

MASTER OF SCIENCE IN FINANCE

MASTERS FINAL WORK PROJECT

EQUITY RESEARCH:

FERRARI N.V.

RAFAEL GRILLI FELIZARDO

OCTOBER 2020

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SUPERVISOR:

PROFESSORA DOUTORA INÊS PINTO

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Abstract

This report is a valuation of Ferrari N.V. prepared as a Master's in Finance Final Work Project at ISEG, following the format recommended by the CFA Institute for Equity Research reports. The study was conducted considering publicly available data on October 07th, 2020, and diverse sources of information were used, such as company reports, Thomson Reuters, Bloomberg L.P., yahoofinance.com. Novelties after this date were not included. The target price (TP) was achieved based on the DCF method, complemented with Adjusted Present Value, Economic Value Added and Relative Valuation. The TP of €177.48 (2020YE) represents an upside potential of 17% over the close price of July 30, 2020, and the final recommendation for Ferrari N.V. is BUY, with medium risk assessed.

JEL Classification: L62; L67.

Keywords: Equity Research; Valuation; Ferrari; Discounted Cash Flows; Economic Value Added; Adjusted Present Value; Relative Valuation.

Resumo

Este relatório é uma avaliação da Ferrari N.V., preparada como Projeto de Trabalho Final de Mestrado em Finanças pelo ISEG. O trabalho segue o formato recomendado pelo Instituto CFA. A avaliação foi conduzida considerando dados disponíveis publicamente em 07 de outubro de 2020, e diversas fontes de informação foram utilizadas, como relatórios da empresa, Thomson Reuters, Bloomberg L.P., yahoofinance.com. Novidades após essa data não estão contempladas na análise. O preço alvo de €177.48 (dezembro de 2020) representa um potencial de valorização de 17% em relação ao preço de fechamento de 30 de julho de 2020, e a recomendação para a Ferrari N.V. é COMPRA, com risco médio avaliado.

Classificação JEL: L62; L67.

Palavras-chave: Equity Research; Avaliação; Ferrari; Fluxos de Caixa Descontados; Valor Econômico Adicionado; Valor Presente Ajustado; Avaliação Relativa.

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These two years as a Social Scientist studying finance were pretty challenging for me, most of the contents were completely new, and to see the operations of a company based on financials was a difficult task. However, many wonderful people were by my side supporting during this process. In so, I would like to thank my friends from ISEG (the group ISEG Portuguese&Immigrants). As a foreigner student in Lisbon, these guys were pretty much my reference. Thank you, my biological family in Brazil, always present in my mind, heart and apps, which decreased the length of Atlantic Ocean. My special thanks to my supervisor Professor Inês Pinto, for the patience and valuable comments and guide. I am thankful to all my professors from ISEG, always supportive in this learning process. I lived around the campus and ISEG has deeply been part of my life in the past semesters. So, I felt a lot the importance of the campus staff, and I would like to extend my thanks to them.

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Research Snapshot

We issue a BUY recommendation to Ferrari N.V. and a target price (TP) of €177.48 for 2020YE, which implies an upside potential of 17% over the closing price of €153 from July 30, 2020 according to our DCF (FCFF) model. Additionally, a TP of €178 and €175 was obtained with APV and EVA models, respectively, supporting the DCF buy recommendation. Relative Valuation with the multiple P/E 2021E (luxury peers) outputs a TP of €176.43, also close to the TP obtained with the other methods.

Covid-19 impacted 2020E production, but did not change upward sales trend

Ferrari is the most iconic luxury brand in the world, recognized for delivering innovation, state-of-the-art performance and distinction in design and engineering. Cars delivered grew at a 10% CAGR between 2017-2019, growth trend applied in our forecast of units produced between 2020E-2022E, without considering the impact of COVID-19 outbreak. The growth in sales has been supported by investments in expansion associated with Ferrari's Business Plan 2018-2022, which includes pursuing a broader variety of cars and higher sales volumes in each car category (controlled growth), enabling pricing power. Between 2023E-2024E, after the current business plan is completed, the production of cars was forecasted to grow at 7% YoY, in line with the growth average between 2015-2018, before the current business plan. Furthermore, it is likely that Ferrari will still hold an enhanced portfolio of cars in the 2023E-2024E period, since models have an average life cycle of four years, and twelve new models are expected to be unveiled between 2020E-2022E (historically Ferrari launched two models per year, which tends to reoccur in for 2023E-2024E, independently of the next business plan vision).

With all the industrial facilities concentrated in Maranello, Italy, Ferrari ceased the operations between March and May 2020, when lockdowns were imposed due to the Covid-19 outbreak. According to our forecast, Ferrari would produce around 11,144 cars in 2020E without the impact of Covid-19. The break in production decreased Ferrari's capacity of delivering 1,500 units in 2020E, and the total production for the year is expected to be 9,644 units, 5% lower than the 10,131 units produced in 2019. However, Ferrari's assessment on waiting lists for recent launched cars, or still to be unveiled, shows demand "as strong as ever"¹, and the prospected sales remain on the pre-Covid-19 route².

Table 1. Stock Data

Price	€153
Target Price	€178
Upside Potential	16%
Dividend Yield	0.7%
Total Shareholder Return	17%
Italian Stock Exchange (ISE)	RACE.MI
NYSE	RACE.N
Market Cap € mn	30,540
52-weeks range €	169.05-115.12
Free-Float	69%
Average Daily Volume (ISE, 2Y data)	525,741
Average Daily Volume (NYSE, 2Y data)	430,918
Beta (Blume Adjusted)	0.84

Table 2. Ferrari's Key Metrics and Multiples (Forecasted)

Multiples	2020	2021	2022	2023	2024
P/E	55.18	38.95	27.14	24.29	19.52
P/EBIT	39.61	28.19	19.75	17.77	14.21
EV/EBIT	45.93	32.69	22.91	20.61	16.47
EV/Sales	9.8	8.18	6.68	6.05	5.41
Key-Metrics	2020	2021	2022	2023	2024
Revenue s (€ bn)	3.4	4.07	4.98	5.5	6.15
EBIT (€ bn)	0.72	1.02	1.45	1.61	2.02
Net Profit Margin	15%	18%	21%	21%	24%
EPS (€)	2.77	3.93	5.64	6.25	7.84

Source: company data, elaborated by the student.

Table 3. Ferrari's Target Price per Model Applied

	TP	Upside
DCF – FCFF	€177	16%
DCF – APV	€178	16%
DCF – EVA	€175	14%
Multiples Valuation (P/E 2021E – Lux Peers)	€176	15%

Source: elaborated by the student.

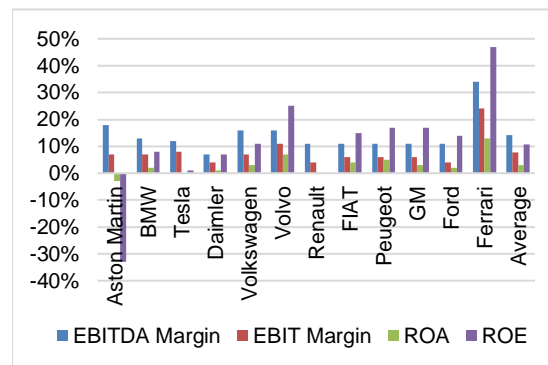
¹ Ferrari's assessment on COVID-19 impact on 2020Q2: "earnings weak across all metrics but in line with expectations. Sound core business confirming solid profit resilience. Covid-19 pandemic disruption delayed the industrialization phase of the SF90 Stradale. Deliveries to commence in Q4 2020. **Vibrant demand strengthening the order book. Restart of pre-owned market sustains residual values.** Obtained the equal salary certification on July 2 underlying the Company's attention to merit".

² Ferrari, 2020. Second quarter report. Maranello, Italy. <https://www.reuters.com/article/us-ferrari-results-idUSKBN22G1CC>; <https://europe.autonews.com/automakers/ferrari-expects-limit-unit-sales-losses-2020>; <https://www.bloomberg.com/opinion/articles/2020-08-03/new-ferrari-demand-stays-strong-in-covid-19-pandemic>; <https://www.gpblog.com/en/news/59113/impact-coronavirus-on-ferrari-appears-to-be-relatively-limited-for-the-time-being.html>;

The most diversified portfolio of cars ever, with high prospects for premiums

Ferrari has the highest revenue per car compared with peers, and this is one of the main triggers sustaining growth in the coming years. Revenues from the sale of cars are expected to evolve within a mix of i. growth in customization, achieving 760 customized vehicles in 2024E (19% CAGR between 2020E-2024E, pushed by Ferrari’s design centers recently opened in strategic markets, and an average premium of 50% on the base price); ii. Hybridization – Plug-in technology, which will be present in 60% of the models by 2022E and brings an average premium of 22% over the base price (Appendix 07); and iii. Controlled growth, with new car categories in GT, Sport, Special Series and Icona strategic pillars, and higher sales volumes per model. Ferrari’s SUV, Purosangue, represents a new model within GT pillar. Icona Series, which selling price starts at €1,500,000 without customizations, represented less than 1% of total vehicles sold in 2019 and is projected to achieve 5% in 2024E). Between 2014-2019, revenues per unit grew at an average rate of 4% YoY, indicating Ferrari’s resilience in charging high premiums for the novelties.

Figure 1. Ferrari & Auto Peers – Performance and Return (2019)

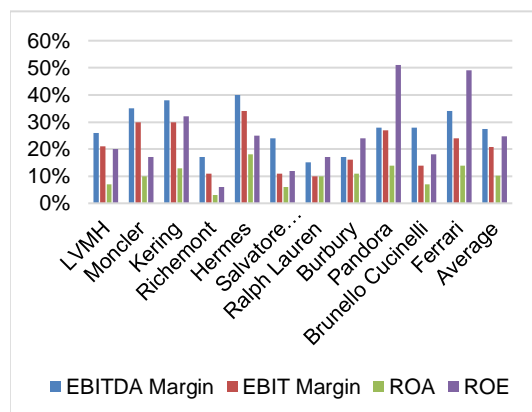


Source: Reuters, elaborated by the student.

Beyond car jewels, towards broader luxury: ultra-exclusive and more inclusive

Besides luxury performance cars (LPC), Ferrari is investing to expand to the broader luxury market, offering personal luxury goods such as watches, jackets, eyewear, collectibles, in physical and online stores. This strategy aims to sustain the brand aura of high luxury by achieving a broader potential market, not restricted only to HNWI³, embracing more Formula 1 fan communities with luxury, but more accessible goods. This source of revenues is estimated to grow at 6% YoY from 2021E:2024E, average growth of personal luxury goods industry between 2012-2019 (Bain & Company), after a sharp fall of 50% of revenues in 2020E due to the Covid-19 impact in Formula 1, stores and amusement parks.

Figure 2. Ferrari & Luxury Peers – Performance and Return (2019)



Source: Reuters, elaborated by the student.

Waiting Lists: Demand is under Ferrari’s control and cash flows are stable

Although Ferrari’s sales are highly correlated with the growth in HNWI population, new launches are the real engine of demand. We predict units produced growing at an 8% CAGR between 2020E-2024E, in line with the past three years CAGR. Ferrari’s capacity of controlling demand depends on scarcity, that is, demand far exceeding offer. Based on the firm’s track-records, we believe that Ferrari will be capable of matching demand and offer on the forecasted period in such a way that the firm will sustain controlled growth until 2024E, with high chance of keeping the pole-position in obtaining the highest premiums per unit in the market. The capacity of managing the demand according to its willingness makes Ferrari able to have more predictable cash flows.

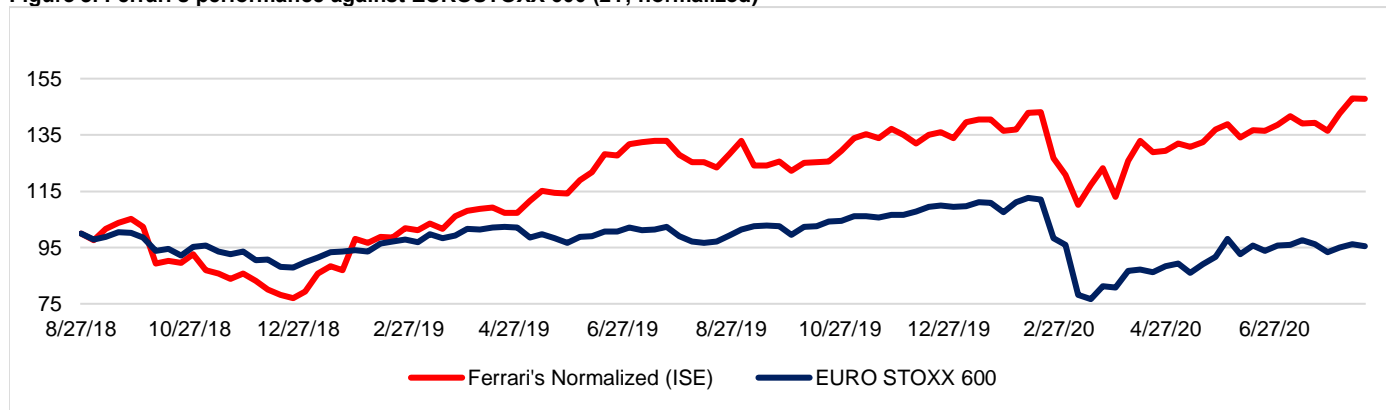
A capital-intensive car manufacturer with margins fatter than luxury industry

<https://auto.economicstimes.indiatimes.com/news/passenger-vehicle/cars/coronavirus-puts-brakes-on-sports-car-maker-ferrari/75539113>.

³ HNWI are defined by Capgemini as those individuals having investable assets of US\$1 million or more, excluding primary residence, collectibles, and consumer durables.

At a first glance it makes sense to compare Ferrari with automotive peers. However, Ferrari's multiples are incomparable with car manufacturer's averages, even including outliers such as the U.S. Tesla or the G.B. Aston Martin. Compared with luxury peers, Ferrari's margins and multiples still outstand, reflecting on the company's leading position as a luxury brand, capable of charging the highest premiums in the industry, an important source for Ferrari's prospected FCFF growth in the coming years.

Figure 3. Ferrari's performance against EUROSTOXX 600 (2Y, normalized)



Source: Reuters, elaborated by the student.

Business Description

Short History

Founded in 1929 by Mr. Enzo Ferrari, the firm was initially a racing team, Scuderia Ferrari, based in Modena, Italy. On that time, Scuderia Ferrari raced with Alfa Romeo cars. In 1947, Mr. Enzo moved his headquarters from Modena to Maranello, where the firm is still located. That's also the year when Ferrari produced its first racing car, becoming the company currently known. In 1950, the company began racing in the Formula 1 World Championship, which makes Scuderia Ferrari the longest running Formula 1 team. In 1969, Fiat Chrysler Group (FCG) acquired a 50% stake in Ferrari S.p.A., and in 1988 increased the stake to 90%, following the death of Mr. Enzo Ferrari. His son, Mr. Piero, owned the remaining 10%.

In 2016, Ferrari became an independent publicly traded company, following its separation from FCG. Ferrari promoted its IPO, offering common shares at the New York Stock Exchange, under the ticker symbol RACE. The Company also listed its common shares on the Mercato Telematico Azionario, the stock exchange managed by Borsa Italiana, under the same ticker symbol.

Company Profile

Ferrari ranks among the world's leading luxury brands, focused on the design, production and sales of the world's most recognizable luxury performance sports cars. As a brand, Ferrari's image symbolizes exclusivity, innovation, state-of-the-art sport performance and Italian design and engineering heritage. Concentrating design, engineer and productions of its cars in Maranello, Ferrari sells in 60 markets worldwide, and had as December 2019 a network of 166 authorized dealers, operating 187 points of sales.

Figure 4. Enzo Ferrari, 1964



Source: Observador.pt.

Figure 5. Ferrari's IPO – Italian Stock Exchange, Milan, 2015



Source: Reuters.

Ferrari's has a dual mission when dealing with the volumes produced: To maintain its aura of exclusiveness and achieve premiums, Ferrari keeps a strategy of low volume production, which is key for sustaining the reputation of scarcity and exclusiveness among its customers. On the other hand, the firm has been growing and delivering record units, which is set to continue on the coming years. To achieve a balance, Ferrari carefully manages the production volumes and delivery waiting lists, having a strong control on the demand.

Besides cars, Ferrari has been diversifying in the luxury industry. Its strength as a brand allows the company to license it to a selected number of producers and retailers of luxury and lifestyle goods, which includes sportswear, watches, accessories, consumer electronics and theme/entertainment parks. Ferrari also designs, sources and sells Ferrari-branded products through a network of 20 Ferrari-owned stores and 24 franchised stores, and on its website. Financial services are also provided to retail clients for the purchases of cars and dealers, through the operations of Ferrari Financial Services, mainly in the U.S. market. Finally, the company also supplies engines for other high luxury car manufacturers, such as Maserati, and provide services for existing Ferrari owners.

In 2019, Ferrari shipped 10,131 cars and recorded net revenues of €3,766 million. The main sources of revenue are divided in 4 business concentrations. In 2019, Cars and spare parts represented 78% of revenues, and grew 13.4% from 2018-2019. Engines represented 5%, and fell 30.3%, reflecting lower shipments to Maserati. Sponsorship, commercial and brand represented 14%, and grew 4.3%. Miscellaneous sources of revenue represented the remaining 3% and grew 6.4%. Overall, Ferrari's revenues grew 8.3% from 2018 to 2019 at constant currency.

The most complete and diversified portfolio of LPC

Ferrari's product offerings comprise four main pillars: the Sports range (SF90 Stradale, F8 Tributo, F8 Spider, 812 Superfast and 812 GTS), the GT range (Ferrari Roma, Ferrari Portofino, GTC4 Lusso and GTC4 Lusso T), Special Series (488 Pista and 488 Pista Spider), and Icona (Ferrari Monza SP1 and the Ferrari Monza SP2). Ferrari also produces limited edition hypercars, which main recent icon is LaFerrari Aperta. In 2019, Ferrari unveiled the SF90 Stradale, the first series production of Plug-in Hybrid Electric Vehicle (PHEV). Within this product range, Ferrari diversifies its product offerings by differentiating models in architectures, engine sizes, technologies, body styles, and seats.

As part of its business plan 2018-2022, Ferrari aims to launch new models regularly, pushing demand while still producing in controlled levels by pillar and product. A total of 7 new cars were unveiled between 2019-2020, and 12 models are expected to be unveiled between 2020E-2022E.

