in the Automobile industry (considering a sample of 11 elements: Aston Martin, Renault, Stellantis, BMW, Daimler, Ford, General Motors, Nissan, Volkswagen, Honda and Toyota) the tendency is to source assets through debt, with the industry average being 26.68% for Equity and 73.32% for Liabilities. On the contrary, the tendency among the Luxury Goods industry (using a sample of 7 competitors: Burberry, Hèrmes, Louis Vuitton, Prada, Moncler, Richemont and Kering) is to source assets through Equity, with the Total Equity / Total Assets ratio averaging 49.06%.

While Ferrari tends to approach the Luxury Goods industry when looking at profitability figures, capital structure positions Ferrari in similar grounds when compared to its automobile manufacturer competitors. These figures reinforce

the importance to take into account both sets of competitors when valuing Ferrari.

Analyzing Other Financial Figures

Ferrari displays two different Cash Conversion Cycles (CCC): Operational and Total. The former encompasses Ferrari normal operations in producing luxury cars and collectibles, the latter adds the Average Financial Receivable Period (the average amount of days it takes for one of Ferrari’s clients to fully pay its car). The Total CCC is extremely high, due to Ferrari’s Financial Services segment, which helps its customers in financing the purchase of a car. These two figures give two curious insights: firstly, Ferrari can finance its purchases of raw materials, showing great power of the company in receiving cash from its dealer network and Maserati. Secondly, we see that Ferrari takes more time to collect the total amount of one of its cars, which is the base of its business model, due to the high price of its cars and the long financing periods. If Ferrari intensifies its Sales through its Financial Services, it may require larger amounts of short-term financial leverage to operate its business.

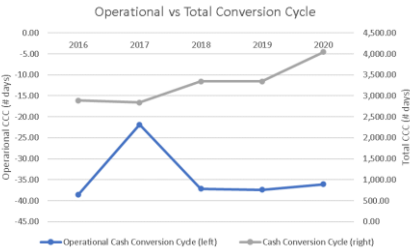


Fig.5: Ferrari Cash Conversion Cycles (in days)
Source: Company data

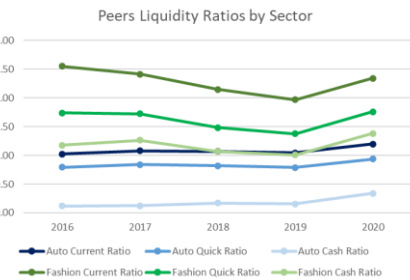


Fig.6: Peers historical Liquidity Ratios by sector (in %)
Source: Peers data

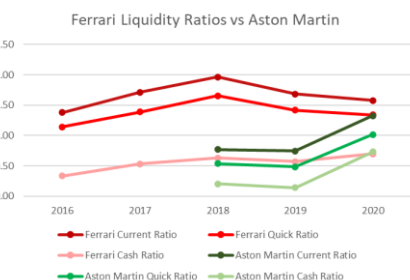


Fig.7: Ferrari Liquidity Ratios vs Aston Martin (in %)
Source: Companies data

In terms of liquidity, Ferrari’s ratios increased until 2018, after which they have slightly decreased, becoming lower than that of its peers in 2020 (first time since 2016, Ferrari’s IPO year). The main reason for this decrease in liquidity were the major increase in Short-Term Debt from the company, as a result of the Share Buyback Program and the COVID-19 pandemic.

Comparing Ferrari to its peers, we observe that it clearly outperforms other Automotive companies, which had a Current, Quick and Cash Ratios of 120%, 94% and 34%, respectively. Contrasting with Ferrari, that yielded 158%, 134% and 70%, for the same ratios. Most of the Automotive peers are general automakers, suffering on multiple fronts during the pandemic. As such, we find it more suitable to compare Ferrari with another European luxury-only automaker, Aston Martin. As it is observable, despite Ferrari outperforming Aston Martin in all previous years, both companies performed similarly in 2020. All in all, on the bigger picture, Ferrari performed better than its automotive competitors, but there may have been some convergence when comparing with other luxury automakers.

Industry Analysis

Scope of the Competition

The automotive industry is comprised by the whole range of activities involved in making a car: design, development, manufacturing, marketing, selling and post-selling services. According to Yahoo! Finance⁷, it is the 9th largest industry in the world, with a market value of \$3 trillion and is expected to grow at a 2% annual rate throughout the next decade, according to McKinsey⁸.

Despite being an automobile manufacturer, Ferrari diverges from the average car manufacturer in the industry. That is, it produces high-end luxury sports cars. As such its economic activity is not exactly comparable with its automotive peers. Additionally, as mentioned above, Ferrari also operates within the luxury clothing and accessories industries. Thus, given these two factors, in order to fully capture Ferrari's range of activity and target population, we have to include the luxury apparel industry in our discussion.

According to the Luxury Goods – Global Market Trajectory & Analytics report⁹, the global market for luxury goods was expected to reach \$224.8B market size, and to keep growing at an astonishing 4.8% CAGR throughout the next decade.

As such, we have selected a list of comparable companies, which compete with Ferrari in their activity. For the automotive industry, we have used Aston Martin, Bayerische Motoren Werke (BMW), Daimler, and Volkswagen. As for the Luxury Goods industry, we took into account Burberry, Hermès, Moët Hennessy Louis Vuitton (LVMH), and Prada. Below you can find a brief description of each, and a brief comparison with Ferrari:

- Aston Martin: is a British luxury sports car manufacturer, with a historically strong presence in the racing world, alike Ferrari. In terms of business development, Aston Martin is likely to be the closest comparable to Ferrari, as it also marks its presence in the luxury goods industry. The major difference between the two is scale, in 2019 Aston Martin had approximately £1 B in revenues, three times less than Ferrari.
- Bayerische Motoren Werke: is a German vehicles manufacturer, focused on the high-end segment. BMW, contrarily to Ferrari, performs in a wider range of

⁷ 10 Biggest Industries in the World in 2021, Yahoo! Finance, <https://finance.yahoo.com/news/10-biggest-industries-world-2021-150703784.html>

⁸ Automotive revolution – perspective towards 2030, McKinsey, <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/disruptive-trends-that-will-transform-the-auto-industry/de-DE>

⁹ Luxury Goods – Global Market Trajectory & Analytics 2021 report, https://www.researchandmarkets.com/reports/1244796/luxury_goods_global_market_trajectory_and

the automotive industry, it produces cars and motorcycles, under the brands of BMW, Mini and Rolls-Royce. As such, it produces vehicles that go from the normal commercial vehicle to the top-notch luxury comfort cars, with the D and E segments (BMW's specialization) in the middle. BMW maintains a strong presence in the car racing world, mostly with touring and more recently with Formula E.

- Daimler: is a German automotive multinational company, which manufactures vehicles (commercial, high-end and luxury cars, trucks, buses) under the brands of Mercedes, Maybach, Smart, among others. Based on revenue, Daimler is the third biggest automobile producer in the world, with revenues reaching €16 B in 2019 (a combination of large volumes and highly priced, due to their quality, cars). Similarly to Ferrari, it maintains a strong presence in the racing world, mostly in Formula 1.

- Volkswagen: is the famous German car manufacturer, and the largest in the world reaching €46 B in revenue in 2019 (result of high volume, and a worldwide presence). Volkswagen, contrarily to the peers analysed above, is focused in the normal commercial segments, approaching the status of market leader in the A (with the Volkswagen Up!), B (with Polo), C (with Golf and the ID.3) and D (with Passat and Arteon). Its presence in the racing world is only sporadic.

- Burberry: is a British luxury fashion house, focused on designing and manufacturing luxury apparel and accessories. Burberry shares with Ferrari its strong and widely known brand, as well as a preference to equity financing, with low recurrence to debt. Additionally, alike Ferrari, despite the obvious differences in industry, it tends to be a late mover in in what concerns the environmentally friendly business methods.

- Hermès: is a French luxury goods manufacturer, with a focus on leather goods, ready-to-wear clothing, jewellery and perfumery. Despite only doubling Ferrari's revenues, it more than triples its market capitalization, which may be explained by its larger margins. Additionally, both Ferrari and Hermès are alike in what concerns capital structure, with a larger focus on equity financing, reaching Equity/Total Assets ratios of around 70%.

- Moët Hennessy Louis Vuitton (LVMH): is a French multinational, specializing in the manufacturing of luxury goods, marketing their products under some of the best-known luxury brands, like Louis Vuitton, Dom Pérignon, Moët & Chandon, Hennessy, Dior, Marc Jacobs, Loewe, Guerlain, TAG Heuer, Tiffany & Co., among many others. LVMH acts in a wide range of different markets, Wines & Spirits, Fashion & Apparel, Perfumes & Cosmetics, Watches & Jewellery, and Retail. Despite the obvious different sizes, Ferrari and LVMH still have a similar

global outreach and convey the same sense of status and luxury, thus targeting mostly the same audience.

- Prada: is an Italian luxury fashion house, specialized in the Fashion & Apparel luxury segment. It shares its geographical origins and global reach with Ferrari. However, it attracts more of a mass-market audience. Its capital structure resembles that of Ferrari, but in terms of operations Prada displays only tiny margins.

Industry Trends

Even though both the automotive and the luxury goods industries are essential for Ferrari’s valuation purposes, in terms of business development, Ferrari is guided by the trends in automobile manufacturing. And the automotive industry is facing disruptive times, with the wake of several new technologies, business models and a global pandemic bringing new challenges to the previously established companies. Several companies have found ways to stay atone but Ferrari, being a luxury car company, might need some time to better deal with these challenges, unlike its German counterparts (Mercedes, VW, BMW and Audi) and subsidiaries.

