

Master Thesis

MSc Finance and Strategic Management



## **Financial Valuation of Ferrari S.p.A**

**Author:** Bosko Kovacevic

**Supervisor:** Peter Ove Christensen

**Date of Submission:** September 4, 2016

**Number of Characters:** 170,647

**Number of Pages:** 80



## Abstract

Ferrari's recent initial public offering (IPO) valued the company at \$ 9.82 billion placing its stock at the top end of the prior IPO announced range (\$48-52). Becoming the sole publicly traded sports luxury car manufacturer that operates within a moderately growing industry, Ferrari's story lured numerous analysts to argue about reasons behind such a high valuation and hence questioning its market value. This thesis uses such a hot topic to further analyze and challenge Ferrari's fair value relative to market expectations.

In order to examine Ferrari's fair value, two valuation methods have been applied: the residual operating income (ReOI) model and the relative valuation method. The focal emphasis was put on the first technique due to its pure equity concept, ultimately leading to more precise valuations. In order to define key value drivers, a profound financial and strategic analysis have been performed. Additionally, this method is built upon a financial and strategic analysis to acquire more credibility before implementing a relative method that is constructed on peer-to-peer valuation. The carried out valuation method based on ReOI indicates that the fair value of Ferrari's common equity is 13.3% higher than the market value of Ferrari's common equity from the first week average in July 2016. Prospect of Ferrari's future value are subaltern to: 1) top management's decision to extend the growth strategy above its small vehicle manufacture (SVM) threshold, 2) leveraging the full brand revenue line potential and 3) the growth of high net worth individuals (HNWI) in emerging markets.

In the relative valuation method, the unleveraged EV/EBITDA multiple has been compared to different peer groups and subsequent outcomes have been derived: 1) applying the peer group of solely high-end premium car producers values Ferrari's stock at € 10 in 2016 2) utilizing the enlarged peer group of high-end premium car producers and luxury good brands determines Ferrari's stock value at € 31.2 in 2016 3) using only the luxury peers estimated Ferrari's value to be € 41.67 in 2016. Comparing to the market's average of Ferrari's value in the first week of July, the peer group of solely high end premium manufacturers and the enlarged peer group of both premium car producers and luxury brands indicate significant overvaluation of Ferrari's stock by ~73% and ~14% respectively. On the other hand, the pure luxury goods' peer group points toward the undervaluation of Ferrari's stock by 14% correspondingly to outcomes from ReOI method. To that end, the relative valuation method designates that Ferrari is more comparable to luxury goods players than to automotive players.



## Table of Contents

<b>List of Abbreviations</b> .....	IV
<b>List of Figures and Tables</b> .....	V
<b>1. Introduction and Motivation</b> .....	<b>1</b>
1.1 Problem Statement .....	2
1.2 Delimitations .....	2
1.3 Thesis Structure.....	3
1.4 Methodology .....	5
1.5 Limitations .....	6
<b>2. Introduction to Luxury Car Performance Industry and Ferrari S.p.A</b> .....	<b>6</b>
2.1 Company at Glance .....	6
2.1.1 Business Concept.....	6
2.2 History and Separation .....	7
2.3 Business Segment.....	8
2.4 Geographical Segments.....	10
2.5 Automobiles .....	11
2.6 Automotive Industry .....	12
<b>3. Financial analysis</b> .....	<b>14</b>
3.1 Reformulation of Financial Statements .....	14
3.1.1 Balance Sheet Reformulation .....	15
3.1.2 Income Statement Reformulation .....	17
3.2 Comparative Common Size Analysis of Reformulated Balance Sheet and Income Statement....	18
3.2.1 Balance Sheet-Common Size Analysis .....	18
3.2.2 Income Statement-Common Size Analysis .....	20
3.3 Profitability Analysis.....	22
3.3.1 Return on Net Operating Assets (Operating Profitability Analysis) .....	22
3.4 Growth Analysis.....	26
3.5 Quantitative Industry Analysis.....	28
<b>4. Strategic Analysis</b> .....	<b>29</b>
4.1 PEST(EL) Analysis .....	30
4.1.1 Political/Legal.....	30
4.1.2 Economic Factors .....	33
4.1.3 Social and Environmental Factors .....	39
4.1.4 Technology .....	40
4.1.5 PEST(EL) Summarize .....	42
4.2 Industry Attractiveness Analysis-Porter's Five Forces .....	42



4.2.1 Threats of Substitutes .....	43
4.2.2 Threats of New Entrants .....	43
4.2.3 Power of Suppliers.....	45
4.2.4 Bargaining Power of Buyers.....	47
4.2.5 Rivalry between Competitors .....	48
4.2.6 Market Outlook.....	48
4.3 Value Chain Analysis.....	49
<b>5. SWOT Analysis.....</b>	<b>54</b>
<b>6. Forecast.....</b>	<b>56</b>
6.1 Budget Period.....	56
6.2 Terminal Growth .....	56
6.3 Business Segment Revenue Forecast .....	57
6.3.1 Sales Development .....	57
6.3.2 Volume and Anticipated Growth Strategy .....	58
6.3.3 Car Models .....	58
6.3.4 Engines, Sponsorships and Other Segment .....	59
6.4 Full Information Income Statement Explicit Forecast (2016-2020) .....	60
6.5 Full Information Balance Sheet Explicit Forecast (2016-2020) .....	62
6.6 Second Stage Forecast (2020-2025).....	64
<b>7. Cost of capital.....</b>	<b>65</b>
7.1 Cost of equity capital.....	66
7.1.1 Risk free rate.....	66
7.1.2 Equity Risk Premium.....	67
7.1.3 Beta Estimation.....	67
7.2 Cost of Debt .....	68
7.3 Capital Structure.....	69
<b>8. Valuation and Analysis .....</b>	<b>70</b>
8.1 Valuation Based on ReOI.....	70
8.2 Relative Valuation.....	71
8.3 Sensitivity Analysis.....	73
<b>9. Conclusion .....</b>	<b>74</b>
<b>10. Bibliography.....</b>	<b>76</b>
<b>11. Appendices .....</b>	<b>82</b>



## List of Abbreviations

**1Q**- First Quarter  
**APAC**- Asia-Pacific region  
**AR**- Accounts Receivable  
**ATO**- Asset Turnover  
**CAGR**- Compound Annual Growth Rate  
**CAPEX**- Capital Expenditure  
**CAPM**- Capital Asset Pricing Model  
**ECB**- European Central Bank  
**EMEA**- Europe, Middle East, Asia  
**EPA**- US Environmental Protection Agency  
**EU**- European Union  
**FA**- Financial Assets  
**FL**- Financial Liabilities  
**FCA**- Fiat Chrysler Automobiles  
**GAAP**- Generally Accepted Accounting Principles  
**GDP**-Gross Domestic Product  
**GT**- Grand Touring  
**HNWI**- High Net-worth Individuals  
**IPO**- Initial Public Offering  
**NOA**- Net Operating Asset  
**NOL**- Net Operating Liabilities  
**NHTSA**-National Highway Traffic Safety Administration  
**OEM**- Original Equipment Manufacturer  
**OI**- Operating Income  
**PESTEL**- Political, Economic, Social, Technological, Environmental, Legal  
**PM**- Profit Margin  
**PP&E**- Property Plant and Equipment  
**PSI**- Political Stability Index  
**ReOI**- Residual Operating Income  
**ROCE**- Return on Common Equity  
**RNOA**- Return on Net Operating Assets  
**R&D**- Research and Development  
**SGA**- Selling General and Administrative costs  
**SVM**- Small Vehicle Manufacturer  
**UAE**- United Arab Emirates  
**USD**- US Dollar  
**WACC**- Weighted Average Cost of Capital



## List of Figures

- Figure 1**-Research Structure; Source: Created by author  
**Figure 2**- Segment Revenue Distribution; Source: Ferrari S.p.A Annual Report-Author Creation  
**Figure 3**-Unit Distribution by Regions; Source: Ferrari S.p.A Annual Report-Author Creation  
**Figure 4**-Global GDP vs. Global Personal-Luxury Goods Market; Source: Ferrari S.p.A Annual Report/Bain and Company/ World Data Bank  
**Figure 5**-Profit Margin Over 3 Year Period; Sources: Annual Reports-Author Creation  
**Figure 6**-ATO Ratio for 3 Year Period; Source: Annual Reports-Author Creation  
**Figure 7**-Strategic Analysis-"Top-Down Approach"  
**Figure 8**-Global Total Vehicle Sales, World GDP and University of Michigan Survey of Consumer Confidence Sentiment; Source: Market List/Bloomberg  
**Figure 9**- GDP growth (annual %); Source: The World Bank Data  
**Figure 10**-Private Financial Wealth across Regions  
**Figure 11**-1yr Historical EUR/USD; Source: XE.com  
**Figure 12**-The Magnitude of China's Middle-Class Growth is Transforming the Nation; Source: McKinsey & Co.  
**Figure 13**-Ferrari's Future Production Schedule; Source: Company Filings, BofA Merrill Lynch Global Research  
**Figure 14**-Yield Curve (Nelson-Siegel-Svensson Method; Source: ECB-Author Creation

## List of Tables

- Table 1**-Balance Sheet Common Size Analysis; Source: Annual reports-Author Creation  
**Table 2**-Income Statement Common Size Analysis; Source: Annual Reports-Author Creation  
**Table 3**-ATO Driver Decomposition (Inverse); Source: Ferrari S.p.A Annual Report-Author Creation  
**Table 4**-Operating Profitability Drivers; Source: Ferrari S.p.A Annual Report-Author Creation  
**Table 5**-Sales Growth and Gross Margin; Source: Ferrari S.p.A Annual Report-Author Creation  
**Table 6**-Competitive Advantage Analysis-Author Creation  
**Table 7**-Full Information Income Statement Explicit 5 Year Explicit Forecast (in € millions)  
**Table 8**-Full Information Balance Sheet Explicit 5 Year Forecast (inverse)-Author Creation  
**Table 9**-Second Stage Forecast ReOI Drivers (2020-2025)  
**Table 10**-ReOI Valuation Outputs (€ millions); Source: Author creation  
**Table 11**-Peer Multiples Comparison; Source: Bloomberg-Author creation  
**Table 12**-Sensitivity Analysis; Source: Author Creation  
**Table 13**-Sensitivity Analysis EV/EBITDA (Overall Peer Group); Source: Author Creation



## 1. Introduction and Motivation

Combination of the intensive competition with the moderate revenue growth across the industry makes the automotive sector hardly lucrative. As such, the automotive industry does not represent a very attractive investment playground for potential investors. This could be also applied to the super luxury car segment whose players rather focus on the low volume business models, loyal customers and brand exclusivity rather than leveraging the full growth potential. Hence, investing in the automotive industry represents a status quo investment in terms of the future returns. However, this industry is still highly popular and therefore, every transaction has been accompanied with special public attention and a story.

Ferrari's recent IPO on the New York Stock Exchange market and double listing in Milano made this iconic brand the only high-end sports car manufacturer publicly traded separately from a parent company. Besides, Ferrari's strategic move triggered many stories about the actual motives. Ferrari is not just a car, but it is a brand, lifestyle, fashion and, as such, attracts a lot of attention amongst investors and automobile enthusiasts. Its brand value is estimated at \$ 4 billion placing it at the top on the list of the most powerful brands in 2014. (Harvey, 2014) Ferrari's U.S. IPO included only 10% of 189 million outstanding shares valuing Ferrari S.p.A at \$9.82 billion, leaving a lot of rumors about the fair value of the company. (Blumenthal, 2015) However, the doubt that arose amongst investors was essentially related to the future performance of this elite brand in a barely profitable and the capital intensive mature industry such as the automotive. Likewise, the question of uncertainty was referred to how the small volume and high-end manufacturer will manage to survive amongst the mass production premium players which leverage significant economies of scale in order to endure within the competitive environment. To that end, the blend of investors' skepticism and Ferrari's uniqueness amongst the automotive players make the valuation topic of this company very stimulating for academic purposes.

This thesis employs in-depth valuation analysis of Ferrari. The analysis is grounded on the key financials and strategic value drivers that could potentially impact the future outlook of the company performance. The study seeks to determine a fair value of Ferrari and how the value drivers will possibly impact the future operations' prospects of the company. Not only the result of this dissertation can potential investors and practitioners, buy also it can be useful for analysts as a benchmark for the valuation purposes of other companies.



## **1.1 Problem Statement**

The purpose of this thesis research is to perform in depth analysis and to determine a fair value of Ferrari. Becoming the only publicly traded high-end luxury car manufacturer triggers the question toward what direction the company's strategy will swing and, consequently, what impacts it will have on the company's value. Most valuation concepts deal with the mature companies that have large sales volumes and steady earnings. However, Ferrari's small volume business and brand exclusivity which targets niche customers may be too risky for investors and increase their skepticism regarding Ferrari's IPO. Hence the primary question of this thesis will be:

*What is the fair value of Ferrari's common equity and stock price and how it is valued in comparison with the market?*

In order to perform comprehensive valuation analysis the following sub-questions will be assessed:

*What are the key value drivers of Ferrari's profitability and how sustainable they can be?*

*What are the change patterns of key values in the automotive industry?*

*What are key Ferrari's core competences and how can the impact the future prospects of Ferrari?*

*Are Ferrari's business model and strategy sustainable in the future?*

*What are the future projections of Ferrari value drivers?*

*What is the most appropriate valuation method used to determine Ferrari's value?*

*How do changes in operations and economic environment affect Ferrari's common equity value?*

## **1.2 Delimitations**

In this thesis, a fair value of Ferrari will be assessed by considering different external and internal factors that impact Ferrari's performance. Furthermore, the inputs gathered and used throughout this dissertation are explicitly secondary data available for the outside analysts. Consequently, additional assumptions will be made when necessary and when insufficient information is publicly provided.

Since Ferrari announced the first separate annual report in February, 2016 the same will be used as a primary data source throughout this paper. The initial annual report comprises period from 2013 to 2015. Thus strategic and financial analysis will be primarily anchored to this time frame. Additional general





information regarding the automotive industry will be taken from Ferrari's peers which have longer historical data. Furthermore, Ferrari's interim Q1 2016 report will be assessed. However, it will not be used to the large extent since it is unaudited and hence, it is subject to change. In order to avoid ambiguity in my research, the interim report will be used as a benchmark point for forecast purposes.

The chosen peer group, which will be used as a benchmark in the following financial and strategic analyses, is comprised of high-end premium automotive manufacturers: BMW AG, Daimler AG, Audi AG and Porsche AG. However, in order to derive a fair value as accurate as possible for the relative valuation purposes the peer group has been extended to the luxury goods players.

Ferrari primarily operates in the automotive business. However, the company accessed the entertainment industry by building Ferrari's theme parks. The main focus throughout the analysis will be on the automotive business and products derived from that specific sector. However, the forecast section in Chapter 6 will not neglect Ferrari's activities in the entertainment department.

The underlying thesis question is evaluated by applying a so-called residual operating income (ReOI) and relative valuation methods. ReOI model will be based upon derived outcomes from financial and strategic analyses. More in-depth explanations of these methods will be described in "Methodology" section. Furthermore, the pitch created throughout the thesis focuses on the ReOI model rather on relative valuation method, hence the last will be used to the limited extent due to simplicity and constraints.

### **1.3 Thesis Structure**

The following section will outline the thesis structure in order to provide a comprehensive understanding of the overall thesis. The Introduction and Motivation Chapter 1 identifies my interest for choosing this topic as well as a brief explanation of how the thesis problem has been assessed.

It is followed by Chapter 2 that describes and highlights general data about the automotive industry and the company. This approach provides the reader with the diligent understanding of the company both internally and externally, as well as the industry environment where the company competes.

The following Chapter 3 is devoted to financial analysis which aim is to determine the key financial drivers that contribute Ferrari's value creation. Financial analysis includes detailed reformulation of Ferrari's financial statements as well as comparing crucial financial ratios and parameters with Ferrari's

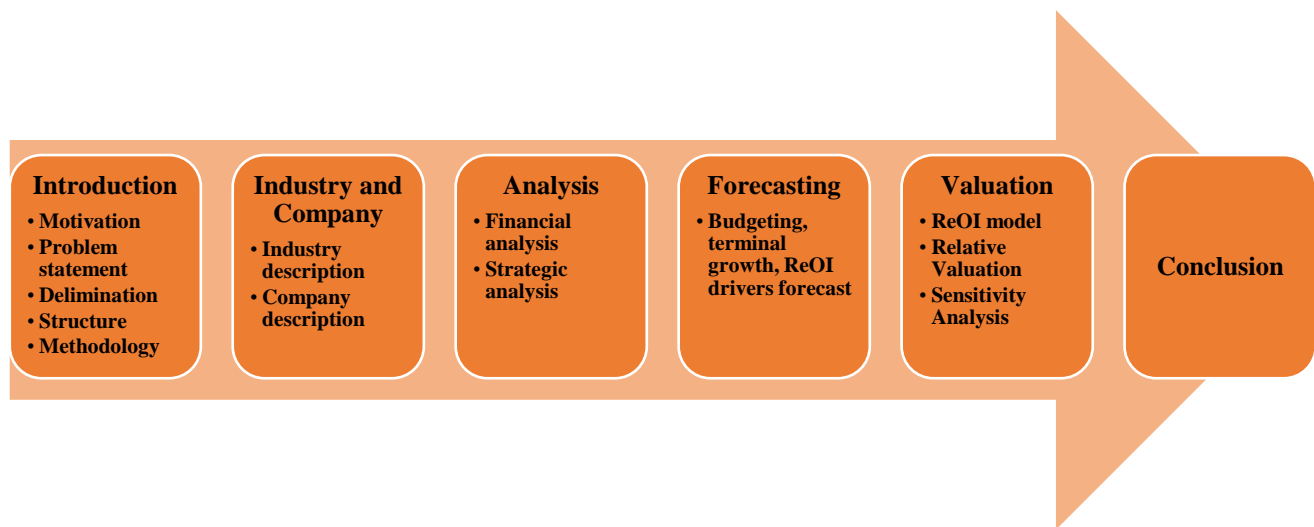


peers. Moreover, in order to approach the industry quantitative analysis, the autoregressive model, proposed by Christensen, P. O., and G. A. Feltham (2009), will be considered.

Chapter 4 embraces the strategic analysis which has the objective to identify key strategical value drivers. Strategy analysis examines external and internal factors that impact the company's business operations by using following frameworks: PESTEL, Porter's Five Forces and value chain analysis. Chapter 5 outlines Ferrari's SWOT analysis incorporating all key value drivers which is the main prerequisite for identifying the future sustainability of Ferrari's business model and growth.

The forecasting section in Chapter 6 determines and analyzes the future projections of Ferrari's key value drivers. Forecasting is done by performing explicit forecast and long term forecast which will be supported by upshots from the autoregressive model. Chapter 7 focuses on financial theories behind the estimations of cost of capital.

Chapter 8 includes the ReOI valuation method of the forecasted ReOI as well as the relative valuation based on the multiples of carefully selected peer groups. Additionally, this section incorporates the sensitivity analysis and discussion about how Ferrari's common equity values can be impacted by certain changes in particular parameters. This section is followed by the closing discussion chapter 9. Figure 1 represents a graphical concept of the research.



*Figure 1 Research Structure; Source: Created by author*



## 1.4 Methodology

The core valuation techniques used for valuing Ferrari are ReOI method based on residual income from operations and the relative valuation based on multiples of Ferrari's peers groups.

ReOI model focuses on valuation creation from operations and it has perspective of the common shareholders. It is based on the discount cash flow concept, but residual operating income will be discounted instead of free cash flow. ReOI represents an excess amount over the required operating income for normal return on the book value of operations. (Penman, 2010) Therefore, ReOI identifies explicitly sources of value creation. It represents a pure equity concept which excludes potential future shareholders through conversion of convertible debt or the execution of the stock options. Assuming that financial activities are valued to the market, they do not generate additional value to the company. Additionally, relative valuation method is applied due to its widespread practice amongst valuation companies. However, limited attention will be devoted to this concept. In order to analyze how possible changes in valuation parameters affect Ferrari's common equity value, the sensitivity analysis is applied.

Additionally, the supportive financial and strategic analyses comprise different models used as a benchmark for profoundly data analysis. Accordingly, financial analysis includes the reformulation of financial statements. The reformulation process is performed according to Stephan Penman (2010) unless otherwise is stated. Moreover, Du Pont model is used to decompose financial statements into the drivers of the company's financial performance. Moreover, the strategic analysis embraces several models used for the external and internal company analysis: PESTEL, Porter's Five Forces and value chain analysis.

The forecast analysis uses full information pro forma explicit forecast method based on Stephan Penman (2010). It is complemented by the autoregressive model for the quantitative industry analysis according to P.O. Christensen and G. Feltham (2009). Quantitative industry analysis embraces the time series of the three key value drivers of Ferrari and its peers. Finally, the weighted average cost of capital (WACC) calculation used for the valuation was based on the capital asset price model.

Beside the annual reports of companies, which serve as the primary data source, the main literature used throughout dissertation is *Financial Statement Analysis and Security Valuation, Fourth Edition* by Stephan Penman and *Equity Valuation* by Christensen, P. O., and G. A. Feltham, 2009.



## **1.5 Limitations**

This research study is based on public data and information sourced from available professional business sources as well as from reports designed for investors. As such, this research study is written from student's perspective for academic purposes and potential framework for some more professional valuations and tasks.

In general, the valuation concept depends on many factors. Firstly, it is contingent to information availability, credibility as well as data accuracy which can be based on different accounting standards. Inside managers and analysts have better insights in the firm than outside analysts. Also, financial indicators are helpful to show financial position of the company; however, they are not the only gauge of business efficiency. In other words, financial statements analyses do not show the overall picture of business operations. Finally, analysts have different predictions and assumptions that have significant impact on company's value. Therefore, the business valuation will depend on how good and how accurate predictions and assumptions have been made. Taking into account the complexity of the real world, the scientific research will be limited and highly exposed to assumptions.

## **2. Introduction to Luxury Car Performance Industry and Ferrari S.p.A**

### **2.1 Company at Glance**

Ferrari S.p.A is one of the world's leading and the most exclusive luxury sports car manufacturer that primarily focuses on design, performance and engineering. Ferrari's market share in the luxury car performance market was 24% in 2015 which has increased by 1.1% comparing to 2014.<sup>1</sup> Ferrari's sales have been less volatile comparing to competitors, mainly due to maintaining low volume strategy comparing to demand and the new models launches. This can be seen in Appendix 1.

#### ***2.1.1 Business Concept***

The identification of a business concept or strategy of a company is an essential element in valuation. Business model of a company provides a clear understanding of firm's goals, consequences of the strategy and how the firm generates the value. (Penman, 2010) Therefore, outlining Ferrari's mission

---

<sup>1</sup> Ferrari S.p.A Annual Report, pg. 31



statement and vision is crucial toward efficient valuation analysis: *We build cars, symbols of Italian excellence the world over, and we do so to win on both road and track. Unique creations that fuel the Prancing Horse legend and generate a “World of Dreams and Emotions”.*<sup>2</sup>

## 2.2 History and Separation

The company is named Ferrari after its founder Enzo Ferrari, an Alfa Romeo driver, who later founded a racing team Scuderia Ferrari in Modena in 1929. In the early ages, the company has sponsored race car drivers that were driving Alfa Romeo Cars. Mainly Scuderia was preparing cars for races which showed loyalty to Alfa Romeo team. In 1940, Enzo Ferrari built the first car that took place in competition at Mille Miglia race. Furthermore, in 1947, Ferrari manufactured the first road car and five years later, Ferrari won the first race title. (Global Cars Brands, 2015) Scuderia was participating in car races until 1973 when Ferrari retired and focused on Formula 1. Parallel with sport competitions, Ferrari started experiencing strong competition by Alfa Romeo and Porsche. In 1969, Fiat group (FCA) acquired 50% stake in Ferrari, which later increased up to 90% stake.<sup>3</sup> Although Ferrari fell under the umbrella of FCA, which lasted until 2015, the company has never abandoned traditional values and culture that made this brand so iconic.

FCA and Ferrari started separation process in October 2015 when the luxury auto maker decided to go public. Completion of IPO led to spinning of 10% of Ferrari from FCA. At the time of IPO, 90% of Ferrari was owned by FCA. Remaining transaction occurred in January when FCA transferred around 80% of equity capital to FCA common shareholders and holders of FCA mandatory convertible securities.<sup>3</sup> FCA common shareholders received one Ferrari common share for every 10 FCA common shares. In addition to Ferrari common share, FCA common shareholders received one Ferrari special voting share. (Snaveley, 2015)

After the complete separation, free float of Ferrari's shares increased up to 62%, while 38% stayed institutional. According to FCA's CEO Sergio Marchionne, FCA earned around \$4 billion from Ferrari's offering. (Reuters, 2016) Separation of FCA and Ferrari led to the change in voting rights as well. Agnelli

---

<sup>2</sup> corporate.ferrari.com/en/about-us/ferrari-dna

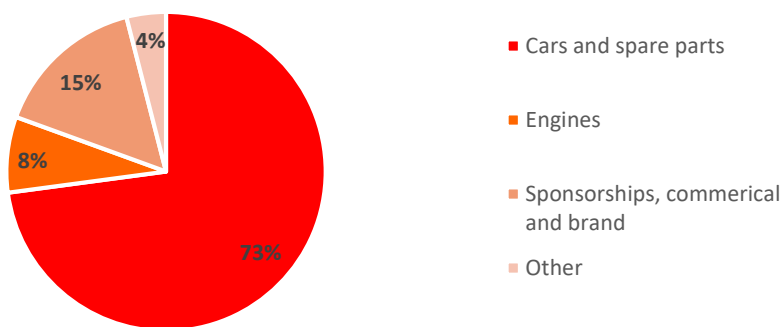
<sup>3</sup> Ferrari S.p.A, Annual Report, pg. 28



family, which is the owner of Fiat Group, owns 22.5% of Ferrari which is equal to 33.4% of voting rights. Piero Ferrari has 10% of stake in Ferrari which leads to 15.4% of voting rights. (Landini, 2015)

### 2.3 Business Segment

Ferrari generates revenue from different sources. The main revenue stream comes from cars and parts sale.<sup>4</sup> However, the production of engines, sponsorships as well as commercial and brand activities create significant portion of the total net revenues. Revenue distribution can be seen in Figure 2.



*Figure 2- Segment Revenue Distribution; Source: Ferrari S.p.A Annual Report-Author Creation*

### Sales

Ferrari sells cars, parts and after sales service through a network of authorized dealers except for the off series models which are distributed directly to clients. However, Ferrari supplies larger markets through wholly owned or partly owned subsidiaries. Dealer selection is based on strict regulations and requirements that Ferrari proposes believing that dealerships represent a key factor in promotion of Ferrari's brand and culture. Mostly, Ferrari's clients purchase automobiles without financing, but Ferrari offers direct and indirect finance as well as the licensing. The company diversifies the dealer network across regions depending on the market share and its presence in the particular markets. Dealer allocation is based on different aspects and matrices which are taken into account: developments in the particular markets, number of units sold, and the average waiting time of the end clients in the market.<sup>5</sup>

<sup>4</sup> Ferrari S.p.A, Annual Report, pg. 63

<sup>5</sup> Ferrari S.p.A, Annual Report, pg. 43



### ***Sports Competition***

Beside the exclusivity, innovation, engineering heritage and Italian design, Ferrari's brand signifies state of the art sporting performance. Ferrari's history and brand tradition are narrowly tied to sport performance such as rally and Formula 1. Winning 224 Grand Prix races, 16 Constructor World titles and 15 Drivers' World titles promoted Ferrari to a synonym for engineer and technology innovation excellence which, consequently, rooted Ferrari's strong brand position and its image into the automotive industry.<sup>6</sup> Ferrari uses technology developed for Formula 1 single seaters to boost the performance of sports cars. In that way, Formula 1 is also used as a testing polygon for technology innovations.

Furthermore, Ferrari uses its presence in sports competition to signal its technological novelty and modernization in terms of performance and engineering developments to audience. Doubtlessly, capturing the numerous audience through formula races, Ferrari strengthens its branding position and increases the brand awareness. Moreover, a significant portion of revenues comes from the auto sport. In 2013, at that moment 5 years from the last world title, Ferrari earned around \$460 million which was \$165 million more than any other team. (Smith C. , 2014) Any branding and marketing campaign impacts the stock price positively or negatively. (Kirk, Ray, & Wilson, 2013) This clearly emphasizes its brand strength which is a significant aspect that should not be disregarded when valuing Ferrari.

### ***Engines***

Ferrari produces engines at Maranello factory. The engines are manufactured from casting of alumni as well as from the other main engine components. Ferrari has been producing for Maserati since 2003. Engines V8 produced and assembled for Maserati are coming from the same platform that produces V8 engines for Ferrari's cars. In 2011, Ferrari started production of V6 F160 engines for Maserati. In 2014, Ferrari made an agreement with Maserati to produce 178,000 engines accumulated by 2020. However, there is an expectation that this agreement will be revised to 260,000 engines accumulated by 2023. In 2015, approximately 21,500 V6 engines have been sold to Maserati. Large volumes of engine production for Maserati enforced Ferrari S.p.A to build the new and more industrialized assembly line at Maranello in order to meet the demand. Engine sale to Maserati generated €177 million in 2015<sup>7</sup>.

---

<sup>6</sup> Ferrari S.p.A, Annual report, pg. 34

<sup>7</sup> Ferrari S.p.A, Annual report, pg. 54

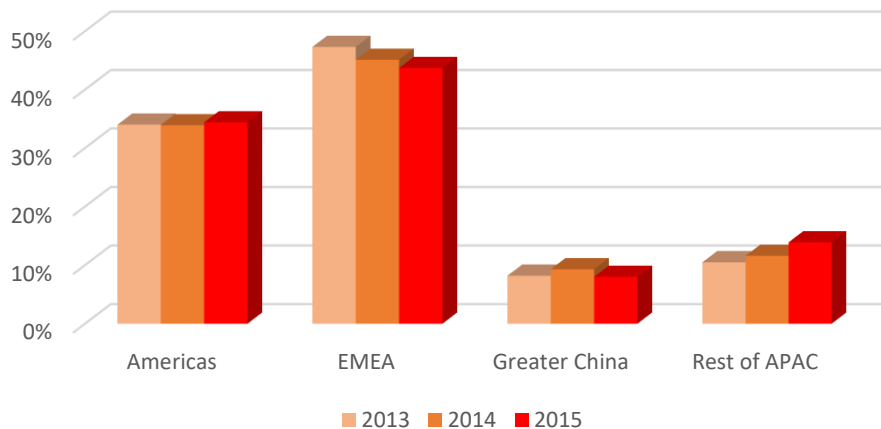


## Licensing

In addition to sports competition, Ferrari leverages its brand strength throughout licensing different products and apparels. Many retailers and distributors use Ferrari brand for their luxury and lifestyle goods such as sportswear, watches, accessories, consumer electronics and theme parks.<sup>8</sup> Currently Ferrari receives royalties from the theme park in Abu Dhabi, UAE. However, the company set the deal to open the new one in Spain and China. Companies such as Oakley, Tod's, Lego, Electronic Arts and Movado are licensed by Ferrari to merchandise their products with Ferrari's logo. (Nazario, 2015)

## 2.4 Geographical Segments

Ferrari pursues the low volume strategy in order to maintain the high pricing power and the brand exclusivity. The company focuses on emerging markets which significantly improve Ferrari's revenue. In 2015, Ferrari shipped 7,664 cars in four regional markets EMEA, Americas, Greater China and APAC. Distribution by regions can be seen in Figure 3.