Ferrari's Strategies

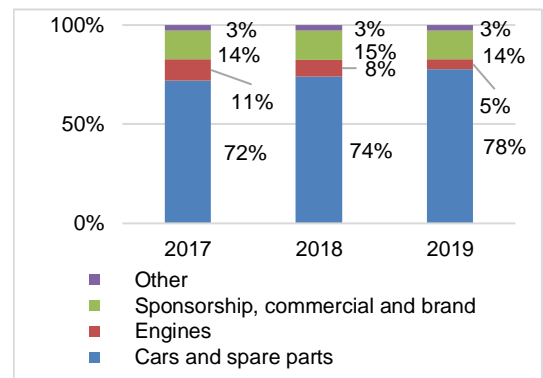
Ferrari's brand diversification strategy is based on principles comprising a dual identity: exclusive, but also inclusive in relation to Formula 1 fan communities. The company will offer product categories that enhance the vibrancy and vitality of the brand, while complying with **3 pillars**: "**Brand Extension**" pillar, a refined collection of products that will embody Ferrari's

Figure 6. Ferrari's Store – Inclusiveness and Diversification with Luxury Industry



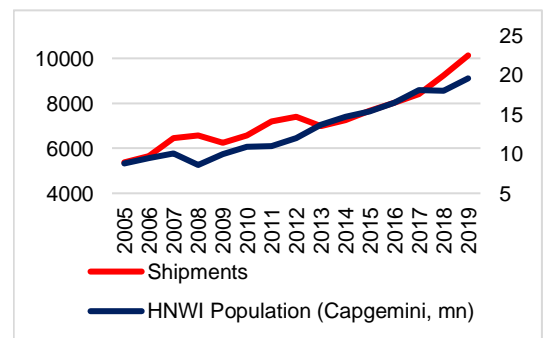
Source: Company data.

Figure 7. Ferrari – Revenues per Business Segment



Source: Company data.

Figure 8. Ferrari – Historical Stable Growth in Shipments

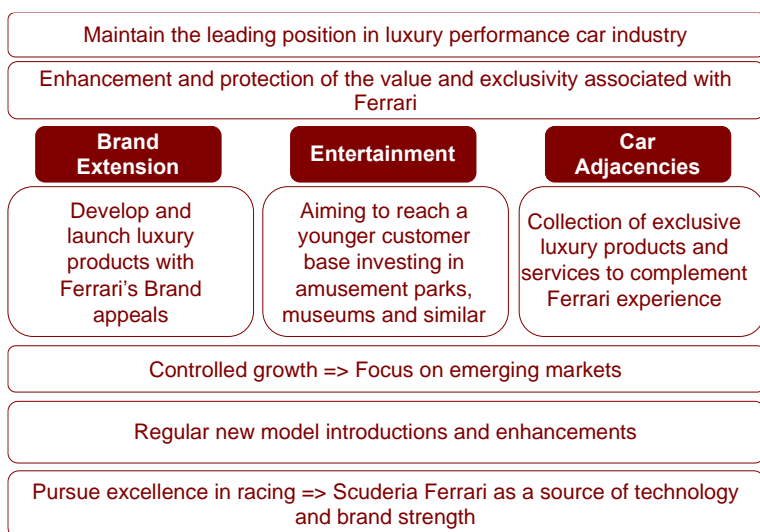


Source: Company data, Capgemini.

DNA; **“Entertainment”** pillar, to reach out a wider and younger customer base, leveraging Ferrari’s racing roots; **“Car Adjacencies”** pillar, a collection of exclusive luxury products and services to complement Ferrari experience.

Ferrari’s broader strategy focuses entirely on maintaining its leading position in the LPCI, in parallel with the enhancement and protection of the value and exclusivity associated with the brand. The company will focus on cost-efficiencies and aim to achieve profitable growth by pursuing: **Controlled growth** – Having in mind that exclusivity is a direct function of rareness; Regular **new model introductions** and enhancements – The demand for Ferrari’s cars grows as a function of new releases, and 8 new models will be unveiled until 2022E, providing Ferrari with the strongest and most diversified portfolio of luxury performance cars in the company’s history; Pursue **excellence in racing** – Scuderia Ferrari and Formula 1 activities are an essential part of company’s brand maintenance; **Controlled growth in adjacent luxury and lifestyle categories** – which is part of augmenting Ferrari’s penetration in luxury, promoting portfolio diversification in this market.

Figure 11. Ferrari’s 2019-2022 Business Plan



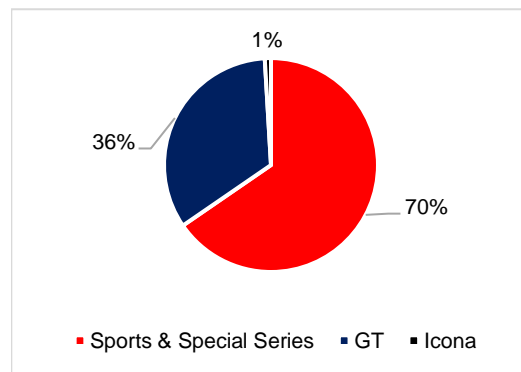
Source: Student elaboration based on company disclosures.

Ferrari’s business plan for 2018-2022 is based on four principles: 1. Meticulously constructed pipeline of product launches. 2. Envious pricing power. 3. Appropriate investments. 4. Predictable and growing free cash flow. Other two goals are set as guides for Ferrari’s strategy to mature in 2022: 1. Keep taking advantage of racing know-how and transferring it to road cars. 2. Deliver ~60% of total sold cars equipped with hybrid technology, decreasing CO₂ emissions and complying with regulatory and market trends.

Formula 1 and Scuderia Ferrari: A technology source enabling innovation

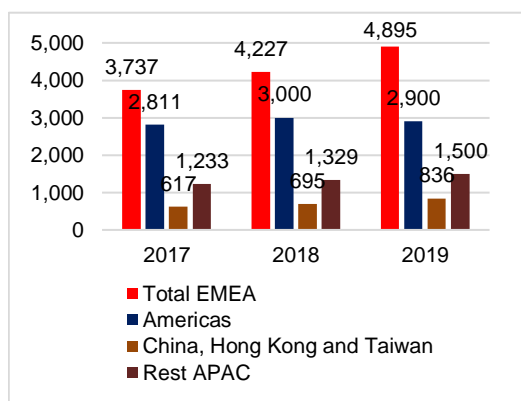
Ferrari’s racing team, Scuderia Ferrari, is a core element in Ferrari’s marketing strategy, and also an important source of technological innovation for the engineering, development and production of the cars. Participating and succeeding in Formula 1 is a vitrine for Ferrari, with 1.922 billion total

Figure 9. Ferrari – Revenues per Car Strategic Category



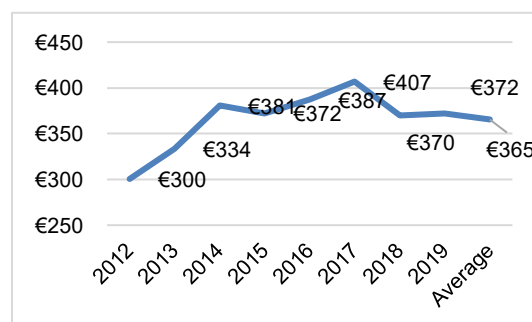
Source: Company data.

Figure 10. Ferrari – Geographic Segmentation



Source: Company data.

Figure 12. Ferrari – Evolution of Average Revenue from C&SP per Unit Delivered



Source: Company data.

global TV cumulative audience, according to the company. Visibility and success in Formula 1 activities enables Ferrari to benefit from sponsorship contracts, which allows the firm to promote and market its brand and apply racing technologies in commercial cars. The regulation in F1 pushes the participants towards innovating each year, bringing new or enhanced cars for the races. This is directly and indirectly applied as innovative features in Ferrari's cars.

Key-drivers of Revenue and Expenses

For FY 2019, Ferrari's net revenue is compound by three main sources: Cars and Spare Parts (77.7%, +15.4% over 2018), Sponsorship, commercial and brand (14.3%, +6.4% over 2018), and Engines (5.3%, -30.3% over 2018). The only source of revenue presenting negative growth is Engines, and it is expected, since the only customer is Maserati, and from 2022E the firm will switch-off Ferrari's engines by in-house made. C&SP net revenues are composed of: (i) an increase in Mainland China, Hong Kong and Taiwan of 20.3%, (ii) an increase in EMEA of 15.8%, (iii) an increase in the rest of APAC of 12.9%, partially offset by a decrease of 3.3% in Americas.

On the expenses side, three main components are the main sources of costs to Ferrari in 2019, as percentages of net revenues: Cost of Sales (47.9%, +11.2 over 2018), Research and Development Costs (18.6%, +8.7% over 2018), and Selling, General and Administrative Costs (9.1%, +4.8% over 2018). Cost of sales consists of the cost of materials, components and labor. SG&A costs consist of costs for sales personnel, marketing and events, and retail stores. R&D are primarily related to Formula 1 activities to support innovation in luxury performance cars. In 2020E, SG&A tend to be higher related the revenue for the year, since part of them incurred even in the absence of production during the operations break. For instance, Ferrari fully paid its employees on that period, as well as inventory levels temporarily increased.

Raw Materials

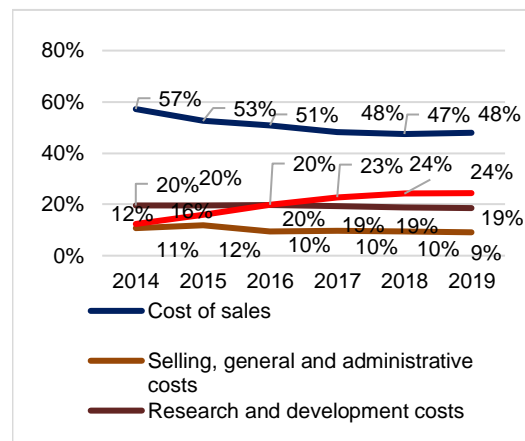
An automobile, on average, has as components: 47% steel, 8% iron, 8% plastic, 7% aluminum, and 3% glass. In total, raw materials account for 47% of the costs for producing a vehicle. It shall be noticed that aluminum's use is shifting against steel in LPCI, as part of a trend to decrease heaviness, enhancing performance without necessarily incurring in more pollution. Changes in the prices of these main components may impact the industry, pushing prices up or pulling profits down. Adverse behavior of commodities prices may affect the costs associated to producing LPC. However, the LPCI has been capable of transferring eventual changes in costs to the consumer.

Management and Corporate Governance

Major Shareholders

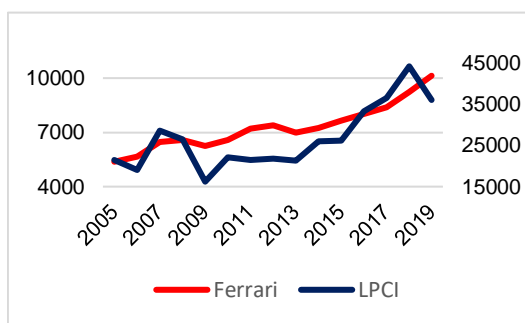
Ferrari's market cap was €30.5 bn thousand on December 2019, consisting of 193,923,499 common shares and 63,349,111 special voting shares, all with a nominal value of €0.01. At the same date, the company had 8,640,176 common shares and 2,190 special voting shares held in treasury. These are partly due to repurchase (suspended) and equity incentive programs. Ferrari

Figure 13. Ferrari – Key Drivers of Expenses as % of Net Revenues



Source: Ferrari, elaborated by the student.

Figure 14. Ferrari and LPCI: Historical Production in Units



Source: Ferrari.

Note from Ferrari: Data for the Luxury Performance Car Industry include all two door GT and sports cars with power above 500hp, retail price above Euro 150,000 (including VAT) sold by Aston Martin, Audi, Bentley, BMW, Ferrari, Ford, Honda/Acura, Lamborghini, McLaren, Mercedes Benz, Porsche and Rolls-Royce.

has a loyalty voting structure, aiming to reward the ownership of common shares and promote stability of Ferrari's shareholder base by granting long-term shareholders special voting rights. Special voting shares have only immaterial economic entitlements, not impacting earnings per share calculation, aiming to keep long-term governance and strategy stable.

Exor is the largest shareholder of Ferrari, with approximately 24.0% shareholding interest and approximately 35.8% of voting power. Mr. Piero Ferrari holds approximately 10.2% of common shares and voting power of approximately 15.2%. The remaining shareholders, as February 2020, are BlackRock, Inc., owning 6.1% of common shares; T. Rowe Price Associates, Inc., with 4.7%. Public shareholders hold the remaining 55.0% of common shares.

Corporate Governance

Ferrari was incorporated as a public limited liability company under the laws of the Netherlands on September 4, 2015. The firm has adopted the best practice provisions of the Revised Dutch Corporate Governance Code (DCGC) issued by the Corporate Governance Code Monitoring Committee. The DCGC contains principles and best practice provisions to regulate relations between the board of directors of a company and its committees and the relationship with the general meeting of shareholders. Overall, corporate governance structure seems suitable to successfully run Ferrari's operations, with low likelihood of material errors in financial reports considering track records. By applying some of the best practices of the DCGC and cutting-edge frameworks to approach internal controls and risk management, Ferrari is improving its ESG scores year after year.

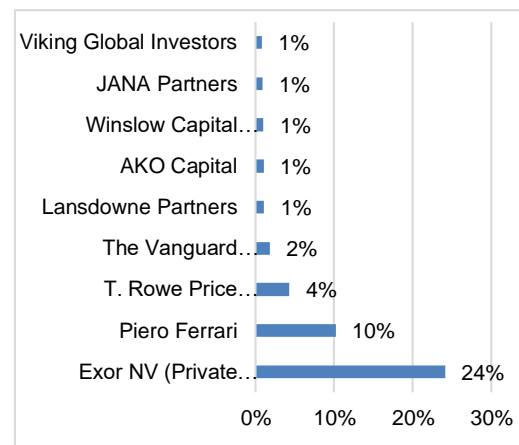
The company has set programs to foster integrity of business conduct, including anti-bribery and anti-corruption items, part of Ferrari's Code of Conduct. In 2019, there were no significant final judgments relating to the breach of (i) corruption laws, (ii) anti-competitive, antitrust and monopoly laws, (iii) environmental laws and (iv) social and economic area laws. During the year, the company faced no significant fines or other non-monetary sanctions, and no incidents of discrimination were identified.

Corporate Management

The Board of Directors is responsible for Ferrari's strategy. Two executive Directors and eight non-executive Directors compose it, the lasts without day-to-day responsibilities within the company. Internal Committees are responsible for appointing the Board of Directors: (i) an Audit Committee, (ii) a Governance and Sustainability Committee, and (iii) a Compensation Committee. Seven of the Directors qualify as independent. Pursuant to Dutch law, Ferrari should secure its Board of Directors contain a minimum of 30% male and 30% female board members, with which Ferrari has been complying. Any resolution adopted must follow favorable vote of the majority of the Directors present or represented in the board meetings.

John Elkann is the Chairman and Executive Director, and Louis C. Camilleri the CEO. Both and the remaining directors occupy their positions since 2016, which indicates stability.

Figure 15. Ferrari – Major Shareholders



Source: Reuters, elaborated by the student.

Table 4. Ferrari's ESG Score

	2019	2018	2017	2016
ESG Combined Score	B	C+	B-	C+
ESG Score (Weight 100.0%)	B	C+	B-	C+
Environment Pillar Score (Weight 34.1%)	B-	B-	B	B-
Social Pillar Score (Weight 41.5%)	B	C+	C+	C+
Governance Pillar Score (Weight 24.4%)	B+	C+	C	C-
ESG Controversies Score	A+	A+	A+	B-

Source: Reuters.

Figure 16. Ferrari – Advances in gender equality



Source: Company data.

Since its IPO in 2015, Ferrari has been improving all of the aspects compounding ESG score year after year. This testifies that since Ferrari became publicly traded, efforts to achieve the highest standards of Environment, Social and Governance have been promoted, and the results have been reflected in Ferrari's rapidly improvement in ESG combined score, which tends to reach A in some years if the firm continues its efforts. In July 2020, Ferrari has been awarded the Equal Salary Certificate for providing the same salaries for men and women sharing the same qualifications and positions.

Industry Overview and Competitive Positioning

A dual identity firm: Car manufacturer in the luxury sector

Despite being a car manufacturer, Ferrari is not comparable with its peers from the broader automotive industry. Aston Martin is the unique sharing characteristics comparable with Ferrari that is listed, and it is not the best fit, given its recent challenging situation⁴. On the other hand, Ferrari's margins and multiples are more comparable with players in the general luxury industry, such Hermès and Pandora. Ferrari's gross margin was 48% in 2019FY, while on average 78% for the automotive industry and 35% for the luxury. Ferrari's EBITDA margin of 34% is beyond 14% and 27% from auto and luxury industries, respectively.

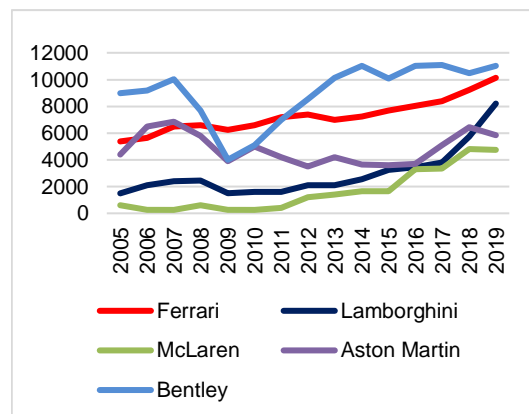
Competition in LPCI

Ferrari market is specific: luxury performance cars as two-door cars powered by engines producing more than 500 hp and selling at a retail price in excess of €150,000 (including VAT). Only a few players produce these cars, almost all are part of major automotive groups. The industry is concentrated: Aston Martin, Audi, Bentley, BMW, Ferrari, Lamborghini, McLaren, Mercedes Benz, Porsche and Rolls-Royce are the main players. Competition is driven by the strength of the brand and features of the products in terms of performance, styling, novelty, innovation, as well as the producer's ability to innovate in new product offerings, which stimulate the demand. For comparability and data availability, the comparison among Ferrari, Aston Martin, Bentley, Lamborghini and McLaren is performed.

Ferrari has a strong track-record of stable growth in the quantity produced and revenues, which tends to evolve upwardly with less volatility than Bentley, McLaren and Lamborghini, and Aston Martin. Even if you consider the 2008 financial crisis and its impact in 2009 sales, Ferrari has proven to be more resilient than the competitors regarding the number of cars produced.