Electrification

The most significant trend right now is the rise of electric vehicles (EV), in detriment of internal combustion engine (ICE) vehicles and, with several countries adopting aggressive measures against the latter (ex: UK and EU’s banning the sale of new ICE cars after 2030 and 2035, respectively). Global EV sales have been growing rapidly in the past decade, with APAC and EMEA being the largest regions, and China the single largest market. However, this technology comes with its challenges, the main being the necessary investment in charging infrastructure. According to Reuters, “the (European) Commission estimates 80-120 billion euros (\$95-\$142 billion) will need to be spent on public and private chargers across the EU by 2040”¹⁰. The charging infrastructure is growing at a rapid pace but is still very limited. Investment will have to be carried by both automakers and the public sector, in order to achieve the common goal of reducing dependency on fossil fuels.

EV's Sales (in units)

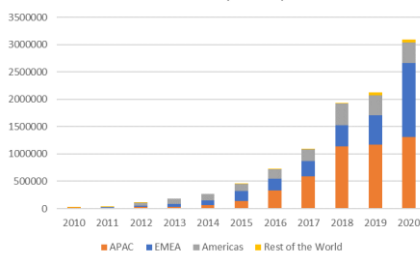


Fig.8: Total EV Sales (in units)
Source: Bloomberg data

Public charging infrastructure

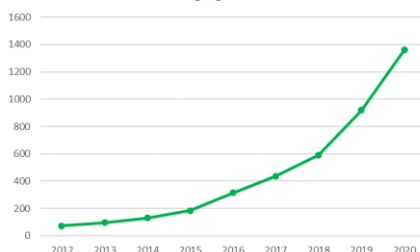


Fig.9: Public charging infrastructure (in thousands of units)
Source: Bloomberg data

¹⁰ “EU Proposes Effective Ban for New Fossil-Fuel Cars from 2035.” Reuters, Nick Carey and Christoph Steitz, 14 July 2021, <https://www.reuters.com/business/retail-consumer/eu-proposes-effective-ban-new-fossil-fuel-car-sales-2035-2021-07-14/#main-content>.



Fig.10: Ferrari SF90 Stradale (above) and 296GTB (below)
Source: Company website

Ferrari might be lagging in this trend, as it currently produces only two plug-in hybrid electric vehicle (PHEV), the SF90 Stradale (with its Spider version) and the new 296 GTB. Currently, Porsche is leading the luxury EV market, with its Taycan family, that, by the 1H of 2021, had already sold 39 967 units, and with an electric range of 333 to 463 km, clearly surpassing the SF90's mere 26 km electric range. Porsche's new Macan SUV (a BEV) is also set to be launched in 2022, timing of Ferrari's PHEV Purosangue SUV launch, hardening Ferrari's task of capturing some market share in this segment. Additionally, Ferrari is only set to start selling its first BEV in 2025, and with an increased difficulty when compared to its competitors: many of Ferrari's competitors are part of larger automotive groups, as is the case of Stellantis, producing in scale and leveraging on partnership establishment for electric battery production (Stellantis has partnered with Samsung SDI for battery production). But this is not an isolate case, with more of these partnerships sprouting. Ferrari faces two different difficulties: (i) it tends to be more independent in conducting these types of new developments when compared to its competitors; (ii) ensuring the adaptation of these newly introduced electric batteries to the sports and high-performance standards its customers are used to.

Still regarding this issue, there are some mitigatory factors, as the Italian government has already stepped in to try to convince the EU to create a special rule for its sports cars manufacturers, in order to protect them from the Union's 2035 ICE ban deadline.

Connectivity

As technology and connectivity play an increasing role in society and in people's lives, we can expect automakers to incorporate IOT (internet of things) technologies into their cars. McKinsey research suggests that this can result in solutions that can contribute to traffic management, safety and car part necessities, helping automakers to adjusting their production into demand needs¹¹.

While these technologies will give a greater insight into how demand is developing, there is no denying that production itself will be changed, as more technological innovations outside the current scope of what Ferrari possesses will appear. Ferrari stated in its latest Annual Report that they "are increasingly investing in connectivity, which requires significant investments in R&D, we expect that the future generation of cars will feature a high degree of connectivity

¹¹ Alsen, Daniel, et al. "The Future of Connectivity: Enabling the Internet of Things." McKinsey & Company, McKinsey & Company, 28 Oct. 2019, <https://www.mckinsey.com/featured-insights/internet-of-things/our-insights/the-future-of-connectivity-enabling-the-internet-of-things>.

for purposes of infotainment, safety and regulatory compliance”¹². Whether Ferrari will make these investments by itself or look for a partnership with an original equipment manufacturer (OEM) remains uncertain, but we believe that Ferrari possesses the required conditions for a good performance in this trend.

Autonomous Vehicles and Artificial Intelligence

First efforts in this area were made with cruise control since cars’ first years. In 2006, Lexus took a great step in AI, by announcing a self-parking car, which has thereafter been included as an extra in several luxury cars. In 2018, US-based start-up Udelv started using autonomous delivery vehicles (ADV) for last-mile deliveries and, in 2019, Tesla launched its Full Self-Driving (FSD) complement to its cars, helping drivers through a set of cameras and algorithms that process information collected through cameras and sensors. As traffic and car crashes increase globally, AV’s have been perceived as the solution to reduce much of road fatalities. In 2020 Annual Report, Ferrari said that “while we do not intend to develop self-driving cars, we will adopt certain features of autonomous driving technology in response to regulatory developments and customer preferences, especially in the GT segment”¹³. Ferrari has already taken a few steps into adopting these technologies, “such as predictive braking and automatic cruise control on current models”¹⁴, and it will be “carefully monitoring the evolution of autonomous driving technologies”¹⁵. We also believe that it is not in Ferrari’s best interests (as well as many other luxury sports cars brands) to build self-driving cars, since that would remove the driving experience from their customers.

Shared Mobility

As the name suggests, shared mobility is a system where people share a vehicle either concurrently or over time. The current market for shared mobility exceeds \$60B in its three main markets: China, US and Europe and it is expected to grow at around 20% annually until 2030, according to McKinsey research¹⁶. However, it points out several challenges that might interfere with the development and growth of this trend: the business models to adopt for each city and country, customer preferences, which still prefer using their private vehicles, and difficulty in implementing shared mobility business models in rural areas. The same report says though autonomous vehicles could be the solution, since “self-driving cars

¹² Ferrari. Ferrari N.V., 2021, Annual Report 2020, https://corporate.ferrari.com/sites/ferrari15ipo/files/ar_2020_ferrari_web.pdf. Accessed 8 Dec. 2021

¹³ *Ibidem*.

¹⁴ *Ibidem*.

¹⁵ *Ibidem*.

¹⁶ “How Shared Mobility Will Change the Automotive Industry.” McKinsey & Company, Anne Grosse-Ophoff, Saskia Hausler, Kersten Heineke and Timo Moller, 18 Apr. 2017, <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/how-shared-mobility-will-change-the-automotive-industry>.

would enable mobility, reducing the fixed cost base. Autonomy would also let companies target different user segments via smaller differentiated fleets”¹⁷.

We believe that trend won't affect Ferrari as much as it affects its peers, for their main customers don't use this type of services and prefer having access to premium and exclusive vehicles. However, McKinsey has a good argument on shared mobility providing opportunities for luxury brands to become available to wider audiences through sharing or pay-per-minute business models, sharing the experience of driving exclusive cars while also pooling the burden of paying for them among many users.

Macroeconomic Outlook

According to International Monetary Fund's latest World Economic Outlook report, in July 2021¹⁸, global economy is projected to grow at 6.0% in 2021 and 4.9% in 2022. These expectations are mostly driven by the economic upsurge after 2020's Covid pandemic, which resulted in a global negative real GDP growth of -3.3% for that year. Both industries (Automotive and Luxury Goods) that are important for the company in analysis, display figures that tend to be more volatile than the global economy, with this aspect being particularly relevant for the Luxury Goods industry. A fall of around 16% in automobiles and of 23% in luxury goods consumption in 2020, is expected to be matched with a 7.7% and 15% rebound in 2021, according to Moody's¹⁹ and Bain & Co.²⁰, respectively.

Growth rebound both globally and at the industry level is mostly explained by the relief in lockdown rules and of economic and social restrictions. This has an important effect in both the supply and demand-side of the market, with companies resuming the pre-pandemic production levels, and with consumption being incentivized by the natural needs associated with a less “domestic life” and the accumulated household savings accumulated during pandemic period. Also, falling levels of local Covid transmission, and the growing vaccination rates, are expected to accelerate and empower these trends.

Long-term real GDP is expected to eventually stabilize and converge to around 2%, according to OECD's long-term data on global real GDP data²¹.

¹⁷ Ferrari. Ferrari N.V., 2021, Annual Report 2020, https://corporate.ferrari.com/sites/ferrari15ipo/files/ar_2020_ferrari_web.pdf. Accessed 8 Dec. 2021

¹⁸ International Monetary Fund, World Economic Outlook Update, July 2021

¹⁹ Automotive Sector Outlook: Recovering after traumatic 2020, <https://think.ing.com/articles/automotive-sector-outlook-recovering-after-traumatic-2020/>

²⁰ Luxury market expected to grow 15% in 2021, <https://journal.hautehorlogerie.org/en/luxury-market-expected-to-grow-15-in-2021/>

²¹ OECD data on Real GDP long-term forecast, <https://data.oecd.org/gdp/real-gdp-long-term-forecast.htm>

Forecasting

Revenues

Ferrari's Net Revenues are divided in four different segments: Cars and Spare Parts; Engines; Sponsorship, Commercial and Brand and Other. The value drivers considered for each segment are presented in Table 2.