*Figure 3-Unit Distribution by Regions; Source: Ferrari S.p.A Annual Report-Author Creation*

As it could be seen, car distribution in EMEA market has diminishing trend which is can be partly explained by slow GDP growth and more strict emission regulations in Europe. Top five markets in Europe are the UK, Germany, Switzerland, Italy and France which comprise 66.8% of the total EMEA market. Comparing 2015 to previous 2014 and 2013, the UK is the most loyal market with steady 9.7%

<sup>8</sup> Ferrari S.p.A, Annual report, pg. 34





of the total amount shipped to EMEA.<sup>9</sup> Nevertheless, the negative trend in EMEA market could be replaced with an increase in APAC market. Still, the main focus of Ferrari is Greater China market considering its rapid growth. However, figure 3 shows a decrease in car distribution in this market by 1.3%. To the some extent, the negative trend can be explained by Chinese government decision to impose the new and stricter vehicle emission standards due to tremendous air pollution. (Chung, 2016)

Comparing to 2014, in 2015 the total number of shipped units has increased by ~6 % which was in line with the target. However, due to the high market pressure that Ferrari experiences, as an independent company, combined with the growth of emerging markets, Ferrari plans to increase output volume to 9000 vehicles by 2019, which is ~30 % increase comparing to the current production. (Bloomberg, 2016)

## **2.5 Automobiles**

Ferrari's production and engineering is based in Maranello factory and it distributes to more than 60 markets worldwide through a network of 176 dealers which operates 198 points of sales.<sup>10</sup> In addition to seven models from sport cars and GT segments, which represent its mainstream revenue, Ferrari produces a limited edition supercars. Ferrari targets clients who require distinctive design and high performance with a key aspect of technology innovation.

***Sports Cars and GT Cars***-Ferrari produces two classes of cars: sports cars and GT cars. Production of sports cars is focused on the performance and aerodynamics alongside with the state of art technology which is mainly developed and tested in Formula 1 races. Ferrari offers three models in sports cars class: 488 GTB which production started from the mid of 2015, 488 Spider, started from the 4Q 2015 and F12 berlinetta.<sup>11</sup> All of them are ranged above 650hp. GT cars are designed more for clients who enjoy comfort and quality of life on board but doubtlessly preserving Ferrari's performance standards. GT class encompass California T, FF and GTC4L. GT class is range between 560-660hp.

***Special Supercars***-In addition to regular GT and sports cars classes, Ferrari produces special series, limited edition supercars, very limited edition and one-off cars. Special series cars are aimed for collectors which are used to introduce novel concepts. These classes contain modified hardware and

---

<sup>9</sup> Ferrari S.p.A, Annual report 2015, pg. 35

<sup>10</sup> Ferrari S.p.A, Annual report 2015, pg. 43

<sup>11</sup> Ferrari S.p.A, Annual report 2015, pg. 35



software that enhance performance and drivability. Usually special series are models that represent transition from current models to upcoming new models. Special series currently include only one model F12tdf. Ferrari stopped production of two special series models 458 Speciale and 458 Speciale Aperta.<sup>12</sup>

**Limited Edition**-Limited edition supercars are launched in the time range from seven to ten years and they represent precursors of technological and mechanical innovations which are intended to be placed in the future models. Ferrari manufactured 499 models limited edition supercar, La Ferrari, in 2013.<sup>13</sup> Very limited edition is mainly focused on innovation and novel exterior design and body modification. Primarily these models are used for special events and celebrations. Finally off-series cars are designed for loyal and discerning customers based on their personal requests and requirements.

**Hybrid Cars**-Economy friendly cars slowly take a big role in the automotive industry mainly due to the frequent environmental regulations and laws that are imposed by governmental organizations. Ferrari launched the first hybrid car La Ferrari in 2013. This car was initially produced for Ferrari's racing team and it is Ferrari's limited edition supercar. (Parker, 2016) La Ferrari project represents very important company's signal to customers and shareholders, showing the clear intention and capability to produce fuel efficient cars and to cope with the competition in the market.

## **2.6 Automotive Industry**

Traditional automotive industry is a highly concentrated and competitive. Despite the intensive competition, the CAGR of the global light vehicle market is anticipated to be 4.1% from 2011 to 2021. (Becker, 2015) In 2013, the top five car manufacturers comprised around 49% of the global automotive industry. Comparing to the market in 1998, the share of top five car manufacturers decreased by 5.1% due to ability of smaller companies to take over some share from major companies. (Kallstrom, 2015) Automobile markets are in expansion and the two biggest automobile markets are China and the US. The number of passenger cars and light commercial vehicles in the US grew by 3.3% or 82.4 million units. Chinese automobile market grew by 8.9% or 20.5 million units. Also, the EU market recorded projected growth of 9.2% or 14.2 million units.<sup>14</sup>

---

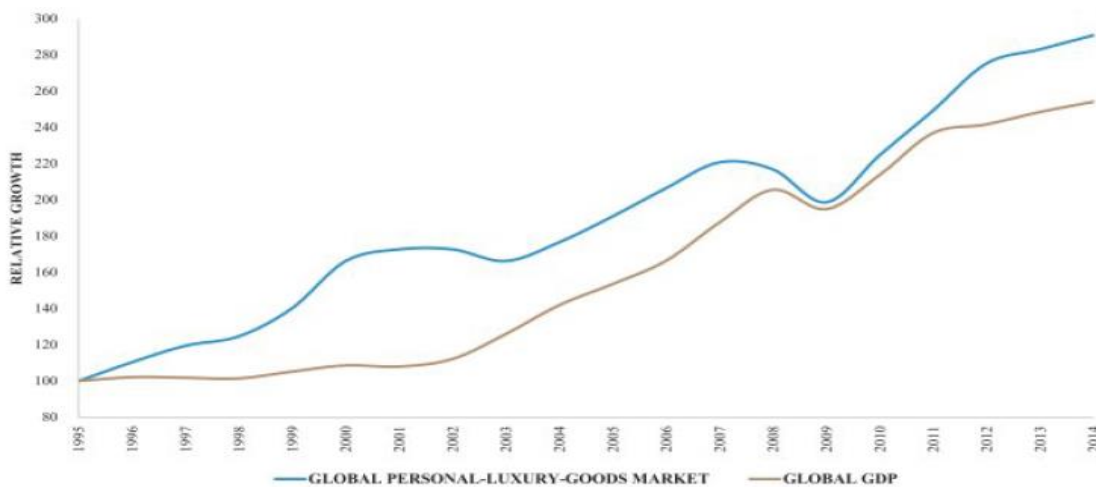
<sup>12</sup> Ferrari S.p.A, Annual report, pg. 35

<sup>13</sup> Ferrari S.p.A, Annual report, pg. 40

<sup>14</sup> BMW, Annual report 2015, pg. 25



To some extent, the luxury performance car industry can be observed separately from the traditional global automotive industry. According to KPMG's report (2015) the CAGR in the sports segment is predicted to be 4.5% until 2020. (Becker, 2015) Although the luxury performance car industry is highly concentrated with small number of producers due to high entry barriers, it is determined by different drivers than the traditional one. The luxury performance car market shares some characteristic with general luxury good markets such as exclusivity, aesthetics, quality and rarity which significantly boost their prices. Beside the global macroeconomic factors that, in general, impact the industry, some other specific features influence and diversify the luxury industry from others. Those aspects are wealth creation and economic growth in emerging markets, trend for urbanization as well as the high tendency for shift from the middle to the upper class in emerging markets.<sup>15</sup> This implies high correlation between the luxury global markets and the global GDP growth as it can be seen in figure 4.



*Figure 4-Global GDP vs. Global Personal-Luxury Goods Market; Source: Ferrari S.p.A Annual Report/Bain and Company/ World Data Bank*

In general, the overall global luxury market has beaten \$1 trillion in 2015 which was mainly driven by the car market. The luxury car industry itself recorded the growth of 8% at the constant exchange rate. (D'Arpizio, Levato, Zito, & De Montgolfier, 2015)

<sup>15</sup> Ferrari S.p.A, Annual report, pg. 30



### **3. Financial analysis**

From the valuation and investment perspective it is crucial to recognize and to examine the financial health of a company. Following section is devoted to financial analysis which will help to determine financial value drivers as well as to determine potential growth aspects and trends.

In order to perform in detail financial analysis, this section covers different sub-segments. As mentioned earlier, data used in the analysis encompasses the 3-year time frame. Short-time series is useful if the company has recently undergone restructuring process. (Plenborg & Christian, 2012) Correspondingly, the benchmark group will be set in order to carry out the cross sectional analysis. The peer group is comprised out of firms that come from the same industry, have similar or identical business operations and that are affected by identical business cycles. Since Ferrari is an ultra-luxury car manufacturer it is not feasible to compare it to the mass automotive producers. However, Ferrari is the only luxury high-end car manufacturer publicly listed. Its main competitors such as Lamborghini, Aston Martin and Maserati are reported under the scope of their parents' annual reports. Hence peers chosen are price premium brands that operate in mass markets as well: BMW, Daimler-Mercedes, Porsche and Audi.

Considering that the focus will be on the ReOI, the analysis will emphasize ReOI's profitability driver, return on net operating assets (RNOA). Subsequently, the growth analysis is performed to define RNOA's growth drivers. The reason for drawing attention to Ferrari's operational activities is driven by the fact that Ferrari's main earnings come from doing businesses with customers and suppliers. Moreover, Ferrari's core growth potential lays in the future operations within the auto market. Consequently, the financial analysis will highlight this business activity as the most relevant one for the potential investors.

#### **3.1 Reformulation of Financial Statements**

The purpose of reformulations is to align the statements with business activities. This process separates the operating activities from financing activities. This is done in the way that the operating performance of the business can be isolated and valued independently of financing performance. As previously stated, finance activities do not create any value unless a firm operates in finance industry. Hence, the financial statements reformulation allows to value explicitly activities which would add value implying more accurate valuation. Operating activities involves transactions with customers and suppliers while



financing activities encompass transactions that are used to finance the business activities such as debt and equity. (Penman, 2010) The scheme of business activities can be found in Appendix 2.

The balance sheet reformulation includes the separation of operating assets and liabilities from financial assets and liabilities in the balance sheet. Additionally, the income statement reformulation is performed on the comprehensive income basis which brings more detailed picture of the company's earnings since the income statement itself does not recognize the dirty surplus items. By reformulating the income statement the income based on operating activities and financial activities are separated. Furthermore, the ordinary income statement reports all income taxes as whole. The reformulation induce allocating taxes to operating income and to financial income disjointedly. Appendix 3 consists of reformulated financial statements of all peer companies. Ferrari shifted its accounting framework from Dutch GAAP to IFRS which is adopted within the EU.<sup>16</sup> Ferrari's peer group consist of mainly German companies that adopts the same framework so no additional changes were needed

### ***3.1.1 Balance Sheet Reformulation***

The reformulation requires the careful analysis of the overall business carefully in order to categorize assets and liabilities properly into different groups. The items classification based on operating and financing activities helps identifying how efficiently the company can generate profits from these separate activities and to enhance the accuracy of the valuation. By netting operating assets and liabilities net operating asset (NOA)<sup>17</sup> is calculated, while deduction financial obligation from financial assets derives the net financial asset if positive (NFA)<sup>18</sup>. In order to be properly categorized and to avoid obscurity the following items are analyzed closely:

- *Receivables from financing activities*- According to Penman (2010) interest bearing assets should be classified as financial assets. (Penman, 2010) However, the credit financing is rather used to attract customers by offering lower interest rates. This interest rate is not a marketable interest rate, hence these receivables are treated as an operating asset.

---

<sup>16</sup> Ferrari S.p.A, Annual report, pg. 182

<sup>17</sup> NOA=Operating Assets-Operating Liabilities

<sup>18</sup> NFA=Financial Assets-Financial Liabilities



- *Trade receivables*- they are mainly items due from FCA Group companies for engine and car sales to Maserati S.p.A and Officine Maserati Grugliasco S.p.A. Other trade receivables include receivables from sponsors and brand activities which are also classified as operating assets.
- *Deposit in FCA Group cash management pool*- deposit into group cash management pool represents a participation of the company into group wide management system. This participation was obligatory until the separation of Ferrari S.p.A from FCA group. Deposits in FCA Group earned Euro Interbank Offered Rate (“EURIBOR”) or London Interbank Offered Rate (“LIBOR”) +15 bps throughout the period covered by the consolidated financial statements.<sup>19</sup> This deposit was mainly invested in highly liquid money instruments and bank deposits. To that end, since this deposit was earning marketable interest rate, it represents the interest bearing assets which I placed into financial category. At the end of 2015, the total deposit was €139,172 while in the 1Q was zero since the separation occurred. Moreover, due to the simplicity, the deposit in the cash management pool is grouped together with other financial assets on the balance sheet.
- *Other current assets*- other current asset items mainly include prepayments and Italian VAT credits which do not earn any interest. Hence they are placed into the group of operating activities.
- *Other liabilities*- other liabilities mainly include deferred income that ~50% comes from the scheduled maintained program. Moreover, advances comprise significant portion of other liabilities and they come from the purchases of special series, supercars and limited editions.<sup>20</sup> Therefore, other liabilities are treated as obligations that arise from different operating activities.
- *Dividends payable*- In 2015 and 2014, Ferrari announced that €18,308 and €64,319 thousand dividends payable respectively. This amount has been deducted from the accrued payables since it represents the obligations to shareholders itself. Therefore the shareholders cannot owe the dividends to themselves. According to that fact, this amount is reclassified and adjusted in the equity statement which will be used later in the valuation.
- *Cash and cash equivalents*- there was no clear information about what percentage of cash and cash equivalents belong to the working cash or operating cash. According to Penman (2010) cash

---

<sup>19</sup> Ferrari S.p.A, Annual report, pg. 149

<sup>20</sup> Ferrari S.p.A, Annual report, pg. 164



is mainly used for investing into the interest bearing assets and due to its simplicity it should be treated as a financial asset.

### ***3.1.2 Income Statement Reformulation***

Reformulation of the income statement includes the recognition of the after tax items from the statement of comprehensive income. Hence, beside the separation of the income from operations and financing, reformulated income statements include dirty surplus items from the equity statement. (Penman, 2010)

In order to reformulate thoughtfully the income statement following items required a detail analysis:

- *Net revenues*- the revenues are broken into different sources of income based on the business segment. In this way it is easier to analyze the key revenue drivers.
- *Research and development cost (R&D costs)* - Ferrari reports R&D costs on the consolidated income statement separately, while its peers mainly reports R&D expenses within the cost of sale line. Thus, for Ferrari's peers R&D expenses have been deducted from the cost of sales and reported in a separate line. This approach has been used in order to align the cost structure of peers with Ferrari which in turn helped to perform more profound comparative common size analysis.
- *Tax rate*- tax rate used for tax allocation of income was a theoretical corporate tax rate used in Italy in accordance with Italian law. This rate is 27.5%. However the new taxation policy has been announced stating the new corporate tax rate of 24% which will be effective from 2017.<sup>21</sup>
- *Other expenses and income*- Ferrari reported all other income and expenses together. However, Ferrari announced € 5.1 million gain on the sale of group assets in 2015. Therefore, this income is separated from the other income since it does not belong to the operating income earned from sales but rather the income from the asset disposition. Other expenses mainly relates to accruals to provisions for legal proceeding and disputes. Hence they are included in operations expenses.
- *Other financial income*- Total financial income/expenses include both income/expenses from financial services and other interest income/expense from the interest bearing assets such as bank deposits. This was reclassified separately since financial services provisions are devoted to operations of the automotive business in order to attract more customers and to provide them with

---

<sup>21</sup> Ferrari S.p.A, Annual report, pg. 141



more affordable purchase conditions. Hence the income from financial services is included in net revenues while the expense is included in the cost of sales line. Other financial income that earns marketable interest income/expense is classified as a financial income/expense.

- *Assets available for sale*- Considering that this section in annual reports does not explicitly state what portion of assets belongs to debt and what portion to equity I followed reports' statements "mainly equity". To that end this item has been classified under operation activities within the dirty surplus accounting unless other is stated. (Penman, 2010)
- *Minority interest*- minority interest does not represent an obligation but rather an equity share in the results. Hence, they have been separated as a solely item.

### **3.2 Comparative Common Size Analysis of Reformulated Balance Sheet and Income Statement**

#### ***3.2.1 Balance Sheet-Common Size Analysis***

Comparative common size analysis of the balance sheet is standardized on the total assets and compared with the peers from the same industry. This analysis provides more informative approach of how the operating assets and liabilities of Ferrari have been structured. The analysis includes composition ratios of operating assets and liabilities<sup>22</sup>.

---

<sup>22</sup> Operating Asset Composition Ratio:  $OAC\ ratio = \frac{\text{Operating Assets}}{\text{Total Operating Assets}}$   
Operating Liability Composition Ratio:  $OLC\ ratio = \frac{\text{Operating Liability}}{\text{Total Operating Liabilities}}$





*Table 1-Balance Sheet Common Size Analysis; Source: Annual reports-Author Creation*

<b>Ferrari S.p.A</b>			<b>Peer Group (FY 201</b>				
<b>Operating Assets</b>			<b>Audi AG</b>	<b>BMW</b>	<b>Daimler</b>	<b>Porsche</b>	
2013	2014	2015					
37%	40%	38%	Account receivables, less allowance for doubtful accounts	14%	47%	43%	17%
26%	22%	22%	Goodwill	1%	0.20%	0.40%	N/A
8%	8%	9%	Intangible assets	15%	4.80%	4.60%	19%
19%	17%	18%	Property, Plant and Equipment	31%	11%	13%	27%
8%	8%	8%	Inventories	17%	7%	12%	15%
1%	3%	3%	Deferred and income tax assets	8%	3%	2%	4%
1%	1%	1%	Other Assets	1%	4%	3%	N/A
N/A	N/A	N/A	Investment in property and equity	13%	1%	2%	2%
N/A	N/A	N/A	Leased assets	N/A	22%	20%	2%
<b>Operating Liabilites</b>							
10%	7%	8%	Income tax payable	4%	4%	3%	5%
38%	36%	34%	Trade payable	28%	21%	22%	24%
13%	9%	9%	Provision for Risks and Charges	37%	26%	32%	25%
37%	41%	42%	Other Liabilities	13%	36%	5%	12%
0%	5%	5%	Employee benefits	16%	8%	18%	26%
2%	1%	2%	Deferred taxes liabilities	1%	6%	5%	8%
N/A	N/A	N/A	Deferred income	N/A	N/A	16%	N/A

According to Table 1, Ferrari has significantly higher goodwill than its peers relative to total assets. This is mainly due to Ferrari's strong brand image and reputation which was boosted with innovative technological improvements in the luxury performance car industry and Formula One. The company's goodwill accounts 22% of the total assets while peers barely ~1%.

Moreover, Ferrari accounts the large portion of accounts receivables (AR) within the total assets. On average Ferrari's AR counts 38% of the total assets. Large amount of receivables is common for the companies that have extent program of financing services for customers. The automotive business, in general, provides large spectrum of possibilities for purchase financing which help manufacturers to push the sale volumes up.

Furthermore, Ferrari does not hold a high volume of inventory on the stock relating to peers (only 8% of the total operating assets). Low volume inventory is mainly driven by the efficient inventory management which emphasizes keeping sufficient raw materials to support the business line but also it stimulates frequent and multiple deliveries each month. Also, this occurrence could be explained with Ferrari's low volume business comparing to its competitors such as Daimler-Mercedes and BMW.



Lastly, the large portion of liabilities are denoted to trade payables 34% of the total assets. Ferrari has higher amount of trade payables due to the company's supply management. Ferrari tends to receive payments for shipped cars 30-40 days after the shipping while paying suppliers 90-105 days after the raw materials or components have been delivered.<sup>23</sup> This can also be seen as Ferrari's payables and receivables optimization strategy.

### 3.2.2 Income Statement-Common Size Analysis

*Table 2-Income Statement Common Size Analysis; Source: Annual Reports-Author Creation*

Ferrari S.p.A			Peers			
2013	2014	2015	Audi AG	BMW	Daimler	Porsche
100%	100%	100%	100%	100%	100%	100%
73%	70%	71%	-	-	-	-
8%	11%	8%	-	-	-	-
15%	15%	18%	-	-	-	-
4%	3%	3%	-	-	-	-
52.9%	54.5%	52.5%	75.4%	75.7%	78.7%	66.6%
47.1%	45.5%	47.5%	24.6%	24.3%	21.3%	33.4%
11.1%	10.9%	11.9%	10.1%	9.4%	10.6%	11.2%
20.5%	19.6%	19.7%	5.1%	4.6%	3.2%	5.1%
0.1%	-0.9%	-0.6%	2.3%	0.0%	1.1%	-1.3%
15.6%	14.1%	15.4%	10.8%	10.3%	8.5%	15.8%
5.1%	4.7%	5.1%	2.4%	3.3%	2.8%	4.9%
10.4%	9.4%	10.3%	8.3%	7.0%	5.7%	10.9%
1.3%	-2.8%	0.8%	-1.8%	1.8%	2.6%	-0.1%
11.7%	6.6%	11.1%	6.5%	8.8%	8.4%	10.8%
0.1%	0.2%	-0.3%	-0.1%	-0.9%	-0.2%	0.1%
11.6%	6.6%	10.7%	6.2%	7.9%	8.4%	10.7%

Table 2 expresses all components from the reformulated income statement as a percentage of total net revenues. According to the table, sales of cars and spare parts represent the mainstream of Ferrari's revenues. In 2015, Ferrari recorded the increase in net revenues by 3.3%. The main growth in revenues comes from the favorable mix (increase in shipment of models LaFerrari and FXXK). Also, the significant revenue driver represents sponsorships and branding that Ferrari has in Formula One and throughout licensing. In 2015 this segment of revenue recorded 5.8% increase relative to 2014 mainly due to the upsurge in sponsorship contracts with Formula One World Championship.

<sup>23</sup> Ferrari S.p.A, annual report. Pg.73



In comparison to its peers, Ferrari has the lowest cost of sales per dollar revenue, on average 53%. In 2015, costs of sales were reduced by 0.4% comparing to 2014. The cost reduction was mainly impacted by the lower shipments of engines to Maserati (-31%) However, this significant cost reduction in engine production was offset by the increased costs due to production of special cars models which have higher cost per unit than other models in product portfolio.<sup>24</sup> Ferrari's peers on average have 15-20% higher cost of sales per dollar revenue. Consequently, Ferrari incurs the highest gross margin comparing to peers, 47.5% of the total revenue.

Comparative common size analysis discloses the structure of operating expenses which shows how Ferrari and its peers do the business. Ferrari and its peer group manufacturers has the same operating expense structure. Ferrari's selling and other administrative costs count ~11% of sales. BMW maintains the lowest selling and administrative expenses. However, Ferrari has significantly higher R&D costs comparing to its peers (19.7%). Daimler and BMW's R&D costs comprise the least percentage of sales, which count only 5% of the total sales. Ferrari's main R&D cost driver represents tremendous investments in Formula One Scuderia team as well as the company's strategy to maintain the market share and the exclusive brand reputation through technological innovations and design excellence. High R&D costs are aligned with the company's strategy which ultimately focuses on a quality not the quantity. Consequently, Ferrari's above the peer average R&D costs wiped off its gross margin resulting in operating income from sales before tax 15.4%. Despite the high operating costs, driven by significant R&D costs, Ferrari, together with Porsche, has the highest operating income from sales before taxes.

Operating profitability (PM) is another segment that common size analysis discloses. Porsche and Ferrari have the highest operating profit margin from sales after tax, 10.9% and 10.3% respectively. Conversely, Ferrari earns 10.3 cents per every euro earned from sales while Porsche earns 10.9 cents. The lowest profit margin from sales has Daimler which counts only 5.7%.

Adding the other operating items from the dirty surplus accounting recorded in the statement of comprehensive income results Ferrari to increase the total operating profit after tax to 11.1%. Comparing to peer group, Ferrari accounts the highest operating income after tax in the percentage of revenues. For every euro earned from sales Ferrari earned 11.1 cents while Porsche earns 10.8 cents from operations.

---

<sup>24</sup> Ferrari, S.p.A, Annual report, pg. 67



Lastly, the comprehensive line shows the net profit margin including the income from financing activities. In 2015, Ferrari has a financing expense of 0.3% of sales while Daimler has a financing income of 0.2% of sales. This effect could be referred to the balance sheet of the companies. Ferrari has a finance expense due to considerable financial obligations related to demerging from FCA group. On the other hand Porsche's financing income counts 0.1% of total sale due to flow from net financial assets.

Common size analysis of financial statements provides more narrow information about profitability from the perspective of operating and financing activities. Moreover, reformulated statements represent an introduction into the next segment of analysis which will focus on profitability and the key profitability ratio return on net operating assets.

### **3.3 Profitability Analysis**

Profitability is a signal of the company's strength and it ensures satisfactory return to shareholders. (Plenborg & Christian, 2012) Hence, the profitability analysis is crucial aspect of the overall valuation method since it directly determines drivers that affect residual earnings which will be used in the valuation model. According to Penman (2010) residual earnings are determined by two components such as return on common equity (ROCE) and the book value of common equity. (Penman, 2010) Decomposition of ROCE can be seen in Appendix 4.

ROCE is influenced by the RNOA and the return coming from financing activities. Ferrari adds the main value from operations and therefore; the hidden premium Ferrari generates from residual operating earnings and not from the financial income whose assets are valued at the market. Thus, focusing on the operating component of ROCE, the focal point of the profitability analysis is RNOA and its drivers.

#### ***3.3.1 Return on Net Operating Assets (Operating Profitability Analysis)***

RNOA represents the operating income after tax relative to net operating assets.<sup>25</sup> This section includes decomposition of operating profitability also known as DuPont model. According to Penman (2010), profitability in operations arises from two sources: 1) higher RNOA implies higher sales ends up in operating income; 2) higher RNOA indicates that more sales are generated from NOA. Hence, firms articulate profitability by improving margins or by efficiently using operating liabilities and assets to

---

<sup>25</sup> RNOA= OI after tax/NOA



generate sales. Consequently, RNOA is broken down into two drivers such as profit margin and asset turnover which will be profoundly analyzed. Subsequently, profit margin and asset turnover will be decomposed into smaller drivers which will give a clear picture of which parameters and in what percentage they drive RNOA.

Ferrari's RNOA in 2015 was 15.7% which was ~6% higher than in 2014. Significant increase in return to net operating asset is due to substantial growth in operating income. The change in operating income comparing to 2014 was +75%. Net operating asset has decreased in 2015 comparing to 2014 by -0.1%.

### **3.3.1.1 Profit Margin**

Profit margin presents operating income relative to the total sales.<sup>26</sup> Complete DuPont model of profit margin drivers can be found in Appendix 4 which is based on the common size analysis of the income statement. Ferrari's profit margin has increased by 4.5% from FY 2014 to FY 2015. In 2014, Ferrari's profit margin was negatively impacted by large losses from other operating items, mainly cash flows from hedging instruments. The loss impact of other items was -2.8% relative to sales. However, Ferrari maintained company average profit margin from sales in 2014 (9.4%). The main driver of profit margin for Ferrari was the launch of new series. In addition to this, favorable demand trends for luxury goods in emerging markets boost up Ferrari's sales. Furthermore, Ferrari is known as the company that has high other expenses as it is showed in the common size analysis. Also, the largest net revenue increase has been seen in Americas and APAC regions. In the US, Ferrari recorded the increase of €111 million in net revenues mainly attributable to Euro's weakening against US dollar. Conversely, the adverse impact on Ferrari's operating revenues had a revenue decrease in EMEA primarily due to unfavorable mix.<sup>27</sup>

Ferrari's peer group has experienced the positive moves in profit margins in 2015 as well. According to Figure 5 the biggest improvement in profit margin recorded Daimler (5.6% increase) comparing to 2014. This is principally influenced by favorable currency movements. Euro depreciated against some of the main currencies such as British pound and the US dollar.<sup>28</sup> Weak Euro gave a cost advantage to all European car manufacturers which could be seen in the operating margins amongst the peers. Furthermore, all companies had significant drop in profit margins in 2014. To some extent this could be

---

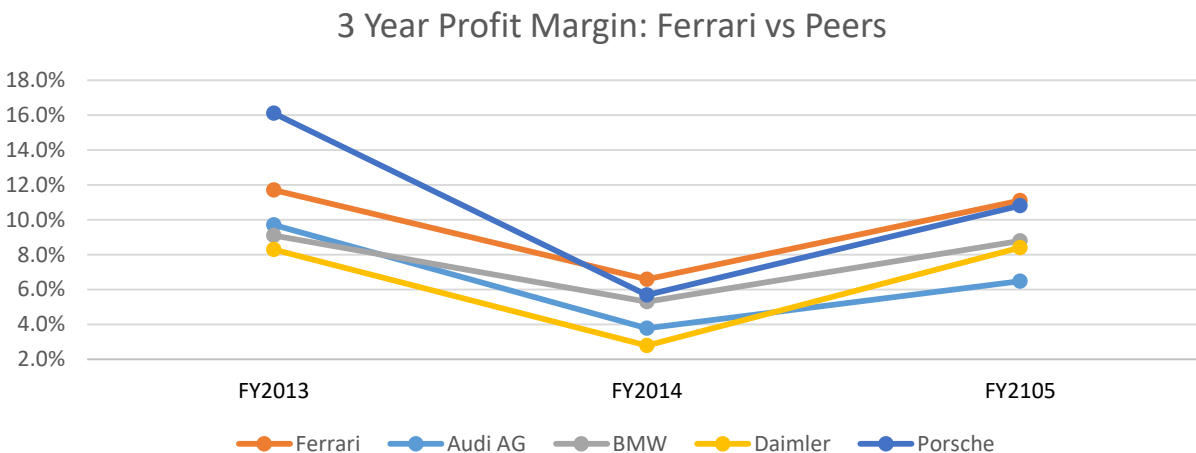
<sup>26</sup> Profit Margin=OI/Sales

<sup>27</sup> Ferrari S.p.A, Annual report 2015, pg. 64

<sup>28</sup> Daimler AG, Annual report 2015, pg. 80.



explained by the economy contractions in Europe and greater China regions which adversely affected the automotive industry in general. However, the recovery was seen in 2015 already.