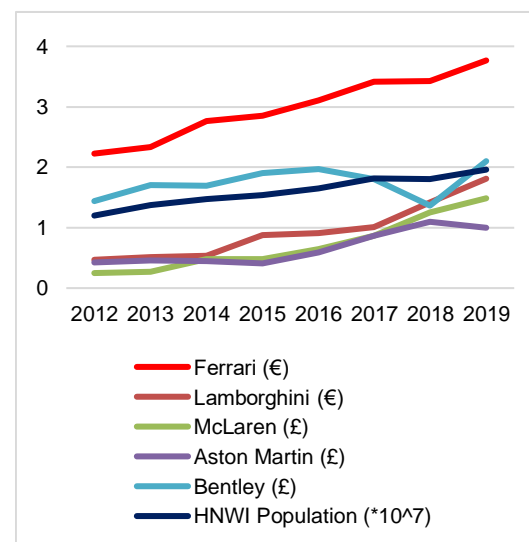
Since 2005, Ferrari has presented the less volatile car output per year compared with its peers. Moreover, the quantity of cars produced by Ferrari is extremely correlated with the HNWI population, still with varying slopes, which does not hold for the peers. When it comes to revenues per quantity produced, Ferrari holds the Pole Position since 2012 until 2019, having an average premium per unit throughout the period 46% higher than the

Figure 17. Ferrari and Peers: Historical Production in Units



Source: Car Sales Base.

Figure 18. Ferrari and Peers: Revenues and HNWI Population Growth (in bn for currencies)



Source: Car Sales Base, company data, Capgemini, elaborated by the student.

⁴ <https://www.bloomberg.com/news/articles/2020-05-13/aston-martin-weighs-further-fundraising-even-as-dbx-orders-grow>; <https://www.bloomberg.com/news/articles/2020-01-07/aston-martin-warns-profit-fell-in-carmaker-s-disappointing-2019>.

second, McLaren, which is followed by Lamborghini, Bentley and Aston Martin, respectively.

Differently of other segments in luxury markets, LPCI faces a significant portion of demand driven by new product launches. Consequently, the market share of individual producers fluctuates over time, reflecting launches. This tend to drive sales even when market conditions are not favorable, mainly because of the level of novelty, exclusivity and excitement a new product tends to create, capturing its own demand. Firms also hold the capacity of managing waiting lists to push or pull the demand. LPCIs' players produce low volumes as part of their strategy to create scarcity, and from there derive exclusiveness. In this sense, market share is less important than new product launches.

Ferrari held in 2019 23% of LPCI market share: 23% in top 22 markets, 23% in Europe, 19% in Americas, 29% in mainland China, Hong Kong and Taiwan and 30% in the remaining APAC. While competitors monitor market share as an indicator of brand appeal, the main players in LPCI do not focus on market share as a performance metric. Deliberately, the industry manages the supply relative to demand, defending and promoting brand exclusivity, which drives premium-pricing power. Producing high volumes may destroy the aura of exclusivity, on which scarcity is based. On average, Ferrari, Lamborghini, McLaren, Aston Martin and Bentley have 42% of their sales in EMEA, 31% in Americas and 27% in Asia in 2019. Asian markets, especially China, are considered the next frontier for LPCI to struggle for revenues and penetration.

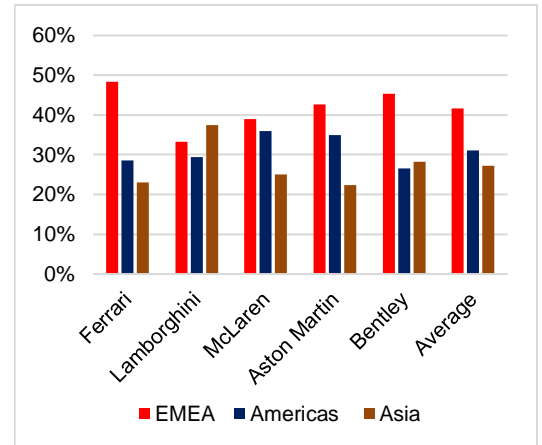
Macroeconomic conditions: Impacts on an exclusive market

Sales of luxury goods tend to decline in recessionary periods, although the sales of LPC have proven to be resilient even in unfavorable times, especially for Ferrari. Currently, the COVID-19 (or "Coronavirus") outbreak brings uncertainties that have been impacting end markets, supply chain and operations, and the effect may be adverse for the whole industry.

After the recession of 2008-2009, the LPCI has been resilient to further economic downturns and stagnation in the broader economy, which was pulled by the increase of new product launches and the sustained period of wealth creation in many Asian countries, with expanding population of potential consumers of luxury goods. Even during the recession, Ferrari's downturn in quantity produced was way lower than its peers'. Ferrari's performance has proven to be resilient even in periods such as the financial crisis of 2008.

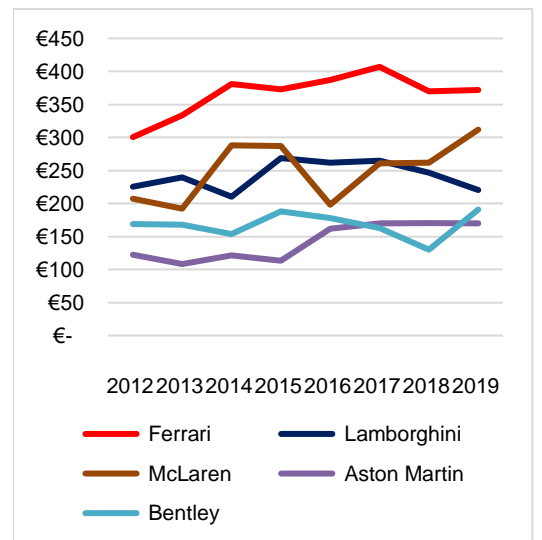
The global economic prospect affects disposable income and impacts the consumer willingness to buy luxury goods. Coronavirus impact in asset prices may have strongly postponed purchase decisions of luxury consumers and LPCI in general; still Ferrari has been passing through this turbulence without great disruptions regarding pre-existent contracts, as well as sales have resumed, and no unusual volatility is occurring. It is expected that near-term global economic situation remains uncertain, and this will affect the wealth and willingness to LPC new purchases, and luxury good within the firm's diversification strategy.

Figure 19. Ferrari and Peers: The Geography of Competition (2019)



Source: Car Sales Base, company data.

Figure 20. Ferrari and Peers: Average Revenue Per Unit Sold



Source: Car Sales Base, company data.

COVID-19 Outbreak: Shedding Light on Uncertainty

The expected impact of COVID-19 outbreak in Ferrari is now clearer, as the company reviewed some of the assumptions regarding goals for 2020FY. In 2020Q1, when Asian markets were partially closed, Ferrari outperformed in relation to 2019Q1 figures. Shipments increased by 128 units, +4.9% vs. PY. Americas grew by +4.2%, EMEA +25.4%, Rest of APAC +23.2%, and Mainland China, Hong Kong and Taiwan -88.7%, as a consequence of the deliberated anticipation of deliveries in 2019. However, in 2020H1, production ceased for more than two months, as well as stores, parks and Formula 1 activities, which is reflected in 2020E Income Statement. Even with the break, Ferrari expects to catch up this period since operations restarted on May 04, 2020, at least for cars and spare parts.

Ferrari carefully controls its delivery agenda, and this allows the firm to delay or advance deliveries as needed. Moreover, four new models were unveiled in 2019, yet to hit the markets. As discussed, new or enhanced models are the engines of demand. According to Ferrari's 2020Q2 presentation (non-audited), the key impacts and expectations regarding COVID-19 were: 1. A significant reduction in Formula 1 revenues, reflecting lower number of races estimated in 2020 season, and retake without fans physically. 2. Brand activities project a substantial reduction, to reflect a slow recovery to pre-pandemic levels. 3. SG&A and R&D expenses reflect prioritizations based on medium term impact analysis. 4. CAPEX projected for 2020 reduced to approximately €750 million. 5. Impact of COVID-19 to reflect primarily on 2020Q2. 6. A potential second wave of infections was not considered as a scenario.

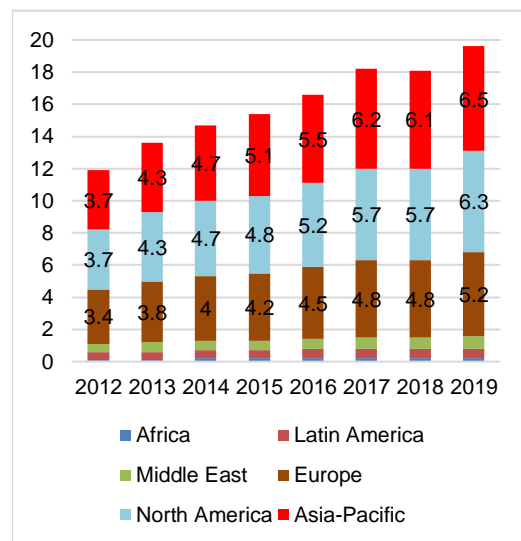
Ferrari estimates that the stop in operations impacted the production and delivery of 2,000 units in 2020E, but reprioritization has provided the company with a catch opportunity of 500 units in 2020E. Moreover, after the first waves of coronavirus passed in Ferrari's main markets, reassessment of waiting lists and new sales have been "strongest than ever", according to Ferrari's 2020Q2 non-audited results presentation.

A Historical Perspective

Ferrari's shipments grew 9.5% (880 units) between 2018 and 2019, reflecting the strongest portfolio of cars ever held, set to be broader and more diversified until 2022E, with the conclusion of the business plan. Net revenues grew 10.1% YoY between 2018 and 2018, the same period, with shipments falling -3.3% to America YoY (deliberated waiting lists), and growing 15.8% in EMEA, 20.3% in Mainland China, Hong Kong and Taiwan, and 12.9% in the rest of APAC.

Breaking revenues by business segment, C&SP grew 13.5% between 2018-2019, reflecting volume increase of the 488 Pista and 488 Pista Spider, the Ferrari Portofino, the 812 Superfast and the initial deliveries of the F8 Tributo. New launches, as said, are the engine of demand in Ferrari's market, and the firm is set to keep launching new models straightly until 2022E. Personalization programs contributed to the growth in revenues, mainly related to Icona series, with Ferrari Monza SP1/SP2, the most expensive models available. Revenues from Engines decreased -30.3%, and are set to be even lower until 2022YE, when Ferrari will cease providing

Figure 21. HNWIs Population Evolution Per Geography (in mn)



Source: Capgemini.

Figure 22. Ferrari's S90 Stradale, 1st Introduced Plug-in Hybrid Model, Unveiled in 2019



Source: Ferrari.

Figure 23. Lamborghini's Sian, 1st Introduced Plug-in Hybrid Model, Unveiled in 2019



Source: Lamborghini.

Maserati with engines. SC&B revenues grew by +4.3%, reflecting higher revenues from Formula 1 racing activities.

Margins and Financial Performance

Ferrari's margins are impressive compared with the car industry. Average gross profit margin was 52% between FY2017-2019, an increase comparing with the 2016 figure (49%). EBITDA margin in 2019FY was 33.7% and grew at a CAGR of 7.5% between 2016 and 2019. The firm achieved an EBIT of € 0.92 bi, and EBIT margins has also been raising since 2016, achieving 24.3% in 2019 and a CAGR of 8.31% between 2016-2019FY. There is no peer among car manufacturers with such EBIT margin (average for the industry is 7%). In luxury industry, only Hermes (34%), Moncler, (30%), Kering (30%), and Pandora (27%), presented EBIT margins comparable with Ferrari's.

ROE in 2019 was 47%, while ROIC was 25.5%. This last figure grew at a 2% CAGR between 2016-2019, achieving its highest level (30%) in 2018. It should be referred that since 2018, Ferrari's CAPEX is higher than historical figures due to investments in controlled expansion, which the firm seeks to achieve with a broader portfolio and selling more units from each car category. This cycle will start normalizing to historical figures in 2021E, and the new models deriving from this expansion only first reached markets in 2019. Results in Net Revenues should start to be reflected in 2020E figures. Ferrari's net profit margin was 19% in 2019 and grew at a 13% CAGR between 2016-2019. In 2018, net profit margin was 30%, the best mark in recent history. Ferrari's operations may be compared with car manufacturers in terms of capital, but margins are comparable with luxury industry. Still, Ferrari presents figures outstanding even luxury peers.

Temporary High CAPEX sustains controlled growth

Ferrari's CAPEX has been outstanding historical margins of around 11% over net revenues since 2018, when the current business plan started. For 2020E, CAPEX is expected to match 19% of net revenues, in line with the figure in 2018-2019 (Ferrari's 2020Q2 presentation confirms a CAPEX of around €750 mn). From 2021E on, CAPEX tends to normalize around historical figures. Ferrari has been resilient machine in generating CFO (17% CAGR between 2015-2019), achieving €1,3 bn on the last year, which was more than enough to cover the expansion CAPEX.

Building the Future: Competition in LPCI and Shifting Towards Hybrid

Players in LPCI are monitoring and contributing to the advance of autonomous driving technologies and how it will impact the automobile market. Autonomous driving technologies are an enhancing technological feature, bringing to cars sensors, artificial intelligence applications and drive assistant systems. A shift towards greener LPCs is not only a trend, but also a must. Models are already available, and in many jurisdictions, they are set to be the rule in some years. This challenges LPCI in applying electric technologies to decrease pollution, while being capable of delivering the same performance of combustion engines.

The year of 2019 may be characterized by a turning point concerning releases of hybrid models by LPCI, yet models have been available since

Figure 24. McLaren's P1 GTR, 1st Introduced Plug-in Hybrid Model, Unveiled in 2019



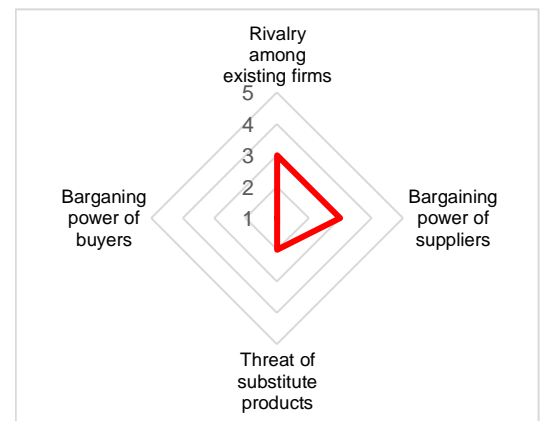
Source: McLaren.

Figure 25. Aston Martin's Valkyrie, hybrid model, unveiled in 2019



Source: Aston Martin.

Figure 26. Ferrari – Porter Five Forces Analysis



Source: elaborated by the student.

2015. Aston Martin⁵ confirmed the performance figures for its full hybrid powertrain and begun prototyping in 2019. Lamborghini's concept car Asterion presents Plug-in Hybrid (PHEV) technology, the same being applied by Ferrari. Applying the same technology and set to compete with Ferrari's GT line, Bentley's Bentayga Hybrid was also unveiled in 2019. McLaren is launching plug-in hybrids in 2020. Legislation is pushing the automotive industry towards more sustainable solutions, and this trend is only late impacting HPCI – players are now reshaping their portfolios and going greener. Overall, it may be expected that companies will be forced to speed up their moves towards new technologies to follow more restrictive regulations over pollution.

The Geography of Competition

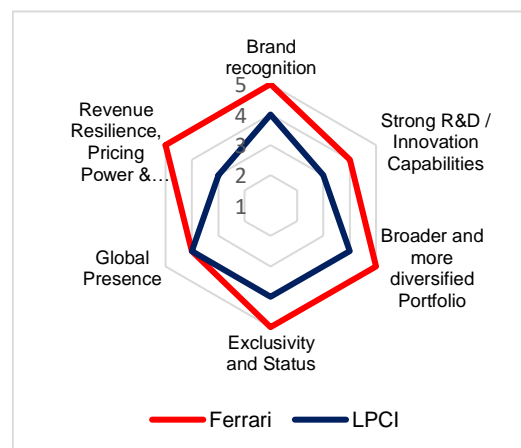
Emerging markets are and will keep being the most promising source of potential growth. LPCI is already taking advantage of this reality, especially regarding Asian markets. In this sense, capabilities to operate in different cultural contexts, with different consumer expectations, values and behavior may be an asset for international expansion of sales. Ferrari is well positioned to catch up these opportunities, with a wide range of strategically located dealers that perform sales and render services. Emerging (highlighting Asia) economies are the expected source of future growth, and eventual additional and existing competitors are likely to aggressively defend their sales in these markets, as well as fighting for expanding in these geographies.

Ultra and High Net Worth Individuals are the Main Consumers

The uncertain macroeconomic landscape can negatively impact LPCI to the extent that it directly affects HNWI population, the main consumer in this exclusive market. According to Capgemini, the number of HNWIs grew at a CAGR of 7.1% between 2012-2018. Annual growth rate between 2018-2019 was 8.8% globally, 6.1% for Africa, 2.7% for Latin America, 9.3% for the Middle East, 8.7% for Europe, 10.9% for North America and 7.6% for Asia-Pacific. In 2019, the population of HNWIs was 19.6 million globally.

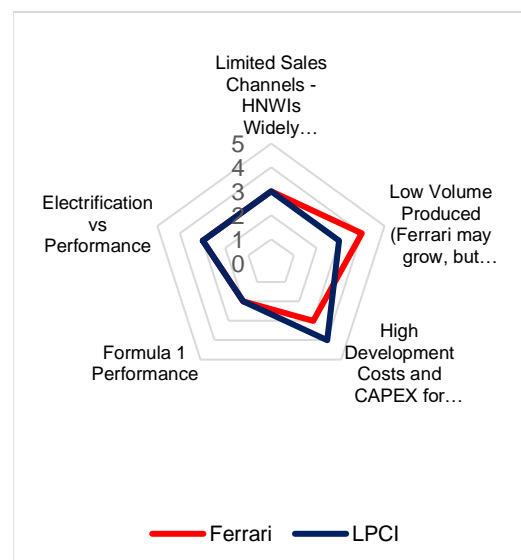
Considering HNWIs as the whole potential market if Ferrari was a monopoly, the firm covered 0.052% of potential customers with units delivered in 2019. In this sense, it is fair to conclude that Ferrari's strategy of controlled growth may be sustainable, even if broader market conditions are unfavorable. The cap would be the quantity that harms exclusivity, which may be well managed with the controlled demand and offer matching strategy. Despite the space available for Ferrari to grow, it is possible to see that some competitors, such as Maserati, have lost their luxury aura by expanding market-share (3/5 of Maserati's models currently under €150,000, including VAT). Fiat Chrysler Group, which controls Maserati, recently released a turnaround plan for the firm, since getting closer to a premium automaker, instead of LPC manufacturer, did not pay-off, the opposite.

Figure 27. Ferrari and peers: SWOT - Strengths



Source: elaborated by the student.

Figure 28. Ferrari and Peers: SWOT - Weaknesses



Source: elaborated by the student.

⁵ <https://media.astonmartin.com/aston-martin-valkyrie-the-ultimate-hybrid-powertrain-for-the-ultimate-hypercar/>

High loyalty level pushing launches as the engine of demand

The main variable affecting the demand for LPCs is the launch of new or enhanced models. Producers may have more or less power to control the demand by managing the new releases agenda, and matching supply and demand according to the market conditions, aiming at scarcity and differentiation. Ferrari is especially capable of adjusting its production according to the market conditions or the firm's needs.