Segment	Value Driver
Cars and Spare Parts	Nº of cars sold Average price of a car
Engines	Nº of Maseratis sold Nº of engines sold to Maserati Average price of an engine Teams' engine rentals
Sponsorship, Commercial and Brand	Nº of online viewers Average revenue per viewer Nº of stores
Other	Average revenue per store Cars and Spare Parts net revenues

Cars and Spare Parts

This segment encompasses the net revenues from shipments of cars, including personalization, as well as sale of spare parts. This segment registered sales of €2,835M in 2020, a decrease of 3.1% in relation to 2019, mainly attributed to the seven-week suspension of activities and the closure of several dealerships, as a result of the COVID-19 pandemic. The impact was greater in Mainland China and in the Americas, partially offset by an increase of sales in EMEA. However, according to Ferrari's quarterly presentations, we believe that shipments in 2021 are set to surpass those of 2019 by 10.2%, sign that the company is recovering well from the pandemic.

We believe the two main drivers for this segment will be the following: product mix and price. The former has been driven by the introduction of new lower-range models (ex: Roma and Portofino M), which complement the existing range products and will allow the company to reach a broader public, and higher-end models (ex: Icona models), which will satisfy regular customers preferences. The most important model though, we believe will be the Purosangue SUV, which will create a new market for Ferrari: the luxury SUV's, opening a completely new range of customers for the company, especially in China and in the US, where these types of cars are privileged over regular luxury cars. We expect this SUV to bring the same surplus to shipments as another successful luxury SUV: the Lamborghini Urus, though with a negative premium of 3500bps which will be diluted through the years, given Ferrari's late entrance in this market. This will result on a CAGR of around 6.8% from 2020 to 2030.

Pricing power could be put into risk, as Ferrari expands its model range, with cars such as the Roma and Purosangue, but the company's 2021 results so far have proved that Ferrari's pricing power has remained strong, with an increase in its average car price of 2.8% compared to 2020, especially due to Special Series and Icona models, which always come with higher price tags and margins. Another important factor in pricing is Ferrari's various personalization programs, which allow the company to capitalize even further with their cars, at minimal costs. As a result, we expect the average price of a car to keep increasing at

Table 2: Net Revenues Value Drivers per Segment
Source: Analyst estimation



Fig.11: Ferrari Roma (above) and Daytona SP3 (below)
Source: Company website

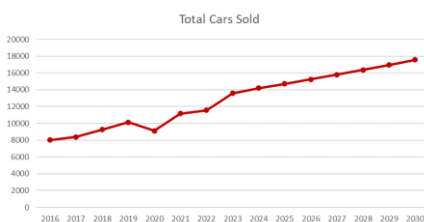


Fig.12: Total Cars Sold (in units)
Source: Company data, Analyst estimation

least at the rate of global inflation, as computed by OECD²², which still would remain a conservative approach, given historical values and the overall strategy of the company.

Given these higher volumes and strong pricing, we believe this segment will have a CAGR of 9.1% from 2020 to 2030, growing to €6,746M in 2030.

Engines

This segment encompasses sales of engines to Maserati and rentals of engines to other F1 teams. This segment had the second worst performance of the company in 2020, with a decrease of 24%, because of lower sales from Maserati and a shorter F1 calendar, both due to the outbreak of the COVID-19 pandemic.

However, we expect this segment to grow once again in 2021, as Maserati recovers from the pandemic as well (we expect a growth in shipments for Maserati of 66% in 2021, compared to 2020), until 2023, year when the contract of engine supply to Maserati ceases.

The end of this contract though, might represent some opportunities to Ferrari, as the human capital and PP&E released might be reallocated to higher profit operations. For example, Ferrari had an entire V6 production line constructed for the assembly of Maserati engines. With the end of the contract, this production line can be reutilised for Ferrari's own V6 engines (used in 296 GTB), which we expect will become more common in Ferrari's cars, as they move towards hybrid and electric cars.

After 2023, this segment will only be composed of Ferrari's engine rentals to other F1 teams, which we expect to remain at historical average, as neither of the teams Ferrari currently supplies with engines (Alfa Romeo Racing and Haas F1) is expected to leave the championship soon.

Sponsorship, Commercial and Brand

This segment relates to net revenues from F1 team through sponsorship agreements, share of F1 World Championship commercial revenues, as well as merchandising, licensing and royalty income. As expected, this was the worst performing segment in 2020, with a decrease of 28% in comparison to 2019, which came as a result of a shorter F1 calendar, the closure of several dealers and lower museum visitors, all attributable to the COVID-19 pandemic. We divided this segment into Formula 1 commercial revenues and stores merchandising revenues.

²² OECD (2021), *OECD Economic Outlook, Volume 2021 Issue 1*, OECD Publishing, Paris, <https://doi.org/10.1787/edfbca02-en>.

- **Formula 1 Commercial Revenues**

These revenues mainly come from sponsorship agreements coming from payment of viewership from Liberty Media. According to many sources, it is expected that Ferrari receives around 20% of total revenues to teams, given that it is the longest running and most successful F1 team, having participated in every edition. We expect these revenues to have an accelerated growth of 10% in 2021 and 5% in 2022 and 2023, due to the development of better online platforms, such as Eleven Sports and Netflix. The release of the series-documentaries “Formula 1: Drive to Survive” and “Schumacher” also helps attracting more people to the sport, further increasing these revenues.

- **Stores Merchandising Revenues**

Even though online stores are gaining terrain on presential stores, we still believe that Ferrari’s customers will prefer to go to the dealers and have a more personalized experience. As a result, we expect number of stores to increase by its pre-COVID-19 historical rate, increasing the number of stores to 43 in 2030. Additionally, due to the company’s higher investment in this area, with its first fashion show in 2021 and with its partnerships with high-end brands (ex: Giorgio Armani and Richard Mille), we expect average revenue per store to increase by inflation rate, as computed by OECD²³.

Additionally, the reopening of their museums and further opening of theme parks will help further increase these revenues, as Ferrari opens itself to a wider public.

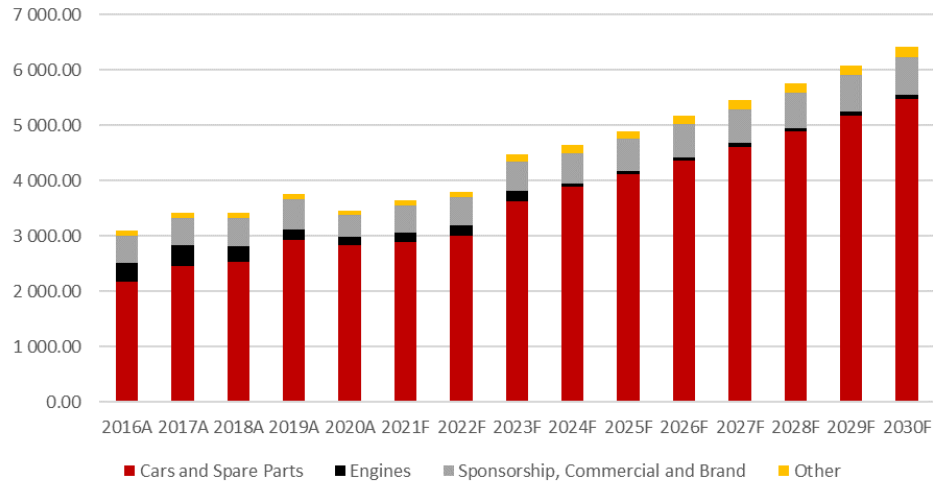
Given these assumptions, we expect this segment to represent €677 million in 2030, representing a CAGR of around 5.7% from 2020 to 2030.

Other (Financial Revenues)

This segment relates to interest income from financial services and revenues from the management of the Mugello racetrack. Since these revenues relate to the financing of cars from Ferrari’s customers, we decided that a good proxy would be the ratio between these revenues and Cars and Spare Parts revenues. Since the world economy is still recovering from the pandemic, we expect this ratio to return to pre-COVID-19 levels in 2022, after which we believe it will remain constant, which means that the sector will thereafter grow at the same rate as Cars and Spare Parts segment.

²³ OECD (2021), *OECD Economic Outlook, Volume 2021 Issue 1*, OECD Publishing, Paris, <https://doi.org/10.1787/edfbca02-en>.

Net Revenues by Segment (in € millions)



Costs

Though their assumptions are the same, we will mainly focus on the expenses incurred in the Core Operations of the company, since these better reflect total expenses and margins.

Cost of Sales (excluding D&A) are the main costs incurred by the company, and they mainly include all costs related to the production of cars and their spare parts and engines to Maserati and other F1 teams. From 2016 to 2020, they represented, on average, 39.7% of Core Net Revenues. We expect these costs to have three different evolution stages: the first will see these costs' weight on Net Revenues increase by 6% until 2022, given Ferrari's strategy to diversify and electrify its model range, which will oblige the brand to build new production lines and adapt to new processes, the second stage will see benefits from greater product mix, slowing down the increase in Net Revenues% to only 3% until 2024, and the third stage when the weight of these costs on Core Net Revenues will decrease by 2% annually (until 2030), due to the end of the electrification process and full integration of products. This will result in a decrease of the Core Gross Margin 57.8% in 2024, after which will increase once again to 62.6% in 2030.

Depreciation and Amortization (D&A) is expected to remain at historical percentage of the previous year's Property, Plant and Equipment (PP&E) and we expect that percentage to remain at historical average. As such, these costs depart from representing 12.6% of Core Net Revenues in 2020 to 17.1% in 2030.

Selling, General and Administrative (SG&A) expenses include selling costs related to marketing events, sales personnel and retail stores (counted as Core expenses) and general and administrative costs (counted as Non-Core). We

expect the weight of these expenses on Net Revenues to increase 1% annually until 2023, due to the company's digitalization process, decreasing its weight by 3% annually thereafter (during the forecasting period). These expenses, on average, represented 5.0% of Core Net Revenues from 2016-2020. With our assumptions, their weight on Core Net Revenues will decrease to 3.1% of Core Net Revenues in 2030, as the company becomes more digital and finds new ways to promote itself, by pairing up with more brands and franchising more of its stores.