*Figure 5-Profit Margin Over 3 Year Period; Sources: Annual Reports-Author Creation*

### **3.3.1.2 Asset Turnover**

Asset turnover (ATO) shows how efficiently operating assets that are put in place can generate sales. It is an efficiency component of RNOA.<sup>29</sup> Ferrari increased the ATO ratio by 2.8% in 2015 while there was a slight decrease in the ATO ratio in 2014. In 2015, Ferrari's ATO was 1.41 which implies that the company used 0.71 cents to generate one euro in sales. Ferrari managed to maintain the same asset turnover over 3 year period. As mentioned above, the NOA has declined in 2015 by -0.1% while sales increased by 3.3% from 2014 to 2015. Table 3 shows a reciprocal values to turnover ratios in order to show the amount of net operating assets to support one euro of sales.<sup>30</sup> The main ATO driver is the account receivables. In 2015, Ferrari's 0.47 cents in account receivables generated one euro of sales. Comparing to 2014, 0.51 cents in accounts receivables were generating one euro in sales. Moreover, Ferrari's goodwill represented a significant ATO driver. In 2015, 0.28 cents in goodwill generated one euro of sale. This is in line with Ferrari's brand strategy which emphasizes the brand as an important force in the luxury performance car market. This will be analyzed intensely in the following section within the strategic analysis.

<sup>29</sup> ATO=Sales/NOA

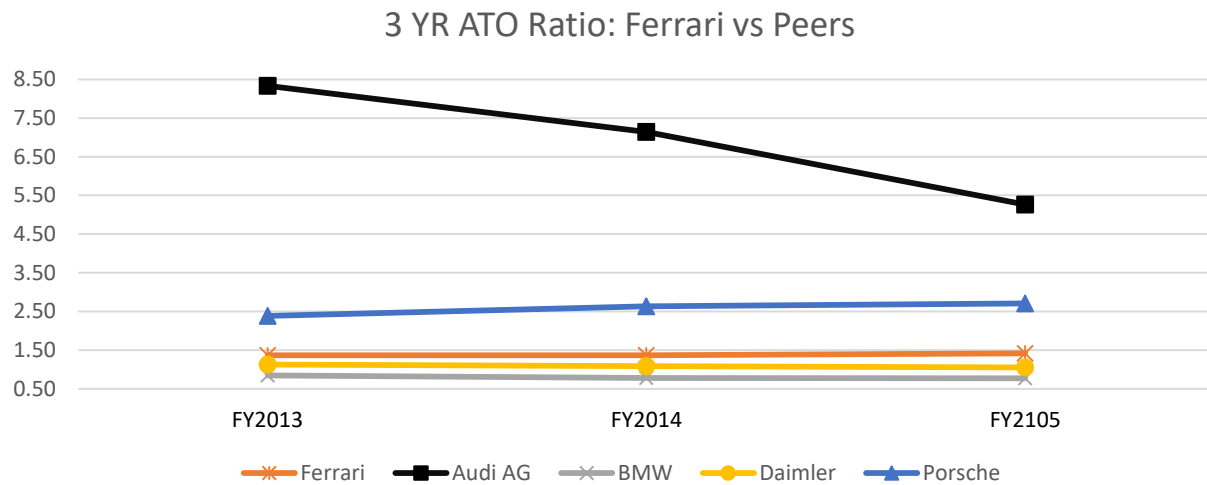
<sup>30</sup> Turnover ratios are equaled to 1/ATO



*Table 3-ATO Driver Decomposition (Inverse); Source: Ferrari S.p.A Annual Report-Author Creation*

<b>Asset Turnover (Inverse)</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>
AR turnover	0.47	0.51	0.47
Goodwill Turover	0.28	0.28	0.34
Intangible assets turnover	0.11	0.10	0.10
PPE turnover	0.22	0.21	0.24
Inventories turnover	0.10	0.11	0.10
Deffered tax assets turnover	0.04	0.04	0.01
Other current assets turnover	0.02	0.02	0.01
<b>Total Operating Asset</b>	<b>1.24</b>	<b>1.27</b>	<b>1.28</b>
Income tax payable	0.04	0.04	0.05
Trade payable	0.18	0.19	0.21
Provision for Risks and Charges	0.05	0.05	0.07
Other Libilities	0.22	0.22	0.20
Employee benefits	0.03	0.03	0.00
Deferred taxes liabilities	0.01	0.01	0.01
<b>Total Operating Liabilities</b>	<b>0.53</b>	<b>0.54</b>	<b>0.55</b>
<b>ATO</b>	<b>0.71</b>	<b>0.73</b>	<b>0.73</b>

In general, the automotive industry has the low asset turnover ratio since it is an asset intensive industry. Comparing to peers Ferrari belongs to the companies with low ATO. According to Figure 6, Audi AG and Porsche have considerably higher ATO ratio than its peers, implying very efficient asset deploying. However, Audi AG's ATO ratio has dropped comparing to 2013 and 2014. Reason behind this is that Audi's NOA increased by 45.5% from 2014 to 2015 while the sales jumped 8.6% in the same period. This implies that Audi overinvested in operating assets which do not generate additional sales in general. Moreover, it could be explained to some extent with an increase in fixed assets investment such as PPE. Comparably, Porsche has higher ATO compared to its peers. Porsche has increased sales by 25.1% from 2014 to 2015 while increasing NOA by 21% for the same period. Thus, Porsche efficiently uses assets to increase the sales.



*Figure 6-ATO Ratio for 3 Year Period; Source: Annual Reports-Author Creation*

### 3.4 Growth Analysis

In order to analyze Ferrari’s growth, sustainable core earnings have been identified since they will repeat in the future. Contrary, transitory earnings or unusual items are separated from the core operating income because they can rather incur a temporary growth. (Penman, 2010) Identification of Ferrari’s core operating income can be seen in Appendix 5. Hence, the growth will more likely occur in a company’s core business rather than through improvements in unusual items gains. (Plenborg & Christian, 2012) By focusing on operations, the analysis will highlight the growth in operating profitability.

*Table 4-Operating Profitability Drivers; Source: Ferrari S.p.A Annual Report-Author Creation*

	1Q 2016	2015	2014	2013
<b>Core OI from sales/NOA</b>	4.2%	14.5%	12.8%	14.3%
<b>Core other OI/NOA</b>	0.0%	0.0%	0.0%	0.0%
<b>Unusual items/NOA</b>	1.8%	1.2%	-3.8%	1.7%
<b>Core RNOA</b>	6.1%	15.7%	8.9%	16.0%
<b>Core sales PM</b>	12.4%	10.3%	9.4%	10.4%

As it can be seen in the Table 4, in 2014 the core RNOA decreased by 7.1% while it recorded significant boost of 6.8% in the following period. From 2013 to 2014, the main impact on the core RNOA was due to loss in unusual items such as hedging instruments. Also, the core operating income (OI) from sales relatively to NOA decreased by 1.5%. However this was mainly due to the increase in the general and





administrative selling cost as well as due to the surge in the NOA. Accordingly, in 2014 the NOA has increased by 18% in order to support the added sales. 2015 figures shows the growth of the core OI from sales relatively to NOA by 1.7%. Moreover, Ferrari managed to maintain almost the same level of NOA in 2015. The change was -0.2%. 2015 increase in sales supported by the reduction in the structure of operating assets improved the core RNOA by 6.8%.

According to Table 5, the sales growth rate was 18.3% in 2014 comparing to 2013. Ferrari's growth rate depends significantly on product mix and price exclusivity. This unusual surge in sales has been affected primarily by introducing the new models. The positive trend in sales continued in 2015 but with significantly lower rate. In 2015, Ferrari's sale growth rate was triggered by the positive product mix which encompassed the sale increase of the new models in V8 segment such as California T, 458 Speciale A and 488 GTB. (Anderson, 2016) However, the negative effect on the sales growth had the significant drop in sales of model F12 Berlinetta and FF, which are in the last year of the life cycle. 1Q 2016 showed the improvements in revenues relative to the same year level in 2016. Moreover, the 1Q core sales profit margin (PM) achieved 12.8% relative to 1Q 2015.

*Table 5-Sales Growth and Gross Margin; Source: Ferrari S.p.A Annual Report-Author Creation*

<i>Core Sales PM Drivers</i>	<b>1Q</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>
<b>Revenue Growth</b>	8.8%	3.3%	18.3%	4.7%
<b>Gross Margin Growth</b>	-	8%	14.0%	6.90%
<b>Contribution margin</b>	51%	47.5%	45.5%	47.1%

Perspective of Ferrari lays in its exclusivity. Ferrari plans to boost the production by 30% by 2019 to 9000 units produced. (Bruce, 2015) Although Ferrari's strategy is to maintain the low volume business, the main idea behind this strategic move is to cap the emerging markets growth as well as to keep the pace with the increase rate of the rich population. Moreover, Ferrari intends to introduce a new model each year until 2018 in order to support the growth strategy. The major impact on the growth in the core RNOA will be highlighted through the revenue growth and the ability to maintain as lower as possible the variable costs, especially R&D. Moreover, Ferrari has advantageous pricing policy which was consistent with the company's pricing power in the market. The company's strategy to remain the low volume business maintaining the uniqueness of the models can help boosting up the prices. Moreover, the marketing strategy which is mainly shaped through Formula One Grand Prix will help incur the



positive and sustainable growth rates. Since the automotive business is cyclical, the core earnings will be affected by the anticipation and introduction of the new models and technology.

### 3.5 Quantitative Industry Analysis

Quantitative industry analysis is a good starting point in estimating the long-run levels of the ReOI drivers. To that end, this analysis is used as an important benchmark for the forecasting procedure in the chapter 6 of this thesis.

P.O. Christensen and G.A Feltham (2009) proposed the first-order auto-regressive model which assumes that the key value drivers are mean reverting to an industry specific growth rate. By applying the autoregressive model to the time series of ReOI drivers, the long-run level  $a$  and its persistence level  $w_c$  are estimated. The persistence level refers to the mean reversion of a driver to the industry specific trend. Low values of  $w_c$  implies the higher trend to the mean reversion. (Christensen & Feltham, 2009)

The three ReOI's value drivers have been considered: the sales growth, the profit margin and ATO. (Appendix 6) In order to avoid the outliers, the time series have been adjusted. Accordingly, for Daimler AG 9-year time series has been used in order to exclude the demerging event with Chrysler. Also, the profit margin of Porsche AG was adjusted for the merger with Volkswagen, hence, the post-merging time series were considered. Furthermore, for the ATO long-run level calculations Audi's 2012-2015 time series have been used to avoid the extraordinary years when Audi had a significant portion of cash in their asset position giving negative NOA values. By performing the quantitative analysis using the above stated model following results have been derived:

The long-run level of the sales growth was estimated at 9.01% while the mean persistence records 6%. However, this is an unusual long-run level for the automotive industry which cannot be applicable for Ferrari for several reasons. Firstly, the automotive industry is the mature one and not significant growth should be anticipated in the long run. Moreover, ~9% long run growth in sales for Ferrari is unlikely due to its low volume strategy and other benefits that capture as a small volume manufacturer (SVM). The following section brings more in-detail highlights regarding SVM benefits. Also, the quantitative analysis does not differentiate the organic growth from the acquisition growth. Hence, for example,



Porsche went through the merging process with Volkswagen impacting its growth significantly. Finally, the time series used for the sales growth encompasses unusual economic cycle-financial crisis affecting the trend of the growth rates significantly. Economic crisis is not an event that will occur on a regular basis in the future. The combination of all these constraints and the extraordinary activities influenced my decision to elude the quantitative long-run level of sales growth and to derive more applicable assumptions which will support Ferrari's projected growth strategy.

Industry specific long-run level for profit margin has been estimated at ~7.04% with a persistence rate of 70.8%. These profit margin values seems realistic considering the average profit margin for the automotive industry of 6.45%.<sup>31</sup> The average profit margin in the last year was fluctuating from 4-10% by quarters. It is noteworthy to mention that the luxury car performance segment incurs a higher profit margin than a traditional one due to strong pricing levels and brand exclusivity. Ferrari's 1Q 2016 core sales PM valued at 12.4% comparing to previous years' 10% average level. The relatively high persistence implies that the current deviation from the industry specific trend tends to fade down gradually. (Christensen & Feltham, 2009)

Finally, the ATO long-run level is anticipated to be 1.91 with a persistence of -1 implying a tremendously high mean reversion toward the industry average. The ATO rate is aligned with the industry average of 1.42 in 1Q 2016.<sup>32</sup> In 2015, Ferrari's ATO was 1.41. The ATO ratio seems to be persistent over time with not significant deviations. To some extent this can be explained that the automotive industry operates at the full capacity and has steady sales growths giving the slight increases in ATO ratio.

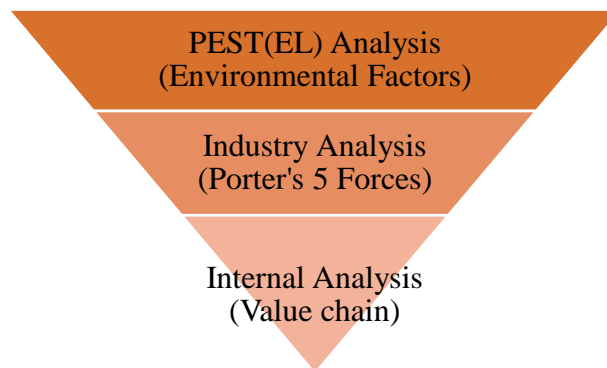
#### **4. Strategic Analysis**

Value is created only if the company invest the capital at higher return rates than the cost of capital. (Koller, 1994) Therefore, companies strive to use the invested capital efficiently in order to achieve strategic goals on a daily basis. Those strategic goals are narrowly related and they have to be in the line with the overall company strategy. The strategic analysis will help identifying non-financial value drivers which will enhance better forecasting process. Different models will be used to analyze Ferrari's strategy. The concept of the analysis can be seen in the figure 3.1.

---

<sup>31</sup> [http://csimarket.com/Industry/industry\\_Profitability\\_Ratios.php?ind=404](http://csimarket.com/Industry/industry_Profitability_Ratios.php?ind=404)

<sup>32</sup> [http://csimarket.com/Industry/industry\\_Efficiency.php?ind=404](http://csimarket.com/Industry/industry_Efficiency.php?ind=404)



*Figure 7-Strategic Analysis-"Top-Down Approach"*

The analysis is started by examining macroeconomic and environmental factors. Thereafter the analysis is narrowed down to the automotive industry analysis and its attractiveness. Finally, the closing section of the analysis is devoted to internal aspects of analysis, Ferrari's value of chain. The top-down approach helps to extensively define and analyze drivers that Ferrari can leverage to create value.

#### **4.1 PEST(EL) Analysis**

Business environment is influenced by both external and internal factors. External factors are often referred to macroeconomic elements that impact businesses, while the internal factors are referred to microeconomic aspects. This section focuses on the analysis of the external factors that in general impact the automotive industry and Ferrari. Demand for luxury goods is sometimes volatile and depends to the large extend on different general, economic, political, social and legal factors which in turn impact operating results and financial conditions of the company.<sup>33</sup> PESTEL model is used to analyze environmental factors that influence businesses. It is comprised of several factor analysis that a company cannot influence and change: political, environmental, social-cultural, technology, and legal factors.

##### ***4.1.1 Political/Legal***

Political factors refer to the stability in political environment and the actions or approaches that political parties undertake which can directly or indirectly impact business operations. However, this section includes the analysis of legal factors as well, since they are derived from the political actions in forms of regulations and laws.

---

<sup>33</sup> Ferrari S.p.A, Annual report, pg. 12



Ferrari operates in diverse international markets that are under jurisdiction of governments that propose different laws and regulations. Key aspects of Ferrari's global growth strategy refer to strengthening Ferrari's position in emerging markets such as Middle East and Asia while maintaining strong presence in the US and Europe. Therefore, the analysis of political factors will be lined with the company's strategy and the focus is conveyed to these markets.

The increased demand for Ferrari's cars and products in emerging markets, such as China and Middle East, can be adversely impacted by political uncertainty in those regions. Political stability of one country can be presented in the form of political stability index (PSI). Political Stability Index integrates different factors such as transfer of government power, armed conflict, violent demonstrations, social unrest, international tensions, as well as ethnic, religious or regional conflicts.<sup>34</sup> Greater China region is highly influenced by the political atmosphere of the Chinese government. According to the World Bank data (2014), political stability index in China was -0.46 which placed this country on the 132 place out of 192 countries.<sup>35</sup> Although 30 years have passed since China started its reforms and opening up, Chinese government still possesses substantial power over its economy which is reflected through intensive interventions in the market. (Li, 2015) This is primarily mirrored in the private sectors, where Chinese government forbids the entry to private enterprises. Such interventions can adversely impact the growth rate of emerging markets and limit Chinese market from developing at the full potential, which can lead to discouragement of luxury purchases. Moreover, political uncertainty and Chinese government power can potentially lead to a proposal of tight regulations and approvals for foreign firms in Chinese market. In 2013, Chinese government, aiming to protect domestic manufacturers, started to consider imposing tariffs and import duties on the luxury high-end European cars producers (Bremer, 2013) Potential tariffs could have impacted Ferrari's operations significantly since Ferrari did not have the option to shift or to relocate its production to China unlike its competitor BMW. Therefore, possible political instability and frequent government actions in China can limit Ferrari's ability to act quickly in making decisions on the business operations in the market.

Furthermore, Middle East market is highly exposed to the political uncertainty due to war tensions in Syria and Iraq which indirectly encompasses economies on Arabian Peninsula. This region is well-known

---

<sup>34</sup> [www.theglobaleconomy.com/rankings/wb\\_political\\_stability/](http://www.theglobaleconomy.com/rankings/wb_political_stability/)

<sup>35</sup> [www.theglobaleconomy.com/rankings/wb\\_political\\_stability/](http://www.theglobaleconomy.com/rankings/wb_political_stability/)



for a lucrative market due to the increase in personal wealth, generally, in areas that have outsized amounts of oil resources. However, according to the World Data Bank only United Arab Emirates have above average PSI of 0.81 which refers to stable political situation.

In addition to the political stability, Ferrari is exposed to various laws and regulations imposed by governmental organizations regarding CO<sub>2</sub> emission, fuel efficiency, reduced greenhouse gas, pollution emission and vehicle safety. EU legalization set emission reduction targets for the new cars which primary role is to improve the fuel economy. 2015 targets proposed that the new cars registered in EU do not emit more than average of 130gr of CO<sub>2</sub> per kilometer which is equivalent to 5.6 liters per 100km of petrol and 4.9 liters per 100 km of diesel. However, EU legislation set new stringent targets which have to be met by 2021, requiring the emission level of 95gr of CO<sub>2</sub> per one kilometer. (European Commission, 2016) Similarly, the U.S. Environmental Protection Agency (EPA) set the fuel level economy standards for passenger car models from 2017 through 2025. Furthermore, governments in China, South Korea and other Asian countries where Ferrari operates, set even more stringent regulations in order to fight and to protect environment from CO<sub>2</sub> emission and air pollution. Accordingly, Chinese government proposed strict Stage III fuel consumption standards which target 6.9 liters per 100km by 2015 and 5.0 liters per 100km by 2021.<sup>36</sup> Particularly Beijing municipality is preparing to introduce new anti-air pollution policies which intend to significantly reduce the pollution in the Chinese capital before the Winter Olympic Games in 2022. (Chun, 2016)

In addition to fuel economy and CO<sub>2</sub> emission programs, some governments imposed regulations and laws that protect and improve drivers' safety. As such, the US. National Highway Traffic Safety Administration (NHTSA) proposed different guidelines that have to be followed. Those guidelines may impact Ferrari's core manufacturing and enforce the company to substantially change the future models.

Despite the rigorous standards and regulations in the most of markets that Ferrari operates Italian automaker has a status of a small volume manufacturer (SVM). Usually SVM status earn companies that manufacture and sell less than 15,000 units including vehicles and engines.<sup>37</sup> Due to SVM status in EU and the US, Ferrari has an option to derogate from proposed requirements and regulations. However,

---

<sup>36</sup> Ferrari S.p.A, Annual Report, pg. 15

<sup>37</sup> Cornell University Law School, 40 CFR 86.1838-01 - Small volume manufacturer certification procedures



Ferrari's SVM status is subject to change. Although the company benefits SVM status in some markets, Ferrari is required to undertake some technological improvements and changes in order to maintain that status. Hence, technological improvements and changes may incur considerable costs that will affect Ferrari's financial performance. Moreover, as a part of maintaining SVM eligibility criteria, Ferrari may be forced to modify the growth strategy. As stated earlier, Ferrari plans to increase the sales volume to 9,000 vehicles by 2019. Therefore, this strict regulations and policies may affect significantly Ferrari's technical and economic capabilities. As a result, Ferrari will be enforced to increase capital expenditures and R&D costs in order to upgrade the products and meet the requirements. Consequently, these actions will rise the production costs which will in turn impact the results of operations adversely.

#### 4.1.2 Economic Factors

This section determines and analyzes all economic factors that impact Ferrari's strategy and performance. Elements that are analyzed are: GDP, consumer confidence, exchange rates, inflation, interest rates and commodity prices.

##### 4.1.2.1 GDP

Traditional automotive industry is known for cyclical industry and it is affected by the upturns and downturns of the economy. Correlation of demand for cars, GDP growth, and consumer confidence could be seen in the Figure 8.



Figure 8-Global Total Vehicle Sales, World GDP and University of Michigan Survey of Consumer Confidence Sentiment; Source: Market List/Bloomberg



The demand function is comprised of two factors: disposable income of customers and willingness of customers to spend the portion of their disposable income on the car purchase. From the figure above, the willingness for spending on the car purchase could be seen in the trend of consumer confidence sentiment stating that if people have more confidence in the overall economy, they will be more likely to purchase the new vehicle. (Lowry, 2014) The global real GDP growth rate declined from 5.2% in 2007 to -0.7% in 2009.<sup>38</sup> The downfall of the global economy during the one of the worst financial crisis in the history impacted consumer confidence harmfully. As a result, the negative economy development affected the vehicle sales which dropped by almost 25% during the worst period of financial global crisis in 2007-2008. Financial crisis almost destroyed the automotive industry in the U.S. which led GM and Chrysler to bankruptcy. (Clark, 2009) (Bigman, 2013) Unlike during the recession period, economy recovery period positively impacted consumers' confidence which resulted in the significant increase in vehicle sales from the end of 2008 until 2010.

As stated earlier, the luxury car performance market deviates from the traditional car segment aspects. The demand elasticity for the luxury cars and sports cars is lower than the one for the regular cars models. Hence, slight movements in the overall economy may not affect the demand for Ferrari's cars due to its strong brand power. However, likewise the traditional car segment, the demand for Ferrari's cars is influenced by the global economy conditions such as GDP. Since the GDP growth represents the activity of the economy, upward trends of the GDP growth increase the wealth and disposable income of customers which respectively impact the demand for Ferrari's cars. The world economy growth was 3.1% in 2015. The US economy recorded the sharp growth while China's economy entered the more stable phase focusing on sustainability which will take an effect in the future. Moreover, the economy growth was negatively impacted by the fall in demand in China's market.<sup>39</sup> This was mainly influenced by robust drop in China's exports to Russia and Brazil. GDP growth of the regions where Ferrari operates can be found on the figure 9.

---

<sup>38</sup> [http://www.indexmundi.com/world/gdp\\_real\\_growth\\_rate.html](http://www.indexmundi.com/world/gdp_real_growth_rate.html)

<sup>39</sup> BMW AG, Annual Report, pg. 23



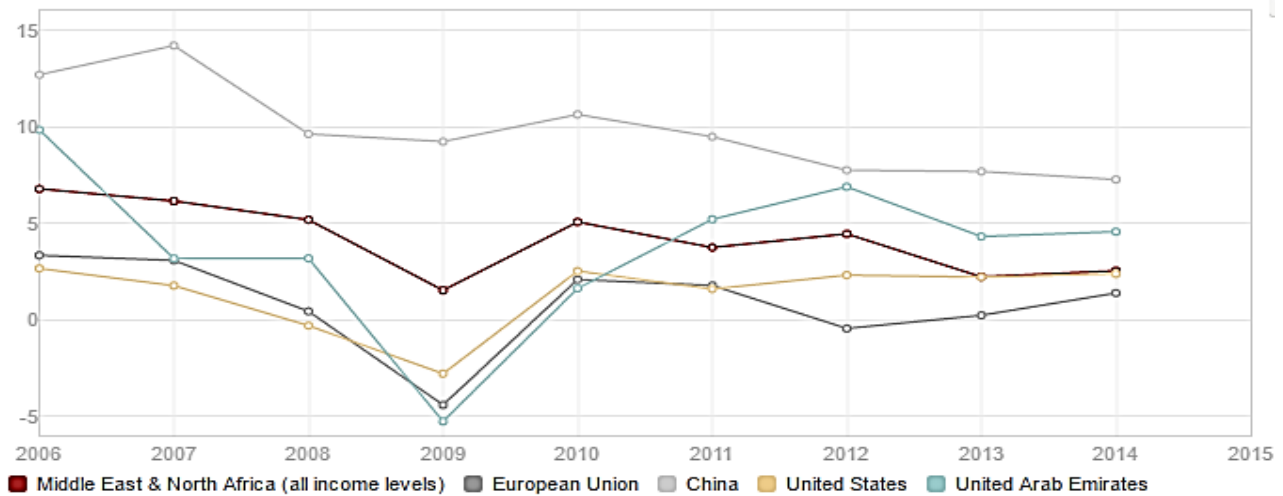


Figure 9- GDP growth (annual %); Source: The World Bank Data

According to figure 9, China and Middle East are the regions with the most prominent GDP growth in 2014. Although there is a high income inequality in the Middle East region, it ranks among the top 10 richest regions globally. (Euro Monitor, 2015) Also, despite China's economy had the highest growth rate amongst all regions, it grew at the slowest pace in the last 25 years over 2015. China's growth in 2015 was estimated at 6.9% which was lower than government expectations. (McCury, 2016) The growth was held down by the negative figures in exports of raw materials which is the main driver of Chinese economy. Additionally, the EU as well as the U.S. experienced harsh times during the global financial crisis. The recovery in the EU took several years from 2009-2011. Moreover, European debt crisis put the downward pressure on the overall European economy in 2015. However, Euro Area continued to recover in 2015 with the strongest first quarter since spring 2013. Euro Area recorded GDP of 3.7% in 2015. (The Economist, 2016) The U.S. market continued to recover as well. After the big turndowns during financial crisis in 2009, the U.S. economy grew at the steady rate. 1Q 2016 recorded 1% in GDP which was more than the government expected. However, the slowdown in China's market drags down other economies as well. Hence, the EU, which accounts for a quarter of its exports to Chinese market, will eventually be impacted by the turmoil in China and other emerging markets.

#### 4.1.2.1.1 Market Outlook and GDP Growth

The global growth slowed down and it recorded only 3.2% in April 2016, which was corrected for -0.2 base points comparing to the market outlook report at the beginning of 2016. (IMF, 2016) IMF predicted



the recovery period starting from 2017 which will be driven by the growth in emerging markets. According to the same source, the projection estimates the growth in global GDP in range from 3.5%-3.9% in period from 2017-2021. The main driver will be the Asian emerging market with the growth in GDP of 6.6%. However, the growth rate will start to fade from 2016-2021 and it will maintain the level of 6.4% by the end of 5 year forecasted period. Advanced economies and Euro area are projected to grow with the rate from 1%-2%.

#### 4.1.2.2 Wealth Growth

Beside the GDP growth that represents the overall economy performance, one of the most crucial factors that influences the luxury markets is the wealth creation and distribution. According to the Boston Consulting Group report (2015), private financial wealth increased by 8% and reached \$156 trillion.

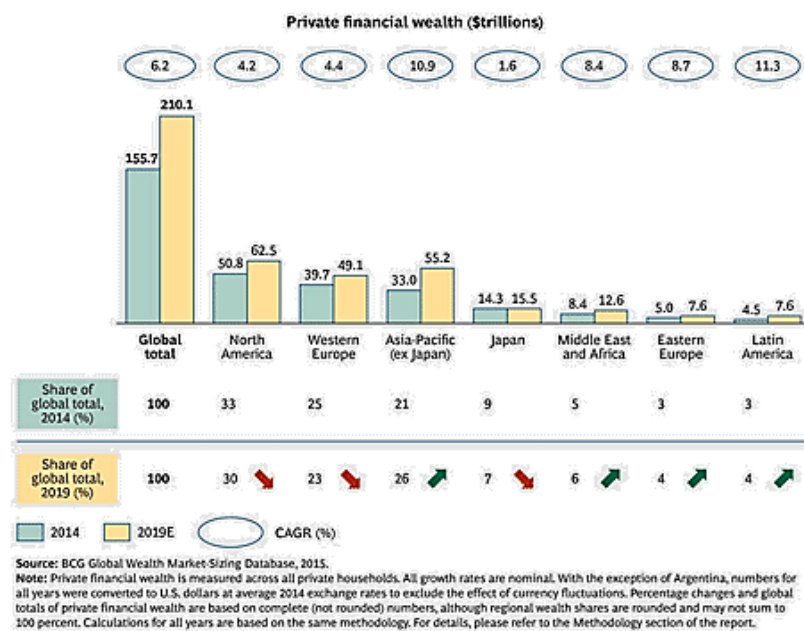


Figure 10-Private Financial Wealth across Regions

recorded 15% of the wealth growth in 2014. Moreover, it is projected that Asia-Pacific region will consist 26% of the total global financial private wealth at the expense of Western Europe and North America by 2019. According to the report the biggest percentage growths will be seen in emerging markets such as Middle East, Latin America, Eastern Europe and Pacific-Asia. (The Boston Consulting Group, 2015)

The increase in private financial wealth across the globe positively impacts Ferrari's performance. As such, the more wealth created the more people will be willing to invest in the luxury brand like Ferrari.

Figure 10 shows distribution of wealth in 2014 and projections for 2019. North America stayed the world leader in 2014 with \$51 trillion in private wealth, while the Western Europe ranked 2<sup>nd</sup> with \$40 trillion. Asia-Pacific region took account for \$33 trillion in private wealth. However, analysts projected that the total private wealth will grow at CAGR of 6% which will reach \$210 trillion in 2019. (BCG 2015) The fastest growing region is Asia-Pacific which



### 4.1.2.3 Exchange Rates and Interest Rates

Due to the intensive business internationalization and everyday currency fluctuations, information about the exchange rates became very decisive for multinational companies. Considering that Ferrari operates in 60 global markets, the currency movements significantly impact the company's operations and profitability. Ferrari's manufacturing factory is located in Italy and its costs are denominated in Euros. However, Ferrari receives revenues in different currencies from operations in different international markets. Accordingly, EUR depreciation against currencies in which Ferrari generates revenues has a positive impact on the company's financial performance and vice versa. In 2015, 67% of the total currency risk is exposed to EUR/USD exchange rate.<sup>40</sup> The EUR/USD trend can be seen in the figure 11.



*Figure 11-1yr Historical EUR/USD; Source: XE.com*

Since December 2015, EUR has appreciated by almost 7% which adversely impacts Ferrari's profitability due to the euro denominated costs. European Central Bank (ECB) EUR/USD projections for 2016 are 1.11 USD per 1 EUR. However, there is a possibility of EUR depreciation against USD mainly influenced by the negative interest rates of -0.3% in 2016. (ECB, 2016) Moreover, in 2015, ECB announced €1.1 trillion worth quantitative easing program as a part of the new monetary policy in order to achieve the inflation target and to support the growth projections. (Randow, 2016) The program will be extended over years and it will influx more money into the market through the government bonds buyback which in turn may cause EUR weakening. Moreover, the US Fed projected raise in the interest

<sup>40</sup> Ferrari S.p.A, Annual report, pg. 109



rates in 2016. (Condon, 2016) The increase in the interest rates will eventually strength USD against EUR. Hence the different directions in monetary policies in the EU and the US could possibly lead to USD appreciation against EUR positively affecting Ferrari's financial records.