Loyalty tends to be high in the industry, and Ferrari's case illustrates it: Approximately 41% of the customers are owners of more than one Ferrari. Moreover, Ferrari owners acquired more than 70% of the new cars sold in 2019. Demand for LPCs may also be affected by factors directly impacting the cost of purchasing and operating the cars, such as the availability and cost of financing (which is important in the U.S. market), prices of raw materials, parts and components, fuel costs, government regulations (including tariffs), import regulation, taxes on luxury goods, etc.

High residual value is important to the primary market. Clients, when purchasing LPCs, consider the expected resale value of the car, which is part of the overall cost of ownership. A higher residual value potentially lowers the cost for the owner to switch to a new model, which tends to reinforce client loyalty and the brand.

Innovation Drives Differentiation and Exclusiveness

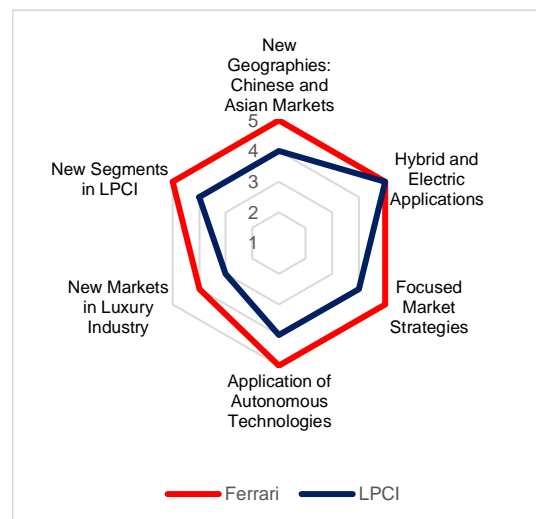
Exclusiveness is highly connected with the innovation capabilities of players in LPCI, and investments in R&D are key to achieve it. For instance, Ferrari invested 18.6% of new revenues in R&D in 2019, 19.8% in 2018, and 19.2% in 2017. On its turn, Aston Martin invested 18.5% in 2018 and almost 26% in 2017. Innovation is also dedicated to applying greener technology to LPCs, yet the challenges to maintain the performance of combustion engines are to be surpassed. Some players in the industry take advantage of technology from their Formula 1 activities applied to the road cars, which is the case of Ferrari, Mercedes Benz, BMW and McLaren. Ferrari aims to have 60% of the models equipped with hybrid plug-in technology by 2022YE. Differentiation in Ferrari's case may achieve unmeasurable levels, since each car may be customized in n different variables according to the customer's preference, adding around 50% on the base-price for the model. Currently 3% of Ferrari's production is customized, and this is expected to grow 4% YoY.

Formula 1 is the main technology spillover source

Ferrari depends on innovation to sustain itself as a business, and a symbiotic relation occurs between the innovation path followed by Scuderia Ferrari and Ferrari as a car manufacturer. The technologies applied to Formula 1 cars are often transferred and adapted to Ferrari's road cars. Formula 1 also supports Ferrari's strategy to go greener, as technologies applied to racecars are also evolving in that direction.

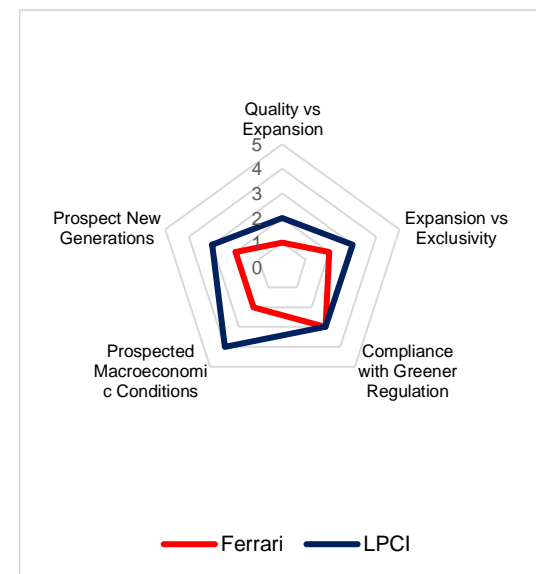
Scuderia Ferrari is also the bridge that links Ferrari to the broader public, which will gain importance for the firm, since its diversification plans include new luxury good segments, such as home and personal appliances. This is the opportunity for Ferrari to achieve with its luxury aura a broader market, which grows at a CAGR of 4% according to Bain & Company. This

Figure 29. Ferrari and peers: SWOT – Opportunities



Source: elaborated by the student.

Figure 30. Ferrari and peers: SWOT – Threats



Source: elaborated by the student.

diversification step represents to Ferrari a chance of expanding its potential market to the limit it reinforces Ferrari's exclusiveness.

Flexibility in Production

LPCI is composed by flexible production organizations, which allows the adjustment of production capacity to accommodate the expected production needs. Some players, such as Mercedes Benz, BMW and Audi may find it less challenging to reduce production of one of many car segments in which they compete. Others, such as Ferrari, Aston Martin and McLaren, may find it more challenging, yet they all seem prepared to operate according to their needs. In LPCI, being capable of adjusting production up or down may mean being able to manage exclusiveness.

The Competitive Reality

Applying Porter's five forces to LPCI helps identify the main forces shaping the sector and positioning Ferrari amongst its few peers. Ferrari operates in a market compound of well-known brands of high-quality cars, and some players are part of larger automotive groups, such as Lamborghini, and may be stronger in the availability of financial resources and bargaining power with suppliers. What shapes competition is the strength of the brand and image, performance and design of cars, the reputation for quality and the driving experience offered to the customers.

HLPI is also characterized by high growth, which is expected to remain strong. Competitive actions to increase market share may be expected by some players. However, products are highly differentiated. As the features of the cars are not the same, and personalization is a trend, it is difficult for a company to win customers from the others. Ferrari owner's fidelity in buying new models illustrates it. This is also a sign of low bargain power of buyers, which select the brand and the model according to the higher value perception in performance, design or reputation.

The threat of new entrants is low, and economies of scale and scope are difficult to be achieved due to the low volumes produced. High capital requirements also difficult the entrance of new players, which would face rigorous license and legal requirements to operate. A brief analysis on the average revenues per unit produced in the past seven years shows that Ferrari enjoys a leadership position among the peers. On average, revenues per car produced are 40% higher for Ferrari than for its second peer, McLaren. Ferrari outstands its peers in these features, which is reflected in the firm's historical higher average premiums per unit.

International Rivalry

A high level of customer loyalty characterizes LPCI. In different levels, players are used to have clients owning more than one car of the same brand. A common challenge for the industry is being capable of achieving new customers, a very specific group of individuals spread around the world, yet countries such as China are considered the hotspots, sources of new buyers. Products are highly differentiated, and many times not even comparable. Players will find their niche and seek fidelity.

Bargain Power of Suppliers and Buyers

Figure 31. Ferrari Roma: 2020 winner of the Car Design Award



Source: cardesignaward.org.

Figure 32. Ferrari is awarded in 2020 the Word's Strongest Brand, second year in a row



Source: Company data.

The industry is characterized by a narrow number of highly specialized suppliers with medium bargaining power, delivering high-quality inputs. Bargain power of buyers is low with high product differentiation: each car is considered unique, preventing customers to switch brands. Further, customization allows the customers to design their models in even more exclusive ways. HNWI's select the brand on which they have a higher value perception either in terms of performance, design or reputation.

New Entrants and Substitutes

The risk of new entrants in the industry may be considered low. Colossal initial investments, substantial amounts of capital to start operations and R&D, possible new entrants are car manufacturers that are not in luxury performance segment. The industry is highly regulated, which also favors companies already in car industry to transact to the HPLI. Yet, the sense of uniqueness associated with each vehicle creates a high level of customer loyalty, resulting in low threat of substitutes.

SWOT Analysis

SWOT analysis was performed to assess how well positioned Ferrari is to deal with the competitive reality that surrounds the firm, which is likely to remain on the coming years.

Figure 33. Ferrari – SWOT Analysis

Strengths	Brand recognition Innovation capabilities Diversified portfolio Exclusivity and status Global presence Stable revenues Pricing power
Weaknesses	Electrification vs Performance Low volumes (limited economies of scale and scope) HNWI's widely spread High R&D and expansion CAPEX Formula 1 performance
Opportunities	New markets Electrification Focused market strategies Automatization New markets in luxury industry New segments in LPCI
Threats	Quality vs Expansion Expansion vs Exclusivity Compliance with environmental legislation Prospected macroeconomic conditions Prospect new generations of Ferrarists

Source: elaborated by the student.

Ferrari's main strengths are related to the strong brand recognition, the innovation capacity, exclusivity and status associated with the brand, a very diverse portfolio of products, global presence and marketing capabilities. The main opportunities are related enter in SUV market with Ferrari Purosangue, competing for a category of cars in which Ferrari was not present until 2019. Controlled growth by expanding the models available and the volumes produced, and achieving new markets, mainly in China and Asia, will be key to sustain growth in the locations with expanding HNWI's, and also means an opportunity. Plug-in Hybrid technology covering 60% of Ferrari's portfolio by 2022 is another opportunity to gain consumers worried with environment issues, but also a must to comply with regulations. A highly

spread dealer and service provider network support Ferrari to expand the personalized cars, an opportunity to increase revenues per unit sold. The expanded-exclusivity Ferrari aims to achieve with another range of luxury products means a great opportunity to achieve the Formula 1 fan community and luxury consumers and products carrying Ferrari's DNA. The main threats identified are compliance costs concerning emissions regulations, trade barriers and new tariffs on luxury products, production costs, political uncertainty, and the current phase of the economic cycle may negatively impact how well shaped Ferrari is to compete.

Investment Summary

A BUY recommendation is issued for Ferrari, a valuation that is sustained by Ferrari's resilience in crises period, on its capacity of achieving higher returns than peers and on controlled growth strategy, already initiated and likely to continue between 2021E-2022E.

Strong portfolio and high premium prospects are the main drivers of cash flows

Ferrari currently holds its most diversified portfolio of cars, which is expected to be amplified on the forecasted period, as the current business plan matures in 2022E. Ferrari's capacity of controlling demand by carefully managing waiting-lists enhances the odds of predictable cash flows in the near future, and this may be levered by the controlled expansion plans. The sources of potential extra gains are 1. Hybridization (average premium of 22%, 60% of cars delivered in 2022E), 2. Customizations: 19% CAGR between 2020E-2024E, when Ferrari is expected to deliver 760 customized vehicles, with average premium of 50% over the base price. New design centers strategically positioned. 3. Controlled growth and higher premiums compared with peers, position likely to be potentialized with new car categories, focusing on Icona and GT as levers of grow.

Ferrari is shifting towards SUV and urban luxury performance cars, achieving customers valuing comfort over performance, which opens a completely new category of potential buyers within HNWIs. To achieve its expansion plans and sustain its operational capacity, Ferrari is expected to present abnormal CAPEX in the 2019-2021E period. We believe these investments will soon be translated into CFO, as new car launches and an enhanced portfolio is available between 2020E-2024E. Ferrari's business plan 2018-2022 is strong, and even discounting the COVID-19 outbreak in Ferrari's operations and units delivered, the management team has been showing strong capacity of matching demand and supply⁶, and interest in Ferrari's cars is far beyond Ferrari's willingness to sell, a point management still does not precisely know, but carefully manage as one of Ferrari's most relevant risks.

Valuation Methods

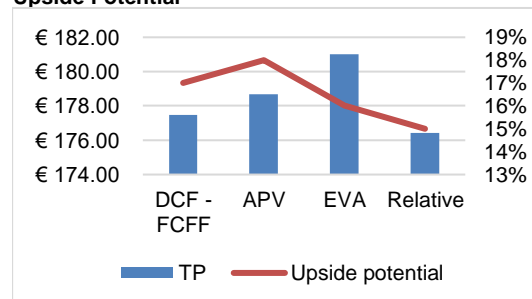
Ferrari was valued with DCF (FCFF) method. To check the robustness of DCF, we performed alternative valuation methods: Adjusted Present Value

Table 5. Ferrari's Key Metrics and Multiples (Forecasted)

Multiples	2020	2021	2022	2023	2024
P/E	55.18	38.95	27.14	24.29	19.52
P/EBIT	39.61	28.19	19.75	17.77	14.21
EV/EBIT	45.93	32.69	22.91	20.61	16.47
EV/Sales	9.8	8.18	6.68	6.05	5.41
Key-Metrics	2020	2021	2022	2023	2024
Revenues (€ bn)	3.4	4.07	4.98	5.5	6.15
EBIT (€ bn)	0.72	1.02	1.45	1.61	2.02
Net Profit Margin	15%	18%	21%	21%	24%
EPS (€)	2.77	3.93	5.64	6.25	7.84

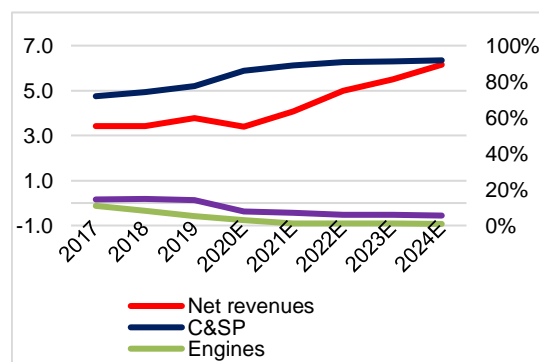
Source: company data, elaborated by the student.

Figure 34. Ferrari – Target Price Per Model and Upside Potential



Source: elaborated by the student.

Figure 35. Ferrari – Revenue per business segment – actual and forecasted (in € bn and %)



Source: elaborated by the student.

⁶ <https://www.bloomberg.com/news/articles/2020-11-03/ferrari-earnings-top-estimates-as-supercar-maker-restores-output>; <https://www.bloomberg.com/news/articles/2020-11-06/ferrari-bentley-find-buyers-in-singapore-despite-pandemic>.

(APV) and Economic Value Added (EVA), confirming FCFF valuation of €178 and €175, respectively. Despite the challenges in finding adequate peers to compare Ferrari in a multiples valuation, it was also performed, and Ferrari's TP valued with the average P/E 2021E (source: Reuters) for luxury industry is €176, with an upside potential of 16%. Other multiples are not adequate to value Ferrari, considering automobile and luxury industry peers, and how specific Ferrari's characteristics are. In this sense, our recommendation is based on the DCF model, confirmed by APV and EVA, and weakly confirmed by multiple valuation, since only one multiple matches DCF valuations.

Risks to the price target

A second wave of Covid-19 could impact Ferrari's operations and delay further the deliveries, or even generating cancellations. If the firm is not capable of sustaining its leading position as a top luxury brand, premiums could harm CFOs, with lower prices per unit. Stricter regulation regarding emissions could also impact Ferrari's CAPEX needs.

Valuation

According to the DCF approach, Ferrari's TP for 2021YE is €177, which implies an upside potential of 16% over the closing price from July 30, 2020. A TP of €178.68 and €181 was obtained with APV and EVA models, respectively, supporting the DCF BUY recommendation. Relative Valuation with the multiple P/E 2021E (luxury peers) outputs a TP of €176.43, also supporting the other methods, despite the lack of perfectly comparable peers.

A three-stage growth model was applied, considering the potential growth in units produced between 2021E-2022E (10% YoY), sustained by the Ferrari's current strategy and expected new launches. Between 2023E-2024E, growth in production is forecasted as a period of stabilization, in which the current business plan matures, and sales tend to grow at historical rates (5%). According to our forecast, Ferrari will produce 13,235 units in 2024E, from 10,131 in 2019. From 2025E on, we assume constant growth rate for the perpetual period, considering Ferrari has still room to expand, but as the quantity increases, scarcity and premiums may decrease.

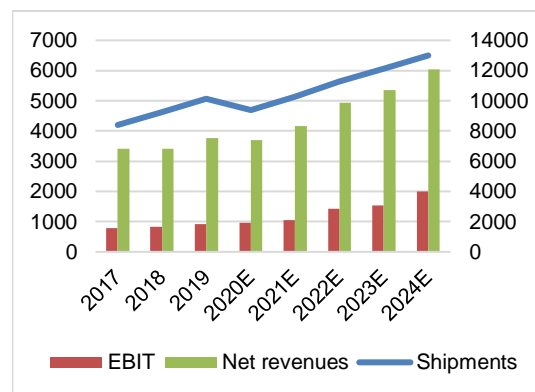
Cars and Spare Parts will be the main driver of growth

C&SP's revenues will grow at an 14% CAGR between 2020E-2020E. Customized cars are forecasted to be 6% of units delivered, from 3% in 2019, with an average premium of 50% over the base price. From 2022E on, 60% of the models will be hybrid, implying a 21% average premium (Appendix 7). Revenues from C&SP are forecasted to grow at a 14% CAGR, boosted by premiums from hybridization, customization and controlled expansion with new car categories.

Engines, Sponsorship, Commercial & Brand (SC&B) faces challenges

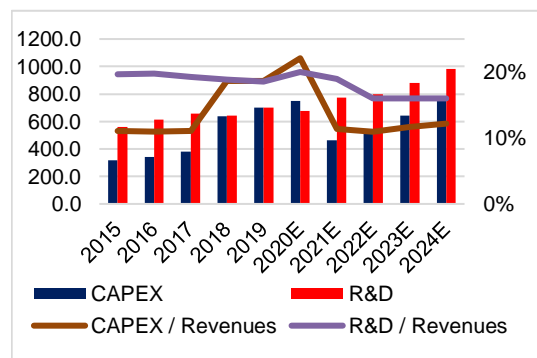
Despite the limited impact of Covid-19 in C&SP, Engines and SC&B are business segments highly impacted by the pandemics. Engines' revenues present a -14% CAGR between 2020E-2020E, impacted by the end of a supply contract that Ferrari had with Maserati, which represented the majority of revenues in this line of business. SC&B, which include stores,

Figure 36. Ferrari – Shipments (units), Revenues (€ mn) and EBIT (€ mn)



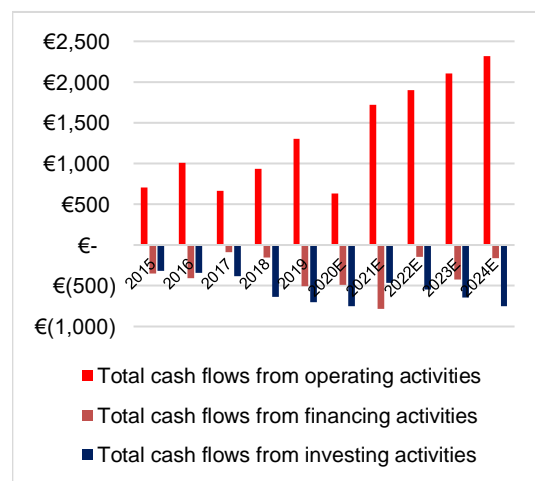
Source: elaborated by the student.