Research and Development (R&D) will be vital in the next years, if Ferrari wants to remain competitive against its peers, especially in the EV race, given that we assume it will pursue this objective by itself, unlike other competitors, which have joined forces with other companies to reduce costs in R&D.

R&D represented 19.3% of Core Net Revenues in 2020, its lowest weight since Ferrari's IPO, but with the acceleration of the electrification process, the introduction of new model ranges, new F1 rules and the appointment of a new CEO (Benedetto Vigna), who is an expert in micro-electromechanical systems, we expect the weight of these costs on previous year Net Revenues to grow at a rate of 10% per year until 2024, after which we expect this weight to revert to historical average values, amounting to €1,448M in 2030.

Given our assumptions, Core EBIT Margin will be 29.9% in 2021, decreasing to 12.2% in 2024, which coincides with the last year of accelerated costs and the first year Ferrari won't supply engines to Maserati. From 2025 onwards, the Core EBIT Margin will grow, reaching 23.0% in 2030. Total EBIT Margin will follow a similar path, decreasing to 9.4% in 2024 but growing back to 19.9% in 2030.

Additionally, we expect Net Margin to be 21.8% in 2021 and to decrease to 8.5% in 2024. From that year, it will grow up to 16.1% in 2030. Once again, when compared to its peers, Ferrari's profitability performance resembles that of the luxury-fashion companies.

Fixed Assets and CAPEX

PP&E were valued at €669.3 million, representing 21.6% of Total Net Revenues in 2016. 2019 saw a growth of 25.8% in comparison to 2018, mainly due to the introduction of IFRS-19 and the completion of "the office area and workshop area of the New Technical Center for the development of engines and hybrid

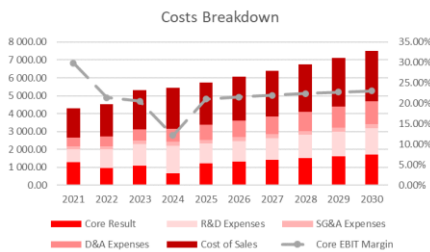


Fig.13: Costs Breakdown (in € millions, except margins)
Source: Company data, Analyst estimation

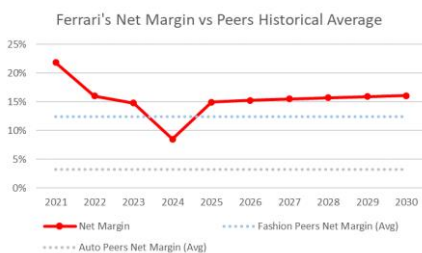


Fig.14: Ferrari's Net Margin vs Peers Historical Average (in %)
Source: Company data, Analyst estimation

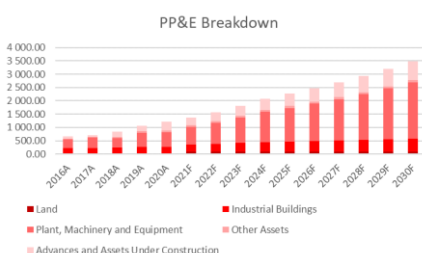


Fig.15: PP&E Breakdown (in € millions)
Source: Company data, Analyst estimation

systems”²⁴. In 2020, PP&E already represented 35.5% of Total Net Revenues and we expect this trend to continue in the next few years.

PP&E is subdivided into five categories: Land; Industrial Buildings; Plant, Machinery and Equipment; Other Assets; Advances and Assets Under Construction.

Industrial Buildings accounted for 20.1% of Total PP&E in 2020. We expect these will grow at 10%, to account for the major changes Ferrari’s production facilities will take, since it will finish its New Technical Center, its new GT Sports building and, with the new purchase of Land, we expect the existence of further developments connected to their new SUV, Hybrid and EV lines. This accelerated growth phase will remain until 2024, when developments for its first EV model will be over. Afterwards, we expect CAGR to go back to historical average of 5.0%, in order to comply with possible new automotive breakthroughs, energetic laws and the usual evolution of business.

Plant, Machinery and Equipment is the main component of PP&E, accounting for 44.8% of Total PP&E in 2020. In order to acquire new equipment to help in the developments of its electric powertrains, better connectivity applications and more personalization options, we expect these assets to grow at 20% annually. This growth will remain until 2024, when possibly the last equipment needed for the development of its first EV will be acquired. Afterwards, annual growth rate will decrease to 11.0% to cover for eventual upgrades in the facilities.

With these assumptions, PP&E will grow from €1,227M in 2020 to €3,486M in 2030, representing a CAGR of 11.0% and representing 51.7% of Total Net Revenues. This represents the major difference between Ferrari and its Fashion/Luxury peers, which do not display such capital-intensive industries.

As a result of higher R&D investments during this period, Ferrari will expand its Intangible Assets, which will have a CAGR of 8.2% from 2020 to 2030, since we expect the ratio of Intangible Assets to R&D expense to remain similar. With this, Ferrari will further enrich its already strong Balance Sheet, adding to its Enterprise Value and share, transmitting stronger confidence to investors.

Even with these assumptions, CAPEX never surpasses 30% of Net Revenues. However, from 2022 to 2024, this ratio is quite higher than the EBIT Margin, which can pose problems to the company when going through the investing period, meaning that the company might need to finance itself through Debt to

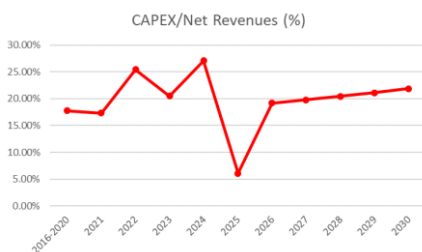


Fig.16: CAPEX/Net Revenues Ratio (in %) Source: Company data, Analyst estimation

²⁴ Ferrari. Ferrari N.V., 2021, Annual Report 2020, https://corporate.ferrari.com/sites/ferrari15ipo/files/ar_2020_ferrari_web.pdf. Accessed 8 Dec. 2021.

carry on with its investments. This can be partially offset by the great cash pool that the company possesses. After the initial period, this ratio will sit at around 20%, meaning that EBIT will be enough to cover for CAPEX expenses.

Net Working Capital

Net Working Capital (NWC) will increase at a CAGR of 9.8% from 2020 to 2030, which can demonstrate both a problem and a good sign. It can be a problem in the sense that the company continuously finds it difficult to collect the money it is entitled to, mainly due to a CAGR of 8.8% from 2020 to 2030 of Receivables from Financing Activities, which can be attributable to the nature of these items, and a CAGR of 10.5% for the same period of Trade Receivables, which can be attributed to the fact that Ferrari’s cars are mostly pre-ordered. Even though Trade Payables grow as well, it will not be enough to offset the growth in the Current Assets. Nevertheless, the presence of higher Current Assets, allied with a great pool of cash that we expect Ferrari to grow in the next years (Excess Cash is expected to grow at a CAGR of 12.7% from 2020 to 2030), shall be enough to remain liquid, and a good sign that the business is indeed growing.

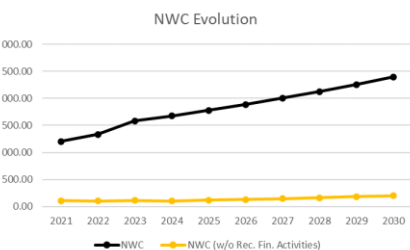


Fig.17: Ferrari NWC (in € millions)
Source: Company data, Analyst estimation

Debt

Between 2019 and 2020, the Debt structure changed, with a bigger portion of Debt (33%) becoming due within a year, as more portions of Debt start reaching its maturity. Nevertheless, the greatest portion of Debt remains in the mid-term maturity (due between one and five years) at 56% of Total Gross Debt. This will pose some risks to Ferrari, as most of its current Gross Debt will mature during the investment phase, when the company will already be under some financial stress, which might result in Ferrari further needing to resort to external financing or renegotiating its Debt terms.

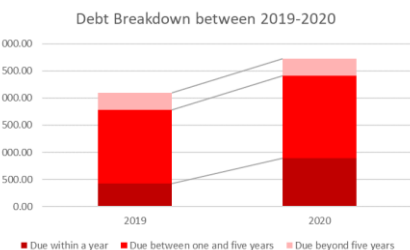


Fig.18: Ferrari Debt Structure (in € millions)
Source: Company data, Analyst estimation

Net Debt was €1,436.0 million in 2020 and will increase until 2024 to a value of €2,626.0 million; as we believe the company will need to look for external financing in the higher investment phase, given that they will be researching on their own, but Net Debt is expected to decrease thereafter to €1,740.7 million, as the company stabilizes and as it starts paying off their Debt. On the other hand, Equity will increase throughout the whole period, except for 2026, when the company is expected to reward shareholders by paying a great amount of Dividends to compensate for the 2023-2025 period, during which the company is not expected to pay any Dividends due to the usage of Excess Cash to invest in

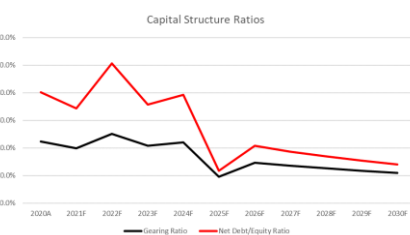


Fig.19: Ferrari Capital Structure Ratios (in %)
Source: Company data, Analyst estimation

Fixed Assets and R&D, while maintaining the company liquid. Equity will reach €6,185.8 million in 2030, resulting in a Net Debt/Equity Ratio of 28.1%, the second lowest in the studied period. The Gearing Ratio will also halve throughout the studied period, reaching 22.0% in 2030, reflecting a stronger BS in the future.