Another currency fluctuation that could significantly impact Ferrari's profitability is Chinese yuan. Chinese economy slowed down which caused the big capital outflows from Chinese economy putting depreciation pressure on Chinese yuan. Moreover, Chinese central bank remained lower interest rates which causes investors to shift their capital to other markets with higher rates. Hence, Chinese yuan depreciation can negatively impact Ferrari's financial performance in that market considering that Ferrari's local dealers generate revenues in the local currency. Consequently, Chinese yuan depreciation against euro will reduce Ferrari's operating profit once the revenues have been converted into euros. Moreover, analysts believe that Chinese yuan is almost 10% overvalued against USD. (Rosenfeld, 2016) This currency overvaluation could potentially lead to significant drop in the value of Chinese negatively impacting Ferrari's revenues in China's market.

Furthermore, interest rates also affect Ferrari's financial performance and results. The main reason for that is the loan cost that Ferrari has. According to Ferrari's report, 10 basis points decrease in interest rates hiked Ferrari's profit before taxes by €1,204 thousand.<sup>41</sup> Thus, a very low interest rates in Europe have positive impact on the company's profitability due to low cost of debt. Moreover, the interest rates have an impact on the loans and the cost of credit. Although, Ferrari's models are usually financed without financial services, low interest rates can have some effect on the auto sales. This is mainly the case in the U.S. where the credit and loan financing is very popular. Interest rates and inflation have positive correlation. Therefore, in 2008 during recession the vehicle purchases declined by almost 20% and the auto loan organizations fell by the third due to tight auto lending conditions. (Johnson, Pence, & Vine, 2014) Considering the fact that ECB announced that the inflation rate is still low, the interest rates in Europe will remain low as well in order to support spending and raise the inflation. On the other side, Fed announced the possible raise of the interest rates which, if happens, influence the demand for vehicles. (Appelbaum, 2016)

---

<sup>41</sup> Ferrari S.p.A, Annual report, pg. 174



### 4.1.3 Social and Environmental Factors

Globalization and the presence in different markets require understanding each market separately. Hence, the analysis of social factors in different global markets plays significant role in strategic decision making.

Considering the price range of Ferrari’s models, the brand itself is associated to the rich communities. Therefore, the Chinese economy boom led to an increase of wealthy people in that market. Currently there are 563 billionaires which sets China on the top of the richest people list, above the United States. (Frank, China Has More Billionaires Than the US:Report, 2016) In 2015, the number of millionaires in the U.S. increased by 300,000 accumulating the total of 10.4 million Americans whose wealth is more than \$1 million excluding their home residence. (Frank, 2016) Moreover, China has 1.09 million people whose wealth is estimated of at least 10 million yuan (\$ 1.6 millions). Beside the upward shift in the number of the richest people, the economy expansion in this market triggered the growth of the middle class which becomes financially stronger each year. According to McKinsey report (2013), the urban consumers who will earn between \$9,000 and \$34,000 will comprise 75% of the total China’s society by 2022. In 2000, this rate was only 4%. Additionally, the fast economy expansion led to creation of the upper middle class which will account around 54% of urban households and 56% of urban private consumption by 2022. According to the Figure 12, the majority of the middle class will shift to the upper middle class. The overall mass middle class will decline to 22% while the majority of the urban households will be comprised of the affluent and the upper middle class.

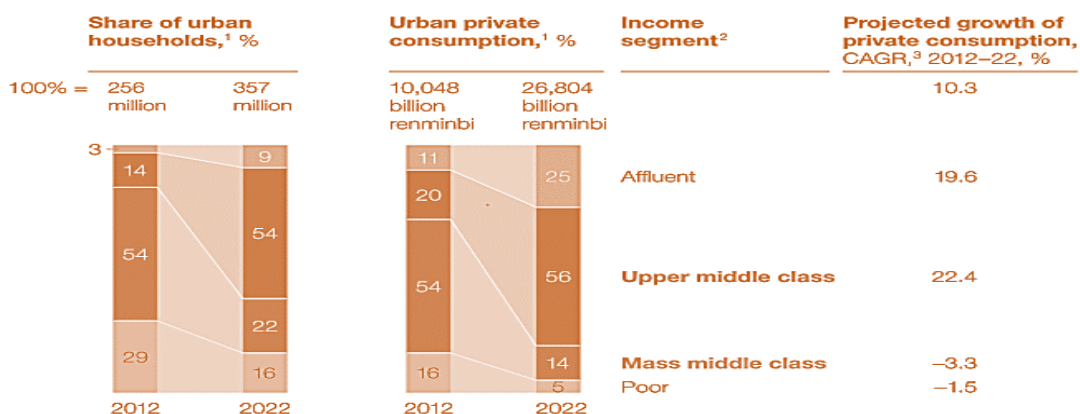


Figure 12-The Magnitude of China’s Middle-Class Growth is Transforming the Nation; Source: McKinsey & Co.



Furthermore, the same report points out Generation 2 as the most prominent middle class generation, which will be three times as numerous as baby boomers in the U.S. Substantial evolution of the middle class will lead to the creation of the strong and large upper middle class which will be the main stimulant of the luxury goods market growth. (Barton, Chen, & Jin, 2013) These figures highlight a huge potential of Chinese luxury goods market which Ferrari can see as an opportunity to leverage.

Moreover, the environmental aspects may be crucial as well in the Ferrari's future performances. People are becoming more environmentally oriented. Substantial environmental perception among consumers will eventually lead to the shift in auto industry trends. Different imposed regulations as well as the frequent health problems that people face due to high air pollutions influence these trends. Thus, there is a significant shift toward sustainable economy and environmental protection. People's orientation toward the sustainability and environment protection technologies will lead the luxury car players to focus more on the fuel efficient and greenhouse technology.

#### ***4.1.4 Technology***

Technology factors are highly influential in today's hi-tech environment. Thus companies have to stay connected to technological updates and to quickly respond to consumers' demand. Similarly, the competition within the luxury performance car industry requires dynamic and frequent technological innovations. Just in 2015, Ferrari's capitalized R&D costs were €154 million, 6% more than in 2014.<sup>42</sup>

The main drivers of customers' tastes within the luxury performance car industry are the power of engines, aerodynamics, speed and style. Moreover, the high performance cars require edge-leading technology that is novel and unique which can be exposed to everyday changes. In order to improve and to achieve the most efficient engine performance, competitors within the performance car industry competes in aerodynamics innovations. The carbon fiber technology and alumni parts represents the future in the automotive industry. BMW already started the carbon fiber technology to improve safety and distance on its sports cars. Still the carbon fiber is eight times more expensive than steel for the same part. (Howard, 2015) However, lower costs of assembling and reduced tooling make this technology very popular and desirable in the future. Costs of carbon fibers significantly have been reduced recently

---

<sup>42</sup> Ferrari S.p.A, Annual report, pg. 55



by almost ~66%. A decade ago the price of carbon fiber was \$35 per pound and in 2014 that cost was ranged only \$10-12 per pound. (Bregar, 2014)

Another technology that is widely spread amongst sports cars manufacturers is aluminum technology. This metal is very useful in engines manufacturing as well as in the auto parts production due to its light weight. Aluminum became a good substitute for the steel which is almost two and half times denser.<sup>43</sup> Moreover, the sustainability of aluminum is an additional advantage over steel. Nevertheless, aluminum is more expensive than steel. Despite the higher price, carbon fiber and aluminum technologies are the future of the sports cars industry. Carbon fiber is prohibited in the automotive industry for anything but for limited applications in niche vehicles.

Furthermore, the frequent CO<sub>2</sub> regulations put the pressure on the performance car industry as well. Ferrari has already introduced the hybrid technology on LaFerrari model. The main factor that influences electric vehicles are batteries. According to McKinsey & Co. report (2012), the price of lithium ion batteries will be reduced to \$200 per KWH by 2020 and \$160 per KWH by 2025. (Hensley, Newman, & Rogers, 2012) In 2012, the price of the same battery was in the price range of \$500-600. According to the same report, the future price will mainly depend on the price of oil.

Ferrari's technology will also be impacted by Formula 1. Taking into consideration that the main performance of Ferrari cars is narrowly related to Formula 1 team, it can be assumed that the future outcomes regarding Ferrari's technology improvements will be influenced by the success of innovative technology applied in Formula 1.

Moreover, the performance car industry requires considerable investments in R&D which could be seen in Ferrari's financial analysis. The R&D costs are significant, and in order to stay competitive and to do not deteriorate its brand image, Ferrari will need to maintain research innovations. Also, frequent regulations regarding the emission and economy efficiency as well as the limited usage of carbon fiber technologies expose Ferrari to risk that the company will not satisfy customers' demands. Additionally, tight regulations and policies will eventually cause Ferrari to increase the investments in R&D.

---

<sup>43</sup> <http://www.wenzelmetalspinning.com/steel-vs-aluminum.html>



#### **4.1.5 PEST(EL) Summarize**

The future growth of Ferrari depends on many different external factors that the company cannot influence internally. The most significant factors for Ferrari's and the industry growth in general are the economic factors such as GDP growth, increase in people's wealth and the performance of the overall economy. Firstly, the GDP growth will affect consumers' ability to purchase the vehicles. Since Ferrari models are referred to the high net worth individuals (HNWI), the positive trends of the overall economy will put the upward pressure on the wealth increase of individuals. GDP is projected to go forward mainly due to the influence of emerging markets in Asia. Moreover, the expansion of Chinese economy will lead to the shift in demographics and creation of more wealthy people. Consequently, the increase in wealth around the globe and creation of the strong upper middle class will positively affect the performance car industry. The consumer confidence will rise and people will be more willing to spend in luxury goods markets. Ferrari's performance will also be impacted by the overall economy performance in Europe and the U.S. Even though, there was a debt crisis in Europe, European economy is expected to grow slowly. Also, different regulations and laws imposed by governmental organizations will put additional pressure on the overall automotive industry. Players within performance car industry will be required to start shifting their production to the hybrid technology. This will eventually increase the costs of productions as well as it will incur technological changes. Hence, we will probably see the increase in the R&D costs amongst competitors in order to maintain current market shares.

#### **4.2 Industry Attractiveness Analysis-Porter's Five Forces**

From the perspective of a value creation for shareholders it is important to emphasize that a company increases its value if returns exceeds the invested capital. Moreover, if the return on investment (ROI) exceeds the amount of capital invested, investors will consider that investment as an attractive one. Mainly, the attractiveness of an investment is determined by the competition landscape within a particular industry. Intense competition within an industry deteriorate profitability and returns of a company which adversely affects its share value. This section entails the analysis of the industry's underlined structure in terms of forces such as: threat of new entrants, bargaining power of buyers, threats of substitutes for products and services, bargaining power of suppliers and the rivalry amongst competitors. Furthermore, the industry grows out from different economic and technological aspects which in turn determines the strength of competitive forces. (Porter, 2008)





#### ***4.2.1 Threats of Substitutes***

Price of the product is determined partially by the presence of substitutes in the market. The absence of substitutes directly impacts consumers' price insensitivity. (Grant, 2012) Passenger cars have various substitutes amongst transportation modes such as buses, trains, bicycles as well as airplanes. However, none of these modes of transportations provides such a convenience and flexibility as a passenger car.

Moreover, since the analysis focuses on the luxury performance car segment, it can be assumed that the number of substitutes is even smaller or does not exist at all. Luxury performance cars are not used as a mode of transportation but rather as a symbol of style, power, luxury, and devotion to speed. Considering those aspects, luxury performance cars have no direct substitutes. Hence, the threat of substitutes in the automotive industry, especially in the luxury performance car segment, is very low.

#### ***4.2.2 Threats of New Entrants***

Attractiveness of an industry is somewhat shaped by its profitability. Industries which earn returns that exceeds the cost of capital will attract numerous players to enter. However, entries are determined by different barriers that are established by existing players in a specific industry. Consequently, barriers and reactions of existing competitors on the new entrants define the seriousness of the threat. (Porter, 2008) The barriers in the automotive industry are determined by following aspects: capital requirements, economies of scale, product differentiation, technological complexity and policies.

Automobile industry is a capital intensive one which requires large capital for starting up the business as well as for operations of the business. (Economy Watch, 2010) Moreover, the automotive industry has a very high capital to labor ratio comparing to other industries. (OCED, 2009) Capital required in the automotive industry is mainly driven by the R&D figures due to frequent and ongoing technology innovations. Hence, existing players in the automotive industry has substantial R&D costs and capital expenditure (CAPEX). By the end of the fiscal 2015, the average CAPEX for the US auto and truck industry was around \$29 billion, placing the industry among the top five industries with the highest CAPEX. (Damodaran, Dataset Capital Expenditures, 2016) As such, German company Audi itself plans to invest around €3bn in property, plant and equipment.<sup>44</sup> Additionally, high R&D costs and up-front

---

<sup>44</sup> Audi AG, Annual Report, pg. 189



costs are required in the automotive industry. Dynamic, competitive and innovative environment incurs high R&D costs amongst players. The auto industry comprised 16.1% of the total global R&D spending setting this industry on the third place amongst the highest R&D spenders, right after hi-tech and healthcare industry. (Statista, 2015) Moreover, Volkswagen and Toyota took the place among the top ten most R&D spenders. (Casey & Hackett, 2014) Although the auto industry is known for the mature one, it suffers substantial R&D costs mainly to the frequent technological changes. The luxury performance car segment is even more exposed to technology updates and innovations. Models in this segment are required to consist the latest technological novelties in order to maintain the exclusivity and high price. Consequently, the large share of those costs are sunk. Therefore, potential new entrants are exposed to extensive up-front and sunk costs which in turn requires large up-front capital which in turn raises entry barriers.

The extensive capital and research costs often require large operating or economies of scales. All players in the automotive industry leverage the economies of scale to cover substantial sunk costs. Moreover, potential new entrants in the automotive industry are faced two possibilities: either to enter on the small scale and to face substantial cost disadvantage or to enter on the large scale and to face underutilized capacity. (Grant, 2012) Either strategy is very unattractive for the new players and requires a lot of up-front capital in order to withstand unfavorable position in the market. The luxury performance car market is slightly different than traditional segment since it is focused on the low volume sales. However, the high pricing power amongst luxury car manufacturers is mainly driven by the application of the latest technology, exclusivity and handcrafting which can present a huge barrier for potential entrants.

In addition, the product differentiation is one of the aspects that creates the barrier intensity. The automotive industry consist players that have strong brand identification. Car manufacturers capture their brand loyalty in different ways such as heavy marketing campaigns, customer services, being the first in the industry or product differences. Hence, the already established differentiation strategy of existing players, the unique culture and the customer loyalty force new entrants to spend heavily in order to overcome those aspects which in turn makes the industry very unattractive. Moreover, the luxury performance car segment has even stronger customer loyalty and brand recognition than a traditional segment. The high-end luxury brands are not just car producers but they are rather a lifestyle symbol. As such, they have strong brand identification amongst customers since in the luxury markets customers are



price indifferent and a brand is the main purchase determinant. Therefore, luxury brands use aggressive marketing campaigns such as sport competitions to approach customers and to create the strong bond with them. Consequently, it creates high barriers for the new entrants since these strategies incur high capital investments in advertising and promotions in order to create brand awareness.

Moreover, the technological know-how creates forces that existing players can push away potential entrants and the new competitors. Existing luxury manufacturers already have established know-how in production, design, and technology. Besides, the existing players already have the proven production platforms, management, logistics and the research teams for the car productions. The new entrants are in disadvantageous position due to the lack of the experience and it would take a substantial cost to create the full production process networks. Considering that the know-how cannot be replicable, this aspect became a critical asset in the automotive industry which is exposed to frequent technological changes.

Finally, frequent legal policies regarding CO<sub>2</sub> emission as well as the safety regulations, exposed the overall automotive industry to the trend shift. Car manufacturers started focusing on production of fuel efficient cars as well as implementing new low emission technology. The same picture can be seen in the luxury performance car segment. Although, luxury brands are focusing on the convenience, luxury and technology modernization, the frequent changes in policies and governmental laws forced manufacturers to introduce hybrid technologies. Transition could incur additional investments which can be a big chunk for the new entrants. Thus the strict regulations set high entry barriers.

Analysis of different aspects derives a conclusion that the automotive industry has high barriers for the new entrants. Hence, the threat of the new entrants in the automotive industry is too low. The barriers for the new entrants in luxury performance car segment are even higher due to its exclusivity and technological complexity.

#### ***4.2.3 Power of Suppliers***

The power between firms (buyers) and suppliers has significant role in defining industry attractiveness. From the aspect of the supply chain management, the easiness of buyers to shift to the new suppliers expresses the bargaining power of suppliers and determines the force that buyers have in the supply chain process. (Grant, 2012) In the automobile industry, frequently, the supply chain is divided in tiers. Tier



one companies directly supplies original equipment manufacturers (OEM) while tier two supplies tier one companies. The focus is on tier one companies since they are involved in supply of the main parts such as chassis, interior and exterior. Moreover, considering the fact that the luxury performance car segment encompasses the latest technology, precious materials and exclusivity, the raw material suppliers will be analyzed as well.

In the traditional automobile industry the power of suppliers was very low due to the fragmented auto parts industry. However, the picture has started to change slowly over the years. The auto suppliers' contribution has increased from 56% in 1985 to around 71% in 2015. (Statista, 2016) This brings a conclusion that auto manufacturers became more relied on suppliers than in the past. Moreover, the number of suppliers is slightly diminishing mainly due to frequent mergers within that specific industry in order to achieve synergies. According to the PwC Strategy& report (2016), the total M&A deal value among automotive supplier sector has increased by almost 340% over 2014. (Ostermann, Harvey, Hesse, & Hague, 2016) Automotive suppliers through M&A aim to acquire new assets to become more competitive in the market. Positive trend in M&A deals could be seen through the prism of bargaining power of suppliers since frequent mergers helps them to gain some power over buyers.

Additionally, raw materials suppliers play significant role in supply market. Luxury performance car manufacturers focus on the excellence, uniqueness and extravagance. As such, the production and the key input requirements significantly differ from the traditional segment. Hence, for example, Ferrari uses aluminum as well as precious metals such as rhodium and palladium.<sup>45</sup> On the other side, BMW started using carbon fiber technology which entails particular carbon materials. In order to achieve the high standards and to differentiate their products the luxury automakers use these specific and extraordinary inputs. Consequently by using those rare materials, they are becoming more depended and tied to specific suppliers assigning them substantially higher supply power than in the traditional segment.

Although, in the automotive industry, the power of suppliers used to be relatively low, it has started to alter. In the luxury performance segment, the supplier power is substantially higher considering the fact

---

<sup>45</sup> Ferrari S.p.A, Annual report, pg. 17



that luxury automakers use exceptional raw materials tiding manufacturers to specific suppliers. Hence, the analysis defines a moderate supplier power.

#### ***4.2.4 Bargaining Power of Buyers***

Porter determines power of buyers by following aspects: product differentiation, the volume of the buyer's purchase, the price sensitivity, and ability to integrate vertically.

The focus of the buyer power analysis is on the luxury performance car segment since it significantly differs from the traditional one. The overall luxury performance car industry is a low volume industry with the total 30,000 produced vehicles in 2015.<sup>46</sup> The target group of the luxury automakers is rich people who purchase small number units. Considering high fixed costs in the automotive industry, the small number of buyers are not powerful to impact the overall firms' performance in the case they decide to shift the purchase from one firm to another.

Another characteristics that is unique for the luxury performance car industry is product differentiation. Players produce cars that are unique, high-class and limited. Buyers do not have too many alternatives to shift from one product to another. Moreover, the super luxury car manufacturers shape and define their low volume strategy in way that they do not sell just a car but the brand as well. Thus, luxury cars buyers are bonded to the brand which in turn creates a specific emotionally attachment to those brands. This reduces the power of buyers to easily move from one to another brand.

Additionally, the buyers' price sensitivity is a crucial factor that determines buyers' power level. The price sensitivity is the extent to which the change in price affects consumers' behaviors. (Grant, 2012) This factor is somewhat interrelated with the product differentiation since the price sensitivity is induced by the level of the product differentiation. As earlier stated, the extremely low product differentiation in the luxury performance car industry alongside with the targeted buyer group defines high price insensitivity within the industry. The price range of luxury performance cars are six or even seven digit numbers. Customers who are willing to afford fashionable and high-class cars have extremely high disposable income which shapes their price insensitivity. Luxury customers are rather focused on the brand and performance of the product than the price itself which in turns defines the low buyer's power.

---

<sup>46</sup> Ferrari S.p.A, Annual report, pg. 31.



Finally, Porter states that buyers create a threat if they have ability to vertically integrate in order to produce a product. (Porter, 2008) Since the luxury performance car industry is low volume one and serves only specific and rich group of people, the possibility of vertical integration does not exist. Analyzing different factors that influence buyer's power it can be concluded that it is very low in the luxury performance car industry.

#### ***4.2.5 Rivalry between Competitors***

The luxury performance car industry is concentrated with small number of producers due to large amount of up-front invested capital requirements. Hence, big auto manufacturers have more flexibility since they have chance to employ more capital in the luxury sports and GT segment. In that way, big auto manufacturers has a chance to diversify their own portfolio. Moreover, the competition is driven by the brand strength as well as the application of products in term of performance, innovation and design.<sup>47</sup> As such, the rivalry intensity will significantly depend on the new technological changes and brand power.

#### ***4.2.6 Market Outlook***

In order to identify strategic drivers it is important to anticipate the trend of specific industry. Moreover, from the perspective of financial valuation, the market outlook shows what the company's direction will be in terms of the strategy implementation in order to create value for shareholders. According to the external factor analysis it could be concluded that the automotive industry will be exposed to substantial changes due to frequent legal requirements in the main markets. Hence, the fuel efficiency technology will start playing a significant role in the overall automotive industry. Therefore, car producers in both traditional and luxury performance car segment will diversify their own product portfolio with hybrid cars. This will lead to enormous capital investments in order to shift technology production from fossil fuel cars to environment friendly ones. The rise in capital investments will boost up the barriers for the new entrants. On the other side, high sunk costs will set high barriers to exist. The luxury performance car market will depend significantly on the application of the innovative technology and the brand power. Existing players will try to maintain the same market shares and no remarkable changes will occur in that aspect. Also, the focus of car producers in the luxury segment will be on the emerging markets where

---

<sup>47</sup> Ferrari S.p.A. Annual report, pg. 32



the potential for significant growth exists. This might change the structural changes among competitors in the terms of achieving growth strategy goals.

### **4.3 Value Chain Analysis**

Up to this section, the external factors and the industry environment have been analyzed and they are not influential by the company. This segment conducts the internal analysis of Ferrari. Analysis's highlights are to determine the key aspects that Ferrari can leverage to create the value to customers. In turn, customers' value creation leads to sustainable customer relationship which consequently increase the shareholders' value as well. The key aspects are linked to capabilities and internal resources that Ferrari can use to generate those returns to its shareholders. Framework used for the internal analysis will be the value chain model which provides a linkage of how the internal activities of Ferrari creates value and hence, shape Ferrari's competitive advantage against competitors. (Ensign, 2001)

Since the automotive industry is highly competitive, it is crucial to define Ferrari's competitive strategy which helps the company to sustain the competitive position within the market and, thus, generate long-term profitability. Ferrari aims to differentiate its products through different technological innovations and novelties within the luxury performance car segment. This does not provide just better performance of cars but also it creates a strong brand picture amongst loyal customers. Ferrari's primary activities can be divided into: inbound logistics, operations, outbound logistics, marketing and sales and services. These primary activities are supported by other activities such as technology, procurement, firm's infrastructure, and human resource management.

#### ***Inbound Logistics***

Ferrari requires highly unique and exclusive standards for its products in order to maintain high-class reputation. The company sources materials from 14 different suppliers considering them as "key strategic innovative partners".<sup>48</sup> Ferrari manages to develop synergic relationship with its suppliers which in turn yields strong bond between Ferrari and suppliers. Its top five suppliers contain 25% of total procurement cost with not exceeding 10% share of the total procurement cost per supplier. Ferrari's outsource transmission from the largest transmission supplier Getrag, while brakes the company sources from the world leader in break disc production Brembo.<sup>39</sup>

---

<sup>48</sup>Ferrari S.p.A, Annual report, pg. 52



Despite the significant number of suppliers, Ferrari strives to sustain a make-or-buy strategy. This strategy implies Ferrari's flexibility to retain the in-house production of materials and parts which contains technological know-how. Moreover, the company aims to preserve the in-house production in case that outsourcing would damage the efficiency and flexibility of the production process. Mainly those are key components that differentiate Ferrari from other brands which is a crucial aspect in producing exclusive models. In order to maintain make-or-buy strategy, the company invests substantially in the skills and processes that are required for the production of Ferrari's key components. In this way, Ferrari focuses its main production in-house enabling to efficiently adjust production processes if needed and to support high quality car models. This flexibility would not be possible if Ferrari did not possess highly trained, skillful and knowledgeable work force.

### ***Production***

Ferrari's production is based on the technological know-how. Earlier mentioned make-or-buy strategy implies that the company carefully estimates value creation from outsourcing. Most of manufacturing processes such as aluminum alloy casting, engine construction, mechanical machining and bench testing is done in Maranello. Placing the research, design and development sectors within the common place enhance faster and more productive knowledge and information flow building a core competence. Consequently this increases the product development efficiency as well as it reduces time and costs. Employees have to pass throughout the strict training that helps them to gain know-how assessing all production process.<sup>49</sup>

Moreover, the company has strong bonds with its employees and it strives to create the best possible working environment where the employees can excel their knowledge and to further professionally develop. Ferrari has been announced for The Best Place to Work in Europe in 2007 according to employee's votes taking in consideration their satisfaction in both personal and professional terms. (Noah, 2007) Additionally, Ferrari's engineers are trained and affected by the racing mindset which directly influence the production speed. On average it takes around 40 months to produce one model from the initial development phase to the final phase with ~4-5 years lifecycle per model which can be

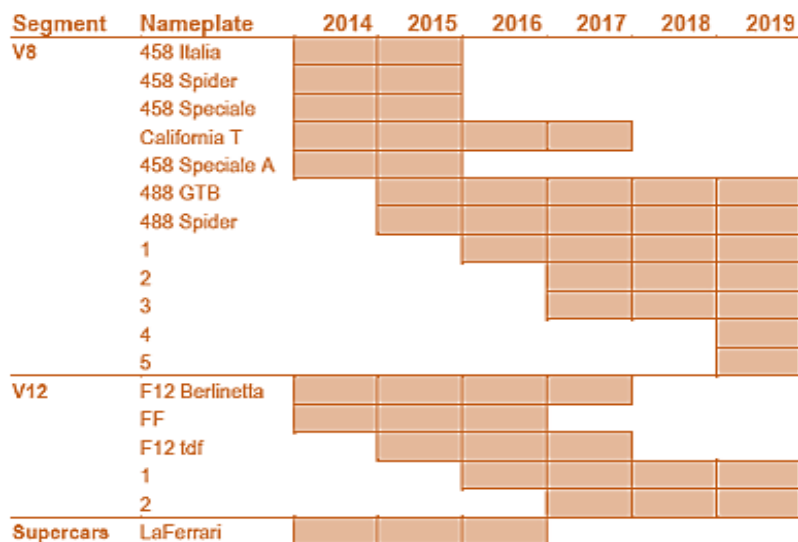
---

<sup>49</sup> Ferrari S.p.A, Annual report, pg. 53





seen in Figure 13. (HBR, 2015) Moreover, this employees’ racing mindset and rapid production enhance Ferrari to introduce and to refresh the assortment with the new models quickly.



*Figure 13-Ferrari’s Future Production Schedule; Source: Company Filings, BofA Merrill Lynch Global Research*

Furthermore, Ferrari employs different technologies in order to reduce car weights and to improve longitudinal and lateral driving dynamics.<sup>50</sup> These techniques involve art carbon fiber technologies and developing a new architecture which aims to reduce noise, vibration and harshness as well as improving the car performance. Also, Ferrari has introduced development of an aluminum lightweight chassis and body which are significantly lighter than carbon fiber material. Conversely to other low volume car manufacturers Ferrari produces several of the main components of engines such as engine blocks, cylinders heads and crankshafts. This additionally makes production more flexible and improves product development. In other words, Ferrari has ability to directly influent development of its engines and not to rely on other suppliers.

Flexibility in manufacturing process and one-site cooperation teams generates competitive advantage to Ferrari over competitors in the long-term. Moreover, the technical know-how and innovative lightweight technologies give Ferrari opportunity to stay in front of the competition.

<sup>50</sup> Ferrari S.p.A, Annual report, pg. 55



### ***Outbound Logistics***

Ferrari does not own dealerships, however, it carefully selects dealer networks based on the market performances. Moreover, Ferrari introduced the new reporting system that tracks and monitors information regarding end clients orders which also helps the company in dealership management and production planning.<sup>51</sup>

Ferrari emphasizes the importance of dealership network for end sales operations throughout the strict training in Ferrari Academy. This training embraces dealers for sales, after sales and technical activities to ensure that high class standards will be delivered to clients. The process does not provide just training and knowledge transfer but also it encompasses an intensive monitoring and observing financial outcomes and the profitability of every dealer. Additionally, Ferrari has specific criteria in choosing dealerships which guarantees the most profitable outcomes for the company.

Despite that Ferrari does not pursue the downward vertical integration with dealerships, the company maintains strong bond with end sales operations. Ferrari Academy represents the core competence for the company throughout providing multiple trainings necessary to maintain high-class standards. This strategy provides flexibility to the company to easily adjust to market requirements but also to retain the high influence over dealers. Moreover, Ferrari's training center is hard to imitate by competitors giving Ferrari sustainable competitive advantage in the end sales operations and services.

### ***Marketing and Sales***

Ferrari's most influential marketing method is participation in Formula One World Grand Prix. The company uses this sports competition to increase the customers' awareness and to promote the new models and technological innovations. Formula One activities has two goals for the company: 1) marketing and promotion brand strategy without additional investments in advertising, 2) serves as a technological platform for innovations in different technologies, designs and performances. (HBR, 2015) 2015 Formula One season was watched by 425 million people. Notwithstanding Formula One has lost over one third of spectators comparing to 2008, it is still known as one of the most popular sports. (Smith L., 2015) Hence, the participations in sports are used to communicate with potential customers and

---

<sup>51</sup> Ferrari S.p.A, Annual report, pg. 44



audience in general while strengthening its brand position in the market. Consequently, Ferrari's long time tradition and presence in Formula One gives temporary competitive advantage to the company.