Figure 37. Ferrari – CAPEX and R&D (€ mn)



Source: elaborated by the student.

Figure 38. Ferrari – Cash Flows from Operating, Financing and Investing Activities, actual and forecasted (in thousands)



Source: elaborated by the student.

amusement parks, brand licensing, and luxury goods, is forecasted to fall 50% in 2020E, and recover at a 6% CAGR between 2021E-2024E, in line with growth in luxury goods sales between 2012-2019. Only by 2024E revenues SC&B will be back to 2019 figures.

CAPEX, D&A

Ferrari has been investing in expansion since 2018, and the CAPEX is higher (19% of revenues until 2020E) compared with the average in prior 3 years (11%). The firm stated that expansion cycle tends to normalize from 2021E on, and achieve the average 11% after that, in the absence of future expansion plans. D&A rates are different according to the asset category, and few information is released about the exact rates of each asset. The average D&A of 9% in the last three years was applied.

Weighted Average Cost of Capital (WACC)

A WACC of 6% was used to discount the FCFF between 2020E-2024E, according to the assumptions presented on the Table 5. Since Ferrari is listed in NYSE and in Italian Stock Exchange, and considering its current shareholder structure, Ferrari may be considered of the best interest of mainly Europeans and U.S. Investors. In this sense, risk-free rate, beta and the market risk premium considered both markets, weighted averaged by the volume traded in each market.

The terminal growth rate (g) was estimated based on the forecasted long-term GDP by OECD, weighted by the size of that market in Ferrari's units delivered in 2019 (Appendix 07). Terminal Value accounts for 87% of the total Enterprise Value, and the model is highly sensitive to the variables WACC and g, which are stressed in a sensitivity analysis simulating different price per shares according to different assumptions for WACC and g. We also tested the impact of different growth assumptions in the final PPS, in both cases analyzing the DCF method.

Adjusted Present Value (APV)

For the APV method, the FCFF was discounted using the unlevered cost of equity, which by its turn was calculated using the unlevered beta. In parallel, the value created by debt was calculated by multiplying the tax rate by the interest expenses, and then discounted by the cost of debt.

Economic Value Added

EVA was estimated departing from the capital employed, from which we estimated the required return of investors applying Ferrari's WACC (a simple multiplication). The required return was subtracted from the after-tax EBIT, outputting the EVA, which was discounted with the WACC.

Relative Valuation

Relative valuation was performed to check how reliable the DCF model is, since no fully comparable peers were identified. In this sense, the method is used as a proxy to compare the DCF's model strength. Our hypothesis is that Ferrari's operations, while comparable with other car assembling lines, are more comparable with a handcrafted good, such as a lapidated diamond, or a handcrafted bag. This implies Ferrari's higher premiums and higher comparability with luxury peers, still far from perfect for valuation purposes.

Table 6. Ferrari and Luxury Peers Multiples

Company	P/E 2021YE	EV/ EBITDA 2021YE	EV/EBIT 2021YE
LVMH	29.09	15.65	21.14
Hermes	49.23	25.39	30.01
Salvatore Ferragamo	65.22	9.29	31.62
Brunello Cucinelli	54.01	14.23	35.41
Ferrari	44.98	31.86	32.69
Average	48.50	19.28	30.17
Median	27.83	15.65	31.62
FERRARI'S RELATIVE PRICE	€176.43	€107.41	€147.61

Source: Reuters, elaborated by the student.

Both Ferrari and luxury players rely on exclusiveness and seek to maintain their price power, which is based on uniqueness. Still, relative valuation may not be considered a sound method for Ferrari's case, given the firm's peculiarities. The P/E 2021E is the only match for Ferrari's DCF TP. Considering the remaining multiples, we may conclude Ferrari should be overvalued, which is not consistent with DCF approach.

Table 7. Ferrari, Auto and Luxury Multiples

Industry average	P/E 2021YE	EV/EBITDA 2021YE	EV/EBIT 2021YE
Auto	31.14	14.52	14.89
Luxury	48.50	19.28	30.17
Ferrari	44.98	31.86	32.69

Source: Reuters, elaborated by the student.

Table 8. Ferrari – WACC Assumptions

Ferrari WACC	N.V.	Value	Assumption
Risk-free rate		1.026%	Risk-free rate was proxied with 1. Germany 10-Year Bond Yield - monthly historical Yields for 10Y to normalize (0.915%), since current yields are negative; 2. Despite the U.S. 10Y treasury yields (0.630%, Sept 04, 2020), to maintain consistency, the same method applied to Germany was applied to the U.S. case, with respective weights 55% and 45%, derived from the volumes traded on NYSE and Italian Stock Exchange, respectively.
Beta (raw)		0.76	As with risk-free, a beta of 0.75 was obtained by regressing Ferrari's stock returns traded in NYSE with the S&P500, proxy for the entire U.S. market. Ferrari's stock returns traded in Italian Stock Exchange was regressed against the EURO STOXX 600, and a beta of 0.78 obtained. Data was weekly for the last two years. Both betas were also weighted averaged (45% for the first and 55% for the second) by volumes traded on each stock exchange.
Beta (Blume adjusted)		0.84	Beta was adjusted with Blume approach.
Unlevered Beta		0.79	
Market risk-premium		6.3441%	Equity risk-premium was proxied with figures provided by Damodaran (updated in July 01, 2020). For the U.S. market, the equity risk premium is 5%, no country adjustment. For Western European markets, risk premium is 6%, and 1% of default spread was added. These figures were weighted averaged by the volumes traded.
Unlevered cost of equity		6.0548%	Capital Asset Pricing Model, the unlevered cost of equity was computed as an input for the APV valuation method.
Cost of equity		6.376%	Capital Asset Pricing Model
Cost of debt		1.62%	Ferrari's debt is not rated, and the approach was to synthetically estimate it according to the rating that a company based on a developed economy would receive considering its interest coverage ratio. Ferrari's interest coverage ratio in 2019 was close to 20, and a ratio over 10 is enough for the company to be considered a Aaa/AAA, which spread is currently 0.63% (figure provided by Damodaran, July 2020), plus the risk-free rate. The average financial expenses were divided by average total debt between 2016-2019, and a cost of debt of 1.59% obtained. Finally, we averaged both approaches to obtain the final cost of debt.
Tax rate		24%	Italian tax rate.
After-tax cost of debt		1.234%	
Leverage Ratio D / (D + E)		8,763%	Leverage Ratio for 2020YE, assumed to be constant, considering Market Capitalization on July 30, 2020, and book value of debt on July 30, 2020.
		2019	
WACC		5.960%	

Table 9. Ferrari – DCF – FCFF Valuation (€ Thousand)

Valuation

Model: DCF - ENTERPRISE DISCOUNTED CASH FLOW (FCFF)

Growth rate (g)	2.124%					
Free Cash Flow to the Firm (FCFF)	2020E	2021E	2022E	2023E	2024E Terminal Value	
EBIT	724,661	1,018,171	1,453,007	1,614,981	2,020,650	
* (1 - T)	0.760	0.760	0.760	0.760	0.760	
(+) Depreciation & Amortization	319,965	338,823	410,646	468,443	536,023	
(-) CAPEX	-750,000	-462,600	-544,965	-642,185	-750,891	
(+ / -) Changes in NWC	-60,662	192,755	148,391	152,903	88,303	
FCFF	60,045	842,788	1,118,357	1,206,547	1,409,129	37,854,487
Discounted FCFF / Year	60,045	795,643	996,738	1,015,184	1,119,313	30,068,933
Enterprise Value	33,995,811					
Net Debt	772,096					
Equity Value	33,223,714,286					
Weighted average number of comm	186,767,000					
Weighted average number of comm	187,535,000					
Price per Share	177					
Price per Share on July 31 2020	153					

Table 10. Ferrari – Adjusted Present Value Valuation (€ Thousand)

	2020E	2021E	2022E	2023E	2024E Terminal Value	
FCFF	60,045	842,788	1,118,357	1,206,547	1,409,129	36,728,226
Discounted unlevered FCFF	60,045	794,768	994,548	1,011,839	1,114,399	29,046,236
Total discounted unlevered FCFF	32,961,790					
Value created By Debts	9,634	11,642	14,781	17,510	20,547	1,265,825
Discounted Value Created by Debts	9,634	11,456	14,313	16,684	19,266	1,186,865
Total discounted value created by debt	1,258,218					
Value of Equity	33,447,912					
Price per Share	178					
Price per Share on July 31 2020	153					

Table 11. Ferrari – Economic Value Added (€ Thousand)

	2019	2020E	2021E	2022E	2023E	2024E Terminal Value	
Capital	2,105,985	2,795,323	3,197,603	4,144,035	4,939,123	5,778,316	
Levered Cost of Equity	6%	6%	6%	6%	6%	6%	
Required return (in Euros)	134,277	178,229	203,878	264,223	314,917	368,424	
EBIT	917,446	724,661	1,018,171	1,453,007	1,614,981	2,020,650	
EBIT * (1-T)	697,259	550,742	773,810	1,104,285	1,227,385	1,535,694	
EVA + TV	562,982	372,513	569,932	840,063	912,468	1,167,270	30,705,139
PV EVA + TV		372,513	535,771	742,377	758,031	911,585	30,705,139
Enterprise Value	33,652,903						
Net Debt	772,096						
Equity Value	32,880,807						
Price per Share	175						
Price per Share on July 31 2020	153						

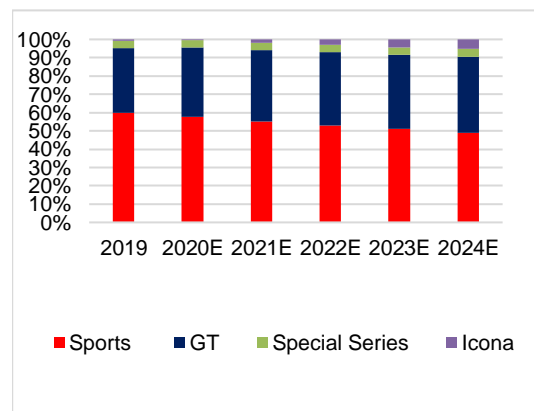
Financial Analysis

Revenues Forecast Assumptions

The quantity of cars produced was forecasted to grow 10% YoY between 2021E-2022E, as the current business plan matures, and new models are launched (respectively four per year between 2020E-2022E). This trend also observed between 2018-2019, the first two years covered by the current business plan and is expected to be maintained until 2022E. Then, from 2023E-2024E, Ferrari's growth in units produced per year tends to normalize around 7% YoY, the level observed between 2013 and 2017, before the current business plan. In this second period, a 7% growth trend is justified by 1. Models launched until 2022E will still be hitting the markets; 2. Historically, Ferrari launched at least 2 new models per year, which could be expected to booster the portfolio after 2022E in the absence of information regarding Ferrari's strategy after 2022.

In 2020E, Ferrari was supposed to produce 11,144 cars, 10% more than the 10,131 units produced in 2019. However, Ferrari's operations were ceased between February and May 2020 due to the Covid-19 outbreak, which

Figure 39. Ferrari – Production per strategic pillar – actual and forecasted, in thousands



Source: elaborated by the student.

impacted the firm's capacity of delivering 2,000 cars in the year. After reprioritizing the operations plans, Ferrari estimates that will be capable of catching up 500 cars in 2020E, and so the Covid-19 outbreak impact in Ferrari's production is of 1,500 units. In this sense, we forecast that Ferrari will produce in 2020E 9,644 cars, which represents -5.1% in relation to the quantity produced in 2019. According to our forecast, Ferrari will sell around 13,225 cars by 2024E, an 8% CAGR over 2020E.

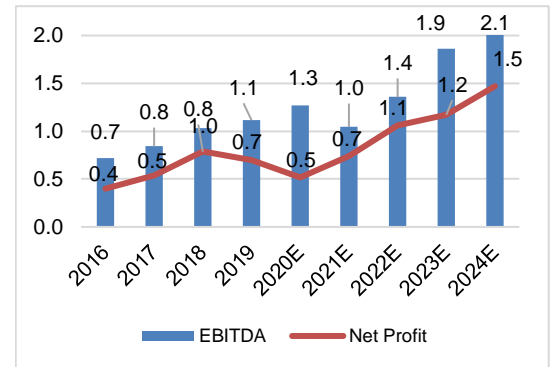
Ferrari's cars are divided in 4 strategic pillars: GT (average base price: €220,278), Sports (average base price: €347,546), Special Series (average base price: €311,200) and Icona (average base price: €1,500,000). GT cars represented 35% of the models sold in 2019, and are forecasted to progressively achieve 41%, since Ferrari aims to diversify and expand in the segment (Ferrari Purosangue is the first SUV model, and others are expected to be unveiled, achieving a customer valuing comfort and drivability over performance). Sports cars represented 60% of sales in 2019 and are expected to reach 53% in 2024E, with a growth in units on the period but loss in percentual terms. Special Series are expected to remain constant as 4% of the models (sales in this category usually are related limited collection editions). Finally, Icona is the most expensive pillar, with the highest potential for premiums. The category represented less than 1% of sales in 2019 and is expected to achieve 5% by 2024E. Icona is the most promising source of potential gains from customization, regardless the fact that each car can be unique, it is unrelated with the category. From 2022E on, 60% of the cars will equipped with plug-in hybrid technology, which implies a price premium of 22% (see Appendix 7). Over the base price per strategic pillar, we have added a growth YoY of 2%, half of the average growth in revenues per car between 2013-2019. Also, personalized cars are expected to jump to 5% of total models sold in 2024E, achieving 760 cars compared with 376 in 2020E, implying an average premium of 50% over the model's base price.

Engines' sales participation in total revenues have been decreasing due to lower shipments to Maserati, which has a contract with Ferrari for the supply of engines expiring in 2022E which is not expected to be renewed. Since 2017, Maserati's orders have been progressively decreasing. The item is expected to fall 50% in 2020E-2021E, with the end of the dealership. The remaining revenue is from the rent of engines to Formula 1, and we expect it to growth 3% YoY between 2022E-2024E, as observed between 2015 and 2019.

Finally, Sponsorship, Commercial and Brand, one important source for Ferrari's diversification strategy in the broader luxury market, is expected to suffer a lot in 2020E due to the impact of Covid-19 outbreak in physical stores, amusement parks, and fan communities of Formula 1 not present on races. The item was forecasted to present a fall of -50% in 2020E, considering the results from the first half. From 2022E on, the item was forecasted to grow 6% YoY, in line with Ferrari's historical figures and with the CAGR of similar luxury markets between 2012-2019 (Bain & Company).

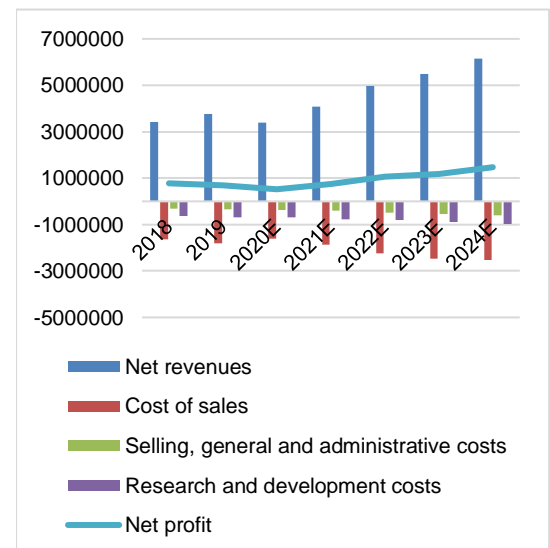
Net revenues are forecasted to grow at a 9% CAGR between 2020E-2024E, achieving €6,3 bi on the last year. For the same period, revenues from C&SP will grow at a 14% CAGR, from Engines to decrease a CAGR of -14%, reflecting lower shipments to Maserati. Sponsorship, Commercial and Brand

Figure 40. Ferrari – EBITDA and Net Profit Margin – Actual and Forecasted (€ bn)



Source: elaborated by the student.

Figure 41. Ferrari – Forecasted P&L



Source: elaborated by the student.

revenues will grow at a 6% CAGR between 2020E-2024E, shaping Ferrari's strategy exploring new segmentations within luxury industry. Other revenues are to grow at a CAGR of 1% over the same period.

As the Business Plan matures, the room for better margins is opened

Gross Profit margin is forecasted to achieve 59% in 2024E from 52% in 2020E, particularly driven by the effect of higher premiums per unit. With the end of the current expansion cycle, R&D expenses over revenues are also expected to gradually decrease from 20% in 2020E to 17% from 2023E-2024E. After achieving historical figure of 30% in 2019, EBITDA margin is forecasted to fluctuate between 23%-34% 2020E-2023E, achieving 32% in 2024E.

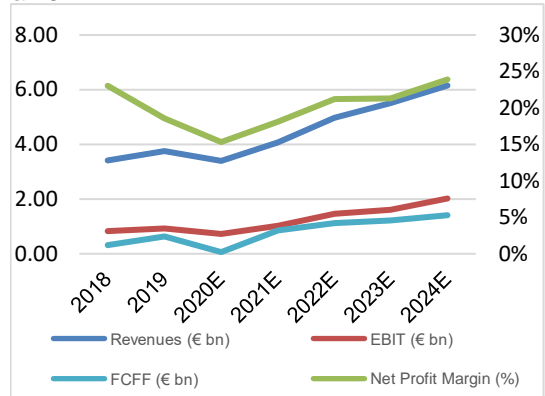
EBIT margin is expected to grow at a CAGR of 6% between 2020E-2024E, achieving a level of 31% in 2024YE, as a result of premiums obtained with personalization and hybridization, stabilized R&D expenses and cost structure, and the end of higher CAPEX cycle. Finally, Net Profit Margin is set to grow at a 6% CAGR, from 18% in 2020E to 23% in 2024E. DuPont analysis shows a ROE varying between 46% in 2020E, slowly decreasing to 21% in 2024E. ROIC is set to grow at a 1.23% CAGR, from 19% in 2020E to 21% in 2024E.

CAPEX expansion cycle tends to normalize from 2021E-2024E, varying from 13% to 10% of net revenues in the period. For 2020E, CAPEX will be around 22% of sales, given the impact of Covid-19 in revenues and that the investments are maintained. FCFO is forecast to grow at a CAGR of 18% between 2020E-2024E, achieving € 2,1 bi by 2024YE.