Valuation

Free Cash-Flows (FCF)

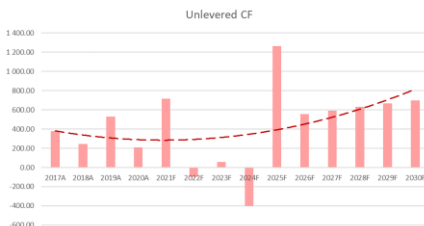


Fig.20: Ferrari Unlevered CF (in € millions)
Source: Company data, Analyst estimation

After recovering in 2021 from the pandemic, we expect the Unlevered CF to turn negative in 2022, as a result of a period with lower margins and higher CAPEX (growth of 80.1%), consequence of Ferrari’s heavy investment in new technologies. This trend continues until 2024, when Unlevered CF reaches -€398.1 million, due to Ferrari’s lowest margins for the forecasted period and a period of still growing CAPEX (growth of 35.9%).

However, as the heavy investment phase comes to an end in 2025, and with the full integration of new technologies and production lines, margins will recover, and CAPEX will stabilize, reaching pre-COVID numbers again.

The financial side of the BS will grow stronger in this period, as Net Debt remains controlled throughout the period, with a CAGR of around 0.0%, against a CAGR of 10.2% for Equity in the same period, helping the company being more flexible during the investment phase (2023-25), where higher Reinvestment Rates (RR) could stress the company.

Discounting the Cash Flows

Given Ferrari’s geographical presence, and the fact that it is based in Italy and its shares are quoted in a European stock market (the Borsa Italiana), we have departed from an European reference as our risk-free rate. As we have modelled a business case for a time period of approximately 10 years, the German 10y Bond Yield (-0.18%) is the suitable rate as risk-free benchmark. Likewise, taking the geographical factor into account, we can use the Stoxx600 index (an European stock index composed of 600 large, mid, and small-sized companies) as a proxy of the market. Departing from monthly price data for this index, and considering an eleven-year period (2010-2020), we have estimated an annualized return of 5.64%, which we consider to be our Market Return benchmark. Despite our measure being based on historical figures, it is in line with the average implied equity risk premium calculated by Damodaran for the

period 2011-2020 in the United States, 5.53%. As Damodaran puts it in the 2021 edition of his Equity Risk Premium report, over the period 1960-2020, “the implied equity risk premium at the end of the prior period was the best predictor of the implied equity risk premium in the next period”²⁵. Given the strong alignment with specialized research, we are confident that despite the simplicity underlying our risk premium calculation, it reflects market risk expectations for our valuation period.

Using a set of comparable companies (Aston Martin Lagonda Global, Bayerische Motoren Werke AG, Daimler AG, Volkswagen AG, Burberry Group PLC, Hermès International, LVMH Moët Hennessy Louis Vuitton SE, and Prada SpA), we have estimated their betas through these stocks’ returns correlation with our Market benchmark. Following this estimation, using each of this peers’ financial statements we have unlevered the estimated betas using the CAPM theory, reaching an average unlevered beta of 0.98, and obtained their unlevered returns, at an average of 4.58% and a 1st quartile of 3.63%. Given Ferrari’s strong business case and its relative balance sheet resilience when compared to most of its peers, we believe that Ferrari clearly outperforms them in most aspects and parameters. As such, we take the 1st quartile from our unlevered returns (approximately 3.63%) as a proxy for Ferrari’s unlevered cost of capital.

This return was then used to discount Ferrari’s Free Cash-Flows. We have estimated cash-flows for a period until 2030, a 5-year annuity from 2030 onwards assuming a CAGR of 6.47% (the forecasted growth rate verified in the last year of the forecasting period, 2030). During the perpetuity period, we assume a CAGR of 2.31%, obtained as an average OECD’s global growth expectations for the 2036-2045 period²⁶.

After discounting both Ferrari’s Core and Non-Core FCF’s and Tax Shields, following the above-mentioned timeline instructions, we obtained an Enterprise Value of €51,060.31M. Subtracting the value of Net Debt (€2,233.34M), we obtain Ferrari’s predicted Equity Value on 31/12/2022 of €48,826.97M.

Then, dividing the Equity Value by the predicted number of outstanding shares in 2022 (183,490,155 common shares), we obtained a share value of €266.10 which, after taking into account the repurchase of shares and the payment of dividends in 2022 of €3.74, results in a total shareholders’ return (TSR) of 16.44%, resulting in a Buy recommendation.

²⁵ Damodaran, Aswath - *Equity Risk Premiums (ERP): Determinants, Estimation, and Implications – the 2021 edition*

²⁶ Calculations based on OECD data on Real GDP long-term forecast, <https://data.oecd.org/gdp/real-gdp-long-term-forecast.htm>

Sensitivity Analysis

To validate our forecasts and reinforce our conclusions, we have tested the resistance of the enterprise value (EV) and, consequently, the share price to changes in our forecasts, namely in four areas: changes in market risk premium, the success of the Purosangue SUV, the growth of the Sponsorship, Commercial and Brand segment and Ferrari’s Electric Vehicle project.

Changes in Market Risk Premium (MRP)

	Market Risk Premium (MRP)					
German 10Y Bond Yield	266.10	4.64%	5.14%	5.64%	6.14%	6.64%
	-0.18%	569.89	365.73	266.10	207.12	168.14

As we can observe, our share is quite sensitive to changes in MRP, with an increase of 0.5p.p. in MRP resulting in a fall in the share price of 22.2%, whereas a decrease of the same amount in MRP would result in an increase of the share price of 37.4%, showing that Ferrari’s share is more resistant to negative changes than to positive changes.

Premium on Shipments from Purosangue SUV

The Purosangue will be one of the most important models for Ferrari to achieve its objective of growing its model range. However, we expect the Purosangue to have a negative premium in growth of overall shipments compared to the Urus of 3500bps, given the former’s late entrance into the luxury SUV market.

	Negative Premium on Purosangue					
Ru	266.10	-45.00%	-40.00%	-35.00%	-30.00%	-25.00%
	3.63%	175.80	220.06	266.10	313.86	363.28

When further decreasing this value by 5p.p., EV decreases 16.5% to €42,611.98M, resulting in a share price of €220.06, a decrease of 17.3% compared to our baseline scenario. We think our 3500bps negative premium is already quite conservative and that Ferrari will hold its ground, so this hypothesis will be unlikely to happen, given the luxury SUV’s market growth and Ferrari’s strong brand. With this said, a 5p.p. will increase EV by 17.2% to €59,823.28M, resulting in a share price of €313.86, an increase of 17.9% compared to our baseline scenario, showing that Ferrari’s share is more resistant to negative shocks regarding this assumption. When increasing a further 5p.p. in the premium, share price increases to €363.28, a 36.5% increase compared to our baseline scenario.

Growth of the Sponsorship, Commercial and Brand Segment

Ferrari is constantly emphasizing the importance the Sponsorship, Commercial and Brand segment will have in the future, with a growth in its merchandise range becoming apparent, as Ferrari organised its first fashion show this year.

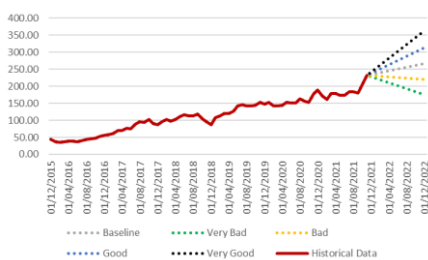


Fig.21: Ferrari Share Price in Purosangue scenarios (in €)
Source: Company data, Analyst estimation

Stores Growth Rate	F1's Online Viewers Growth Rate				
	266.10	1.42%	2.42%	3.42%	4.42%
-0.23%	250.09	252.87	255.89	259.15	262.68
-0.77%	254.92	257.71	260.74	264.02	267.56
1.77%	260.25	263.06	266.10	269.39	272.95
2.77%	266.15	268.97	272.03	275.33	278.91
3.77%	272.67	275.51	278.58	281.90	285.50

The growth in stores is the variable that the share price is the most sensitive to, with a 1p.p. change in the growth rate of stores changing, on average, the share price proportionally by 2.1%. However, we do not believe that Ferrari will expand significantly its number of stores, with our estimates being already optimistic.

On the other hand, F1's online viewer's might increase at an accelerated pace, with the widespread use of online streaming platforms, such as Eleven Sports and Netflix. Maintaining store's growth rate at our baseline level, the best case scenario would be F1's online viewers growing by 5.4% annually, which would result in a EV of €52,317.41M and a share price of €272.95, a growth of 2.6% against our baseline scenario. The worst case scenario would be a growth in F1's online viewers of only 1.4%, which would result in a share price of €260.25, a decrease of 2.2% compared to our baseline scenario.

Delays in the Electric Project

Last but not least, the electric project will have a great impact on Ferrari's EV and share price, both directly and indirectly. Directly because it means that, with delays in the electric vehicle, Ferrari will have to endure higher costs for a longer period of time and will get even more delayed compared to its competition. Indirectly, in the sense that investors will perceive Ferrari as a riskier company in case of said delays.

R&D Growth Rate	Years of Delay on EV			
	266.10	0	1	2
6%	267.32	188.39	104.32	14.42
8%	266.72	187.32	102.61	11.87
10%	266.10	186.21	100.81	9.13
12%	265.47	185.05	98.91	6.21
14%	264.82	183.85	96.91	3.10

One year of delay will bring the share price back to mid-2021 share prices, a reduction of 30.0% in comparison with our baseline scenario. In case the company delays its electric car by two years, we expect its share price to fall to €100.81, the lowest value since 2018. This is mainly a result of a further stressed balance sheet, delay against its competitors and greater fear from investors. For this reason, and we believe Ferrari knows this, they have the obligation to perform well in the electrification field. Delaying this project would leave the door wide open for its competitors and would be catastrophic for Ferrari.