In addition to Formula One, Ferrari provides a high level customized program known as "Tailor Made Program". It involves highly specialized level of customization by Ferrari's clients which includes a large choice of finishes and accessories made of different materials. This customization is performed in assistance with Ferrari designers. In this way, Ferrari creates and strengthens its bonds with customers while showing producer-customer loyalty. In turn, by increasing the number of loyal customers Ferrari boost its price insensitivity and brand exclusivity allowing them to charge higher prices. This close producer-customer relation in manufacturing and design generates short term competitive advantage for Ferrari. Moreover, the customization program boost Ferrari's models price levels as well.

### ***Summarize of Value Chain Analysis***

Table 6 below summarizes what primary activities generate core competences for Ferrari and create competitive advantage for the company in the market. The competitive advantage has been divided as a long-term sustainable competitive advantage and short term competitive advantage.

*Table 6-Competitive Advantage Analysis-Author Creation*

<b>Primary Activity</b>	<b>Supporting Activity</b>	<b>Core Competence Resources</b>	<b>Imitability</b>	<b>Competitive advantage</b>
Inbound logistics	Technology development and procurement	"Key strategic innovative partners"	In the long run	Short-term competitive advantage
Production	Infrastructure, HR management, technology development	Maranello, Engineers' mindset	Not imitable	Long-term competitive advantage
Outbound logistics	HR management and procurement	Ferrari Academy-skill and technician training	In the long run	Long-term competitive advantage
Marketing and sales	Technological development and infrastructure	Formula One Scuderia Team, Tailor Made Program	In the long run	Short-term competitive advantage
Services	HR management	Ferrari Academy-skill and technician training	In the long run	Short-term competitive advantage



## 5. SWOT Analysis

After completing Ferrari's strategic and financial analysis, the company's strategic and financial position is defined in the SWOT analysis (strengths, weaknesses, opportunities and threats).

### Strengths

- Exceptionally strong brand image and exclusivity that gives the company strong pricing power.
- New investments and technology innovations increase Ferrari's model performance and set the new standards in luxury car performance market which in turn set high technological barriers.
- Ferrari Academy- The unique training programs raise and set employees' Ferrari's mindset and create knowledge know-how which is not likely to be imitable by competitors.
- Low volatility due to strong correlation with HNWI
- Formula One- marketing platform through sports competition and traditional longtime presence in sports increase Ferrari's brand awareness amongst audience. Moreover, Ferrari has no need to spend additional capital on advertising campaigns.
- Strong and devotional bond with customers through "Tailor Made Program" which gives a high level of customization and profound cooperation with customers.
- Strong corporate connection between the company and employees
- No need for intensive CAPEX due to low volume business.
- High interest coverage ratio implies Ferrari's high solvency and ability to meet debt obligations.

### Weaknesses

- Low volume business- although it maintains its exclusivity through rarity, the low volume business model can adversely affect demand requirements.
- Low volume business model can omit growth opportunities that Ferrari can leverage and benefit its shareholders.
- Engine business is still highly dependent on Maserati plans and its long-term target goals
- Strong environmental and emission policies-Ferrari will be required to adjust its production toward low emission and hybrid models in order to maintain regulations and avoid regulatory fines. This might lead to intensive CAPEX and losing Ferrari's traditional soul such as performance, power and speed.
- Low AR turnover comparing to traditional automotive segment



- High R&D costs which comprise around 20% of the total net revenues and four times higher than its peers.
- Despite the strong brand presence through Formula One and licensing, the brand revenue line is not fully exploiting the fully potential of brand value

### ***Opportunities***

- Opening of new markets for luxury goods due to economy growth in developing countries.
- Wealth growth in large markets such as India and Greater China which show an opportunity for sports and luxury cars manufacturers to leverage these new markets.
- Ferrari has space to extend its production to large volumes and to enlarge the customer base through different remodeling aspects
- Ferrari's production factory in Maranello is not working at the full capacity which gives flexibility to Ferrari, in case of expansion strategy, to exploit this opportunity without additional capital investments in plants and property
- Technology development opens up new avenues for Ferrari to explore and to enhance its own product development and performance of the models. (Carbon-fiber technology, lightweight materials, improvements of electronics)

### ***Threats***

- Frequent tightening of CO<sub>2</sub> emission regulations, imposed by different countries, especially in fast growing markets such as Greater China, present a substantial challenge for Ferrari to keep up with those requirements. Particularly taking in consideration the performance oriented nature of engines that Ferrari produces.
- Intensive competition amongst rivals such as Porsche which decided to shift its strategy to SUV's models such as Porsche Cayenne. Moreover, Porsche does not follow the low volume strategy as Ferrari in order to maintain the exclusivity, but it rather expands the range of models throughout other segments not just in sport and GT segment.
- Economy uncertainty- although Ferrari is not as cyclical business as the traditional automotive industry, it stills suffers from adverse and unpredictable economic trends that affect the global economy. Tension in Middle East, slower growth in China, full industry capacity in Europe are some disadvantageous trends that could impact Ferrari's financial performance.



## 6. Forecast

Since the emphasis of the valuation analysis is on ReOI, this section focuses on the forecast of ReOI drivers in order to predict ReOI's future developments. Stating the ReOI formula:

$$ReOI = Sales \times \left[ Core\ sales\ PM - \frac{Required\ return\ from\ operations}{ATO} \right] + Core\ other\ OI \\ + Unusual\ Items$$

There are five drivers that need to be forecasted: sales, core sales profit margin (PM) turnover efficiency, core other operating income (OI), and unusual items. The following sections determine the forecast figures and explain the reasoning behind established assumptions used for the forecast

### 6.1 Budget Period

Before getting profoundly into the forecast of the ReOI drivers it is important to determine the forecast period. Koeller (2010) points out that the forecast for the cyclical companies should encompass longer forecast periods usually from 10-15 years. The forecast entails 10 year period assuming that after the 10<sup>th</sup> year Ferrari will grow at the perpetual growth rate and it will achieve the steady state. The overall forecast period embraces three stages. The first stage is the five year period (2016-2021) where the explicit forecast is performed. This stage encompasses Ferrari's growth strategy and potentially drivers which may incur significant technological changes. Furthermore, it is assumed that these changes will significantly impact Ferrari's figures by 2021. Moreover, the explicit forecast highlights Ferrari's short term strategy to introduce new vehicles each year until 2018. The second stage implicates the remaining period which anticipates the slower growth. The second stage forecast of ReOI's value drivers are partially benchmarked upon the earlier performed quantitative industry analysis estimations. Additionally, the growth will fade down to the terminal growth rate. Finally the third stage determines the terminal value.

### 6.2 Terminal Growth

In order to analyze the terminal growth rate the attention was brought to several potential determining drivers of the long term growth: the growth in the sports car segment, GDP growth and Ferrari's strategy.



As it was stated in the strategic analysis, the sport car segment is anticipated to grow at CAGR of 4.5% in the period 2011-2021. In addition, the automotive industry is a mature one and it is generally correlated with GDP trends. As mentioned earlier, the global GDP will grow from 3.5% to 3.9% until 2021 while the GDP growth in advanced economies and the Euro area is estimated to be between 1% and 2%. However, Ferrari is rather correlated to the growth of HNWI implying less dependence on the macroeconomic factors. This further implies that Ferrari is more likely to grow above the traditional auto segment in the short run but fading down to GDP growth in the long run. Moreover, assuming that Ferrari will follow its low volume production strategy while maintaining high prices in order to sustain its brand exclusivity not any spectacular growth figures should be anticipated in the long run. This assumption can be additionally emphasized by the fact that Ferrari entails substantial benefits and regulation exemption as a SVM. Therefore, it is implausible that Ferrari will seek to extend the production above the SVM thresholds and move its production to the mass market which would incur significant costs. Moreover, it is more likely that Ferrari will slightly increase the production volume since it still generates strong and positive profit margins. The growth is expected, however, it would be too optimistic to assign a high terminal growth rate to Ferrari. Hence, 1.5% long run growth is assigned which is in line with the long run GDP growth in the EU and advanced economies. The complexity of the perpetuity growth rate will be analyzed more in detail in sensitivity analysis.

### **6.3 Business Segment Revenue Forecast**

The first driver that will be forecasted in the explicit forecast is sales growth. According to Appendix 1, sales have increased with a steady trend since 2007 until 2014. There are four components of revenues: car sales and spare parts (73%), engines (8%), sponsorship and brand commercial (15%) and other income (4%) mainly generated through interest income. Since the sponsorship revenues rely on Formula One team success, which is really difficult to anticipate, the revenues from this business segment are assumed to be unpredictable and hence, the emphasis is on Ferrari's car production and its sales.

#### ***6.3.1 Sales Development***

The sales forecast is exclusively based on the firm's strategy and its future production. These aspects mainly involve the production and development of new models in the market as well as developments of new markets. The core assumption is that Ferrari intends to stay a low volume business in order to keep



its exceptionality. Moreover, the capacity limitations of Maranello factory are the biggest constraint for the sales growth. Hence, there is a small probability that there will be oversupply of Ferrari's models.

### ***6.3.2 Volume and Anticipated Growth Strategy***

As emphasized above, Ferrari's main strategy is to pursue a low volume business, keep extra exclusivity and rarity of models, which in turn beneficially impacts its operating margins by setting high retail prices and low production costs. Ferrari has increased its volume by only 255 units from 2013 to 2014, and 409 units from 2014 to 2015 with a growth of 3.6% and 5.6% respectively.

Ferrari's management attention to increase the production to 9,000 units until 2019 implies the increase in volume production by CAGR ~4%. Additionally, Ferrari's board announced that the company might re-think the growth strategy by which Ferrari will raise its global sales cap to around 10,000 units. (Drew, 2016) However, one big regulatory piece cannot be omitted and that is current SVM benefits that the company exploits. By increasing the production volume, Ferrari would lose SVM eligibility which would induce substantial investment cost and remodeling in order to satisfy the new regulation policies. To that end, it can be assumed that even if Ferrari decides to surge production to 10,000 units, this may be feasible in the long run with a slow steady growth rate. Furthermore, Ferrari could easily achieve this threshold in the short term by introducing an economy model. However, this is less likely to happen since this strategical approach would be at the cost of its brand exclusivity. Comparing to historical data, the forecasted car sales will comprise ~71% of Ferrari's total net revenues.

### ***6.3.3 Car Models***

Ferrari's performance in the market is highly correlated with the introduction of new models. As showed in the strategic analysis, Ferrari seeks to introduce a new model each year with updated technology and innovations in order to maintain market share and boost sales. In 2015, the sales of the end years cycle models production dropped by 24%, while the newly introduced models gained sales by 17%.<sup>52</sup> Short model lifecycles (4-5 years) give Ferrari the ability to achieve a competitive advantage through exclusivity as well as to be flexible to market demand trends. 2018 will be the gap year when Ferrari will

---

<sup>52</sup> Ferrari, S.p.A, Annual report, pg. 35





not place a new model in the market. (Figure 13) However, the prior 2018 production strategy is assumed to be pursued after 2019.

#### ***6.3.4 Engines, Sponsorships and Other Segment***

Ferrari's main engine customer is Maserati. Hence, the revenue growth from engine sales is mainly dependent on the framework agreement with Maserati. According to this agreement Ferrari expects to produce 178,000 engines in aggregation by 2020. Moreover, the production of engines will rise subsequently to 260,000 units by 2023. This will follow Maserati's growth strategy whose management planned to introduce new models and to increase the sales volume in the future. In 2014 and 2015, ~11% and ~8% of the total net revenues was generated from engine sales.<sup>53</sup> I assume that higher growth in engine sales than in vehicle sales will be offset by the lower price of engine itself. Hence, the forecasted engine revenue share will be flat at 10% which will reflect the increased deliveries to Maserati. It is complex to set the price of engines since they vary according to Maserati's requirements.

Sponsorship, brand and commercial highly depend on Formula One team Scuderia and its success, as well as on licensing Ferrari's brand. In 2013, the revenue share devoted to sponsorships and brand was 17.6% while in the two previous years it was around 15.5%. The revenue share is forecasted to be flat at the rate of 16%. This rate will mirror Ferrari's expansion in the theme park business as well as the increase in brand awareness through licensing different accessories. Although, the number of spectators in Formula One has decreased in the previous two years, it is still a strong marketing and testing platform for Ferrari's brand and its technology. Moreover, as it could be seen in the strategic analysis, Scuderia team is Ferrari's competitive advantage. Hence, even it is complex to predict the future success in sports, sustained earnings are expected in the future from this segment of business. Finally, I expect "The other" segment to maintain the ~3% of the total net revenues. The Financial Service Group's revenue is directly correlated with sales growth. Hence, as production and sales are expected to increase, the revenue from Ferrari Financial Services will follow this trend as well.

---

<sup>53</sup> Ferrari S.p.A, Annual report, pg. 63



## **6.4 Full Information Income Statement Explicit Forecast (2016-2020)**

### ***Sales Forecasts***

As stated earlier the global GDP growth is anticipated to be between 3.5-3.9% between 2016 and 2021. I assume that the revenues will grow at the higher rate than the global GDP level for several reasons. Firstly, since Ferrari is an ultra-luxury brand it is less exposed to industrial cyclicality than other traditional auto brands. Moreover, as emphasized in strategic analysis Ferrari's target group are wealthy people who are almost zero price sensitive. Accordingly, the sales growth will be more affected by the wealth growth which is projected to grow at 6% CAGR by 2019. (Barton, Chen, & Jin, 2013) Moreover, Ferrari anticipated increasing the volumes to 9,000 per year by 2017, leading to a CAGR of 4.5%. 1Q 2016 results show 8.8% yoy sales growth. Likewise, the sales are dependent on the new models production. In 2016, Ferrari will launch two new models, each from the V8 and V12 segment, while in 2017 three models will be launched. Hence, supposing that the net revenues growth will capture these new promotions boosted with a favorable product mix as well as the extensive engine production for Maserati ~7% growth rate can be anticipated in 2016 and 6% in 2017. Even though the new models seem to bring positive trends in sales, Ferrari will not leverage fully that opportunity due to its production policy to steadily increase the production volume. Ferrari does not intend to launch any new models in 2018 and hence, it is assumed that the growth will start to weaken to 5.5% in 2018 and, consequently, beyond that year it will steadily fade down to the long term growth rate of 1.5%. Although it is likely that innovative models will be introduced beyond this period, it is assumed that Ferrari's conservative growth policy will limit the growth potential.

### ***Gross Margin Forecast***

The gross margin highly depends on the material used for car manufacturing. In 2015, the gross margin was 47.5%. In order to meet regulations, Ferrari more often employs technologies that use carbon fibers and aluminum to produce lighter cars which reduce fuel consumption and CO<sub>2</sub> emissions. As stated in the strategic analysis the cost of these materials has been reduced significantly with a declining trend in the future. To that end, it is assumed that the gross margins will increase to 51% which will capture these cost upsides from 2016 to 2018. Moreover, the low volume production will not require Ferrari to off-shore its production. However, the labor cost is expected to increase in the future due to intensive technological novelties. More advanced technology will induce the increase in training costs and it will require Ferrari to employ more skillful engineers in order to achieve projected hi-tech goals. Hence, it is



assumed that the increase in labor costs will push down the margins to 49% in 2019 and subsequently to 48% as new products and more costly novel technologies are brought into the market.

### ***Core Operating Expenses***

The biggest drivers of core operating expenses are SGA (selling, general and administrative) expenses and R&D. SGA expenses of 11.9% of the total net revenues were recorded in 2015, while in 2014 SGA costs comprised 10.9% of the annual net revenues. The main reason for the increase in SGA costs were one-time costs related to the IPO and the restructuring process.<sup>54</sup> According to that fact, it is assumed that SGA costs will drop to 11% of the total net revenues in 2016 and beyond.

In 2015, R&D costs were 19.7% of the total annual net revenues. R&D costs are mainly correlated with launching new models and developments within the Formula One team. As Ferrari will launch 3 models in 2017, I expect that R&D costs will increase to 20.5% of the total net revenue in 2016. However, I assume that R&D costs will drop to the current level in 2017 and 2018. Moreover, Ferrari's R&D costs are anticipated to comprise 20% beyond 2018 due to the intensive competition within the luxury car market. Finally, other expenses are assumed to be 0.5% of the annual net revenues.

### ***Tax Rate and Unusual Items***

Due to a change in Italian law, the corporate tax rate will be 24% from January 2017 onwards.<sup>55</sup> Hence, the current corporate tax rate is used to estimate the core operating income in 2016 and thereafter, the new corporate tax rate was considered as a long term tax rate.

The unusual items are often difficult to forecast, hence, they are forecasted to be zero. (Penman, 2010) Ferrari's income statement other OI is classified under the unusual items. The overall full-information five year explicit forecast could be seen in table 7. As it can be seen in the table, core profit margins tend to jump in next period to 15% in 2017 which depicts the introduction of new models. However, the core profit margin will slightly decline to 12.5% beyond that year showing slower and steady growth in sales.

---

<sup>54</sup> Ferrari S.p.A, Annual report, pg. 68

<sup>55</sup> Ferrari S.p.A, Annual report, pg. 141



*Table 7-Full Information Income Statement Explicit 5 Year Explicit Forecast (in € millions)*

	2015 A	2016 E	2017 E	2018 E	2019 E	2020 E
<b>Core Operating Income</b>						
<i>Growth rate</i>		7%	6.00%	5.50%	4.93%	4.36%
Core Sales revenue	2,854.4	3,054.2	3,237.4	3,415.5	3,583.8	3,740.0
Core cost of sales	1,498.8	1,496.5	1,586.3	1,673.6	1,827.7	1,944.8
Core gross margin	1,355.6	1,557.6	1,651.1	1,741.9	1,756.1	1,795.2
<b>Core operating expenses</b>						
SGA costs	338.6	336.0	356.1	375.7	394.2	411.4
R&D costs	561.6	626.1	637.8	672.9	716.8	748.0
Other income/(expense)	(16.8)	(15.3)	(16.2)	(17.1)	(17.9)	(18.7)
<b>OI (before tax)</b>	438.5	580.3	641.0	676.3	627.2	617.1
<b>Taxes*</b>	145.3	159.6	153.8	162.3	150.5	148.1
<b>Core OI from sales (after tax)</b>	293.2	420.7	487.2	514.0	476.6	469.0
<b>Core Profit Margin</b>	10.3%	13.8%	15.0%	15.0%	13.3%	12.5%

\*Taxes: 27.5% corporate tax in 2016, 24% corporate tax in 2017 and beyond

## 6.5 Full Information Balance Sheet Explicit Forecast (2016-2020)

Historically looking, the balance sheet components tend to be more stable over time comparing to income statement items. (Plenborg & Christian, 2012) However, certain changes in the balance sheet can be foreseen in order to support Ferrari's revenue growth in the future. Hence, the forecast of balance sheet items is showed as a percentage of revenues in order to show the linkage of sales and operating assets.

### *Accounts receivables*

Accounts receivables (AR) comprised the largest portion of the total operating assets with 38%. In 2015, the account receivable turnover ratio was 2.12 or 47 cents per euro sales. Comparing to 2014, Ferrari increased AR turnover ratio from 1.96 which implies that the company started generating more sales from AR. The main driver of accounts receivables was Ferrari's financial service activity which accounted for ~87% of the total AR. Receivables from financial services has declined in 2015 comparing to 2014 by ~4% which can be partly explained by slower growth in sales in that particular period. Hence, it can be concluded that Ferrari's financial service activity is affected by sales growth. I assume that AR will be 48 cents per euro of sales until 2017 to capture the increase in sales. However, this rate will be reduced to 46 cents per euro of sales (2.17 turnover ratio) beyond that period due to slower sales growth as well as better collection policy by Ferrari. This long term AR rate is in line with the company's historical AR turnover ratio which was 2.12. Moreover, it can be assumed that Ferrari will not increase



the AR significantly due to the type of its customers which are mainly super wealth people who do not require prolonged payments.

### ***Inventory***

Historically, Ferrari succeeded to maintain the low inventory on stock. As mentioned in the earlier analysis, efficient inventory management enabled Ferrari to maintain the same level. However, the future growth in both car and engine sales might induce a slightly higher inventory on stock in order to maintain the future sales growth. Hence, I assume that the growth pick in both engine and car sales will be 2017-2018. To that end, I forecast that Ferrari's inventory for 2017-2020 will be 11 cents per euro of sales. All other years will maintain the same level of inventory at the current rate which is 10 % of sales.

### ***Property, Plant and Equipment***

Ferrari's factory Maranello is not working at full capacity giving the company ability to be flexible in terms of production. Hence, the low volume business that Ferrari pursue will not require the company to make significant investments in PP&E. In case that Ferrari decide to shift its low volume strategy toward medium volume strategy it will still have enough room to leverage existing factory without any additional investment in plants. However, there will be certain investments that will have to be undertaken in order to support the car and engine production growth

Additionally, Ferrari is really active in promoting its brand through building up theme parks. Ferrari already has one theme park in Abu Dhabi and one is under construction in Spain. However, Bloomberg (2016) announced that Ferrari has scheduled two theme parks to be built in China and the United States. (Ebhardt, 2016) Ferrari-land, Port Aventura investment has been estimated on €100 million. Hence, the additional capital expenditures can be foreseen in the future. On the other side Abu Dhabi theme park was \$624 million investment. (The Weekly Driver, 2010) PP&E in 2015 comprised 22 cents per euro of sales while in 2014 it was 21 cent per one euro in sales. I assume that this will increase in next couple years. Accordingly, I forecast that PP&E will be 23 cents per euro in sale in 2016 and it will increase to 24 cents per euro in sales in 2017 and 2018. This period will capture the finalization of agreements for theme parks in China and the US. From 2019 it is assumed that it will fade down to the current level.

### ***Other Balance Sheet Items***

***Trade Payable-*** Trade payables have decreased over time. In 2013 it counted for 21% of total sales, while in 2014 and 2015 they were 19% and 18% respectively. Usually trade payables are related to lifecycle



of the models. Assuming that new models are planned to be launched in the next 2-3 years I forecast that trade payables will increase to 19% of the total revenue for that period after which it will be reduced to the current level which will stay the same after 2018.

Other operating liabilities and operating assets are forecasted to stay at the current proportion level of the total net revenues. The overall pro forma balance sheet forecast can be seen in table 8.

*Table 8-Full Information Balance Sheet Explicit 5 Year Forecast (inverse)-Author Creation*

	A 2015	E 2016	E 2017	E 2018	E 2019	E 2020	E 2021	E 2022	E 2023	E 2024	E 2025
<b>Operating Assets</b>											
AR, less allowance for doubtful accour	47%	48%	48%	47%	46%	46%	46%	46%	46%	46%	46%
Goodwill	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%
Intangible assets	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%
Property, Plant and Equipment	22%	23%	24%	24%	24%	22%	22%	22%	22%	22%	22%
Inventories	10%	10%	11%	11%	11%	11%	10%	10%	10%	10%	10%
Deffered tax assets	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Other Current Assets	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
<b>Total Operating Assets</b>	124%	126%	128%	126%	125%	123%	123%	123%	123%	123%	123%
<b>Operating Liabilites</b>											
Income tax payable	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Trade payable	18%	18%	19%	19%	19%	19%	18%	18%	18%	18%	18%
Provision for Risks and Charges	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Other Liabilities	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
Employee benefits	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Deferred taxes liabilities	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>Total Operating Liabilities</b>	53%	53%	54%	54%	54%	54%	53%	53%	53%	53%	53%
<b>Net Operating Assets/(Liabilites)</b>	71%	73%	73%	72%	71%	69%	69%	69%	69%	69%	69%
<b>ATO</b>	1.41	1.37	1.36	1.39	1.41	1.45	1.91	1.91	1.91	1.91	1.91

## 6.6 Second Stage Forecast (2020-2025)

The second stage forecast embraces the period from the explicit forecast until the terminal year. It will be based upon the quantitative industry analysis performed earlier. As stated in the quantitative analysis section the sales growth estimations will be avoided and they will be based upon the assumption that the sales growth rate will decay at the steady level from 2020 until the terminal rate.

ReOI drivers that will be estimated by the quantitative analysis are profit margin and ATO. The long run level profit margin has been estimated at 7.04%. However, Ferrari's peer group are mass manufacturers that do not incorporate as much pricing power as Ferrari. Moreover, Ferrari's price level is significantly higher than its peers. Furthermore, the ultra-luxury car producers entails significantly higher brand



exclusivity and boost their sales revenues with limited edition models which favorably affect the profit figures. Hence, I have readjust the long run level for the ultra-luxury car performance industry at 9% which is somewhat in line with the ultra-luxury car manufacturers' profit margin. In addition, the persistence rate is assumed to be 70.8%.

ATO long run level in the quantitative analysis appears to be rational at 1.91 with a strong persistence of -1. Although Ferrari is not a mass producer likewise its peers, this ATO long run level can be foreseen due to the improvement in collections from account receivables and payables. Moreover, due to the reduction of the corporate taxes in Italy, positive trends in tax liabilities could be anticipated. Considering the persistence of -1 implies that Ferrari tends to achieve the industry trend in 2021 and maintain that trend through 2025. Profit margin development can be seen in Appendix 7. The 2020-2025 forecast of ReOI drivers can be seen in Table 9.

*Table 9-Second Stage Forecast ReOI Drivers (2020-2025)*

	2021E	2022E	2023E	2023E	2025E
<b>Sales Growth</b>	3.79%	3.21%	2.64%	2.07%	1.50%
<b>Sales</b>	3,881.6	4,006.3	4,112.2	4,197.4	4,260.3
<b>Core Sale Profit</b>	445.52	430.85	421.17	414.67	409.95
<b>Core Sale PM</b>	11.48%	10.75%	10.24%	9.88%	9.62%
<b>ATO</b>	1.91	1.91	1.91	1.91	1.91

## 7. Cost of capital

The importance of cost of capital lays in its fundamentals which emphasize this rate as required return by investors to compensate for investing in a particular share in terms of time value of money and the risk. This section analyzes the estimation of Ferrari's cost of capital which will be used later as a discount rate in valuation. Since the focus of Ferrari's valuation is on its operations, the cost of capital for operations (also referred as weighted average cost of capital WACC) will be used to discount the residual operating income.

$$WACC = \frac{MVe}{MVo} \times r_e + \frac{MVD}{MVo} \times r_d \times (1-t)$$

Hence, the main inputs of WACC formula are cost of equity capital ( $r_e$ ), cost of capital for debt ( $r_d$ ) which are weighted with the capital structure of the firm.



## 7.1 Cost of equity capital

Capital asset price model (CAPM) is the most used concept behind the calculation of the cost of equity capital. It integrates the relationship between the risk and return stating that an investor will pay only for the systematic risk which cannot be eliminated through the portfolio diversification. According to CAPM model the cost of equity capital is determined by the formula (Grablowsky, Brealey, & Myers, 2011).

$$r_e = r_f + \beta \times \text{Market risk premium}$$

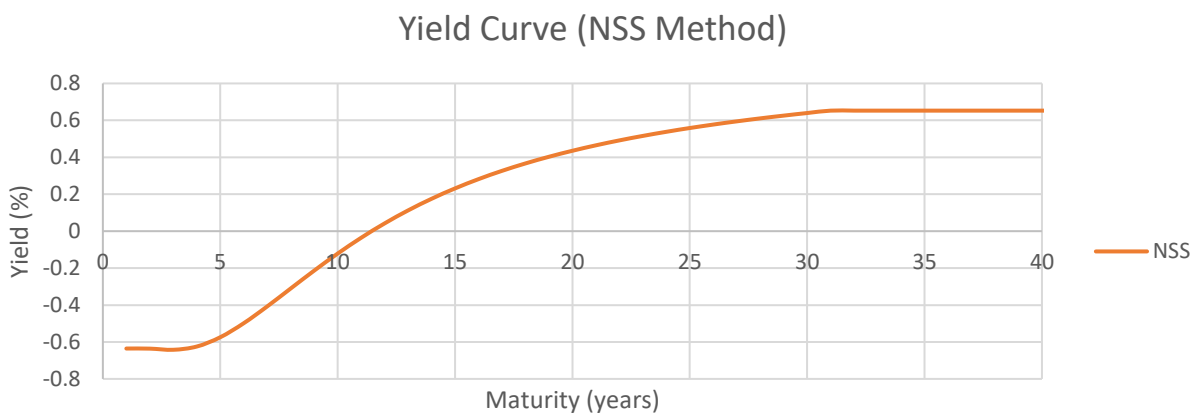
The main drivers of the equity cost of capital are risk free rate, systematic risk and market risk premium.

### 7.1.1 Risk free rate

Nelson-Siegel-Svensson method has been used for the estimation of the risk free rate. This method is widely used amongst European central banks to derive yield curve out of series of zero coupon bonds of different maturities. (Ballwieser & Wiese, 2010) Moreover, this method is required in valuations in Germany. Appendix 8 explains the method and provides equation used for yield estimation. Moreover, this method “smooths out” potential mispricing due to illiquidity of the long term government bonds. (Arnold, Lahmann, & Schwetzler, 2011) Additionally, Damodaran (2009) stresses out the importance of the risk free rate’s consistency with inflation. Since residual operating earnings are in nominal terms the risk free rate in nominal terms is used.

Since the objective of this dissertation is European company, it would be feasible to use the European country long term government bond. According to the credit rating of sovereign bonds in Appendix 9, Germany, Luxembourg, Sweden and Denmark have the highest credit ratings in Europe and, thus, the lowest risk. However, German government bond (German Eurobond) will be used assuming the highest liquidity amongst the top ranked countries. Ferrari’s operating income is in nominal terms which is consistent with 30 year German government bond nominal values. Figure 14 shows the yield curve of German zero coupon government bonds with different maturities as of July 23, 2016. Since the future cash flow is assumed to be infinitive, the longest maturity should be applied. The longest German’s government bond maturity is 30 years, however, it has been assumed that the curve beyond that period is flat. Hence, the yield on 30 year government bond is ~0.65% which will be used as a risk free rate.





*Figure 14-Yield Curve (Nelson-Siegel-Svensson Method; Source: ECB-Author Creation*

### **7.1.2 Equity Risk Premium**

Equity risk premium is an important element of the cost of equity capital. Petersen & Plenborg (2012) argues that there is an uncertainty about the true value of the risk premium. Additionally, Koeller et al. (2005) stresses the market risk premium as “the most debated issue in finance”. (Koeller, Goedhart, & Wessels, 2010) There are various approaches of estimating risk premium. Petersen & Plenborg (2012) states that there are two general methods: ex-post approach and ex-ante approach. Ex-post approach estimates the risk premium by observing historical market returns and the long term risk free rate. Koeller et al. (2005) suggests market risk premium between 4.5% and 5.5%.