Sensitivity analysis and Monte Carlo simulation

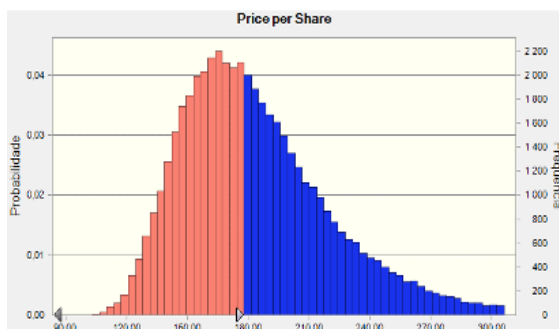
The DCF model is highly influenced by two variables: g and WACC. In order to test the behavior of the stock price according to changes on them, sensitivity analysis was performed, and the results are presented on Table 12. Moreover, the Ferrari's TP is highly dependent on the availability of FCFF. In this sense, we tested the impact of changes in the TP according to changes in FCFF and WACC. A Monte Carlo simulation was run with the intention of obtaining possible scenarios for the stock price, given changes in the variables g and WACC. Regarding the input data for the simulation, WACC's average was considered the real WACC, with standard deviation of 1.49%; g average was considered the real g, with standard deviation of 0.5%. The output of 50,000 simulations shows 69% of chance that Ferrari's stock price will be with a price higher than October 07, 2020 close price.

Figure 42. Ferrari – Revenue, EBIT, Net Profit Margin & FCFF



Source: elaborated by the student.

Figure 43. Distribution of Prices for Different WACCs and Terminal Growth Rates – Monte Carlo Simulation



Source: elaborated by the student.

Table 12. Ferrari – Sensitivity Analysis with WACC and g

	Changes in Terminal Growth Rate (g)															
	1.4%	1.5%	1.6%	1.7%	1.8%	1.9%	2.0%	2.1%	2.2%	2.3%	2.4%	2.5%	2.6%	2.7%	2.8%	
4.2%	254	263	273	284	296	308	322	337	354	372	393	416	442	472	506	
4.4%	232	240	248	257	266	277	288	300	313	327	343	360	379	401	425	
4.7%	214	220	227	234	242	251	260	269	280	291	304	317	332	349	367	
4.9%	198	204	209	216	222	229	237	245	253	263	273	283	295	308	322	

Changes in WACC	5.2%	184	189	194	199	205	211	217	224	231	239	247	256	266	276	287
	5.4%	172	176	181	185	190	195	201	206	212	219	226	233	241	250	259
	5.7%	162	165	169	173	177	182	186	191	197	202	208	214	221	228	236
	5.9%	152	155	159	162	166	170	174	178	183	187	193	198	203	210	216
	6.2%	144	147	150	153	156	159	163	167	171	175	179	184	189	194	199
	6.4%	136	139	141	144	147	150	153	157	160	164	167	172	176	180	185
	6.7%	129	132	134	137	139	142	145	148	151	154	157	161	164	168	172
	6.9%	123	125	127	130	132	134	137	139	142	145	148	151	154	158	161
	7.2%	117	119	121	123	125	128	130	132	135	137	140	143	146	149	152
	7.4%	112	114	116	118	119	121	123	126	128	130	132	135	138	140	143
	7.7%	107	109	111	112	114	116	118	120	122	124	126	128	130	133	135

Source: Elaborated by the student.

Table 13. Sensitivity Analysis with Changes in WACC and in FCFF

Changes in FCFF		0.79	0.82	0.85	0.88	0.91	0.94	0.97	1	1.03	1.06	1.09	1.12	1.15	1.18	1.21
Changes in WACC	4.2%	265	276	286	296	306	317	327	337	347	358	368	378	388	398	409
	4.4%	236	245	254	263	272	281	290	300	309	318	327	336	345	354	363
	4.7%	212	220	228	237	245	253	261	269	278	286	294	302	310	319	327
	4.9%	192	200	207	215	222	230	237	245	252	260	267	275	282	289	297
	5.2%	176	183	190	197	203	210	217	224	231	238	244	251	258	265	272
	5.4%	162	169	175	181	187	194	200	206	213	219	225	232	238	244	251
	5.7%	150	156	162	168	174	180	185	191	197	203	209	215	221	226	232
	5.9%	140	145	151	156	162	167	173	178	184	189	195	200	206	211	217
	6.2%	131	136	141	146	151	156	162	167	172	177	182	187	192	197	203
	6.4%	123	128	132	137	142	147	152	157	161	166	171	176	181	186	190
	6.7%	116	120	125	129	134	138	143	148	152	157	161	166	170	175	179
6.9%	109	114	118	122	127	131	135	139	144	148	152	157	161	165	170	
7.2%	104	108	112	116	120	124	128	132	136	140	144	149	153	157	161	
7.4%	98	102	106	110	114	118	122	126	129	133	137	141	145	149	153	
7.7%	94	97	101	105	108	112	116	120	123	127	131	134	138	142	146	

Investment Risks

Ferrari's risks were divided into 4 types: 1. Market risk, 2. Strategic and Operational risks, 3. Regulatory and Legal risks, and 4. Financial Risks, and their probability / impact are plotted on the risk matrix.

Market Risk | Deteriorating global economic conditions + Coronavirus may impact negatively profitability (MR1)

Ferrari faces the risk of deteriorating general economic conditions affect disposable incomes and reduce consumer wealth, affecting demand and pressuring prices and volumes downward. Coronavirus toll has made governments impose control measures that affect end markets, supply

Figure 44. Ferrari – Risk Matrix



Source: elaborated by the student.

chains and operations. The effect on Ferrari's result may be material and adverse. The growth strategy in emerging markets may be adversely affected by macroeconomic developments in China and remaining Asian markets.

Market Risk | Increasing competition may result in pricing pressures and reduced margins (MR2)

Several global luxury automotive manufactures have increased competitive pressures for luxury cars, particularly in emerging markets. Ferrari anticipates that additional participants will enter the market, and existing market participants will aggressively seek to protect or increase market share.

Operational Risk | Low volume strategy vs. current growth strategies (OR1)

Ferrari's limited number of models, and the strategy of maintaining car waiting lists, aims to reach the optimal combination of exclusivity and client service. On the other hand, Ferrari has been straightly increasing units delivered. If the firm is unable to balance brand exclusivity and higher still-low volumes, it may erode the desirability, consumer demand and revenues.

Operational Risk | Ferrari is incapable of innovating in high performance car technologies (OR2)

Ferrari heavily invests in R&D, but if these activities are not capitalized as applied technology, Ferrari's historic competitive positioning may be in harm. Costs related to developing and applying new technologies are high and may increase, and competition in LPCI does. Innovation capabilities include the leading design appeal.

Operational Risk | Ferrari fails to maintain brand value (OR3)

Ferrari may not succeed in preserving and enhancing the value of its brand, which could harm demand and revenues. The firm's brand image partially depends on the success of Ferrari's Formula 1 racing team. Changing in consumer's preference towards greener technologies will force Ferrari's shift to hybrid and electric engines. Ferrari's long-term success in using hybrid and electric technologies, keeping performance, is uncertain.

Operational Risk | Supply Chain & Human Capital (OR4)

Ferrari depends on suppliers, many of which are single source suppliers. If these suppliers fail to delivery necessary raw materials, systems, components and parts, with the quality and timely expected, Ferrari's operations may be disrupted. Human capital is highly specialized and also represents an operational risk for Ferrari.

Regulatory and Legal Risk | Greenhouse gas/CO₂/fuel economy legislation (RLR1)

New or changes in current laws, regulations or policies from State organizations regarding increased fuel economy requirements, reduced greenhouse gas or pollutant emissions, or vehicle safety, may have a significant effect on Ferrari's operational costs or business model.

Regulatory and Legal Risk | Changes in tax, tariff or fiscal policies (RLR2)

Any additional taxes and levies designed to limit the use of automobiles could adversely affect the demand, as well as changes in corporate and other taxation policies and export, incentives, import or tariff policies, could adversely affect Ferrari's operations. The U.S. declared that it is considering imposing new tariffs on imported cars, decision still to be made. Brexit still

represents an uncertainty for Ferrari, and regulatory and legal issues may be expected.

Financial Risks | Credit Risks: Ferrari's indebtedness could adversely affect operations (FR1)

Ferrari's current and long-term debt requires a significant portion of the firm's cash flows, which is used to service interest and principal payments. If interest rates rise, this amount may increase. Ferrari's existing debt may limit its ability to raise further capital, additional debt, and execute its strategy. This risk could increase according to the increase in Ferrari's leverage.

Financial Risks | Financing sources, interest and exchange rates fluctuations (FR2)

Ferrari is exposed to interest rate risk. If market rates for new car financing rises, it could push Ferrari's consumers to less luxury options. If consumer interest rates rise, financial service providers tighten lending standards or restrict their lending to certain classes of credit, the clients may choose not to not be able to obtain financing. Ferrari also may be unable to provide adequate access to financing for dealers and clients, which may negatively affect revenues. Ferrari's cash flows from sales may be denominated in other currencies different from the one used to production activities. So, foreign exchange volatility may negatively impact profitability.

Appendices

Appendix 1: Statement of Financial Position

For the years ended
December 31,

	2018	2019	2020F	2021F	2022F	2023F	2024F
	(€ thousand)						
Assets							
Goodwill	785,182	785,182	785,182	785,182	785,182	785,182	785,182
Intangible assets	645,797	837,938	1,211,443	1,433,558	1,697,048	2,009,727	2,374,824
Property, plant and equipment	850,550	1,069,652	1,446,147	1,433,558	1,968,108	2,297,613	2,683,407
Investments and other financial assets	32,134	38,716	38,716	38,716	38,716	38,716	38,716
Deferred tax assets	60,744	73,683	73,683	73,683	73,683	73,683	73,683
Total non-current assets	2,374,407	2,805,171	3,555,171	3,764,696	4,562,737	5,204,921	5,955,812
Inventories	391,064	420,051	362,763	453,629	486,756	517,266	517,738
Trade receivables (net)	211,399	231,439	190,564	277,416	233,141	306,432	260,784
Allowance for doubtful accounts (Trade receivables)	24,346	27,171	27,924	28,698	29,493	30,311	31,151
Receivables from financing activities (net)	878,496	966,448	872,111	1,044,263	1,277,583	1,411,210	1,578,535
Current tax receivables	128,234	21,078	74,656	74,656	74,656	74,656	74,656
Other current assets	64,295	92,830	63,828	100,304	122,715	135,551	151,623
Current financial assets	10,174	11,409	11,409	11,409	11,409	11,409	11,409
Cash and cash equivalents	793,664	897,946	288,970	766,001	1,971,622	3,007,464	4,413,544
Total current operating assets	1,673,488	1,731,846	1,563,921	1,950,269	2,194,851	2,445,114	2,583,336
Total current financial assets	803,838	909,355	300,379	777,410	1,983,031	3,018,873	4,424,953
Total current assets	2,477,326	2,641,201	1,864,300	2,727,679	4,177,883	5,463,987	7,008,288
Total assets	4,851,733	5,446,372	5,419,471	6,492,375	8,740,619	10,668,908	12,964,100
Equity and liabilities							
Retained earnings	174,870	529,074	933,108	1,664,966	2,715,146	3,878,998	5,339,478
Equity attributable to owners of the parent	1,348,722	1,481,290	984,204	1,920,034	3,156,620	4,200,176	5,509,529
Non-controlling interests	5,117	5,998	3,985	7,775	12,782	17,007	22,309
Total equity	1,353,839	1,487,288	988,189	1,927,808	3,169,401	4,217,183	5,531,838
Employee benefits	86,575	88,116	88,116	88,116	88,116	88,116	88,116
Provisions	182,539	165,572	175,506	186,037	197,199	209,031	221,573
Deferred tax liabilities	39,142	82,208	73,683	73,683	73,683	73,683	73,683
Debt	1,927,167	2,089,737	2,667,788	2,596,950	3,496,248	4,267,563	5,185,640
from which							
Non-current	1,190,493	1,180,438	2,388,679	1,912,299	3,447,421	3,941,960	5,277,813

Current	736,674	909,299	371,282	776,824	141,000	417,776	0
Other liabilities	589,743	800,015	793,680	831,716	873,200	918,471	967,901
Other financial liabilities	11,342	14,791	14,791	14,791	14,791	14,791	14,791
Trade payables	653,751	711,539	610,612	766,167	820,875	872,964	873,452
Current tax payables	7,635	7,106	7,106	7,106	7,106	7,106	7,106
Total current operating liabilities	1,262,471	1,533,451	1,426,188	1,619,781	1,715,972	1,813,332	1,863,250
Other non-current liabilities	308,256	335,896	337,305	347,836	358,998	370,830	383,372
Total liabilities	3,497,894	3,959,084	4,431,282	4,564,567	5,571,218	6,451,725	7,432,262
Total equity and liabilities	4,851,733	5,446,372	5,419,471	6,492,375	8,740,619	10,668,908	12,964,100

Appendix 2: Income Statement

CONSOLIDATED INCOME STATEMENT

For the years ended
December 31,

	2017	2018	2019	2020F	2021F	2022F	2023F	2024F
	(€ thousand)							
Net revenues	3,416,890	3,420,321	3,766,705	3,395,461	4,069,989	4,979,344	5,500,154	6,152,296
Cars and spare parts	2,455,955	2,535,245	2,925,721	2,922,795	3,629,706	4,519,402	5,019,469	5,649,723
Engines	373,313	284,546	198,308	99,154	49,577	51,064	52,596	54,174
Sponsorship, commercial and brand	494,082	505,701	538,328	269,164	285,314	302,433	320,579	339,813
Other	93,540	94,829	104,348	104,348	105,391	106,445	107,510	108,585
Cost of sales	1,650,860	1,622,905	1,805,310	1,614,812	1,871,521	2,231,708	2,455,133	2,532,049
Selling, general and administrative costs	329,065	327,341	343,179	376,896	406,999	497,934	550,015	615,230
Research and development costs	657,119	643,038	699,211	679,092	773,298	796,695	880,025	984,367
Other expenses, net	6,867	3,195	4,991	0	0	0	0	0
Result from investments	2,437	2,665	3,522	0	0	0	0	0
EBIT	775,416	826,507	917,446	724,661	1,018,171	1,453,007	1,614,981	2,020,650
Net financial expenses	29,260	23,563	42,082	40,142	48,510	61,589	72,957	85,614
Profit before taxes	746,156	802,944	875,364	684,519	969,661	1,391,417	1,542,024	1,935,035
Income tax expense	208,760	16,317	176,656	164,285	232,719	333,940	370,086	464,408
Net profit	537,396	786,627	698,708	520,234	736,942	1,057,477	1,171,938	1,470,627
Net profit attributable to:								
Owners of the parent	535,393	784,678	695,818	518,083	733,894	1,053,103	1,167,091	1,464,544
Non-controlling interests	2,003	1,949	2,890	2,152	3,048	4,374	4,847	6,083

Basic earnings per common share (in €)	2.83	4.16	3.73	2.79	3.95	5.66	6.27	7.87
Diluted earnings per common share (in €)	2.82	4.14	3.71	2.77	3.93	5.64	6.25	7.84

Appendix 3: Cash Flow Statement

CONSOLIDATED STATEMENT OF CASH FLOWS

For the years ended December 31,	2018	2019	2020F	2021F	2022F	2023F	2024F
			(€ thousand)				
Cash and cash equivalents at the beginning of the year	647,706	793,664	897,946	288,970	766,001	1,971,622	3,007,464
Cash flows from operating activities:							
Profit before taxes	802,944	875,364	684,519	969,661	1,391,417	1,542,024	1,935,035
Amortization and depreciation	288,748	351,946	319,965	338,823	410,646	468,443	536,023
Provisions accruals	15,573	14,253	12,887	18,760	15,766	20,723	17,636
Result from investments	-2,665	-3,522	-3,522	-3,522	-3,522	-3,522	-3,522
Net finance costs	23,563	42,082	40,142	48,510	61,589	72,957	85,614
Other non-cash expenses, net	33,012	38,563	38,563	38,563	38,563	38,563	38,563
Net gains on disposal of property, plant and equipment and intangible assets	-283	424	--	--	--	--	--
Change in inventories	-4,638	-40,627	-57,288	90,867	33,127	30,510	473
Change in trade receivables	26,890	-22,377	-40,875	86,852	-44,274	73,290	-45,647
Change in trade payables	40,317	53,940	-100,927	155,556	54,707	52,089	488
Change in receivables from financing activities	-107,353	-76,694	-94,337	172,153	233,319	133,628	167,324
Change in other operating assets and liabilities	-83,013	145,547	-6,335	38,037	41,484	45,271	49,430
Fixed income received	2,657	3,274	--	--	--	--	--
Finance costs paid	-13,966	-42,600	--	--	--	--	--
Income tax paid	-87,745	-33,480	-164,285	-232,719	-333,940	-370,086	-464,408
Total cash flows from operating activities	934,041	1,306,093	628,506	1,721,540	1,898,883	2,103,888	2,317,009
Cash flows used in investing activities:							
Investments in property, plant and equipment	-300,794	-352,154	-376,495	-240,486	-281,475	-329,505	-385,794
Investments in intangible assets	-337,542	-353,458	-373,505	-222,115	-263,490	-312,679	-365,097

Proceeds from the sale of property, plant and equipment and intangible assets	1,392	4,539	--	--	--	--	--
Proceeds from exercising the Delta Topco option	--	--	--	--	--	--	--
CAPEX	-636,944	-701,073	-750,000	-462,600	-544,965	-642,185	-750,891
Cash flow used in financing activities:							
Proceeds from the issuance of bonds and notes	--	298,316	0	0	0	0	0
Repayment of bonds and notes	--	-315,395	-371,282	-776,824	-141,000	-417,776	-149,891
Net change in bank borrowings	-3,584	-3,516	0	0	0	0	0
Proceeds from securitizations, net of repayments	94,709	92,173	0	0	0	0	0
Net change in lease liabilities	--	-3,896	0	0	0	0	0
Net change in other debt	-7,988	12,322	0	0	0	0	0
Dividends paid to owners of the parent	-133,095	-192,664	-116,200	-5,085	-7,297	-8,086	-10,147
Cash distribution of reserves	--	--	--	--	--	--	--
Share repurchases	-100,093	-386,749	--	--	--	--	--
Dividends paid to non-controlling interest	-2,040	-2,120	--	--	--	--	--
Total cash flows from financing activities	-152,091	-501,529	-487,482	-781,909	-148,297	-425,862	-160,038
Translation exchange differences	952	791	--	--	--	--	--
Total change in cash and cash equivalents	145,958	104,282	-608,976	477,031	1,205,621	1,035,841	1,406,080
Cash and cash equivalents at the end of year	793,664	897,946	288,970	766,001	1,971,622	3,007,464	4,413,544