Additionally, we have tested for changes in the growth rate of R&D weight on Sales. A decrease of 2p.p. in this growth rate would increase the share price by 0.2%. We believe this scenario to be possible, since we are assuming Ferrari will

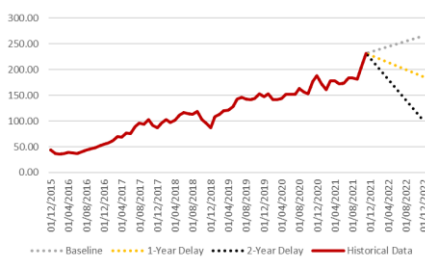


Fig.22: Ferrari Share Price in EV delays scenarios (in €)
Source: Company data, Analyst estimation

be assuming all the R&D costs needed to achieve its electrification objectives. Most likely Ferrari will be able to find partnerships to develop its new technologies, like the one they did with LoveFrom in September, which would reduce R&D needs for the company, improving their margins.

Relative Valuation

Framing Ferrari as a Luxury or Automotive company

So far, we have seen that Ferrari, in terms of margins and ratios, resembles much more its Luxury peers (ex: Hermes, Moncler, LVMH, etc.) than its Automotive peers (ex: BMW, Daimler, VW, etc.), mainly due to the fact that most of its Automotive peers do not produce exclusively luxury models, having mass production models as well. We will conduct a small backward test, to verify if, in terms of multiples, Ferrari is closer to Luxury or Auto companies, by comparing its last fiscal year (LFY) EV/EBITDA and P/E ratios with that of its peers. For the Luxury peers, we picked Burberry, Hermès, LVMH, Prada, Moncler and Richemont, whereas we picked Aston Martin, BMW, Daimler, Stellantis, Ford and Volkswagen as Auto peers.

From an EV/EBITDA point, Luxury peers had an average of 25.74x, much closer to Ferrari's 39.01x, compared to the Auto peers average of 11.98x. In fact, if we exclude Aston Martin, who is the closest Auto company to Ferrari, with an EV/EBITDA ratio of 40.26x, the average of the other Auto peers would decrease to 6.33x. From the P/E ratio, we reach a similar conclusion, with Luxury companies having an average P/E ratio of 55.35x, whereas Auto companies have only an average P/E ratio of 15.50x. Comparing to Ferrari's P/E ratio of 78.04x, it is once again clear that Ferrari is much closer to its Luxury peers.

Multiple Valuation

As seen above, we believe that the set of Luxury companies that we selected will bear a more realistic approach to Ferrari's case. Nevertheless, we are going to include in our set of peers Aston Martin, for two reasons: it is the only Automotive peer besides Ferrari that sells exclusively luxury sports vehicles and showed similar ratios to that of Ferrari. With this said, we will compute a forward-looking average between Hermès and the average Luxury EV/EBITDA, resulting in an EV/EBITDA ratio of 25.36x. This results in an enterprise value of €34,086.29 million and a €185.77 share price for 2022.

This is a great fall from the €266.10 we predicted with our APV valuation, showing that Ferrari is clearly outperforming its peers, with the exception of

EV/EBITDA LFY - Automotives

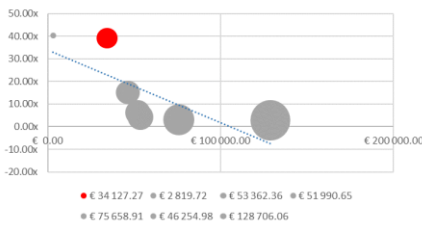


Fig.23: EV/EBITDA LFY Auto (in %)
Source: Companies data

EV/EBITDA LFY - Luxury Fashion

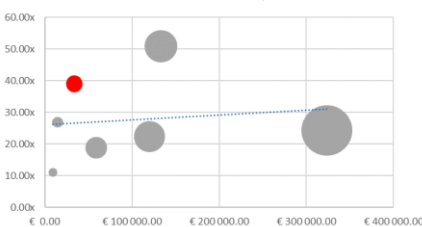


Fig.24: EV/EBITDA LFY Luxury (in %)
Source: Companies data

P/E LFY - Automotives

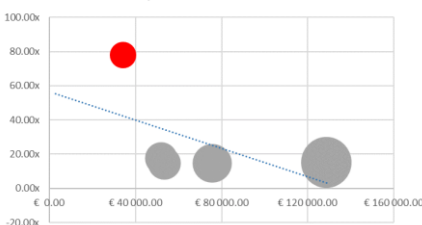


Fig.25: P/E LFY Auto (in %)
Source: Companies data

P/E LFY - Luxury Fashion

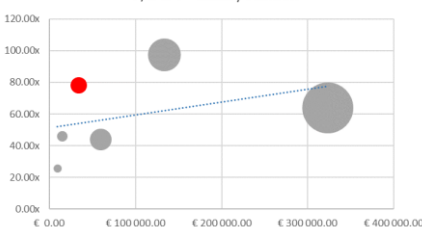


Fig.26: P/E LFY Luxury (in %)
Source: Companies data

(in € millions)	2022
EBITDA 2022	€ 1 432.31
EV/EBITDA FY+1 (Hermès+ Luxury Peers Average)	25.36x
EV 2022	€ 36 319.63
Net Debt 2022	€ 2 233.34
Equity 2022	€ 34 086.29
Nº shares 2022	183490155
Share Price 2022	€ 185.77

Table 3: EV/EBITDA FY+1 using Hermès and Luxury Peers average
Source: Companies data

(in € millions)	2022
EBITDA 2022	€ 1 432.31
EV/EBITDA FY+1 (Hermès)	34.63x
EV 2022	€ 49 600.64
Net Debt 2022	€ 2 233.34
Equity 2022	€ 47 367.30
Nº shares 2022	183490155
Share Price 2022	€ 258.15

Table 4: EV/EBITDA FY+1 using only Hermès
Source: Companies data

Hermès, which presented an EV/EBITDA FY+1 in 34.63x and a P/E FY+1 of 60.21x, which would result in a share price for Ferrari of €258.15 and €225.42, respectively, more in line with our APV valuation, showing that Hermès might be the closest peer to Ferrari and the one for Ferrari to look up to.

We believe Ferrari will be able to keep its premium position over its peers due to its Predictability, given that all demand and production are known in advance by the company, which will help Ferrari in defining its strategy; its Brand and Pricing Power, as Ferrari was voted second strongest brand by Brand Finance Global 500²⁷ in 2021, only behind WeChat; its High Profitability, given its Special Series and Icona models, and its Loyal Customer Base.

Conclusion, Risks and Recommendations

Driven by its historically strong performance and its resilient business case for the next decade, our recommendation is Buy, with a predicted return of 16.44% for FY2022. This value can be broken down into 14.81% from Capital Gains, 1.61% from Dividends and 0.02% from Share Repurchases.

Multiple valuation also suggests that the share price is highly undervalued, given that all its peers, with the exception of Hermès, have too low P/E and EV/EBITDA ratios, when compared to Ferrari. Nevertheless, it should be remembered that our share price will be highly volatile to fluctuations in the MRP, which could change our recommendation to Hold (or even Sell in a more extreme scenario).

In terms of its operations, Ferrari’s overreliance in its two factories, both located in Italy, might be troublesome in case the COVID-19 pandemic starts worsening again and forces a temporary closing of the manufacturing operations (a factor that is intensified by the fact that a large percentage of Ferrari’s workers are unionized, thus, if worker’s safety is at stake, unions will not hesitate in pushing for temporary factory closure). Although this seems unlikely now, with the development of vaccines, this scenario would hit deliveries as well as developments in the electric vehicle project which, as seen in the “Sensitivity Analysis” section, could have a significant negative impact in the share price (which would potentially force a change in our recommendation to a Sell). Ferrari is looking to address this by investing more in non-manufacturing segments, such as their Financial and Sponsorship, Commercial and Brand segments, which would ensure Ferrari some cash-inflows, mainly from services and online deliveries.

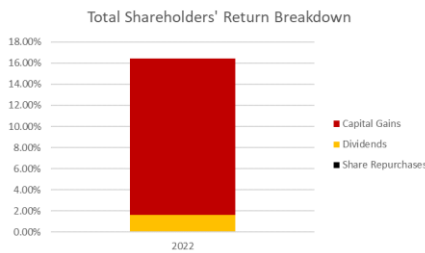


Fig.27: TSR Breakdown in 31/12/2022 (in %)
Source: Company data, Analyst estimation

²⁷ Brand Finance Global 500 2021 report, <https://brandirectory.com/download-report/brand-finance-global-500-2021-preview.pdf>

Another risk factor will be possible changes in European policy in terms of greenhouse gases emissions which would ban ICE vehicles even sooner. Ferrari and Lamborghini have been aided by the Italian government on this, with the latter stating that a special regime should be implemented for these luxury sports cars companies (similar to the one currently existing for low volume producing automakers). Despite this eminent risk, we believe the lobby for high-end luxury cars will prevail and manage to bargain more flexible conditions in the transition to a cleaner automotive industry, mainly in the deadlines to stop commercializing non-electric vehicles.

On the other hand, as we have said in the “Costs” section, we were highly conservative in our costs structure, since we have assumed that Ferrari will bear all its costs, mainly in R&D, by itself. This is indeed an unlikely scenario but given the level of relative uncertainty on how Ferrari will conduct its electric transition strategy, we prefer showcasing the upside potential for Ferrari’s shareholders in a highly conservative cost-bearing scenario.

However, our true beliefs lean for Ferrari’s strong brand, and its ability to get good partnerships for both general supply of goods and research conduction. This would further enforce our Buy recommendation and our conviction for next decade strong business plan.

Finally, while new model ranges (ex: Roma, Purosangue, etc.) might have an impact on Ferrari’s image of exclusivity, the company will still produce high-end sports models (ex: Special Series, Icona, etc.) and develop its personalization programs to please its regular customers. This strategy gets the best of both worlds, Ferrari keeps its pricing power and margins, and most important of all it manages to escape its niche sports and high-performance highly luxurious market. It now has models that can compete with slightly less luxurious manufacturers such as Aston Martin and Porsche, in both the comfort and the sports segments. Ferrari is now in the path to capture the whole segments of the high-end car market. All this reinforces our Buy recommendation.