Damodaran (2016) modifies the historical market risk premiums by adding country/region specific risk on the average historical market return for every country assuming different premiums. Based on Ferrari’s operations across the global regions, I have decided to determine the revenue weights that Ferrari generates from operations in those regions. *Applying those weights to particular region specific risk premiums the weighted average equity risk premium of 7.34% has been estimated.*

### **7.1.3 Beta Estimation**

Ferrari’s raw beta has been estimated at 0.88.<sup>56</sup>The raw beta or historical beta is obtained from the linear regression for a stock’s historical data. For beta input the adjusted beta is used, which represents an

---

<sup>56</sup> Bloomberg Data, 2016



estimate of a security's future beta. It is derived from the historical beta but modified by the assumption that the future company's beta will move towards the market average of 1. The adjustment formula used:

$$Adj. \beta = 0.67 * Raw \beta + 0.33 * 1$$

*Ferrari's adjusted beta is estimated at 0.92 which will be used for the cost of equity calculations. By applying CAPM model, I estimated cost of equity of 7.37%.*

## 7.2 Cost of Debt

Cost of debt represents a cost at which the firm can borrow money to fund the business and operations. Penman (2010) emphasizes the cost of capital for debt as the cost of capital for all net financial obligations including preferred stocks and financial assets. Moreover he underlines the cost of capital for debt as an average borrowing cost of the firm. The formula used for the estimation of the cost of debt:

$$r_d = \text{Nominal Cost of Debt} \times (1 - \text{tax})$$

Additionally, Damodaran (2009) as well as Petersen & Plenborg (2012) extends this formula:

$$r_d = (r_f + r_s) \times (1 - \text{tax})$$

This formula states that the cost of debt is based on both financial and operational risk estimated as credit spread (default spread) over the risk free rate. Since Ferrari's annual report does not provide the average borrowing cost in notes, the extended formula is used to calculate the cost of debt. The three main inputs are: 1) the risk free rate 2) default spread and 3) the corporate tax.

Risk free rate is estimated in the previous section while analyzing the cost of capital for equity. There are different ways to estimate the default spread. Since Ferrari is the recently IPO, the credit ratings for this firm have not been assign yet by the credit ratings agencies. Therefore, the synthetic rating is estimated based on Ferrari's interest coverage ratio and its market cap which the whole assessment can be seen in Appendix 10. (Damodaran, 2009) Considering the market cap of Ferrari which is estimated around \$8 billion Ferrari can be considered as a firm with high market cap. According to Damodaran



dataset Ferrari has significantly high interest covered ratio of 26.6 which assigns AAA synthetic rating and 0.75% default spread.<sup>57</sup>

In order to reconfirm Ferrari's high synthetic rating, I extended synthetic rating assessment with Altman Z score which integrates five other financial ratios in evaluating firm's default probability and its financial stability. The overall assessment can be seen in the Appendix 11. Ferrari has Z-score of 3.224 which places this company in the safe and stable zone with only 3.8% probability chance to go into bankruptcy.

*Corporate tax used for the cost of debit estimation is the long term marginal income tax rate 24%. Integrating all inputs I estimated effective cost of debt of 1.09%*

### **7.3 Capital Structure**

The last input of WACC formula is a capital structure that company assigns. From the valuation perspective, the aim is to determine and to challenge the future value of the company through the future residual earnings. Hence, the focus in this section will be on target capital structure. According to Penman (2010), the weights in WACC calculation are determined by the intrinsic value of operations and net financial obligations. Considering the fact that market values represent the opportunity cost for investors, the market values of equity are typically used. (Plenborg & Christian, 2012)

Ferrari is mainly equity financed business. In 2015, Ferrari had net financial obligation of €2,021 and this is mainly due to financing a FCA spin off by borrowing €2.8 billion. However, in 2014 and 2013 Ferrari incurred net financial assets lowering the enterprise value.<sup>58</sup> Ferrari's market value (MV) of equity to market value (MV) of operations was 0.82 while NFO to MV operations was 0.18 giving the leverage ratio of 22%. Assuming that 2016 is a transitional year in terms of financial debt on the group capital, the expected long term capital structure is used. Several assumptions have been made regarding the target capital structure. Firstly, significantly low cost of debt. As it could be seen in the macroeconomic analysis, the low interest rates stimulate intensive borrowings. Additionally, financing through debt is cheaper for the company than equity. Hence, it is assumed that Ferrari will seek to increase the debt to equity ratio.

---

<sup>57</sup> Damodaran, A. (2016), Dataset – Estimating country risk premium

<sup>58</sup> Ferrari S.p.A, Annual report, pg. 73



Hence it could be feasible that Ferrari will optimize its capital structure in the next period assuming that NFO/Equity will rise. I will assume that the target capital structure will be D/E 50%. In this case Ferrari will increase its leverage ratio, however it will stay below the industry leverage. **Applying all inputs WACC at 5.27% has been estimated.**

## 8. Valuation and Analysis

This section includes the valuation of the forecasted ReOI and the relative valuation of Ferrari's multiples comparing to its peer group as well as to the luxury brand companies.

### 8.1 Valuation Based on ReOI

The goal of this valuation model is to derive the fundamental value of equity which challenges the market value of the company. Anchoring the equity valuation model to ReOI brings closer attention to operations that add value emphasizing the source of value generators. Moreover, this model is efficient due to its simplicity because it entails few key drivers to be forecasted. Furthermore, the investments that do not add value are excluded putting to the fore the investments that add value. Finally, the model is irrelevant to financing strategy since the financing activities do not affect the operations. Table 10 summarizes the output of the valuation based on residual operating income from operations method while the whole model can be seen in Appendix 12:

*Table 10-ReOI Valuation Outputs (€ millions); Source: Author creation*

Total ReOI PV to 2025	3,117.44
PV of Continuing value	4,704.38
Common Equity as of Dec. 2015	(6.80)
<b>Value of Equity (€ millions)</b>	<b>7,815.02</b>
Net Financial Obligation	2,021.30
<b>Enterprise value (€ millions)</b>	<b>9,836.3</b>
Number of Shares (millions)	188.92
<b>Value per share</b>	<b>€ 41.37</b>
Cost of capital	5.27%

According to the Table 10, the ReOI has been calculated based on the previously forecasted ReOI drivers giving the total present value of residual operating incomes of € 3,117.4 million. As it can be seen from Appendix 13, ReOI is expected to grow significantly until 2018 which captures the new models launches



and the extensive engine production for Maserati. After that period the ReOI is anticipated to decline due to the achieved capacity production and somewhat slower growth. Adding the total present value of ReOI to the present value of continuing operations and the common shareholder equity as of Q1 2016 derives the equity value of € 7,815.0 million. The total number of shares outstanding on the July 7<sup>th</sup>, 2016 was 188.92 million contributes to Ferrari's equity value per share of €41.37.

The market, on average in the first week of July, valued one Ferrari share at €36.5. Considering the valuation based on the model in this thesis and the assumptions derived behind it, the market undervalues Ferrari's stock by 13.3%. There are numerous explanations for that. First, the market does not see too much growth potential in Ferrari in the future. Moreover, investors might be skeptic regarding the overall automotive industry in general due to more often regulations and policies imposed on car manufacturers. Their incredulity about the automotive business might have arisen from the recent scandal over Volkswagen and Toyota cheating on pollution test which affected the overall industry. Furthermore investors may perceive that the trend in the automotive business shifts towards fuel efficient cars due to strict conventions. Consequently, this may affect the sports car's industry by significant introduction of hybrid models impacting the current profile of powerful and fast models. However, Ferrari entails tremendous brand power which can be leveraged in the future, hence, Ferrari's undervalued stock is a good motive for investors.

## **8.2 Relative Valuation**

Throughout this study, the primary focus was put on residual operating income model leaving a trivial attention to relative valuation method. However, this method will be approached to the some extent since it is a wide spread in practice across valuation companies. Hence, in order to carry the useful relative valuation analysis three important requirements need to be fulfilled: choosing the right multiple, choosing the right peer group and calculation of the multiples has to be in the same manner. Considering that Ferrari does not have a pure peer player in the automotive industry, the peer group of the high top-end automotive players is extended with the peers from the luxury goods market. This is led by the assumption that peers from the luxury goods market entail significant brand value similarly to Ferrari which, consequently, provides more accurate and relevant valuation. Three ratios will be embraced: the enterprise value to EBIT (EV/EBIT), price to earnings ratio (P/E) and enterprise value to EBITDA (EV/EBITDA). According to empirical evidences the forward looking multiples are more accurate



predictors than historical ones. (Koeller, Goedhart, & Wessels, 2010) Hence, 1-year and 2-year forward multiples for EV/EBIT and EV/EBITDA will be used to encompass the future launches of the new models. P/E ratio will be 12-month trailed. Table 10 shows the multiples of Ferrari and its peers as well the values based on different peer groups.

*Table 11-Peer Multiples Comparison; Source: Bloomberg-Author creation*

<b>Ferrari S.p.A Values</b>	<b>EV/EBITDA</b>		<b>P/E trail.</b>	<b>EV/EBIT</b>	
	<b>E 2016</b>	<b>E 2017</b>	<b>2016</b>	<b>E 2016</b>	<b>E 2017</b>
Financials (EBITDA, EBIT, EPS)	855.20	932.40	316.00	580.30	641.00
<b>Peers Group Multiple</b>					
High End Peers (automotive) avg.	<b>4.6x</b>	<b>4.5x</b>	<b>8.1x</b>	<b>6.6x</b>	<b>6.5x</b>
Luxury Goods Peers avg.	<b>11.6x</b>	<b>11.0x</b>	<b>22.8x</b>	<b>15.2x</b>	<b>14.0x</b>
Enlarged sample (luxury+automotive)	<b>9.2x</b>	<b>8.8x</b>	<b>18.1x</b>	<b>11.2x</b>	<b>11.3x</b>
<b>Enterprise Values (€ millions)</b>					
High End Peers (automotive) avg.	3,916.82	4,200.46	2,543.80	3,829.98	4,166.50
Luxury Goods Peers avg.	9,891.81	10,236.98	7,219.55	8,794.18	9,001.24
Enlarged sample (luxury+automotive)	7,908.46	8,202.79	5,732.64	6,524.75	7,271.74
<b>Common Equity Values (€ millions)</b>					
High End Peers (automotive) avg.	1,895.62	2,179.26	2,543.80	1,808.78	2,145.30
Luxury Goods Peers avg.	7,870.61	8,215.78	7,219.55	6,772.98	6,980.04
Enlarged sample (luxury+automotive)	5,887.26	6,181.59	5,732.64	4,503.55	5,250.54
<b>Stock Price</b>					
High End Peers (automotive) avg.	10.04	11.54	13.47	9.58	11.36
Luxury Goods Peers avg.	41.67	43.49	38.22	35.85	36.95
Enlarged sample (luxury+automotive)	31.17	32.72	30.35	23.84	27.80

Giving the three different peer groups, value of Ferrari diverges significantly. Considering solely the high-end automotive peers brings the expressively low Ferrari's common equity value as well as the stock price which is about four times lower than the one derived from ReOI model and roughly as triple as lower as the market price. This descends additional proof that Ferrari cannot be positioned into the automotive segment. The combination of the high-end premium automotive manufacturers and the luxury peers derives fairly reasonable value of Ferrari's common equity and stock price. The enlarged peer sample approach values Ferrari lower than the market in the first week of July, however more realistically than the traditional automotive segment only. Finally, the luxury goods peer group solely stems Ferrari's highest common equity and stock price values. They mirror the ReOI model's outcomes mostly. Both EV/EBITDA and EV/EBIT of the luxury goods peers show the Ferrari's growth potential in the future.



### 8.3 Sensitivity Analysis

Valuation method that supports this dissertation is based upon various assumptions which are influenced by different subjectivity and uncertainty. It is not beholden to envisage the future circumstances because the economic environment is highly erratic. Thus, the sensitivity analysis will test the possible values of common equity and the stock prices in terms of changes in WACC and the future growth of Ferrari's operations. Moreover, the sensitivity analysis will be applied on the unlevered multiple EV/EBITDA in order to estimate how the enterprise value will variate in accordance with EBITDA values impacts.

*Table 12-Sensitiity Analysis; Source: Author Creation*

<b>Equity Value (€ millions)</b>		<b>Growth rate</b>						
	<b>WACC</b>	<b>0%</b>	<b>0.5%</b>	<b>1.0%</b>	<b>1.5%</b>	<b>2.0%</b>	<b>2.5%</b>	<b>3.0%</b>
	<b>3.5%</b>	10,278.6	11,438.2	13,061.6	15,496.8	19,555.3	27,672.4	52,023.6
	<b>4.5%</b>	7,733.0	8,311.7	9,055.7	10,047.6	11,436.4	13,519.6	16,991.5
	<b>5.27%</b>	6,427.0	6,792.7	7,244.1	<b>7,815.0</b>	8,560.4	9,574.6	11,035.0
	<b>6.0%</b>	5,501.9	5,749.5	6,046.6	6,409.8	6,863.8	7,447.5	8,225.8
	<b>7.0%</b>	4,533.8	4,685.5	4,862.5	5,071.7	5,322.7	5,629.5	6,013.0
<b>Share price</b>		<b>Growth rate</b>						
	<b>WACC</b>	<b>0%</b>	<b>0.5%</b>	<b>1.0%</b>	<b>1.5%</b>	<b>2.0%</b>	<b>2.5%</b>	<b>3.0%</b>
	<b>3.5%</b>	54.41	60.55	69.14	82.03	103.51	146.48	275.37
	<b>4.5%</b>	40.93	44.00	47.93	53.18	60.54	71.56	89.94
	<b>5.27%</b>	34.02	35.96	38.34	<b>41.37</b>	45.31	50.68	58.41
	<b>6.0%</b>	29.12	30.43	32.01	33.93	36.33	39.42	43.54
	<b>7.0%</b>	24.00	24.80	25.74	26.85	28.17	29.80	31.83

Exceptional low interest rate environment in the EU implies low debt costs and hence, lower WACC. However, the yield curve assessed in the previous section can be a noteworthy predictor of the future economies activities. The upward slope of the yield curve indicates that financial markets expects the future interest rates to rise which represents a reasonable prediction due to the economy expansion outlooks. The potential increase in the interest rates will rise the cost of debt implying higher cost of capital. Assuming that the growth rate remains unaffected, the increase in cost of capital will eventually lower Ferrari's common equity and hence, the stock price as it can be seen in table 12. The complete WACC sensitivity analysis can be seen in Appendix 14. Therefore, for instance assuming the unchanged 1.5% growth rate, if the WACC increases by 13.9%, Ferrari's common equity and stock price value will decline by ~18%.



Considering that the terminal value accounts for ~81% of the enterprise value, the common equity value is highly sensitive to the long term growth. Ferrari has a huge growth potential considering its brand value and exclusive. However, Ferrari's status quo strategy regarding the production increase due to SVM benefits that the company exploits tempted my interest to analyze the future growth prospects. If Ferrari's management decides to break through the 10,000 units limit and expand the production leveraging lucrative brand potential, the higher growth rates can be foreseen. Consequently, if the long term growth rate increases by 0.5% and assuming the unchanged cost of capital, Ferrari's common equity value and stock price will surge by ~10%.

As it can be seen in table 13, the sensitivity analysis based on the unlevered multiple EV/EBITDA based on the overall peer group derives various estimates of Ferrari's enterprise values. As stated in the relative valuation analysis, the solely automotive high-end peers significantly underestimates Ferrari's value. Hence, the more accurate valuation is derived by embracing the luxury good companies in the sample, which similarly to Ferrari, entails substantial brand premium.

*Table 13-Sensitivity Analysis EV/EBITDA (Overall Peer Group); Source: Author Creation*

<b>Enterprise Value ( € millions )</b>		<b>EBITDA</b>						
	<b>Multiple</b>	600.0	700.0	800.0	855.2	900.0	1,000.0	1,100.0
	7.0x	4,200.0	4,900.0	5,600.0	5,986.4	6,300.0	7,000.0	7,700.0
	8.0x	4,800.0	5,600.0	6,400.0	6,841.6	7,200.0	8,000.0	8,800.0
	9.2x	5,548.5	6,473.3	7,398.0	<b>7,908.5</b>	8,322.8	9,247.5	10,172.3
	10.0x	6,000.0	7,000.0	8,000.0	8,552.0	9,000.0	10,000.0	11,000.0
	11.0x	6,600.0	7,700.0	8,800.0	9,407.2	9,900.0	11,000.0	12,100.0

## 9. Conclusion

The objective of this thesis was to determine the fair value of Ferrari S.p.A and to compare it the estimated value to the market. The primary model that has been applied throughout this dissertation was based on the residual operating income due to its pure equity concept which contributes to more accurate value estimation of the common equity. The application of this model entailed the financial statements reformulation by separating operating and financing activities. Thereby, the relative valuation method was used to validate and to support the overall valuation analysis. Comparing the results from these two methods it can be concluded that financial market sees Ferrari rather as a luxury brand than as a pure auto manufacturer.





In estimating the future ReOI flows, Ferrari's sales growth and profit margins are the key value determinants which substantially impact ReOI. They are highly correlated to the introduction of the new models and hence, the greatest profit margins (15%) are expected in years 2017-2018 when four new prototypes are expected to be introduced. Nevertheless, Ferrari's profit margin is highly influenced by large R&D costs which counts ~20% of the total sales. More pressure on margins is expected to be seen in the future due to intensive technological innovations and a battle for better competitive position in the market. Furthermore, Ferrari's growth will be significantly dependent on the fast growing and emerging markets such as Asia and Greater China where the growth of HNWI is significant (~6%). Also, it is important to highlight that Ferrari, as others car players, will be exposed to the trend shift in the automotive industry toward fuel efficient models. In the long run, this will lead to the increase in cost production due to modification of the current manufacturing footprints

According to the ReOI method, Ferrari's equity value has been estimated at € 7,815 million or € 41.37 per share implying the undervaluation of Ferrari's stock by 13.3% comparing to the market's average in the first week of July, 2016. The possible reason for this is that the market does not see too much prospects in the automotive industry considering all strict regulations and policies that have been anticipated. However, it is noteworthy to mention that Ferrari entails significant brand and pricing power that can be potentially leveraged in the future. Doubtlessly, Ferrari's prospects will be contingent to the future production strategy which foresees two possibilities: 1) keeping the low volume production while maintaining the product rarity and exclusivity as well as benefiting from SVM's concessions or 2) breaking through the SVM limit and leveraging the full brand potential, which would potentially induce tremendous growth in sales but probably trailing some exclusivity. Much brighter picture to investors will be perceivable once Ferrari's management decides to push the volumes up, and subsequently let Ferrari's stock price rise beyond € 50 per share. Additionally, the relative valuation showed that estimating Ferrari's value based on the high end automotive peers solely leads to significant underestimation of the fair value implying that Ferrari is incomparable to pure car players. Applying the multiples of the peers from the luxury goods market derives somewhat analogous equity value of Ferrari and hence, the stock price. According to these facts, investors and analysts rather see Ferrari as the luxury good brand than a pure car manufacturer.



## 10. Bibliography

### **Books:**

- Ballwieser, W., & Wiese, J. (2010). Cost of Capital. In W. Ballwieser, & J. Wiese, *Guide to Fair Value under IFRS, J.P.* (pp. 129-150). John Wiley & Sons.
- Christensen, P. O., & Feltham, G. A. (2009). *Equity Valuation*. Now Publishers Inc.
- Damodaran, A. (2009). Equity Risk Premiums. In A. Damodaran, *Investment Valuation* (pp. 159-177). New Jersey: John Wiley and Sons.
- Damodaran, A. (2009). Estimating Risk Parameters and Cost Financing. In A. Damodaran, *Investment Valuation* (pp. 182-223). New Jersey: John Wiley and Sons.
- Grablowsky, B., Brealey, R., & Myers, S. (2011). *Principles of Corporate Finance*. S&P Global.
- Grant, R. M. (2012). *Contemporary Strategy Analysis*. Wiley & Sons.
- Koeller, T., Goedhart, M., & Wessels, D. (2010). *Measuring and Managing the Value of Companies*. New Jersey: John Wiley & Sons.
- Penman, H. S. (2010). *Financial Statement Analysis*. New York: McGraw Hill.
- Plenberg, T., & Christian, P. (2012). *Financial Statement Analysis: Valuation - Credit Analysis - Executive Compensation*. Copenhagen: Trans-Atlantic Publications, Inc.

### **Annual Reports:**

- Audi AG, Annual report, 2013, 2014, 2015
- BMW AG, Annual report, 2013, 2014, 2015
- Daimler AG, Annual report, 2013, 2014, 2015
- Ferrari S.p.A, Annual report, 2013, 2014, 2015
- Ferrari S.p.A, Interim annual report Q1, 2016
- Porsche AG, Annual report, 2013, 2014, 2015



### ***Other Resources:***

- Anderson, B. (2016, February 3). *Ferrari Reports Record Annual Sales And Revenue*. Retrieved from Carscoops.  
Link: <http://www.carscoops.com/2016/02/ferrari-reports-record-annual-sales-and.html>
- Appelbaum, B. (2016, May 19). *Fed Is Seriously Considering Raising Rates in June, Meeting Minutes Says*. Retrieved from The New York Times.  
Link: [http://www.nytimes.com/2016/05/19/business/economy/federal-reserve-interest-rates-meeting-minutes.html?\\_r=0](http://www.nytimes.com/2016/05/19/business/economy/federal-reserve-interest-rates-meeting-minutes.html?_r=0)
- Arnold, S., Lahmann, A., & Schwetzler, B. (2011). *A Note On Using the Svensson Procedure to Estimate th Risk Free Rate in Corporate Valuation*. Leipzig Graduate School of Management-Finexpert.
- Barton, D., Chen, Y., & Jin, A. (2013). *Mapping China's Middle Clas*. McKinsey and Company.
- Becker, D. (2015). *KPMG's Global Automotive Executive Survey 2015*. KPMG.
- Bigman, D. (2013, October 30). *How General Motors Was Really Saved: The Untold True Story Of The Most Important Bankruptcy In U.S. History*. Retrieved from Forbes.  
Link: <http://www.forbes.com/sites/danbigman/2013/10/30/how-general-motors-was-really-saved-the-untold-true-story-of-the-most-important-bankruptcy-in-u-s-history/#5b5963f5acc7>
- Bloomberg. (2016, January 14). *Ferrari's New Independence Increases Pressure to Grow*. Retrieved from Automotive News Europe.  
Link: <http://europe.autonews.com/article/20160114/ANE/160119814/ferraris-new-independence-increases-pressure-to-grow>
- Blumenthal, R. G. (2015, October 24). *Ferrari IPO: Buy the Car, Not the Stock*. Retrieved from Barron's.  
Link: <http://www.barrons.com/articles/ferrari-ipo-buy-the-car-not-the-stock-1445665413>
- Bregar, B. (2014, August 5). *Price Keeping Carbon Fiber From Mass Adoption*. Retrieved from Plastic News.  
Link: <http://www.plasticsnews.com/article/20140805/NEWS/140809971/price-keeping-carbon-fiber-from-mass-adoption>
- Bremer, C. (2013, June 7). *China Considers Tariff Action on EU Luxury Cars*. Retrieved from Reuters.  
Link: <http://www.reuters.com/article/us-china-eu-cars-idUSBRE9560A920130607>
- Bruce, C. (2015, October 14). *Ferrari Will Increase Production By 30% To 9,000 Cars Per Year*. Retrieved from Autoblog.  
Link: <http://www.autoblog.com/2015/10/14/ferrari-will-increase-production-9000-units-report/>



- Casey, M., & Hackett, R. (2014, November 17). *The 10 Biggest R&D Spenders Worldwide*. Retrieved from Fortune.  
Link: <http://fortune.com/2014/11/17/top-10-research-development/>
- Chun, Z. (2016, February 3). *The Next Step in Beijing's War on Pollution*. Retrieved from The Diplomat.  
Link: <http://thediplomat.com/2016/02/the-next-step-in-beijings-war-on-pollution/>
- Clark, A. (2009, April 30). *Chrysler Declares Itself Bankrupt*. Retrieved from The Guardian.  
Link: <https://www.theguardian.com/business/2009/apr/30/chrysler-verge-bankruptcy-talks-collapse>
- Condon, C. (2016, April 27). *Federal Reserves Leaves Door Open for June Rate Increase*. Retrieved from Bloomberg.  
Link: <http://www.bloomberg.com/news/articles/2016-04-27/fed-leaves-rates-unchanged-signals-openness-to-june-increase>
- Damodaran, A. (2016). *Dataset Capital Expenditures*.
- D'Arpizio, C., Levato, F., Zito, D., & De Montgolfier, J. (2015). *Global Luxury Markets Report*. Bain & Company.
- Drew, J. (2016, January 2016). *Ferrari Re-Thinks 9,000 Units Sales Cap*. Retrieved from Left Lane.  
Link: <http://www.leftlanenews.com/ferrari-rethinks-9000-unit-sales-cap-90748.html>
- Ebhardt, T. (2016, April 15). *Ferrari Goes Into Reverse*. Retrieved from Bloomberg.  
Link: <http://www.bloomberg.com/news/articles/2016-04-15/ferrari-s-luxury-ambitions-face-reset-as-prada-hits-the-skids>
- ECB. (2016). *ECB Staff Macroeconomic Projections for the Euro area*. European Central Bank.
- Economy Watch. (2010, June 29). *Capital Intensive Industry*. Retrieved from Economy Watch.  
Link: <http://www.economywatch.com/world-industries/capital-intensive.html>
- Ensign, P. C. (2001). Value Chain Analysis and Competitive Advantage. *Journal of General Management*.
- Euro Monitor. (2015). *Middle East and Africa: Growing Opportunities for Consumer Appliances in a Diverse Market*. Euro Monitor.
- European Commission. (2016). *Reducing CO2 Emissions From Passenger Cars*. European Commission.
- Frank, R. (2016, February 24). *China Has More Billionaires Than the US: Report*. Retrieved from CNBC.  
Link: <http://www.cnbc.com/2016/02/24/china-has-more-billionaires-than-us-report.html>
- Frank, R. (2016, March 7). *Record Number of Millionaires Living In the US*. Retrieved from CNBC.  
Link: <http://www.cnbc.com/2016/03/07/record-number-of-millionaires-living-in-the-us.html>



- Global Cars Brands. (2015, May 19). *Ferrari Logo, History Timeline and Latest Models*. Retrieved from Global Cars Brands.  
Link: <https://www.globalcarsbrands.com/ferrari-logo-history-and-models/>
- Harris, N. (2015, January 31). *Formula One Suffers Global Drop in TV Figures*. Retrieved from Dailymail Co.UK.  
Link: <http://www.dailymail.co.uk/sport/formulaone/article-2934850/Formula-One-suffers-global-drop-TV-figures-five-cent-fans-turn-Britain-despite-Lewis-Hamilton-s-title-win.html>
- Harvey, M. (2014, February 19). *Ferrari Powers On As World's Most Powerful Brand*. Retrieved from Telegraph Co.UK.  
Link: <http://www.telegraph.co.uk/luxury/motoring/25063/ferrari-powers-on-as-worlds-most-powerful-brand.html>
- HBR. (2015, November 29). *Innovation on The Road and Track*. Retrieved from Harvard Business Review.  
Link: <https://rctom.hbs.org/submission/ferrari-innovation-on-the-road-and-track/>
- Hensley, R., Newman, J., & Rogers, M. (2012, July). *Battery Technologies Charges Ahead*. Retrieved from McKinsey and Company.  
Link: <http://www.mckinsey.com/business-functions/sustainability-and-resource-productivity/our-insights/battery-technology-charges-ahead>
- Howard, B. (2015, July 15). *How BMW Waves, Bakes, and Builds the Carbon Fiber 7 Series*. Retrieved from Extreme Tech.  
Link: <http://www.extremetech.com/extreme/209812-how-bmw-weaves-bakes-and-builds-the-carbon-fiber-7-series>
- IMF. (2016). *Global Economy Outlook*. IMF.
- Johnson, K., Pence, K., & Vine, D. (2014). *Auto Sales and Credit Supply. Finance and Economics Discussion Series, Divisions of Research and Statistics and Monetary Affairs Federal Reserve Board*.
- Kallstrom, H. (2015, February 5). *What Makes the Auto Industry Highly Concentrated*. Retrieved from Market Realist.  
Link: <http://marketrealist.com/2015/02/makes-auto-industry-highly-concentrated/>
- Kirk, C. P., Ray, I., & Wilson, K. B. (2013). The Impact of Brand Value on Firm Valuation: The Moderating Influence of Firm Type. *Journal of Brand Management*, Vol. 20, Issue 6, pp. 488-500.
- Koller, T. (1994, August). *What is Value Based Management*. Retrieved from McKinsey and Company.  
Link: <http://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/what-is-value-based-management>



- Landini, F. (2015, December 23). *Top Two Ferrari Investors Sign Pact Over 48.8 Percent of Voting Rights*. Retrieved from Reuters.  
Link: <http://www.reuters.com/article/us-ferrari-exor-pact-idUSKBN0U61ZK20151223>
- Li, X. (2015, November 11). *China's Potential Pitfalls #2: The Limitations of China's Political and Economic Models*. Retrieved from The Diplomat.  
Link: <http://thediplomat.com/2015/11/chinas-potential-pitfalls-2-the-limitations-of-chinas-political-and-economic-models/>
- Lowry, W. (2014, April 28). *Must-know Growth Drivers For the Global Automobile Industry*. Retrieved from Market realist.  
Link: <http://marketrealist.com/2014/04/must-know-growth-drivers-global-automobile-industry/>
- McCurry, J. (2016, January 19). *China Economy Grows at the Slowest Pace in 25 Years, Latest GDP Figures Show*. Retrieved from The Guardian.  
Link: <https://www.theguardian.com/world/2016/jan/19/china-economy-grows-at-slowest-pace-in-25-years-latest-gdp-figures-show>
- Nazario, M. (2015, October 12). *All the Things Ferrari Sells That Aren't Cars*. Retrieved from Business Insider.  
Link: <http://www.businessinsider.com/ferrari-merchandise-and-licensed-products-2015-10>
- Noah, J. (2007, May 3). *Paradise: Ferrari Named Best Place to Work*. Retrieved from Autoblog.  
Link: <http://www.autoblog.com/2007/05/03/paradise-ferrari-named-best-place-to-work/>
- OCED. (2009). *Automobile Industry In And Beyond the Crisis*. OCED.
- Ostermann, D., Harvey, D., Hesse, J., & Hague, S. (2016). *M&A In the Global Automotive Supply Industry; Study FInds a Bull Market With Room To Grow*. PwC.
- Parker, J. (2016, January 11). *A Much-Needed Step Towards an Eco-Friendly Ferrari*. Retrieved from Market Realist.  
Link: <http://marketrealist.com/2016/01/much-needed-step-towards-eco-friendly-ferrari/>
- Porter, M. (2008). *The Five Competitive Forces That Shape Strategy*. *Harvard Business Review*.
- Randow, J. (2016, March 10). *Europe's QE Quandary*. Retrieved from Bloomberg.  
Link: <https://www.bloomberg.com/quicktake/europes-qe-quandary>
- Reuters. (2016, January 4). *The Ferrari Spin-Off Is Exposing Fiat Chrysler's Weaknesses*. Retrieved from Fortune.  
Link: <http://fortune.com/2016/01/04/ferrari-spinoff-fiat-chrysler/>
- Rosenfeld, E. (2016, January 7). *Chinese Yuan: Here's What's Happening To the Currency*. Retrieved from CNBC.  
Link: <http://www.cnbc.com/2016/01/07/chinese-yuan-heres-whats-happening-to-the-currency.html>