Appendix 4: Key Financial Ratios

KEY FINANCIAL RATIOS (RACE)	2016	2017	2018	2019	2020E	2021E	2022E	2023E	2024E	
PROFITABILITY RATIOS										
Gross Profit Margin	49%	52%	53%	52%	52%	54%	55%	55%	59%	
EBITDA Margin	21%	21%	26%	30%	34%	31%	23%	27%	32%	
EBIT Margin	19%	23%	24%	24%	21%	25%	29%	29%	33%	
Net Profit Margin	13%	16%	23%	19%	15%	18%	21%	21%	24%	
ROA	3%	3%	4%	3%	2%	2%	3%	2%	3%	
ROE	121%	69%	58%	47%	53%	38%	33%	28%	27%	
ROIC (Damodaran)	22%	24%	29%	33%	19%	23%	26%	24%	25%	
EFFICIENCY RATIOS										
Trade Receivables Turnover	13.5	10.0	10.5	15.2	14.2	15.5	17.5	18.4	19.6	

Days Sales Outstanding (DSO)	27.1	36.5	34.8	24.0	25.6	23.5	20.8	19.9	18.6	
Financial Receivables Turnover	-39%	-8%	18%	10%	-10%	18%	20%	10%	11%	
Inventory Turnover	10	10	9	9	9	10	11	11	12	
Days Inventory Outstanding (DIO)	72	79	88	82	88	80	77	75	75	
Days Payable Outstanding (DPO)	129	135	142	138	149	134	130	126	126	
Accounts Receivable Period	27	37	35	24	26	24	21	20	19	
Inventory Period	36	38	42	39	42	37	34	33	31	
Operating Cycle	64	75	77	63	68	60	55	53	49	
Cash Cycle Conversion (CCC)	-31	-19	-19	-32	-35	-31	-32	-31	-33	
Fixed Asset Turnover	4.79	4.95	4.38	3.92	2.70	2.83	2.93	2.58	2.47	
Total Asset Turnover	0.80	0.86	0.76	0.73	0.62	0.68	0.65	0.57	0.52	
LIQUIDITY RATIOS										
Current Ratio	1.31	1.65	1.96	1.72	1.31	1.68	2.43	3.01	3.76	
Quick Ratio	0.44	0.72	0.95	0.73	0.37	0.60	1.32	1.79	2.54	
Cash Ratio	0.32	0.51	0.63	0.59	0.20	0.47	1.15	1.66	2.37	
CAPITAL STRUCTURE										
Total Debt to Total Equity	5.60	2.43	1.42	1.41	2.70	1.35	1.10	1.01	0.94	
Total Debt to Total Assets	0.48	0.46	0.40	0.38	0.49	0.40	0.40	0.40	0.40	
Debt to EBITDA	2.19	1.84	1.73	1.65	2.55	1.91	1.88	2.05	2.03	
Interest Coverage Ratio	-17.18	20.67	31.08	19.96	20.50	18.28	17.30	18.67	19.81	
Long-Term Debt to Equity	3.61	1.52	0.88	0.79	2.42	0.99	1.09	0.93	0.95	
Long-Term Debt to Assets	0.48	0.46	0.40	0.38	0.49	0.40	0.40	0.40	0.40	
OTHER RATIOS										
CAPEX over Sales	11%	11%	19%	19%	22%	11%	11%	12%	12%	

Appendix 5: Common-Size Statement of Financial Position

COMMON-SIZE STATEMENT OF FINANCIAL POSITION

For the years ended December 31,

	2018	2019	2020F	2021F	2022F	2023F	2024F
(€ thousand)							
Assets							
Goodwill	16%	14%	14%	12%	9%	7%	6%
Intangible assets	13%	15%	22%	22%	19%	19%	18%
Property, plant and equipment	18%	20%	27%	22%	23%	22%	21%
Investments and other financial assets	1%	1%	1%	1%	0%	0%	0%
Deferred tax assets	1%	1%	1%	1%	1%	1%	1%
Total non-current assets	49%	52%	66%	58%	52%	49%	46%
Inventories	8%	8%	7%	7%	6%	5%	4%
Trade receivables	4%	4%	4%	4%	3%	3%	2%

Receivables from financing activities	18%	18%	16%	16%	15%	13%	12%
Current tax receivables	3%	0%	1%	1%	1%	1%	1%
Other current assets	1%	2%	1%	2%	1%	1%	1%
Current financial assets	0%	0%	0%	0%	0%	0%	0%
Cash and cash equivalents	16%	16%	5%	12%	23%	28%	34%
Total current assets	51%	48%	34%	42%	48%	51%	54%
Total assets	100%	100%	100%	100%	100%	100%	100%
Equity and liabilities							
Equity attributable to owners of the parent	28%	27%	18%	30%	36%	39%	42%
Non-controlling interests	0%	0%	0%	0%	0%	0%	0%
Total equity	28%	27%	18%	30%	36%	40%	43%
Employee benefits	2%	2%	2%	1%	1%	1%	1%
Provisions	4%	3%	3%	3%	2%	2%	2%
Deferred tax liabilities	1%	2%	1%	1%	1%	1%	1%
Debt	40%	38%	49%	40%	40%	40%	40%
Other liabilities	12%	15%	15%	13%	10%	9%	7%
Other financial liabilities	0%	0%	0%	0%	0%	0%	0%
Trade payables	13%	13%	11%	12%	9%	8%	7%
Current tax payables	0%	0%	0%	0%	0%	0%	0%
Total liabilities	72%	73%	82%	70%	64%	60%	57%
Total equity and liabilities	100%	100%	100%	100%	100%	100%	100%

Appendix 6: Common-Size Income Statement

COMMON-SIZE STATEMENT	CONSOLIDATED		INCOME					
For the years ended December 31,								
	2017	2018	2019	2020F	2021F	2022F	2023F	2024F
	%							
Net revenues	100%	100%	100%	100%	100%	100%	100%	100%
Cost of sales	48%	47%	48%	48%	46%	45%	45%	41%
Selling, general and administrative costs	10%	10%	9%	11%	10%	10%	10%	10%
Research and development costs	19%	19%	19%	20%	19%	16%	16%	16%
Other expenses, net	0%	0%	0%	0%	0%	0%	0%	0%
Result from investments	0%	0%	0%	0%	0%	0%	0%	0%
EBIT	23%	24%	24%	21%	25%	29%	29%	33%
Net financial expenses	1%	1%	1%	1%	1%	2%	2%	2%
Profit before taxes	22%	23%	23%	20%	24%	28%	28%	31%
Income tax expense	6%	0%	5%	5%	6%	7%	7%	8%
Net profit	16%	23%	19%	15%	18%	21%	21%	24%
Net profit attributable to:								
Owners of the parent	16%	23%	18%	14%	19%	28%	31%	39%

Non-controlling interests	0%	0%	0%	0%	0%	0%	0%	0%
Basic earnings per common share (in €)	2.83	4.16	3.73	2.79	3.95	5.66	6.27	7.87
Diluted earnings per common share (in €)	2.82	4.14	3.71	2.77	3.93	5.64	6.25	7.84

Appendix 7: Forecasting Assumptions

Assets

<i>Goodwill</i>	2019YE figure maintained constant.
<i>Intangible assets</i>	Each intangible asset class was assumed to grow at 18% YoY, according to the growth between 2017-2019, with a higher stated CAPEX for 2020E aiming at expansion and capped at 750,000 (€ thousand) in 2020E, with is 46% higher than the 18% average growth.
<i>Property, plant and equipment</i>	Each PP&E asset class was forecasted according to its average grow YoY between 2017-2017. PP&E in total is assumed to grow at 18% YoY. A higher stated CAPEX for 2020E aiming at expansion and capped at 750,000 (€ thousand) in 2020E, with is 46% higher than the 18% average growth.
<i>Investments and other financial assets</i>	2019YE figure maintained constant.
<i>Deferred tax assets</i>	2019YE figure maintained constant.
<i>Inventories</i>	Forecast Derived from Inventory Days ratio.
<i>Trade receivables (net)</i>	Forecast Derived from Accounts Receivable Days ratio.
<i>Allowance for doubtful accounts</i>	Forecasted to be constant at 3% of Trade Receivables.
<i>Receivables from financing activities</i>	Forecasted to be constant at 26% of Net Revenues, in line with the average in the past 3 years.
<i>Current tax receivables</i>	2019YE figure maintained constant.
<i>Other current assets</i>	Forecasted to be constant at 2% of Net Revenues, in line with the average in the past 3 years.
<i>Current financial assets</i>	2019YE figure maintained constant.
<i>Employee benefits</i>	2019YE figure maintained constant.
<i>Provisions</i>	Forecasted to be constant at 6% of Net Revenues for Cars & Spare Parts, in line with the average in the past 3 years.
<i>Deferred tax liabilities</i>	2019YE figure maintained constant.
<i>Debt</i>	Forecasted to be constant at 40% of Total Assets.
<i>Other liabilities</i>	Forecasted under different assumptions, depending on the item.
<i>Other financial liabilities</i>	2019YE figure maintained constant.
<i>Trade payables</i>	Forecast derived from Trade Payable Days ratio.
<i>Current tax payables</i>	2019YE figure maintained constant.
<i>Revenue Assumptions***</i>	
<i>Cars and spare parts</i>	A bottom-up approach was used to forecast the quantity of cars to be produced each year from 2020E-2024E. We also considered the average base price for each class of cars (GT, Sports & Special Series, and Icona), que the weights Ferrari aims to produce for each class. With that, other assumptions were used, explained in Appendix. C&SP are forecasted to growth in three different stages: 1. 2020 and the impact of COVID-19 in 1,500 units, and a decrease of -5% units delivered in 2020E; without the COVID-19 impact, the number of units delivered was forecasted to grow 10% in the year, and the trend is maintained for the second stage. 2. 2021E-2022E, 10% YoY, in line with the Business Plan 2018-2022, which impact will bring revenues from a mix of more units sold, hybridization and customization premiums, and a natural historical increase in Net Revenues per Ferrari sold. COVID-19 impacted Ferrari's operations, but did not have material impact in waiting lists. 3. 2023E-2024E, 7% YoY. In this period, Ferrari will be harvesting from the widest ever range of vehicles to be launched until 2022E, but considering hybridization and customization premiums, and a halved average natural historical increase in Net Revenues per Ferrari sold.
<i>Engines</i>	Engines Revenues are set to decrease -50% in 2020E-2021E due to the end of Maserati contract and deliveries. The item is expected to growth 3% YoY from 2022E-2024E.

<i>Sponsorship, commercial and brand</i>	Sponsorship, commercial and brand activities Revenues will suffer a fall of -50% in 2020E due to the Covid-19 outbreak impact on activities and operations. From 2021E-2024E, the item is forecasted to grow 6% YoY, in line with 3 years average and the luxury industry CAGR between 2012-2019.
<i>Other</i>	Other revenues forecasted to growth 1% YoY, in line with 3 years average.
<i>Cost of sales</i>	Cost of Sales forecasted to be constant at 48% of Net Revenues, excluding revenues forecasted as the growth in premiums per car sold, which was 2% between 2021E-2022E, half of the observed between 2012-2019 to be more conservative. For not impacting operations, this premium is not computed as part of Cost of Sales, despite being part of Net Revenues.
<i>Selling, general and administrative costs</i>	Forecasted to be constant at 10% of Net Revenues. In 2020E, due to the Covid-19 impact on Ferrari's operations, the item will correspond to 11% of Net Revenues.
<i>Research and development costs</i>	2020E: 20% of net Revenues (higher CAPEX for controlled expansion). 2021E-2022E: 19% (normalizing to the average, end of the business plan in 2022E). 2023E-2024E: 16%, 3-year average (2014-2017), before the Ferrari's Business Plan 2018-2022.
<i>Income tax expense</i>	Forecasted to be constant at 24%.
<i>Amortization and depreciation</i>	Average Amortization and Depreciation is 9%.
<i>Provisions accruals</i>	Forecasted with three years average over Trade Receivables, 7%.
<i>Result from investments</i>	2019YE figure maintained constant.
<i>Dividends paid to owners of the parent</i>	Constant at 0.69%.

*** More details about Forecasting Revenue:

HNWIs population has been growing, as so as their wealth, and Ferrari's penetration in this community is still low, 0.005% in 2019, varying on Ferrari's history but never higher than 2019's figure. This represents potential for the expansion plans even if HNWIs population does not grow at all between 2020E-2024E. High levels of customer fidelity also means that Ferrari's owners are expected to own the majority of the new models sold in the coming years, which makes the real Ferrari's coverage rate of HNWIs even lower. Besides that, the waiting lists and new sales are robust according to the results non-audit presentation of 2020Q2. In this sense, the Covid-19 outbreak impacted Ferrari's revenues from C&SP due to less units delivered in 2020E, and not due to a reverse on prior trends.

The percentages of line-up strategic pillars (GT, Sports Cars & Special Series, and Icona) vary from 2021E-2024, starting respectively on 30%, 65% and 5% in 2021E, to 50%, 45% and 5% in 2024E, in line with Ferrari's strategy of competing for performance luxury comfort urban cars. The average base price in April of 2020 for each model in GT, Sports & Special Series, and Icona, was considered in the forecast.

Ferrari has presented an average incremental revenue per car of 4% YoY between 2014-2019. This represents the resilience and historical capacity of increasing premiums per unit. To be conservative, these premiums were at historical levels of 4% in 2020E, and three years moving average from 2021E-2024E, which outputs an average price premium of 2% YoY per unit sold, and since premiums may not be achieved on the longer-term.

Another source of higher premiums per unit is customization. In 2018, around 3% of total units delivered were personalized. This figure is expected to growth 4% YoY between 2020E-2024E, and the average personalization premiums is 50% the initial value of the model. To support this growth, Ferrari is investing personalization labs in some of its main geographies. In 2019, the firm opened its third design lab in New York, a tailor-made center of 6,600-square-foot showroom in Manhattan.

Ferrari's business plan expects that 60% of all models available in 2022E will be equipped with Hybrid Plug-in technology. In 2019, the first model was unveiled. A proxy for Hybrid Plug-in premiums was estimated with 13 models from Hyundai, Porsche, BMW, Volvo and Peugeot, and found an average of 17% price premium for this model. Considering Ferrari's past record and capacity of delivering results, this premium rate was also applied to Ferrari. Since 60% of models will contain this technology in 2022E, an assumption of 30% technology coverage in 2021E portfolio was made, considering the 6 models expected to be unveiled between 2020E-2021E.

Ferrari's Shipments CAGR and Terminal Growth Rate

Ferrari's unit shipments by geographic market:

For the years ended on December 31,	0	1	2		
# of cars	2017	2018	2019	CAGR	OECD Long Term Forecasted Growth
EMEA					
UK	843.00	981.00	1,120.00	0.15	0.02
GERMANY	710.00	803.00	967.00	0.17	0.01
ITALY	417.00	479.00	559.00	0.16	0.01

SWITZERLAND	339.00	380.00	454.00	0.16	0.02
FRANCE	346.00	399.00	452.00	0.14	0.02
MIDDLE EAST	331.00	326.00	309.00	-0.03	0.03
OTHER EMEA	751.00	859.00	1,034.00	0.17	0.03
TOTAL EMEA	3,737.00	4,227.00	4,895.00	0.14	
AMERICAS	2,811.00	3,000.00	2,900.00	0.02	0.02
MAINLAND CHINA, HONG KONG AND TAIWAN	617.00	695.00	836.00	0.16	0.02
REST OF APAC	1,233.00	1,329.00	1,500.00	0.10	0.03
TOTAL	8,398.00	9,251.00	10,131.00	0.10	0.0212379

Ferrari's Strategic Car Categories

Ferrari's Line-Up Strategic Pillars - % participation in total cars produced

	2016	2017	2018	2019	2020E	2021E	2022E	2023E	2024E	Assumption
<i>Sports</i>	0.59	0.64	0.64	0.60	0.58	0.56	0.54	0.53	0.51	Sports cars participation in total units produced tends to fall in the forecasted period, in line with Ferrari's diversification within GT range and Icona. Sports cars participation in total units produced is set to decrease at a 3% CAGR, in line with the movement happening between 2017-2019.
<i>GT</i>	0.33	0.30	0.32	0.35	0.36	0.37	0.38	0.39	0.40	GT cars participation in total units produced tends to grow at a 2.4% CAGR between 2020E-2024E, in line with Ferrari's investments to be more competitive in GT car range, with an enlarged option of super and elegant GT cars. The CAGR is also in line with GT CAGR in Ferrari's unit produced between 2016-2019. Ferrari Roma was unveiled in 2019, and is expected to hit the markets in 2020E, as the four-five new GT models that may enhance Ferrari's portfolio until 2022E.
<i>Special Series</i>	0.08	0.06	0.04	0.04	0.04	0.04	0.04	0.04	0.04	Special Series cars were forecasted to remain stable between 2020E-2024E, since Ferrari tends to put more efforts in expanding GT and Icona Series.
<i>Icona</i>	0.00	0.00	0.00	0.006	0.02	0.03	0.03	0.04	0.05	Icona line was introduced in 2019, and has proven to be a success, yet sales are still to hit markets. Two models are currently available, and the segment represents the highest potential premium to Ferrari, with highly personalized limited models. The company aims Icona to reach 5% of units sold by 2024E. There are on average 2 Icona models available each year, which means around 300 of each model available sold per year in 2024E, a highly exclusive masterpiece.
	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Source: Estimated by the student with company information.

Ferrari's Number of Cars by Strategic Pillar

Ferrari's Line-Up Strategic Pillars - # of cars produced per Strategic Pillar

	2018	2019	2020E	2021E	2022E	2023E	2024E
<i>Sports</i>	5921	6079	5423	5778	6156	6404	6663

GT	2960	3586	3395	3819	4295	4717	5181
Special Series	370	405	378	416	456	490	525
Icona	0	61	170	275	392	508	630

Source: Estimated by the student with company information.

Ferrari's Average Price per Car and Average Price per Strategic Pillar

Category	Model	Base Price (2019 - ex-VAT and dealer's margins)	Average Price by Category
GT Car	Ferrari Portofino	€ 198,061.00	220,277.75
GT Car	Ferrari Roma	€ 210,000.00	
GT Car	Ferrari GTC4Lusso	€ 236,525.00	
GT Car	Ferrari GTC4Lusso T	€ 236,525.00	
Sport Car	Ferrari F8 Tributo	€ 236,000.00	347,545.40
Sport Car	Ferrari 812 Superfast	€ 303,727.00	
Sport Car	Ferrari 812 GTS	€ 336,000.00	
Sport Car	Ferrari FS90 Stradale	€ 600,000.00	
Sport Car	Ferrari F8 Spider	€ 262,000.00	
Special Series Car	Ferrari 488 Pista	€ 296,000.00	311,200.00
Special Series Car	Ferrari 488 Pista Spider	€ 326,400.00	
Icona	Ferrari Monza SP1/SP2	€ 1,500,000.00	1,500,000.00

Source: Estimated by the student with company information.

The following weights were multiplied by the average price per car according to each category. From 2022E on, 60% of C&SP bring Hybrid Premium, and 5% of the cars sold will be customized, which implies an average premium per customized car of 50%.