Going past our risk discussion, we are confident that the business plan for the next decade will confirm the expectations of Ferrari’s customers and shareholders, assuring high-quality standards both in company performance and in the cars they deliver. Concluding, we issue a Buy recommendation for Ferrari.

References

“Official Ferrari Website.” Official Ferrari Website, Ferrari N.V., <https://www.ferrari.com/en-PT>.

Ferrari. Ferrari N.V., Annual Report 2016-2020.

Ferrari. Ferrari N.V., 2021, Interim Report 3Q2021.

“The Ferrari Way.” Harvard Business School Working Knowledge, Michael Blanding, 21 Mar. 2019, <https://hbswk.hbs.edu/item/the-ferrari-way>.

Brand Finance Global 500 2021 report, <https://brandirectory.com/download-report/brand-finance-global-500-2021-preview.pdf>

10 Biggest Industries in the World in 2021, Yahoo! Finance, <https://finance.yahoo.com/news/10-biggest-industries-world-2021-150703784.html>

Automotive revolution – perspective towards 2030, McKinsey, <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/disruptive-trends-that-will-transform-the-auto-industry/de-DE>

Luxury Goods – Global Market Trajectory & Analytics 2021 report, https://www.researchandmarkets.com/reports/1244796/luxury_goods_global_market_trajectory_and

“EU Proposes Effective Ban for New Fossil-Fuel Cars from 2035.” Reuters, Nick Carey and Christoph Steitz, 14 July 2021, <https://www.reuters.com/business/retail-consumer/eu-proposes-effective-ban-new-fossil-fuel-car-sales-2035-2021-07-14/#main-content>.

Alsen, Daniel, et al. “The Future of Connectivity: Enabling the Internet of Things.” McKinsey & Company, McKinsey & Company, 28 Oct. 2019, <https://www.mckinsey.com/featured-insights/internet-of-things/our-insights/the-future-of-connectivity-enabling-the-internet-of-things>.

“How Shared Mobility Will Change the Automotive Industry.” McKinsey & Company, Anne Grosse-Ophoff, Saskia Hausler, Kersten Heineke and Timo Moller, 18 Apr. 2017, <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/how-shared-mobility-will-change-the-automotive-industry>.

International Monetary Fund, World Economic Outlook Update, July 2021

Automotive Sector Outlook: Recovering after traumatic 2020, <https://think.ing.com/articles/automotive-sector-outlook-recovering-after-traumatic-2020/>

Luxury market expected to grow 15% in 2021, <https://journal.hautehorlogerie.org/en/luxury-market-expected-to-grow-15-in-2021/>

OECD data on Real GDP long-term forecast, <https://data.oecd.org/gdp/real-gdp-long-term-forecast.htm>

OECD (2021), OECD Economic Outlook, Volume 2021 Issue 1, OECD Publishing, Paris, <https://doi.org/10.1787/edfbca02-en>.

Damodaran, Aswath - Equity Risk Premiums (ERP): Determinants, Estimation, and Implications – the 2021 edition

“Porsche BEVs Roar Ahead at Munich IAA.” Bloomberg Anywhere, Michael Dean, 20 Sept. 2021.

“Ferrari: Company Outlook.” Bloomberg Anywhere, Michael Dean, 5 Aug. 2021.

Stellantis. Stellantis N.V., 2021, Stellantis Annual Report 2020.

Stellantis. Stellantis Reports Q3 Net Revenues of €32.6 Billion. Stellantis N.V., 28 Oct. 2021, <https://stockhouse.com/news/press-releases/2021/10/11/stellantis-to-announce-third-quarter-2021-shipments-and-revenues-on-october-28>.

FCA. FCA, FCA Annual Report 2017-2019.

VW. Volkswagen Group, Volkswagen Group Annual Report 2017-2020.

BMW. BMW Group, BMW Group Annual Report 2017-2020.

Aston Martin. Aston Martin Lagonda, Aston Martin Lagonda Annual Report 2018-2020.

Bloomberg Finance L.P., Bloomberg Anywhere, <https://bba.bloomberg.net/Content/Html5/Citrix/src/SessionWindow.html?launchid=1638994075187>.

Jaguar-Land Rover. Tata Motors, Jaguar Land Rover Automotive PLC Annual Report 2017/18-2020/21.

McLaren. McLaren Group, McLaren Group Annual Report 2017-2020.

Five trends transforming the Automotive Industry, pwc, <https://www.pwc.com/gx/en/industries/automotive/publications/eascy.html>

2021 Global Automotive Consumer Study, Deloitte, <https://www2.deloitte.com/us/en/pages/manufacturing/articles/automotive-trends-millennials-consumer-study.html>

2022 automotive outlook: A more stable market ahead?, Erik Solum, <https://www.walleniuswilhelmsen.com/insights/2022-automotive-outlook-a-more-stable-market-ahead>

Automotive Market Size 2021 – Global Growth, Trends, Industry Analysis, Key Players and Forecast 2024, <https://www.marketwatch.com/press-release/automotive-market-size-2021-global-growth-trends-industry-analysis-key-players-and-forecast-2024-2021-10-19>

The Future of the EU Automotive Sector, European Parliament Study, [https://www.europarl.europa.eu/RegData/etudes/STUD/2021/695457/IPOL_STU\(2021\)695457_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2021/695457/IPOL_STU(2021)695457_EN.pdf)

Appendix 1: Financial Statements

Forecasted Income Statement															
Core	2016A	2017A	2018A	2019A	2020A	2021F	2022F	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F
Core															
(in € millions)															
Net Revenues	3 006.48	3 323.35	3 325.49	3 662.27	3 375.83	4 286.98	4 536.83	5 312.00	5 453.03	5 748.55	6 060.49	6 389.80	6 737.43	7 104.41	7 491.84
Cost of Sales (excluding D&A)	-1 310.38	-1 358.92	-1 300.08	-1 408.23	-1 222.70	-1 610.21	-1 806.30	-2 178.38	-2 303.30	-2 379.55	-2 458.51	-2 540.25	-2 624.88	-2 712.50	-2 803.22
	<i>% Net Revenues</i>	43.59%	40.89%	39.09%	38.45%	36.22%	37.56%	39.81%	41.01%	42.24%	41.39%	40.57%	39.75%	38.96%	37.42%
Depreciation and Amortization	-248.00	-261.00	-289.00	-352.00	-427.00	-493.69	-521.06	-632.20	-727.26	-839.84	-912.31	-992.21	-1 080.32	-1 177.53	-1 284.79
	<i>% PPE t-1</i>	39.00%	40.69%	41.38%	39.92%	40.25%	40.25%	40.25%	40.25%	40.25%	40.25%	40.25%	40.25%	40.25%	40.25%
SG&A Costs	-146.43	-173.48	-167.82	-173.51	-171.90	-159.72	-170.72	-201.88	-201.03	-205.56	-210.22	-214.99	-219.88	-224.91	-230.05
	<i>% Net Revenues</i>	4.87%	5.22%	5.05%	4.74%	5.09%	3.73%	3.80%	3.69%	3.58%	3.47%	3.36%	3.26%	3.17%	3.07%
R&D Costs	-613.64	-657.12	-643.04	-699.21	-707.39	-742.60	-1 037.33	-1 207.56	-1 555.28	-1 111.70	-1 171.94	-1 235.54	-1 302.67	-1 373.54	-1 448.36
	<i>% Sales t-1</i>	21.86%	19.35%	21.03%	19.32%	22.00%	24.20%	26.62%	29.28%	20.39%	20.39%	20.39%	20.39%	20.39%	20.39%
Core Result Before Taxes	688.04	872.83	925.56	1 029.32	846.85	1 280.77	1 001.43	1 091.98	666.17	1 211.90	1 307.52	1 406.81	1 509.66	1 615.93	1 725.42
Core Income Taxes	-189.21	-209.48	-222.13	-247.04	-203.24	-307.38	-240.34	-262.08	-159.88	-290.86	-313.80	-337.63	-362.32	-387.82	-414.10
	<i>Tax Rate</i>	27.50%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%
Core Tax Adjustments	-7.46	-20.06	179.12	40.98	105.84	83.12	83.12	83.12	83.12	83.12	83.12	83.12	83.12	83.12	83.12
	<i>% Core Result</i>	-1.08%	-2.30%	19.35%	3.98%	12.50%	6.49%	6.49%	6.49%	6.49%	6.49%	6.49%	6.49%	6.49%	6.49%
Core Result	491.36	643.30	882.54	823.26	749.44	1 056.50	844.21	913.03	589.41	1 004.16	1 076.83	1 152.29	1 230.46	1 311.23	1 394.44
Non-Core															
(in € millions)															
Net Revenues	98.60	93.54	94.83	104.35	83.96	116.47	135.09	161.64	172.54	182.37	192.76	203.75	215.36	227.64	240.61
Cost of Sales	-21.31	-30.95	-33.83	-45.08	-36.63	-18.77	-23.08	-29.27	-33.12	-34.31	-35.54	-36.81	-38.13	-39.50	-40.91
	<i>% Net Revenues</i>	21.61%	33.08%	35.67%	43.20%	43.62%	16.12%	17.08%	18.11%	19.20%	18.81%	18.44%	18.07%	17.71%	17.35%
SG&A Costs	-148.81	-155.58	-159.52	-169.67	-164.23	-166.95	-206.64	-262.82	-280.54	-296.53	-313.43	-331.29	-350.17	-370.13	-391.22
	<i>% Net Revenues</i>	150.92%	166.33%	168.22%	162.60%	195.59%	143.34%	152.97%	162.60%	162.60%	162.60%	162.60%	162.60%	162.60%	162.60%
Other Expenses, Net	-24.50	-6.87	-3.20	-4.99	-18.48	-13.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Result from Investments	3.07	2.44	2.67	3.52	4.65	4.75	4.45	4.45	4.45	4.45	4.45	4.45	4.45	4.45	4.45
	<i>% of Investments and Other Financial Assets</i>	9.03%	8.11%	8.29%	9.10%	10.85%	9.08%	9.08%	9.08%	9.08%	9.08%	9.08%	9.08%	9.08%	9.08%
Non-Core Profit Before Taxes	-92.95	-97.42	-99.05	-111.87	-130.72	-77.52	-90.18	-126.00	-136.67	-144.02	-151.75	-159.90	-168.49	-177.54	-187.08
Other Comprehensive Income	36.80	9.34	-3.14	-0.63	17.12	-31.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-Core Income Taxes	25.56	23.38	23.77	26.85	31.37	18.60	21.64	30.24	32.80	34.56	36.42	38.38	40.44	42.61	44.90
	<i>Tax Rate</i>	27.50%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%
Non-Core Tax Adjustments	-4.15	-9.63	-2.73	-7.55	-3.91	-4.16	-4.84	-6.76	-7.34	-7.73	-8.15	-8.58	-9.04	-9.53	-10.04
	<i>% Non-Core Result</i>	4.46%	9.88%	2.76%	6.75%	2.99%	5.37%	5.37%	5.37%	5.37%	5.37%	5.37%	5.37%	5.37%	5.37%
Non-Core Result	-34.75	-74.32	-81.15	-93.20	-86.13	-94.51	-73.38	-102.53	-111.21	-117.18	-123.48	-130.11	-137.10	-144.46	-152.22
Financial															
(in € millions)															
Net Financial Expenses	-27.73	-29.26	-23.56	-42.08	-49.09	-50.55	-48.07	-52.19	-65.33	-76.71	-89.95	-84.46	-90.45	-96.92	-103.90
	<i>% Debt t-1</i>	1.58%	1.30%	2.18%	2.35%	1.86%	1.86%	1.86%	1.86%	1.86%	1.86%	1.86%	1.86%	1.86%	1.86%
Financial Profit Before Taxes	-27.73	-29.26	-23.56	-42.08	-49.09	-50.55	-48.07	-52.19	-65.33	-76.71	-89.95	-84.46	-90.45	-96.92	-103.90
Interest Tax Shield	7.63	7.02	5.66	10.10	11.78	12.13	11.54	12.53	15.68	18.41	21.59	20.27	21.71	23.26	24.94
	<i>Tax Rate</i>	27.50%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%	24.00%
Financial Result	-20.10	-22.24	-17.91	-31.98	-37.31	-38.42	-36.54	-39.66	-49.65	-58.30	-68.37	-64.19	-68.74	-73.66	-78.97
Total Comprehensive Income	436.51	546.74	783.48	698.08	626.00	923.57	734.29	770.84	428.55	828.68	884.99	958.00	1 024.62	1 093.11	1 163.25