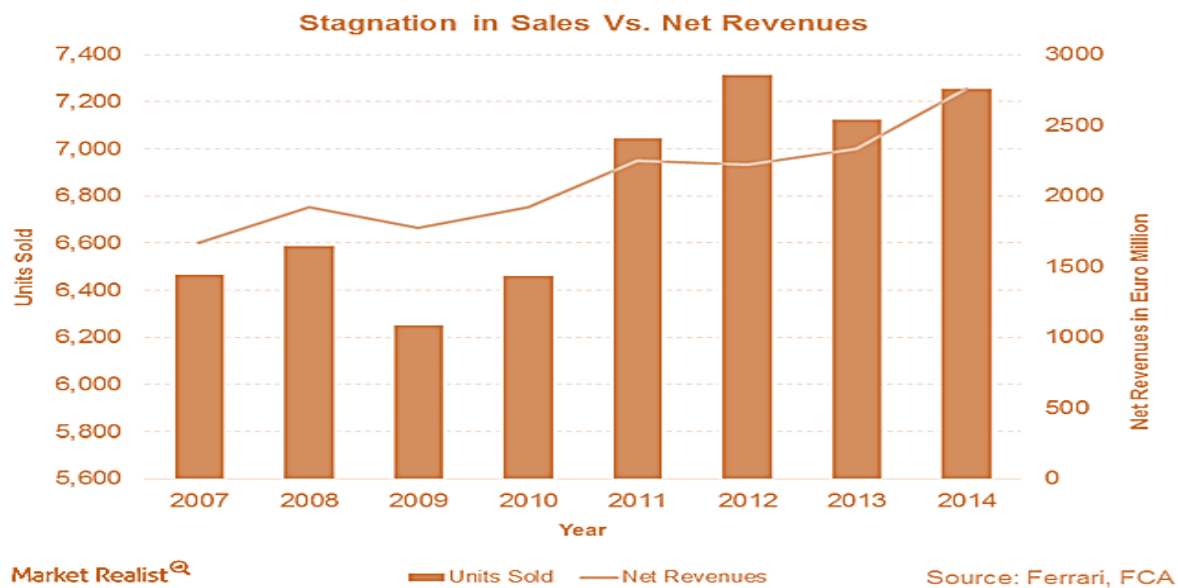


- Smith, C. (2014, November 12). *Formula One's Most Valuable Teams: Red Bull, Mercedes On The Rise*. Retrieved from Forbes.  
Link: <http://www.forbes.com/sites/chris-smith/2014/11/12/formula-ones-most-valuable-teams-red-bull-mercedes-on-the-rise/#74507f3356af>
- Smith, L. (2015, February 14). *As F1 TV Viewing Figures Continue to Fall Globally, Is there a Solution To the Problem?* Retrieved from NBC Sport.  
Link: <http://motorsports.nbc.com/2015/02/14/as-f1-tv-viewing-figures-continue-to-fall-globally-is-there-a-solution-to-the-problem/>
- Snively, B. (2015, December 31). *Ferrari To Add Luxury Goods, More Theme Parks*. Retrieved from Detroit Free Press.  
Link: <http://www.freep.com/story/money/cars/2015/12/31/ferrari-fca-chrysler-wall-street-ipo/78087740/>
- Statista. (2015). *Percentage of Global Research and Development SPending In 2015 By Industry*. Statista.
- Statista. (2016). *Automotive Suppliers' Proportion of Value Added to Worldwide Automobile Manufacture From 1985-2015*. Statista.
- The Boston Consulting Group. (2015). *Global Wealth 2015: Winning the Growth Game*. The Boston Consulting Group.
- The Economist. (2016, February 18). *European Economic Guide*. Retrieved from The Economist.  
Link: <http://www.economist.com/blogs/graphicdetail/2016/02/taking-europe-s-pulse>
- The Weekly Driver. (2010, October 15). *Ferrari World Iconic Theme Park Set For Early Opening in Abu Dhabi*. Retrieved from The Weekly Driver.  
Link: <https://theweeklydriver.com/ferrari-world-worlds-most-extravagan-theme-park-set-for-early-debut-abu-dhabi/>

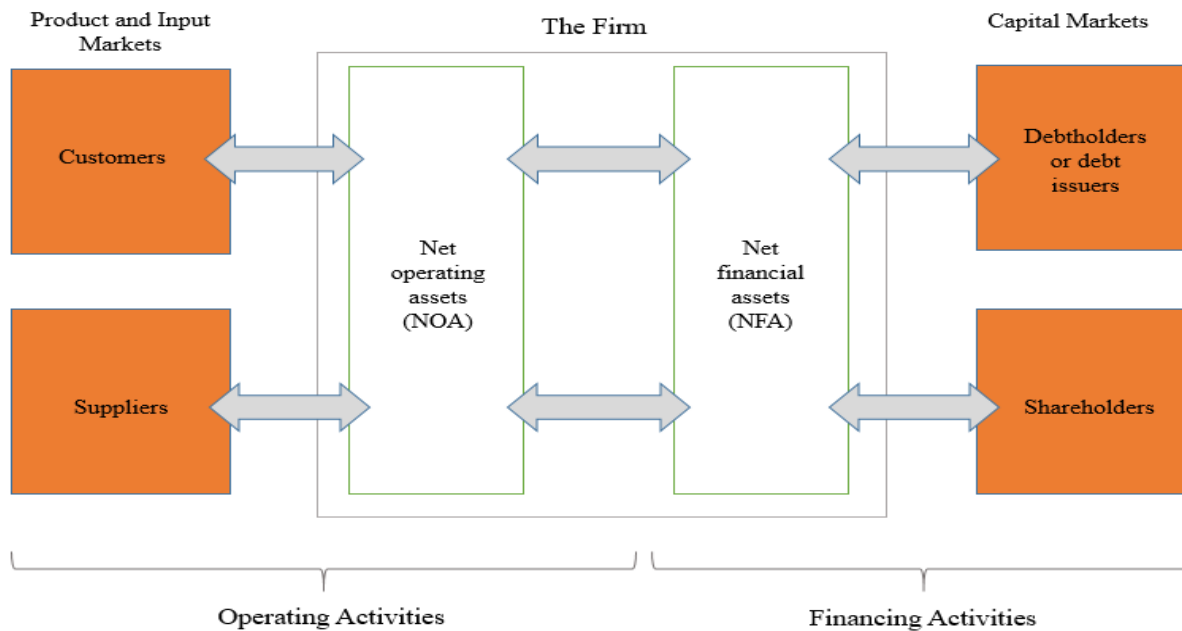


## 11. Appendices

Appendix 1: Historical Ferrari's Sales Figures; Source: Marketrealist



Appendix 2: Stocks and Flows for a Firm; Source: Penman (2010)







### Appendix 3: Reformulated Statements

#### Ferrari S.p.A (in millions)

#### Reformulated Statement of Shareholder Equity

##### Reformulated Statement of Common Equity

<b>Balance at December 2014</b>		<u>€ 2,542,633.00</u>
<b>Transaction with Shareholders</b>		
Restructuring process	€ (2,800,000.00)	
Share premium contribution	€ 1,162.00	
Cash dividends	€ (46,010.00)	
Non-controlling interest	€ (8,500.00)	
		€ (2,853,348.00)
<b>Comprehensive Income</b>		
Net profit reported	€ 290,054.00	
Gains/(losses) on remeasurement of defined benefit plans	€ 898.00	
Gains/(losses) on cash flow hedging instruments	€ 8,234.00	
Exchange differences on translating foreign operations	€ 13,344.00	
Total related tax income	€ (2,908.00)	€ 309,622.00
<b>Balance at December 2015</b>		€ (1,093.00)

Note: The beginning balance in the reformulated statement is calculated as follows

Reported Balance	€ 2,478,313.00
Dividends Payable	€ 64,320.00
	<u>€ 2,542,633.00</u>

The ending balance is calculated as follow:

Reported Balance	€ (19,403.00)
Dividends Payable	€ 18,310.00
	<u>€ (1,093.00)</u>



## Reformulated Balance Sheet

	1Q 2016	2015	ΔYOY	2014	ΔYOY	2013
<b>Operating Assets</b>						
Account receivables, less allowance for doubtful	1,319.17	1,347.36	-5%	1,411.10	0.28	1,100.00
Goodwill	787.18	787.18	0%	787.18	-	787.18
Intangible assets	324.36	307.81	16%	265.26	0.10	242.17
Property, Plant and Equipment	620.76	626.13	7%	585.19	0.03	567.81
Inventories	299.69	295.44	0%	296.01	0.25	237.50
Deffered tax assets	107.27	122.62	10%	111.72	3.50	24.81
Other Current Assets	70.57	46.48	-11%	52.05	1.05	25.41
<b>Total Operating Asset</b>	<b>3,529.00</b>	<b>3,533.01</b>	<b>1%</b>	<b>3,508.50</b>	<b>0.18</b>	<b>2,984.88</b>
<b>Operating Liabilities</b>						
Income tax payable	154.09	125.23	14%	109.52	(0.13)	126.29
Trade payable	500.87	507.50	-5%	535.71	0.10	485.95
Provision for Risks and Charges	143.92	141.85	5%	134.77	(0.20)	169.26
Other Liabilities	638.24	636.47	5%	606.06	0.28	474.81
Employee benefits	79.86	78.37	2%	76.81	-	-
Deferred taxes liabilities	24.58	23.35	8%	21.61	0.12	19.23
<b>Total Operating Liabilities</b>	<b>1,541.55</b>	<b>1,512.77</b>	<b>2%</b>	<b>1,484.48</b>	<b>0.16</b>	<b>1,275.54</b>
<b>Net Operating Assets/(Liabilites)</b>	<b>1,987.45</b>	<b>2,020.24</b>	<b>0%</b>	<b>2,024.02</b>	<b>0.18</b>	<b>1,709.34</b>
<b>Financing Assets</b>						
Cash and cash equivalents	563.44	182.75	36%	134.28	(0.27)	183.62
Short Term Investments	23.30	147.80	-84%	951.22	0.25	758.43
Investments and other financial assets	12.80	11.84	-75%	47.43	3.01	11.84
<b>Total Financial Assets</b>	<b>599.54</b>	<b>342.39</b>	<b>-70%</b>	<b>1,132.93</b>	<b>0.19</b>	<b>953.89</b>
<b>Financing Liabilities</b>						
Debt	2,442.22	2,260.39	343%	510.22	0.61	317.31
Other financial liabilities	50.08	103.33	-1%	104.09	-	-
<b>Total Financial Liabilities</b>	<b>2,492.30</b>	<b>2,363.72</b>	<b>285%</b>	<b>614.31</b>	<b>0.94</b>	<b>317.31</b>
<b>Net Financial Assets/(Liabilites)</b>	<b>(1,892.76)</b>	<b>(2,021.34)</b>	<b>-490%</b>	<b>518.61</b>	<b>(0.19)</b>	<b>636.58</b>
<b>Total equity</b>	<b>94.69</b>	<b>(1.09)</b>	<b>-100%</b>	<b>2,542.63</b>	<b>0.08</b>	<b>2,345.92</b>
<b>Non controlling interest</b>	<b>5.75</b>	<b>5.72</b>	<b>-34%</b>	<b>8.70</b>	<b>(0.68)</b>	<b>26.78</b>
<b>Common Shareholder Equity</b>	<b>88.94</b>	<b>(6.81)</b>	<b>-100%</b>	<b>2,533.94</b>	<b>0.09</b>	<b>2,319.14</b>



## Reformulated Income Statement

	1Q 2016	2015	ΔYOY	2104	ΔYOY	2013			
<b>Operating revenues</b>	675.45	2,854.37	3%	2,762.36	18%	2,335.27			
Cost of Sales	333.00	1,498.81	0%	1,505.89	22%	1,234.64			
Gross margin	342.46	1,355.56	8%	1,256.47	14%	1,100.63			
<b>Operating expenses</b>									
Selling, general and administrative costs	60.42	338.63	13%	300.09	15%	259.88			
Research and development cost	158.19	561.58	4%	540.83	13%	479.29			
Other income/(expense)	(2.59)	(16.84)	-35%	(26.08)	-1344%	2.10			
<b>Operating income from sales (before tax)</b>	121.25	438.52	13%	389.47	7%	363.55			
<b>Taxes</b>									
Taxes as reported	34.70	144.12		133.22		120.30			
Tax benefit on financial expense	2.46	2.79		-		-			
Taxes on operating income/expense	37.16	(1.60)	145.31	11%	(2.41)	130.81	9%	(0.78)	119.52
<b>Operating income from sales (after tax)</b>	84.09	293.21	13%	258.66	6%	244.03			
<b>Other operating income (before tax items)</b>									
Gains on asset disposal		5.80							
Tax on disposal gains		1.60	4.21						
<b>Other operating income (after tax items)</b>									
Gains/(losses) on remeasurement of benefit plans		0.90	-119%	(4.74)	96%	(2.41)			
Gains/(losses) on cash flow hedging instruments	60.41	8.23	-106%	(148.34)	-372%	54.60			
Exchange differences on translating foreign operations	(5.18)	13.34	-52%	27.84	-473%	(7.47)			
Related tax impact	(18.95)	(2.91)	-106%	47.65	-410%	(15.35)			
<b>Operating income (after tax) NOPAT</b>	120.36	316.98	75%	181.07	-34%	273.41			
<b>Financing income (expenses)</b>									
Net financial income/(expense)	(8.96)	(10.15)	-216%	8.77	207%	2.85			
Tax effect 27.5%	2.46	2.79	-216%	(2.41)	-407%	0.78			
Net Financial Income/(Expense) after tax	(6.49)	(7.36)	-216%	6.35	207%	2.07			
<b>Minority interest</b>	0.03	2.92	-52%	6.05	29%	4.69			
<b>Copernhensive income to common</b>	113.85	306.70	69%	181.38	-33%	270.79			



## Audi AG (in millions)

### Reformulated Balance Sheet

	2015	Δ YOY	2014	Δ YOY	2013
<b>Operating Assets</b>					
Intangible Assets	€ 5,787.00	9%	€ 5,292.00	12.9%	€ 4,689.00
Property, plant and equipment	11,380.00	18%	9,673.00	15.0%	8,413.00
Investment property	319.00	9%	293.00	71.3%	171.00
Investment in equity	4,483.00	11%	4,022.00	9.4%	3,678.00
Other Participation	294.00	10%	268.00	-7.6%	290.00
Deferred taxes	2,939.00	25%	2,351.00	36.7%	1,720.00
Trade receivables	4,097.00	12%	3,648.00	14.9%	3,176.00
Other receivables	1,025.00	55%	660.00	34.4%	491.00
Inventories	6,317.00	25%	5,071.00	12.8%	4,495.00
Income tax asset	29.00	-28%	40.00	14.3%	35.00
<b>Total operating assets</b>	<b>36,670.00</b>	<b>17%</b>	<b>31,318.00</b>	<b>15.3%</b>	<b>27,158.00</b>
<b>Operating Liabilities</b>					
Other Liabilities	3,318.00	12%	2,966.00	-15.4%	3,507.00
Provisions for pensions	4,221.00	-8%	4,585.00	42.9%	3,209.00
Other provisions	9,584.00	11%	8,599.00	12.8%	7,625.00
Trade payables	7,204.00	24%	5,824.00	12.8%	5,163.00
Income tax obligations	1,121.00	-28%	1,554.00	29.1%	1,204.00
Deferred tax liabilities	192.00	-9%	211.00	-59.2%	517.00
<b>Total operating liabilities</b>	<b>25,640.00</b>	<b>8%</b>	<b>23,739.00</b>	<b>11.8%</b>	<b>21,225.00</b>
<b>Net Operating Assets/(Liabilities)</b>	<b>11,030.00</b>	<b>46%</b>	<b>7,579.00</b>	<b>27.7%</b>	<b>5,933.00</b>
<b>Financial Assets</b>					
Other financial assets	2,937.00	-37%	4,690.00	107.1%	2,265.00
Cash funds	12,375.00	9%	11,391.00	-14.6%	13,332.00
Securities	4,782.00	42%	3,370.00	40.4%	2,400.00
<b>Total financial assets</b>	<b>20,094.00</b>	<b>3%</b>	<b>19,451.00</b>	<b>8.1%</b>	<b>17,997.00</b>
<b>Financial Liabilities</b>					
Financial Liabilities	1,884.00	15%	1,637.00	15.8%	1,414.00
Other financial liabilities	7,461.00	20%	6,195.00	56.6%	3,955.00
<b>Total financial liabilities</b>	<b>9,345.00</b>	<b>19%</b>	<b>7,832.00</b>	<b>45.9%</b>	<b>5,369.00</b>
<b>Net Financial Assets/(Obligations)</b>	<b>10,749.00</b>	<b>-7%</b>	<b>11,619.00</b>	<b>-8.0%</b>	<b>12,628.00</b>
<b>Total Equity</b>	<b>21,779.00</b>	<b>13%</b>	<b>19,198.00</b>	<b>3.4%</b>	<b>18,561.00</b>
<b>Non controlling interest</b>	<b>531.00</b>	<b>32%</b>	<b>403.00</b>	<b>37.1%</b>	<b>294.00</b>
<b>Shareholder Common Equity</b>	<b>21,248.00</b>	<b>13%</b>	<b>18,795.00</b>	<b>2.9%</b>	<b>18,271.00</b>



## Reformulated Income Statement

	2015	ΔYOY	2014	ΔYOY	2013			
<b>Operating revenue</b>	58,420.00	9%	53,787.00	8%	49,880.00			
Cost of sales	44,064.00	6%	41,410.00	9%	37,932.00			
Gross Margin	14,356.00	16%	12,377.00	4%	11,948.00			
<b>Operating expense</b>								
Distribution costs	5,782.00	18%	4,895.00	5%	4,641.00			
Administrative expenses	640.00	9%	587.00	4%	566.00			
R&D costs	2,979.00	-1%	3,005.00	9%	2,759.00			
Other income/(expense)	1,333.00	16%	1,145.00	31%	871.00			
<b>Operating income from sales (before tax)</b>	6,288.00	25%	5,035.00	4%	4,853.00			
<b>Taxes</b>								
Taxes as reproted	987.00		1,563.00		1,309.00			
Taxes benefit on operating income/expense	432.70		(34.27)		(53.04)			
Tax benefit on financial income/expense	0.89	1,420.59	0%	(104.90)	1,423.83	6%	87.31	1,343.27
<b>Operating income from sales (after tax)</b>	4,867.41	35%	3,611.17	3%	3,509.73			
<b>Other OI/(expense) (before tax items)</b>								
Gain on disposal asset	3.00		1.00		6.00			
Gain/(Loss) from hedging transactions	(1,439.00)		106.00		187.00			
Impairment loss	(16.00)		(12.00)		(15.00)			
Writing-up of intangible assets	-		20.00		-			
Tax on operating income	432.70	(1,019.30)	-1363%	34.27	80.73	-35%	53.04	124.96
<b>Other OI/(expense) (after tax items)</b>								
Revaluations from pension plans	240.00	-125%	(943.00)	-541%	214.00			
Currency translation differences	100.00	-26%	136.00	-297%	(69.00)			
Gains/(losses) from hedges	(920.00)	-35%	(1,419.00)	-321%	641.00			
Equity investments	451.00	-8%	488.00	7%	454.00			
Equity accounted investents	72.00	-17%	87.00	-364%	(33.00)			
<b>Operating income (after tax) NOPAT</b>	3,791.11	86%	2,040.90	-58%	4,841.69			
<b>Financing (income)/expense</b>								
Finance expense	155.00	-46%	287.00	82%	158.00			
Other financial results	(152.00)	-76%	(639.00)	-16075%	4.00			
Net interest expense/(income)	3.00	-101%	(352.00)	-317%	162.00			
Tax on financial income 29.8%	0.89	-101%	(104.90)	-220%	87.31			
Net financial expense/(income) after tax	2.11	-101%	(247.10)	-431%	74.69			
Available for sale assets	64.00	-405%	(21.00)	-400%	7.00			
Net financing expense/ (income) after tax	66.11	-125%	(268.10)	-428%	81.69			
<b>Minority interest</b>	128.00	16%	110.00	244%	32.00			
<b>Coprehensive income to shareholders</b>	3,597.00	64%	2,199.00	-53%	4,728.00			



## BMW AG (in millions)

### Reformulated Balance Sheet

	2015	ΔYOY	2014	ΔYOY	2013
<b>Operating Assets</b>					
Intangible Assets	€ 7,372.00	13%	€ 6,499.00	5%	€ 6,179.00
Property, Plant and Equipment	17,759.00	3%	17,182.00	13%	15,168.00
Leased Assets	34,965.00	16%	30,165.00	16%	25,914.00
Long term equity investments	2,233.00	105%	1,088.00	71%	638.00
Other equity Investments	428.00	5%	408.00	-26%	553.00
Receivables from sales financing	70,043.00	15%	61,024.00	13%	54,117.00
Other assets	6,261.00	2%	6,132.00	19%	5,170.00
Deferred taxes	1,945.00	-6%	2,061.00	27%	1,620.00
Current tax	2,381.00	25%	1,906.00	66%	1,151.00
Inventories	11,071.00	0%	11,089.00	16%	9,595.00
Trade receivables	2,751.00	28%	2,153.00	-12%	2,449.00
<b>Total Operating Asset</b>	<b>157,209.00</b>	<b>13%</b>	<b>139,707.00</b>	<b>14%</b>	<b>122,554.00</b>
<b>Operating Liabilities</b>					
Provision for pension	3,000.00	-35%	4,604.00	100%	2,303.00
Other provisions	9,630.00	10%	8,790.00	21%	7,240.00
Deferred tax liabilities	2,116.00	7%	1,974.00	-20%	2,459.00
Other liabilities	13,767.00	14%	12,050.00	13%	10,667.00
Trade payables	7,773.00	1%	7,709.00	3%	7,485.00
Tax payables	1,441.00	-9%	1,590.00	-31%	2,319.00
<b>Total Operating Liabilities</b>	<b>37,727.00</b>	<b>3%</b>	<b>36,717.00</b>	<b>13%</b>	<b>32,473.00</b>
<b>Net Operating Assets/(Liabilities)</b>	<b>119,482.00</b>	<b>16%</b>	<b>102,990.00</b>	<b>14%</b>	<b>90,081.00</b>
<b>Financial Assets</b>					
Financial assets	8,843.00	19%	7,408.00	-9%	8,152.00
Cash and cash equivalents	6,122.00	-20%	7,688.00	0%	7,671.00
<b>Total financial assets</b>	<b>14,965.00</b>	<b>-1%</b>	<b>15,096.00</b>	<b>-5%</b>	<b>15,823.00</b>
<b>Financial Liabilities</b>					
Financial liabilities	91,683.00	14%	80,649.00	15%	70,304.00
<b>Total financial liabilities</b>	<b>91,683.00</b>	<b>14%</b>	<b>80,649.00</b>	<b>15%</b>	<b>70,304.00</b>
<b>Net Financial Asset/(Obligations)</b>	<b>(76,718.00)</b>	<b>17%</b>	<b>(65,553.00)</b>	<b>20%</b>	<b>(54,481.00)</b>
<b>Total Equity</b>	<b>42,764.00</b>	<b>14%</b>	<b>37,437.00</b>	<b>5%</b>	<b>35,600.00</b>
<b>Non-controlling interest</b>	<b>234.00</b>	<b>8%</b>	<b>217.00</b>	<b>15%</b>	<b>188.00</b>
<b>Equity to common shareholders</b>	<b>42,530.00</b>	<b>14%</b>	<b>37,220.00</b>	<b>5%</b>	<b>35,412.00</b>



## Reformulated Income Statement

	2015	ΔYOY	2014	ΔYOY	2013			
<b>Operating revenues</b>	92,175.00	15%	80,401.00	6%	76,059.00			
Cost of sales	69,772.00	18%	59,261.00	5%	56,673.00			
Gross margin	22,403.00	6%	21,140.00	9%	19,386.00			
<b>Operating expenses</b>								
Selling and administrative expenses	8,633.00	9%	7,892.00	9%	7,257.00			
R&D costs	4,271.00	3%	4,135.00	0%	4,118.00			
Other income/(expense)	(7.00)	-53%	(15.00)	-57%	(35.00)			
<b>Operating income from sales (before tax)</b>	9,492.00	4%	9,098.00	14%	7,976.00			
<b>Taxes</b>								
Reported taxes	2,828.00		2,890.00		2,564.00			
Taxes from other operating items	(30.10)		(5.96)		(0.60)			
Tax benefit from financing expense	264.33	3,062.23	-4%	317.67	3,201.71	18%	146.62	2,710.02
<b>Operating income from sales (after tax)</b>	6,429.77	9%	5,896.29	12%	5,265.98			
<b>Other OI (before tax items)</b>								
Gain on disposal asset	150.00		76.00		26.00			
Gain/(losses) of impairment and writing downs	(49.00)		(56.00)		(24.00)			
Tax on gain	30.10	70.90	405%	5.96	14.04	900%	0.60	1.40
<b>Other OI/(expense) (after tax items)</b>								
Remeasurment for panison plans	1,012.00	-164%	(1,592.00)	-270%	936.00			
Financial instruments used for hedging	(1,301.00)	-41%	(2,194.00)	-262%	1,357.00			
Income from equity accounted investments	71.00	-248%	(48.00)	586%	(7.00)			
Currency translation	765.00	5%	732.00	-280%	(407.00)			
Result from equity accounted investments	518.00	-21%	655.00	61%	407.00			
Tax impact on related to items	516.00	-32%	764.00	-221%	(633.00)			
<b>Operating income (after tax) NOPAT</b>	8,081.67	91%	4,227.33	-39%	6,920.38			
<b>Financing expense/(income)</b>								
Other financial result	454.00	-39%	747.00	263%	206.00			
Interest income	(185.00)	-8%	(200.00)	9%	(183.00)			
Interest expense	618.00	19%	519.00	11%	469.00			
Net financing expense/(income) before tax	887.00	-17%	1,066.00	117%	492.00			
Tax on income 29.8%	264.33	-17%	317.67	117%	146.62			
Net financing expense/(income) after tax	622.67	-17%	748.33	117%	345.38			
Available for sale assets	170.00	-525%	(40.00)	400%	(8.00)			
Net financing expense/(income) after tax	792.67	12%	708.33	110%	337.38			
<b>Minority interest</b>	27.00	42%	19.00	-27%	26.00			
<b>Comprehensive income to common shareholders</b>	7,262.00	107%	3,500.00	-47%	6,557.00			



## Daimler AG (in millions)

### Reformulated Balance Sheet

	2015	Δ YOY	2014	Δ YOY	2013
<b>Operating Assets</b>					
Intangible assets	€ 10,069.00	7%	€ 9,367.00	0%	€ 9,388.00
Property, plant and equipment	24,322.00	5%	23,182.00	6%	21,779.00
Equipment on operating leases	38,942.00	18%	33,050.00	17%	28,160.00
Equity-method investments	3,633.00	58%	2,294.00	-33%	3,432.00
Receivables from financial services	73,514.00	19%	61,679.00	21%	50,770.00
Deferred tax assets	3,284.00	-20%	4,124.00	125%	1,829.00
Other assets	4,925.00	19%	4,153.00	14%	3,648.00
Inventories	23,760.00	14%	20,864.00	20%	17,349.00
Trade receivables	9,054.00	5%	8,634.00	11%	7,803.00
<b>Total operating assets</b>	<b>191,503.00</b>	<b>14%</b>	<b>167,347.00</b>	<b>16%</b>	<b>144,158.00</b>
<b>Operating Liabilities</b>					
Provision for pensions and similar obligations	8,663.00	-32%	12,806.00	30%	9,869.00
Provision for income taxes	1,652.00	3%	1,608.00	20%	1,340.00
Provisions for other risks	15,830.00	13%	13,979.00	18%	11,889.00
Deferred tax liabilities	2,215.00	107%	1,070.00	20%	892.00
Deferred income	7,739.00	29%	5,994.00	30%	4,596.00
Trade payables	10,548.00	4%	10,178.00	12%	9,086.00
Other liabilities	2,393.00	18%	2,021.00	38%	1,469.00
<b>Total operating liabilities</b>	<b>49,040.00</b>	<b>3%</b>	<b>47,656.00</b>	<b>22%</b>	<b>39,141.00</b>
<b>Net Operating Assets</b>	<b>142,463.00</b>	<b>19%</b>	<b>119,691.00</b>	<b>14%</b>	<b>105,017.00</b>
<b>Financial Assets</b>					
Marketable debt securities	8,273.00	25%	6,634.00	-6%	7,066.00
Other financial assets	7,454.00	25%	5,987.00	-4%	6,241.00
Cash and cash equivalents	9,936.00	3%	9,667.00	-13%	11,053.00
<b>Total financial assets</b>	<b>25,663.00</b>	<b>15%</b>	<b>22,288.00</b>	<b>-9%</b>	<b>24,360.00</b>
<b>Financial Liabilities</b>					
Financial liabilities	101,142.00	17%	86,689.00	12%	77,738.00
Other financial liabilities	12,360.00	15%	10,706.00	29%	8,276.00
<b>Total financial liabilities</b>	<b>113,502.00</b>	<b>17%</b>	<b>97,395.00</b>	<b>13%</b>	<b>86,014.00</b>
<b>Net Financial Assets/(Obligations)</b>	<b>(87,839.00)</b>	<b>17%</b>	<b>(75,107.00)</b>	<b>22%</b>	<b>(61,654.00)</b>
<b>Total Equity</b>	<b>54,624.00</b>	<b>23%</b>	<b>44,584.00</b>	<b>3%</b>	<b>43,363.00</b>
<b>Non-controlling interests</b>	<b>1,063.00</b>	<b>16%</b>	<b>919.00</b>	<b>35%</b>	<b>683.00</b>
<b>Common Shareholder Equity</b>	<b>53,561.00</b>	<b>23%</b>	<b>43,665.00</b>	<b>2%</b>	<b>42,680.00</b>





## Reformulated Income Statement

	2015	ΔYOY	2014	ΔYOY	2013
<b>Operating revenue</b>	149,467.00	15%	129,872.00	10%	117,982.00
Cost of sales	117,670.00	16%	101,688.00	10%	92,855.00
Gross margin	31,797.00	13%	28,184.00	12%	25,127.00
<b>Operating expenses</b>					
Selling expenses	12,147.00	5%	11,534.00	4%	11,050.00
General administrative expenses	3,710.00	11%	3,329.00	4%	3,188.00
Research and non-capitalized development costs	4,760.00	5%	4,532.00	8%	4,205.00
Other operating income/(expense)	1,581.00	111%	749.00	-36%	1,172.00
<b>Operating income from sales (before tax)</b>	12,761.00	34%	9,538.00	21%	7,856.00
<b>Taxes</b>					
Reported taxes	4,033.00		2,883.00		1,419.00
Taxes on other operating income	6.56		44.71		12.22
Taxes on net interest	136.78	41%	33.38	71%	304.26
<b>Operating income from sales (after tax)</b>	8,584.66	31%	6,576.91	7%	6,120.52
<b>Other operating income (before tax items)</b>					
Gains/(losses) on selling PP&E	115.00		(57.00)		(41.00)
Losses on impairments	(137.00)		(93.00)		-
Tax benefit on operating expenses	6.56	(15.44)	-85%	44.71	(105.29)
<b>Other operating income (after tax items)</b>					
Unrealized gains/losses from equity-method investments (after tax)	(3.00)	-127%	11.00	-27%	15.00
Unrealized gains/losses from derivative financial instruments (after tax)	(643.00)	-66%	(1,886.00)	-335%	802.00
Unrealized gains/losses from currency translation adjustments	1,437.00	-20%	1,800.00	-218%	(1,531.00)
Actuarial gains/losses from pensions and similar obligations (after tax)	2,701.00	-173%	(3,696.00)	-430%	1,119.00
Profit/loss on equity method investments, net	464.00	-48%	897.00	-73%	3,345.00
<b>Operating income (after tax) NOPAT</b>	12,525.22	248%	3,597.62	-63%	9,841.74
<b>Net Financing (income)/expenses</b>					
Other financial (income)/ expense	27.00	-106%	(458.00)	-231%	349.00
Interest income	170.00	17%	145.00	-32%	212.00
Interest expense	602.00	-16%	715.00	-19%	884.00
Net interest expense	459.00	310%	112.00	-89%	1,021.00
Tax effect	(136.78)	310%	(33.38)	-89%	(304.26)
Net income expense after tax	322.22	310%	78.62	-89%	716.74
Unrealized gains/losses from financial assets available-for-sale (after tax)	(662.00)	233%	(199.00)	611%	(28.00)
Net financing expense/(income) after tax	(339.78)	182%	(120.38)	-117%	688.74
<b>Minority interest</b>	359.00	-6%	383.00	-79%	1,859.00
<b>Coprenhensive income to common shareholders</b>	12,506.00	275%	3,335.00	-54%	7,294.00