Ferrari's Cars by Strategic Pillar

Category	Weights (2020E)	Weights (2021E)	Weights (2022E)	Weights (2023E)	Weights (2024E)	Average Price 2020 (weights for median prices: Sports & Special Series, 50%; Sport Cars, 45%; Icona, 5%)	Customization Average Premium (Assumption: on average, increase the price of a Ferrari car in 50%. The range varies between 20% and 100%)	Hybrid Premium (60% of total cars delivered from 2022 on are expected to be Hybrid models)
GT Cars	0.36	0.37	0.38	0.39	0.40	€ 320,807.07	€ 168,426.20	€ 65,990.04
Sports Car	0.58	0.56	0.54	0.53	0.51			
Special Series	0.04	0.04	0.04	0.04	0.04			
Icona	0.02	0.03	0.03	0.04	0.05			

Source: Estimated by the student with company information.

The following table shows the proxies applied to calculate Ferrari's average hybrid premium:

Estimated price premium for hybrid models

Company	Model	Price (in Euros) Petros/Diesel	Price Hybrid (in Euros)	Estimated Premium
Hyundai	2018 Hybrid Hyundai Sonata	22,050.00	26,000.00	18%
Porsche	Panamera 4 / Panamera 4S E-Hybrid	125,973.00	138,589.00	10%
	Panamera 4 Executive / Panamera 4S E-hybrid Executive	139,064.00	152,857.00	10%
BMW	BMW 218i Luxury Active Tourer	28,795.00	37,225.00	29%

	Mercedes-Benz E 300 e E 200 Limousine	60,549.00	67,650.00	12%
Hyundai	Ioniq Hev / Ioniq EV	27,906.00	36,580.00	31%
Volvo	XC60 Momentum Diesel / Hybrid	56,399.00	65,377.00	16%
	S90 Momenum / S90 R-Design	58,063.00	70,229.00	21%
Peugeot	Allure / Allure HY	33,980.00	44,505.00	31%
	GT Line / GT Line HY	36,980.00	47,305.00	28%
Average				21%

Source: Estimated by the student with company information.

Appendix 8: WACC and Summary of Valuation Models

Assumptions for the WACC calculation

1. Beta

Ferrari's Beta

Applying Beta's formula:

Covariance Ferrari (Italian Stock Exchange) - EURO STOXX 600 0.00069

Variance EURO STOXX 600 0.00096

Ferrari's European Beta 0.71965

Covariance Ferrari (NYSE) - S&P 500 0.00066

Variance S&P 500 0.00112

Ferrari's U.S. Beta 0.58403

Weight* U.S Beta 0.45044

Weight* European Beta 0.54956

Ferrari's Beta 0.65856

Applying linear regression:

Ferrari's U.S. Beta 0.74900

Ferrari's European Beta 0.77800

Ferrari's Beta (linear regression) 0.76494

Average Beta (formula, linear regression and bottom-up beta) 0.71175

Source: Reuters and company information, elaborated by the student.

Ferrari's Beta Estimated by Reuters (access on October 06, 2020)

90 Days (daily) 0.65

180 Days (daily) 0.73

2 Years (monthly) 0.56

3 Years (monthly) 0.66

5 Years (monthly) 0.54

Source: Reuters.

Beta obtained with Regression:

Summary statistics: Ferrari vs S&P 500 returns

Regression of variable Ferrari's Returns (New York Stock Exchange):

Goodness of fit statistics (Ferrari's Returns (New York Stock Exchange)):

Observations	104
Sum of weights	104
DF	102
R ²	0.393
Adjusted R ²	0.387
MSE	0.001
RMSE	0.031
MAPE	85.155
DW	2.330
Cp	2.000
AIC	-718.171
SBC	-712.882
PC	0.631

Model parameters (Ferrari's Returns (New York Stock Exchange)):

Source	Value	Standard error	t	Pr > t	Lower bound (95%)	Upper bound (95%)
Intercept	0.003	0.003	0.866	0.389	-0.003	0.009
S&P 500 returns	0.749	0.092	8.124	<0.0001	0.566	0.931

Equation of the model (Ferrari's Returns (New York Stock Exchange)):

Ferrari's Returns (New York Stock Exchange) = 0.00267218683299144+0.748685707641582*S&P 500 returns

Summary statistics: Ferrari vs EURO STOXX 600 returns

Variable	Observations	Obs. with missing data	Obs. without missing data	Minimum	Maximum	Mean	Std. deviation
Ferrari's returns (Italian Stock Exchange - Borsa Italiana)	104	0	104	-0.130	0.130	0.004	0.038
EURO STOXX 600 returns	104	0	104	-0.180	0.070	0.000	0.030

Correlation matrix:

Regression of variable Ferrari's returns (Italian Stock Exchange - Borsa Italiana):

Goodness of fit statistics (Ferrari's returns (Italian Stock Exchange - Borsa Italiana)):

Observations	104
Sum of weights	104
DF	102
R ²	0.398
Adjusted R ²	0.393
MSE	0.001
RMSE	0.029
MAPE	73.833
DW	2.075
Cp	2.000
AIC	-732.752
SBC	-727.463
PC	0.625

Analysis of variance (Ferrari's returns (Italian Stock Exchange - Borsa Italiana)):

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	1	0.058	0.058	67.554	<0.0001
Error	102	0.087	0.001		
Corrected Total	103	0.145			

Computed against model Y=Mean(Y)

Model parameters (Ferrari's returns (Italian Stock Exchange - Borsa Italiana)):

Source	Value	Standard error	t	Pr > t	Lower bound (95%)	Upper bound (95%)
Intercept	0.004	0.003	1.390	0.168	-0.002	0.010
EURO STOXX 600 returns	0.778	0.095	8.219	<0.0001	0.590	0.966

Equation of the model (Ferrari's returns (Italian Stock Exchange - Borsa Italiana)):

Ferrari's returns (Italian Stock Exchange - Borsa Italiana) = 0.00398500181429666+0.77799056565738*EURO STOXX 600 returns

2. Cost of Debt

Estimating the synthetic cost of debt:

Balance at December 31, 2018	Impact of IFRS adoption	of 16	Balance at January 1, 2019	at 1,	Proceeds from borrowings	Repayment of borrowings	Interest accrued and other	Translation differences	Balance at December 31, 2019
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Bonds and Notes	1,198,109,000	--	1,198,109,000	298,316,000	-315,395,000	4,440,000	--	1,185,470,000
Asset-backed financing (Securitized)	682,581,000	--	682,581,000	282,113,000	-189,940,000	-82,000	--	788,269,000
Lease liabilities	673,000.00	63,535,000	64,208,000	14,788,000	-18,684,000	--	184,000	60,496,000.00
Borrowing from banks	35,984,000	--	35,984,000	--	-3,516,000	-71,000	549,000	32,946,000
Other debt	9,820,000	--	9,820,000	33,801,000	-21,479,000	--	414,000.00	22,556,000
Total debt	1,927,167,000	63,535,000	1,990,702,000	629,018,000	-549,014,000	4,287,000	14,744,000	2,089,737,000
Total debt at October 06, 2020								2,757,067,000

	Time to Maturity (years)	Balance at December 31, 2018	Accrued Interest	Balance at December 31, 2019, net	Implicit borrowing rate
Cost of debt (financial expenses/average total debt)	--	--	--	--	1.590%
	2020	2021	2022	2023	2024
Financial expenses	44956.74	55048.82	65262.51	76697.27	89371.36

SYNTHETICALLY ESTIMATED COST OF DEBT FOR FERRARI N.V.

DATE OF ANALYSIS: DATA USED IS AS OF JANUARY 2020

FOR NON-FINANCIAL SERVICE FIRMS ONLY

SOURCE: ASWATH DAMODARAN (AVAILABLE IN <http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ratings.htm>, last access: Aug/15/2020.

For developed market firms with market cap > \$5 billion

For all emerging market firms and developed market firms with market cap < \$5 billion

If interest coverage ratio is

If interest coverage ratio is

>	≤ to	Rating is	Spread is	>	≤ to	Rating is	Spread is
8.50	10,000	Aaa/AAA	0.63%	12.50	10,000	Aaa/AAA	0.63%
6.50	8.50	Aa2/AA	0.78%	9.50	12.50	Aa2/AA	0.78%
5.50	6.50	A1/A+	0.98%	7.50	9.50	A1/A+	0.98%
4.25	5.50	A2/A	1.08%	6.00	7.50	A2/A	1.08%
3.00	4.25	A3/A-	1.22%	4.50	6.00	A3/A-	1.22%
2.50	3.00	Baa2/BBB	1.56%	4.00	4.50	Baa2/BBB	1.56%
2.25	2.45	Ba1/BB+	2.00%	3.50	4.00	Ba1/BB+	2.00%

2.00	2.25	Ba2/BB	2.40%	3.00	3.50	Ba2/BB	2.40%
1.75	2.00	B1/B+	3.51%	2.50	3.00	B1/B+	3.51%
1.50	1.75	B2/B	4.21%	2.00	2.50	B2/B	4.21%
1.25	1.50	B3/B-	5.15%	1.50	2.00	B3/B-	5.15%
0.80	1.25	Caa/CCC	8.20%	1.25	1.50	Caa/CCC	8.20%
0.65	0.80	Ca2/CC	8.64%	0.80	1.25	Ca2/CC	8.64%
0.20	0.65	C2/C	11.34%	0.50	0.80	C2/C	11.34%
-10,000	0.20	D2/D	15.12%	-10,000	0.50	D2/D	15.12%
	Risk-Free Rate	Market Cap	Interest Coverage Ratio	Default Spread	Cost of Debt	Tax Rate	After-Tax Cost of Debt
Ferrari NV	1.0260%	28,704,107,100.00	19.96	0.6300%	1.6560%	24%	1.2586%

Valuation Models

Relative Valuation

Financial Analysis – Ferrari and Automotive Industry

Company	Revenue (in mn)	COGs / Revenue	EBITDA Margin	EBIT Margin	ROA	ROE	EPS
<i>Aston Martin</i>	£ 997,30	64%	18%	7%	-3%	-33%	-£ 15,95
<i>BMW</i>	€ 104.210,00	83%	13%	7%	2%	8%	€ 7,47
<i>Tesla</i>	\$ 2.477,66	83%	12%	8%	0%	1%	\$ 0,04
<i>Daimler</i>	€ 172.745,00	83%	7%	4%	1%	7%	\$ 3,65
<i>Volkswagen</i>	€ 252.632,00	81%	16%	7%	3%	11%	€ 26,66
<i>Volvo</i>	€ 431.980,00	76%	16%	11%	7%	25%	€ 17,02
<i>Renault</i>	€ 55.537,00	80%	11%	4%	0%	0%	-€ 0,52
<i>FIAT</i>	€ 108.187,00	86%	11%	6%	4%	15%	€ 2,73
<i>Peugeot</i>	€ 74.731,00	79%	11%	6%	5%	17%	€ 3,40
<i>GM</i>	\$ 137.237,00	81%	11%	6%	3%	17%	€ 4,82
<i>Ford</i>	\$ 143.599,00	94%	11%	4%	2%	14%	€ 1,19
<i>Ferrari</i>	€ 3.766,00	48%	34%	24%	13%	47%	€ 3,71
<i>Average</i>	--	78%	14%	8%	3%	11%	--

Source: Reuters, elaborated by the student.

Financial Analysis – Ferrari and Luxury Industry

Company	Revenue	COGs / Revenue	EBITDA Margin	EBIT Margin	ROA	ROE	EPS
<i>LVMH</i>	€ 53.670,00	34%	26%	21%	7%	20%	€ 14,23

<i>Moncler</i>	€ 1.627,70	22%	35%	30%	10%	17%	€ 1,42
<i>Kering</i>	€ 15.883,50	26%	38%	30%	13%	32%	€ 25,59
<i>Richemont</i>	€ 14.238,00	41%	17%	11%	3%	6%	€ 1,74
<i>Hermes</i>	€ 6.883,40	31%	40%	34%	18%	25%	€ 14,55
<i>Salvatore Ferragamo</i>	€ 1.372,45	35%	24%	11%	6%	12%	€ 0,52
<i>Ralph Lauren</i>	\$ 6.159,80	41%	15%	10%	10%	17%	€ 6,56
<i>Burbury</i>	£ 2.633,10	35%	17%	16%	11%	24%	£ 78,70
<i>Pandora</i>	21.868,00 kr.	27%	28%	27%	14%	51%	30,10 kr.
<i>Brunello Cucinelli</i>	€ 608,59	41%	28%	14%	7%	18%	€ 0,77
<i>Ferrari</i>	€ 3.766,00	48%	34%	24%	14%	49%	€ 3,71
<i>Average</i>	--	35%	27%	21%	10%	25%	--

Source: Reuters, elaborated by the student.

As it may be seen, on the above tables, Ferrari is not comparable with every luxury peer. Taking into consideration the level of exclusiveness translated into higher multiples and margins, filtering the initial luxury industry to find better comparability with Ferrari's reality would leave us with LVMH, Hermes, Salvatore Ferragamo and Brunello Cucinelli. With this bias, it is possible to value Ferrari with the P/E 2021YE multiple, according to estimates from Reuters. Since this is a weak method to value Ferrari due to the firm's peculiarities, it may be seen as an extra tool to confirm the DCF – FCFF, APV and EVA obtained Target Price for Ferrari.

Ferrari's Relative Valuation with Auto and Luxury Peers

<i>Industry average</i>	<i>P/E 2021YE</i>	<i>EV/EBITDA 2021YE</i>	<i>EV/EBIT 2021YE</i>	<i>EV/Sales 2021YE</i>
<i>Auto</i>	31.14	14.52	14.89	2.32
<i>Luxury</i>	48.99	18.91	30.54	6.04
<i>Ferrari</i>	47.39	30.02	34.51	8.78
<i>Ferrari's Relative Price to Auto</i>	€127.64	€59.53	€61.05	€9.52
<i>Ferrari's Relative Price to Luxury</i>	€176.43	€107.41	€147.61	€119.43

Appendix 9: Business and Corporate Structure

Ferrari's Board of Directors is composed by 11 directors, including both executive and non-executive, and is responsible for the management and for the strategic direction of the Group. Since Ferrari's IPO in 2015, the firm's officers have been stable.

Name	Age	Current Position	Bio	Officer/Director	In Position
Mr. John Elkann	44	Executive Chairman of the Board		1 Year	1 Year
Mr. Louis Camilleri	65	Chief Executive Officer, Executive Director		5 Years	2 Years
Mr. Piero Ferrari	75	Non-Executive Vice Chairman of the Board		33 Years	33 Years
Mr. Antonio Piccon	56	Chief Financial Officer		2 Years	2 Years
Mr. Michele Antoniazzi	51	Chief Human Resource Officer		4 Years	4 Years

Mr. Michael Leiters	49	Chief Technology Officer	7 Years	7 Years
Mr. Enrico Galliera	54	Chief Marketing and Commercial Officer	10 Years	10 Years
Mr. Carlo Daneo	52	General Counsel	5 Years	5 Years
Mr. Mattia Binotto	51	Managing Director Gestione Sportiva and Team Principal Scuderia Ferrari	2 Years	2 Years
Mr. Nicola Boari, Ph.D.	50	Chief Brand Diversification Officer	11 Years	2 Years
Mr. Flavio Manzoni	55	Chief Design Officer	11 Years	2 Years
Ms. Jane Reeve	--	Chief Communication Officer	1 Year	1 Year
Mr. Vincenzo Ragazzoni	57	Chief Manufacturing Officer	6 Years	6 Years
Ms. Delphine Arnault	44	Non-Executive Independent Director	--	--
Ms. Giuseppina Capaldo, CPA	51	Non-Executive Independent Director	--	--
Mr. Eddy Cue	56	Non-Executive Independent Director	--	--
Mr. Sergio Duca	73	Non-Executive Independent Director	10 Years	10 Years
Mrs. Maria Grieco	68	Non-Executive Independent Director	--	--
Mr. Adam Keswick	47	Non-Executive Independent Director	--	--
Ms. Elena Zambon	56	Non-Executive Independent Director	--	--

Appendix 10: Porter's Five Forces

Bargain Power of Buyers: Low

Cars in LPCI are highly unique. Buyers may choose among GT and Sports Cars from different manufacturers, but each has her own features that many times are incomparable with the ones present in competitors' models. Buyers are price-takers, and despite the comparability in car features produced by different peers, Ferrari's buyers tend to be loyal despite their low power to negotiate or switch-off products easily. From the buyer perspective, there are not considerable threats regarding the customer's power over the firm.

Bargain Power of Suppliers: Medium

Bargain power of suppliers may be considered medium to Ferrari but may be lower to other peers. As an independent luxury performance car manufacturer producing low volumes, Ferrari concentrates part of the buys with the same suppliers, which tend to have some power to negotiate with Ferrari that is higher compared with their power to negotiate with peers that are part of larger automotive groups, for instance. Ferrari's cars are special and brings specific features, and as a result, some suppliers in Ferrari's supply chain are the only source of that supply, decreasing Ferrari's power and bringing a medium risk of disruptions in supply chains.

Rivalry among Existing Peers: Medium

Competition is high in LPCI, despite the fact of each car to be unique. This is because potential buyers are limited: HNWI's constitute a very small number of people if you consider this group as the potential buyers. In this sense, convincing new customers that your models are the best ones is now an easy task, and the few competitors tend to fight for being considered the best class available. Even tough, Ferrari has been producing very unique cars, which are not easily comparable with the competitors. The rivalry is medium, and Ferrari is well shaped to keep succeeding in keep itself on the pole-position in LPCI, which has been the source of higher premiums.

Threat of New Entrants and Substitutes: Low

The risk of new entrants in LCPI is low, since initial capital is high, R&D capabilities a must, and a high level of regulation is present. Possible new entrants are car manufacturers whose portfolios do not contain LPC. The industry is highly regulated, which also favors companies that already produce cars. The high level of exclusivity cannot be built from the night to the day, and new entrants would take a long time to prove their products with very exigent customers, whose willingness to switch-off from one brand to other is low. Economies of scale and scope are limited in LCPI, since the number of models sold is low and cannot grow without harming exclusivity of premiums.

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Recommendation System

Level of Risk	SELL	REDUCE	HOLD/NEUTRAL	BUY	STRONG BUY
High Risk	$0\% \leq$	$>0\% \ \& \ \leq 10\%$	$>10\% \ \& \ \leq 20\%$	$>20\% \ \& \ \leq 45\%$	$>45\%$
Medium Risk	$-5\% \leq$	$>-5\% \ \& \ \leq 5\%$	$>5\% \ \& \ \leq 15\%$	$>15\% \ \& \ \leq 30\%$	$>30\%$
Low Risk	$-10\% \leq$	$>-10\% \ \& \ \leq 0\%$	$>0\% \ \& \ \leq 10\%$	$>10\% \ \& \ \leq 20\%$	$>20\%$