Core	2016A	2017A	2018A	2019A	2020A	2021F	2022F	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F
Core															
(in € millions)															
Operating Cash	60.13	66.47	66.51	73.25	67.52	60.81	90.74	106.24	109.06	114.97	121.21	127.80	134.75	142.09	149.84
	<i>% Net Revenues</i>														
Trade Receivables	243.98	239.41	211.40	231.44	184.26	226.22	303.55	355.41	364.85	384.62	405.49	427.52	450.78	475.34	501.26
	<i>Average Receivable Period</i>														
Receivables from Financing Activities	790.38	732.95	878.50	966.45	939.61	1 095.90	1 231.15	1 473.10	1 572.45	1 662.06	1 756.79	1 856.91	1 962.73	2 074.59	2 192.82
	<i>Average Financial Receivable Period</i>														
Inventories	324.00	393.77	391.06	420.05	460.62	513.30	438.90	529.31	559.67	578.20	597.38	617.24	637.81	659.10	681.14
	<i>Average Holding Period</i>														
Current Tax Receivables	1.31	6.13	128.23	21.08	12.44	7.35	7.35	7.35	7.35	7.35	7.35	7.35	7.35	7.35	7.35
Total Operating Current Assets	1 419.79	1 438.71	1 675.70	1 712.26	1 664.44	1 903.57	2 071.68	2 471.42	2 613.37	2 747.20	2 888.21	3 036.82	3 193.42	3 358.46	3 532.40
Other Liabilities	-619.85	-577.54	-542.26	-758.91	-641.44	-740.60	-703.55	-675.06	-671.51	-667.92	-664.28	-660.60	-656.88	-653.11	-649.29
Trade Payables	-614.89	-607.51	-653.75	-711.54	-713.81	-693.95	-728.99	-879.16	-929.57	-960.35	-992.21	-1 025.20	-1 059.36	-1 094.72	-1 131.33
	<i>Average Payable Period</i>														
Current Tax Payables	-41.60	-29.16	-7.64	-7.11	-15.90	-125.17	-125.17	-125.17	-125.17	-125.17	-125.17	-125.17	-125.17	-125.17	-125.17
Total Operating Current Liabilities	-1 276.33	-1 214.21	-1 203.65	-1 477.55	-1 371.15	-1 559.71	-1 557.72	-1 679.39	-1 726.25	-1 753.44	-1 781.67	-1 810.98	-1 841.41	-1 873.00	-1 905.80
Goodwill	785.18	785.18	785.18	785.18	785.18	785.18	785.18	785.18	785.18	785.18	785.18	785.18	785.18	785.18	785.18
Intangible Assets	354.39	440.46	645.80	837.94	979.29	1 103.38	1 541.31	1 794.25	2 310.90	1 651.81	1 741.33	1 835.82	1 935.57	2 040.87	2 152.04
	<i>% R&D Costs</i>														
Property, Plant and Equipment	669.28	710.26	850.55	1 069.65	1 226.63	1 294.63	1 570.77	1 806.97	2 086.67	2 266.74	2 465.26	2 684.19	2 925.70	3 192.21	3 486.38
Fixed Assets	1 808.86	1 935.90	2 281.53	2 692.77	2 991.10	3 183.19	3 897.26	4 386.40	5 182.75	4 703.73	4 991.77	5 305.19	5 646.46	6 018.27	6 423.60
Deferred Tax Assets	119.36	94.09	60.74	73.68	152.22	163.02	163.02	163.02	163.02	163.02	163.02	163.02	163.02	163.02	163.02
Deferred Tax Liabilities	-13.11	-10.98	-39.14	-82.21	-113.47	-95.93	-95.93	-95.93	-95.93	-95.93	-95.93	-95.93	-95.93	-95.93	-95.93
Provisions	-122.41	-123.14	-111.13	-107.81	-106.94	-102.69	-107.82	-113.21	-118.88	-114.29	-114.29	-114.29	-114.29	-114.29	-114.29
Other Core Items	-16.17	-40.02	-89.53	-116.34	-68.20	-35.60	-40.73	-46.12	-51.78	-47.19	-47.19	-47.19	-47.19	-47.19	-47.19
Total Core Invested Capital	1 936.16	2 120.38	2 664.06	2 811.14	3 216.20	3 491.45	4 370.49	5 132.31	6 018.09	5 650.30	6 051.12	6 483.84	6 951.27	7 456.53	8 003.02
Non-Core															
(in € millions)															
Investments and Other Financial Assets	33.94	30.04	32.13	38.72	42.84	49.02	49.02	49.02	49.02	49.02	49.02	49.02	49.02	49.02	49.02
Current Financial Assets	16.28	15.68	10.17	11.41	40.08	7.99	6.35	6.67	3.71	7.17	7.65	8.29	8.86	9.45	10.06
	<i>% Comprehensive Income</i>														
Other Current Assets	53.73	45.44	64.30	92.83	76.47	93.99	93.99	93.99	93.99	93.99	93.99	93.99	93.99	93.99	93.99
Employee Benefits	-91.02	-84.16	-86.58	-88.12	-59.99	-83.26	-83.26	-83.26	-83.26	-83.26	-83.26	-83.26	-83.26	-83.26	-83.26
Provisions	-92.82	-74.26	-71.41	-57.76	-48.39	-54.11	-56.82	-59.66	-62.64	-68.93	-68.93	-68.93	-68.93	-68.93	-68.93
Other Liabilities	-36.43	-42.81	-47.48	-41.11	-46.02	-37.45	-43.44	-51.98	-55.48	-58.64	-61.98	-65.52	-69.25	-73.20	-77.37
	<i>% Other Revenues</i>														
Total Non-Core Invested Capital	-116.33	-110.06	-98.86	-44.03	5.00	-23.83	-34.16	-45.22	-54.67	-60.65	-63.51	-66.41	-69.57	-72.92	-76.49
Net Debt															
(in € millions)															
Excess of Cash	-397.65	-581.24	-727.15	-824.70	-1 294.89	-1 212.31	-579.76	-1 401.34	-1 510.54	-3 783.47	-2 796.28	-3 131.85	-3 485.67	-3 863.96	-4 268.49
Debt	1 848.04	1 806.18	1 927.17	2 089.74	2 724.75	2 591.33	2 813.10	3 521.35	4 135.16	4 848.84	4 552.51	4 875.46	5 224.10	5 600.72	6 007.81
	<i>% Core invested capital t-1</i>														
Other Financial Liabilities	39.64	1.44	11.34	14.79	2.14	27.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-Controlling Interests	4.81	5.26	5.12	6.00	4.02	5.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Net Debt	1 494.83	1 231.64	1 216.47	1 285.83	1 436.01	1 411.93	2 233.34	2 120.01	2 624.61	1 065.37	1 756.23	1 743.61	1 738.43	1 736.76	1 739.32
Total Equity	325.00	778.68	1 348.72	1 481.29	1 785.19	2 055.69	2 103.00	2 967.08	3 338.81	4 524.28	4 231.38	4 673.82	5 143.27	5 646.85	6 187.21

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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