## Porsche AG (in millions)

### Reformulated Balance Sheet

	2015	ΔYOY	2014	ΔYOY	2013
<b>Operating Assets</b>					
Intangible Assets	€ 3,286.00	11%	€ 2,953.00	14%	€ 2,590.00
Property, Plant and Equipment	4,580.00	12%	4,087.00	4%	3,935.00
Leased Assets	2,761.00	20%	2,294.00	34%	1,708.00
Long term equity investments	332.00	-1%	334.00		-
Other equity Investments	50.00	117%	23.00	-92%	306.00
Financial services receivables	1,887.00	11%	1,696.00	9%	1,550.00
Other receivables	339.00	-3%	350.00	-33%	526.00
Tax receivables	153.00	-3%	157.00	99%	79.00
Deferred taxes	727.00	29%	562.00	241%	165.00
Inventories	2,509.00	16%	2,157.00	36%	1,589.00
Trade receivables	486.00	-7%	522.00	23%	424.00
<b>Total Operating Asset</b>	<b>17,110.00</b>	<b>13%</b>	<b>15,135.00</b>	<b>18%</b>	<b>12,872.00</b>
<b>Operating Liabilities</b>					
Provision for pension and similar obligations	2,361.00	0%	2,361.00	53%	1,544.00
Other provisions	2,232.00	4%	2,148.00	11%	1,929.00
Deferred tax liabilities	749.00	10%	684.00	-5%	719.00
Other liabilities	1,115.00	6%	1,054.00	30%	813.00
Provision for taxes	63.00	-21%	80.00	48%	54.00
Trade payables	2,214.00	19%	1,856.00	25%	1,485.00
Tax payables	489.00	1%	486.00	43%	340.00
<b>Total Operating Liabilities</b>	<b>9,223.00</b>	<b>6%</b>	<b>8,669.00</b>	<b>26%</b>	<b>6,884.00</b>
<b>Net Operating Assets</b>	<b>7,887.00</b>	<b>22%</b>	<b>6,466.00</b>	<b>8%</b>	<b>5,988.00</b>
<b>Financial Assets</b>					
Other Financial Assets	9,505.00	2%	9,326.00	-7%	10,064.00
Securities	43.00	10%	39.00	-28%	54.00
Cash and cash equivalents	2,485.00	59%	1,560.00	-1%	1,570.00
<b>Total financial assets</b>	<b>12,033.00</b>	<b>10%</b>	<b>10,925.00</b>	<b>-7%</b>	<b>11,688.00</b>
<b>Financial Liabilities</b>					
Financial liabilities	5,317.00	-1%	5,353.00	-20%	6,671.00
Other Financial liabilities	3,903.00	60%	2,439.00	24%	1,966.00
<b>Total financial liabilities</b>	<b>9,220.00</b>	<b>18%</b>	<b>7,792.00</b>	<b>-10%</b>	<b>8,637.00</b>
<b>Net Financial asset</b>	<b>2,813.00</b>	<b>-10%</b>	<b>3,133.00</b>	<b>3%</b>	<b>3,051.00</b>
<b>Total equity</b>	<b>10,700.00</b>	<b>11%</b>	<b>9,599.00</b>	<b>6%</b>	<b>9,039.00</b>
<b>Non-controlling interest</b>	<b>2.00</b>	<b>-33%</b>	<b>3.00</b>		<b>-</b>
<b>Equity to common shareholders</b>	<b>10,698.00</b>	<b>11%</b>	<b>9,596.00</b>	<b>6%</b>	<b>9,039.00</b>

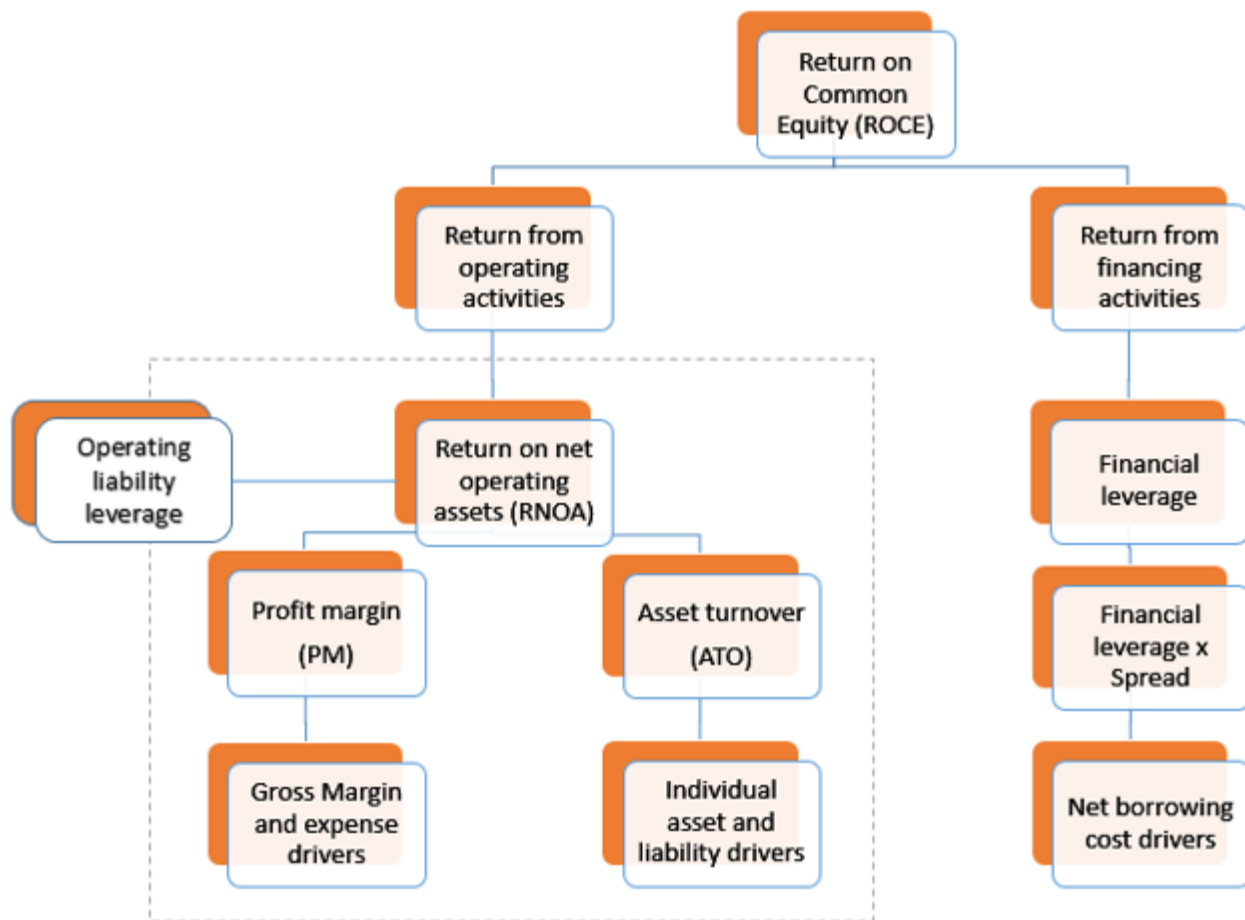


## Reformulated Income Statement

	2015	ΔYOY	2014	ΔYOY	2013			
<b>Sales revenue</b>	21,533.00	25%	17,205.00	20%	14,326.00			
Cost of sales	14,341.00	20%	11,999.00	28%	9,377.00			
<b>Gross margin</b>	7,192.00	38%	5,206.00	5%	4,949.00			
<b>Other expenses</b>								
Distribution expenses	1,505.00	20%	1,257.00	17%	1,075.00			
Administrative expenses	908.00	15%	789.00	0%	792.00			
Research and non-capitalized development costs	1,100.00	24%	886.00	16%	762.00			
Other operating income/(expenses)	(275.00)	-162%	445.00	72%	259.00			
<b>Operating income from sales (before tax)</b>	3,404.00	25%	2,719.00	5%	2,579.00			
<b>Taxes</b>								
Taxes reported	1,047.00		859.00		845.00			
Tax on financial items	7.75	1,054.75	39%	(101.92)	757.08	-3%	(61.09)	783.91
<b>Operating income from sales (after tax)</b>	2,349.25	20%	1,961.92	9%	1,795.09			
<b>Other operating income (after tax items)</b>								
Pension plan remeasurement	146.00	-132%	(458.00)	-524%	108.00			
Gain/(loss) on currency translation	125.00	21%	103.00	-269%	(61.00)			
Gain/(loss) on hedges	(307.00)	-51%	(632.00)	-237%	462.00			
Share of profits on equity accounted investments	4.00	-500%	(1.00)		-			
<b>Operating income (after tax) NOPAT</b>	2,317.25	138%	973.92	-58%	2,304.09			
<b>Finance expense/(income)</b>								
Finance cost	142.00	-30%	203.00	-6%	217.00			
Other financial result	(116.00)	-79%	(545.00)	29%	(422.00)			
Net financial income before tax	26.00	-108%	(342.00)	67%	(205.00)			
Tax on financial income 29.8%	7.75	-108%	(101.92)	67%	(61.09)			
Net financial expense (income)	18.25	-108%	(240.08)	67%	(143.91)			
Available for sale assets	-	-100%	254.00	-389%	(88.00)			
<b>Minority interest</b>	1.00	-50%	2.00		-			
<b>Comprehensive income to common</b>	2,298.00	140%	958.00	-62%	2,536.00			



Appendix 4: Decomposition of ROCE and RNOA drivers





## Appendix 5: Cutting to Ferrari's Core Operating Income

	1Q 2016	2015	2014	2013
<b>Core Operating Income</b>				
Core Sales revenue	675.45	2,854.37	2,762.36	2,335.27
Core cost of sales	333.00	1,498.81	1,505.89	1,234.64
Core gross margin	342.46	1,355.56	1,256.47	1,100.63
<b>Core operating expenses</b>				
Selling, general and administrative costs	60.42	338.63	300.09	259.88
Research and development cost	158.19	561.58	540.83	479.29
Other income/(expense)	(2.59)	(16.84)	(26.08)	2.10
<b>Core operating income from sales (before tax)</b>	111.79	438.52	389.47	363.55
<b>Taxes</b>				
Taxes as reported	34.70	-	144.12	-
Tax benefit on financial expense	2.46	-	2.79	-
Taxes on operating income/expense	-	37.16	(1.60)	145.31
<b>Core operating income from sales (after tax)</b>	84.09	293.21	258.66	244.03
<b>Core Operating income</b>	84.09	293.21	258.66	244.03
<b>Unusual items</b>				
Gains/(losses) on remeasurement of defined benefit plans	-	-	0.90	(4.74)
Gains/(losses) on cash flow hedging instruments	60.41	-	-	8.23
Exchange differences on translating foreign operations	(5.18)	-	-	13.34
Related tax impact	(18.95)	36.28	-	(2.91)
Gains on asset disposal	-	-	5.80	-
Tax on disposal gains	-	-	1.60	4.21
<b>Operating income</b>	120.36	-	316.98	181.07
<b>Financing income (expenses)</b>				
Net financial income/(expense)	(8.96)	(10.15)	8.77	2.85
Tax effect 27.5%	2.46	2.79	(2.41)	0.78
Net Financial Income/(Expense) after tax	(6.49)	(7.36)	6.35	2.07
<b>Minority interest</b>	0.03	2.92	6.05	4.69
<b>Copermhensive income to common</b>	113.85	306.70	181.38	270.79



*Appendix 6: Quantitative Industry Analysis-Auto-Regressive Model*

Formula:

$$x_t - a = \omega (x_{t-1} - a) + \varepsilon_t$$

$a$ -long run level for specific industry (peer group)

$\omega$ - persistence level (mean reversion)

$\varepsilon_t$  - residuals



Driver: Sales growth

Sales growth									
	Year	Driver	AR	SSR		a	9.01%		
Ferrari S.p.A	2013	4.70%	-0.04249	0.001805	8.00%	w	6.2%		
	2014	18.30%	0.095557	0.009131					
	2015	3.30%	-0.06288	0.003954					
Porsche AG	2006/07	3.44%	-0.05875	0.003452	13.90%				
	2007/08	1.34%	-0.07322	0.005362					
	2008/09	13.54%	0.049994	0.002499					
	2009/10	13.54%	0.042431	0.0018					
	2011	13.54%	0.042431	0.0018					
	2012	26.88%	0.175836	0.030918					
	2013	3.32%	-0.06795	0.004617					
	2014	20.10%	0.114374	0.013081					
	2015	25.16%	0.154562	0.023889					
	Audi AG	2006	17.11%	0.081348		0.006618	8.50%		
2007		7.95%	-0.01567	0.000246					
2008		1.72%	-0.07223	0.005218					
2009		-12.74%	-0.21298	0.04536					
2010		18.77%	0.111075	0.012338					
2011		24.42%	0.148038	0.021915					
2012		10.60%	0.006343	4.02E-05					
2013		2.27%	-0.06836	0.004674					
2014		7.83%	-0.00761	5.79E-05					
2015		8.61%	-0.00325	1.06E-05					
BMW		2006	17.22%	0.084444	0.007131	5.20%			
		2007	14.32%	0.048039	0.002308				
		2008	-5.04%	-0.14377	0.02067				
		2009	-4.73%	-0.1287	0.016564				
		2010	19.27%	0.111102	0.012344				
	2011	13.85%	0.042055	0.001769					
	2012	11.66%	0.023515	0.000553					
	2013	-1.03%	-0.10203	0.01041					
	2014	5.71%	-0.0268	0.000718					
	2015	14.64%	0.058373	0.003407					
	Daimler AG	2007	2.37%	-0.06236	0.003889		2.40%		
		2008	-3.05%	-0.11652	0.013576				
		2009	-19.85%	-0.28112	0.07903				
		2010	23.87%	0.166458	0.027708				
		2011	8.98%	-0.00953	9.08E-05				
2012		7.28%	-0.01729	0.000299					
2013		3.22%	-0.0568	0.003227					
2014		10.08%	0.014251	0.000203					
2015		15.09%	0.060101	0.003612					
			SUM		0.406295				



Driver: Profit Margin

Profit Margin							
	Year	Driver	AR	SSR			
Ferrari S.p.A	2013	10.40%	-0.00221	4.88E-06	12%	a	7.04%
	2014	9.40%	-0.00017	3.012E-08		w	0.70797
	2015	10.30%	0.015906	0.000253			
Porsche AG	2011	12.78%	1.14%	0.0001307	13.54%		
	2012	11.76%	0.006585	4.336E-05			
	2013	12.10%	0.017212	0.0002963			
	2014	10.81%	0.001872	3.503E-06			
	2015	10.95%	0.012378	0.0001532			
Audi AG	2006	4.53%	1.71E-05	2.909E-10	3.50%		
	2007	4.41%	-0.00856	7.327E-05			
	2008	5.27%	0.000941	8.851E-07			
	2009	3.43%	-0.02357	0.0005555			
	2010	6.59%	0.021096	0.0004451			
	2011	8.50%	0.017765	0.0003156			
	2012	7.74%	-0.00326	1.063E-05			
	2013	7.46%	-0.00077	5.981E-07			
	2014	6.67%	-0.00667	4.448E-05			
	2015	6.59%	-0.00187	3.51E-06			
BMW	2006	5.71%	-0.00022	4.627E-08	5.20%		
	2007	6.20%	0.000997	9.94E-07			
	2008	1.69%	-0.04752	0.0022581			
	2009	0.17%	-0.03083	0.0009502			
	2010	5.79%	0.036172	0.0013084			
	2011	8.05%	0.018978	0.0003602			
	2012	7.26%	-0.00491	2.407E-05			
	2013	7.12%	-0.00081	6.564E-07			
	2014	7.75%	0.006532	4.267E-05			
	2015	7.34%	-0.00199	3.969E-06			
Daimler AG	2007	3.50%	-0.00037	1.383E-07	2.10%		
	2008	4.94%	0.004054	1.644E-05			
	2009	-0.75%	-0.063	0.0039688			
	2010	5.44%	0.039156	0.0015332			
	2011	5.89%	-0.00021	4.534E-08			
	2012	5.95%	-0.00273	7.469E-06			
	2013	5.42%	-0.00844	7.125E-05			
	2014	5.01%	-0.00884	7.81E-05			
	2015	6.19%	0.005854	3.427E-05			
				SUM		0.0129935	



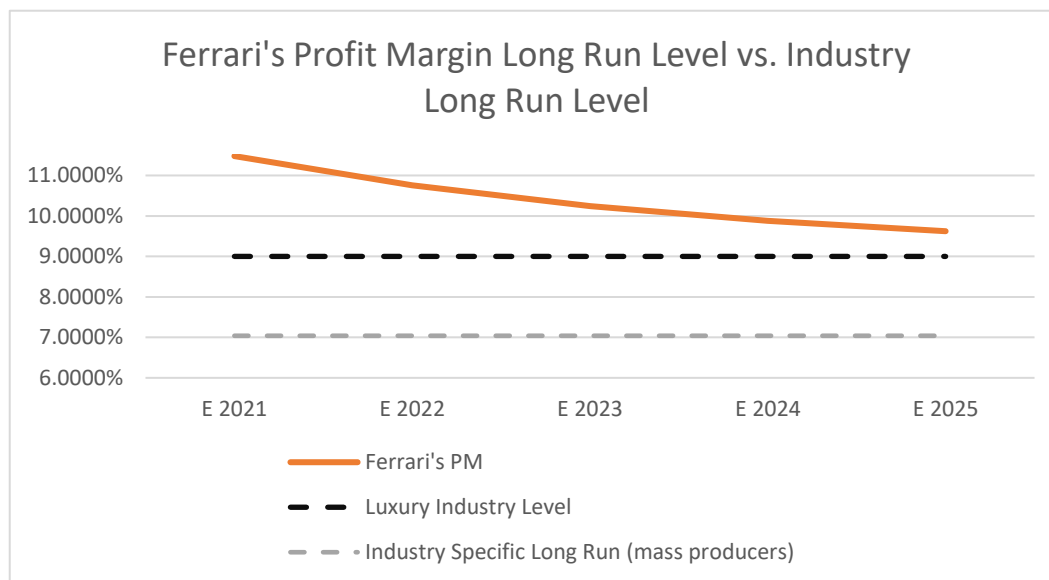


Driver: ATO

		ATO				
	Year	Driver	AR	SSR		
<b>Ferrari S.p.A</b>	2013	1.37	-1.0965	1.202309	1.35	a 1.91
	2014	1.36	-1.0865	1.180479		w -100%
	2015	1.41	-1.0465	1.095159		
<b>Porsche AG</b>	2006/07	0.662616	-1.82388	3.326546	1.33	
	2007/08	0.342932	-2.81095	7.901441		
	2008/09	0.342932	-3.13063	9.800873		
	2009/10	0.342932	-3.13063	9.800873		
	2011	0.795516	-2.67805	7.171956		
	2012	1.03339	-1.98759	3.950523		
	2013	1.038266	-1.74484	3.044472		
	2014	2.660841	-0.11739	0.013781		
	2015	2.730189	1.574532	2.47915		
<b>Audi AG</b>	2012	9.442594	18.6961	349.544	13.07	
	2013	8.40155	14.02765	196.7748		
	2014	7.094974	11.68003	136.423		
	2015	5.296944	8.57542	73.53783		
<b>BMW</b>	2006	0.974135	-1.95236	3.811722	0.89	
	2007	0.957949	-1.88441	3.551016		
	2008	0.781286	-2.07726	4.315021		
	2009	0.737296	-2.29792	5.280418		
	2010	0.819932	-2.25927	5.104304		
	2011	0.840808	-2.15576	4.647295		
	2012	0.904275	-2.07142	4.290761		
	2013	0.84434	-2.06788	4.276142		
	2014	0.780668	-2.19149	4.80263		
	2015	0.771455	-2.26438	5.127396		
<b>Daimler AG</b>	2008	1.134736	-1.37176	1.881732	1.31	
	2009	1.004365	-1.6774	2.813662		
	2010	1.167937	-1.6442	2.703382		
	2011	1.105462	-1.5431	2.381156		
	2012	1.126345	-1.58469	2.511247		
	2013	1.123456	-1.5667	2.45454		
	2014	1.085061	-1.60798	2.585605		
	2015	1.049164	-1.68227	2.830046		
			SUM	872.6153		



*Appendix 7: Profit Margin Development Ferrari vs. Industry Specific Long Run Level*



*Appendix 8: Nelson-Siegel-Svensson Method*

Formula:

$$i_c(t, t+T, b) = \beta_0 + \beta_1 \frac{1 - e^{(-T/\tau_1)}}{T/\tau_1} + \beta_2 \left( \frac{1 - e^{(-T/\tau_1)}}{T/\tau_1} - e^{(-T/\tau_1)} \right) + \beta_3 \left( \frac{1 - e^{(-T/\tau_2)}}{T/\tau_2} - e^{(-T/\tau_2)} \right)$$

$$b = (\beta_0, \beta_1, \beta_2, \beta_3, \tau_1, \tau_2)$$

Vector parameters have been estimated and provided by European Central Bank.

Parameters	
$\beta_0$	1.029269
$\beta_1$	-1.69027
$\beta_2$	12.55121
$\beta_3$	-15.5048
$\tau_1$	1.774032
$\tau_2$	1.971428



### Appendix 9: Credit Ratings of Government Securities

Country	S&P	Moody's	Fitch
Germany	AAA	Aaa	AAA
France	AA	Aa2	AA
UK	AA	Aa1	AA
Louxiembourg	AAA	Aaa	AAA
Italy	BBB-	Baa2	BBB+
Austria	AA+	Aa1	AA+
Denmark	AAA	Aaa	AAA
Sweden	AAA	Aaa	AAA

Source: Created by Author/Trading Economics 2016

### Appendix 10: Estimating Synthetic Ratings

Estimating synthetic rating assessment is done by analyzing rated firms and their financial characteristics shared by the firms within all rating classes. The table below shows interests covered ratios for corporations with large market cap. Firms which have higher market cap are assumed to be >\$2 billion. Ferrari's estimated interest coverage ratio is 12.53 implying that the company can pay out ~12 times its interest obligations relative to earnings.

Table 8.6: Interest Coverage Ratios and Ratings: High Market Cap Firms

Interest Coverage Ratio	Rating	Spread
> 8.5	AAA	0.75%
6.5-8.5	AA	1.00%
5.5-6.5	A+	1.50%
4.25- 5.5	A	1.80%
3- 4.25	A-	2.00%
2.5-3	BBB	2.25%
2- 2.5	BB	3.50%
1.75-2	B+	4.75%
1.5-1.75	B	6.50%
1.25-1.5	B-	8.00%
0.8-1.25	CCC	10.00%
0.65-0.8	CC	11.50%
0.2-0.65	C	12.70%
<0.2	D	14.00%

$$\text{Interest Coverage Ratio} = \frac{\text{EBIT}}{\text{Interest Expense}}$$



### *Appendix 11: Altman Z score*

Altman Z score estimates financial stability of the company. It builds bankruptcy probability of the company based on its five financial ratios:

$X_1 = \text{Working Capital} / \text{Total Assets}$

$X_2 = \text{Retained Earnings} / \text{Total Assets}$

$X_3 = \text{Earnings before Interest and Taxes} / \text{Total Assets}$

$X_4 = \text{Market Value of Equity} / \text{Total Liabilities}$

$X_5 = \text{Sales} / \text{Total Assets}$

***Formula for estimating Z-Score:***

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 0.999X_5$$

***Probability Formula:***

$$P = 1 - \frac{e^z}{1 + e^z}$$

**Zone Determination Base on Z-Score:**

$Z > 2.99$  -“Safe” Zone

$1.81 < Z < 2.99$  -“Gray” Zone

$Z < 1.81$  -“Distress” Zone



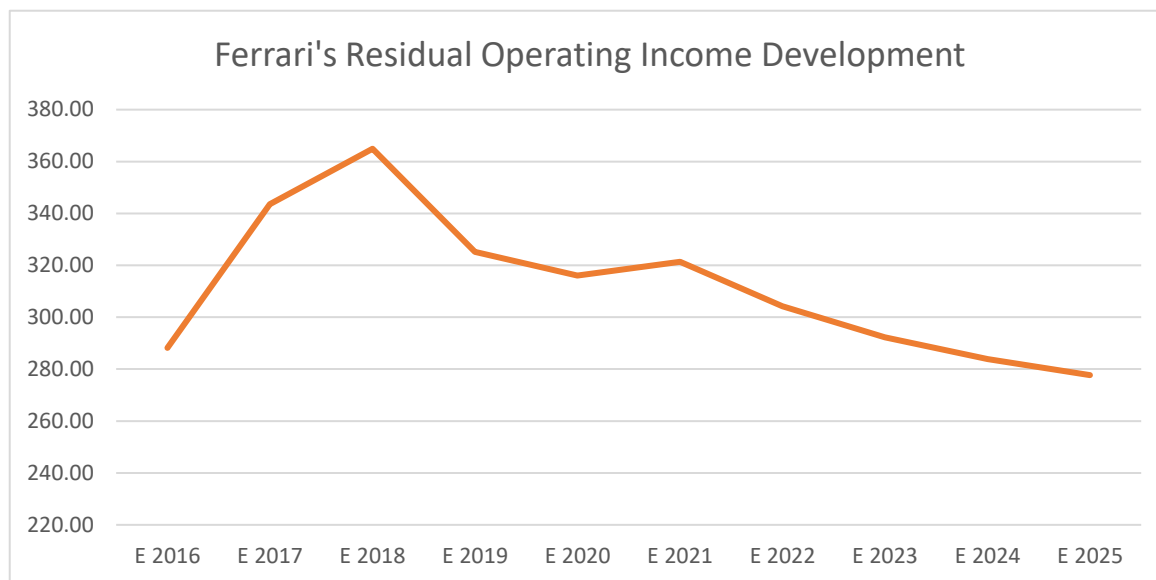
## Appendix12: Residual Operating Income Model

	A 2015	E 2016	E 2017	E 2018	E 2019	E 2020	E 2021	E 2022	E 2023	E 2024	E 2025	Term. Yr.
<i>Growth rate</i>		7%	6.00%	5.50%	4.93%	4.36%	3.79%	3.21%	2.64%	2.07%	1.50%	1.50%
<b>Core Sales revenue</b>	2,854.4	3,054.2	3,237.4	3,415.5	3,583.8	3,740.0	3,881.6	4,006.3	4,112.2	4,197.4	4,260.3	
<b>Core Sales PM</b>	10.3%	13.8%	15.0%	15.0%	13.3%	12.5%	11.48%	10.75%	10.24%	9.88%	9.62%	
NOA	2,020.20	2,224.65	2,379.16	2,461.45	2,546.93	2,583.10	2,032.23	2,097.55	2,152.98	2,197.58	2,230.55	
Δ NOA		2,224.65	154.51	82.29	85.48	36.17	(550.87)	65.32	55.44	44.60	32.96	
ATO	1.41	1.37	1.36	1.39	1.41	1.45	1.91	1.91	1.91	1.91	1.91	
ReOI	186.68	303.41	361.72	384.17	342.35	332.79	338.36	320.25	307.65	298.79	292.34	296.7
Present value (PV) of ReOI		288.21	343.60	364.93	325.20	316.12	321.41	304.21	292.24	283.83	277.69	
Total ReOI PV to 2025			3,117.44									7,864.48
PV of Continuing value			4,704.38									
Common Equity as of Dec. 2015			(6.80)									
<b>Value of Equity (€ millions)</b>			<b>7,815.02</b>									
Net Financial Obligation			2,021.30									
<b>Enterprise value (€ millions)</b>			<b>9,836.3</b>									
Number of Shares (millions)			188.92									
<b>Value per share</b>			<b>€ 41.37</b>									
Cost of capital			5.27%									

<b>Default Spread</b>	0.75%
D/E	0.5
<b>Risk free</b>	0.65%
Tax	24%
<b>Cost Equity</b>	7.37%
<b>Cost of Debt</b>	1.09%
Beta	0.92
<b>Cost of capital</b>	<b>5.27%</b>
D/V	33%
E/V	66.7%
MRP	7.30%



Appendix 13: Residual Operating Income Development Over Forecasted Period



Appendix 14: Sensitivity Analysis of WACC and Share Price In Terms of Cost of Debt and Risk Free Rate; Source- Author Creation

<b>WACC</b>		<b>Risk free rate</b>						
<b>Cost of debt</b>		<b>0.10%</b>	<b>0.65%</b>	<b>1.65%</b>	<b>2.65%</b>	<b>3.65%</b>	<b>4.65%</b>	<b>5.65%</b>
<b>1.00%</b>		4.88%	5.24%	5.91%	6.58%	7.24%	7.91%	8.58%
<b>1.09%</b>		4.91%	<b>5.27%</b>	5.94%	6.61%	7.27%	7.94%	8.61%
<b>2.00%</b>		5.21%	5.58%	6.24%	6.91%	7.58%	8.24%	8.91%
<b>3.00%</b>		5.54%	5.91%	6.58%	7.24%	7.91%	8.58%	9.24%
<b>4.00%</b>		5.88%	6.24%	6.91%	7.58%	8.24%	8.91%	9.58%
<b>Share Price</b>		<b>Risk Free Rate</b>						
<b>Cost of Debt</b>		<b>0.10%</b>	<b>0.65%</b>	<b>1.65%</b>	<b>2.65%</b>	<b>3.65%</b>	<b>4.65%</b>	<b>5.65%</b>
<b>1.00%</b>		46.74	41.72	34.71	29.51	25.48	22.24	19.56
<b>1.09%</b>		46.31	<b>41.37</b>	34.46	29.32	25.32	22.11	19.46
<b>2.00%</b>		42.14	37.93	31.93	27.38	23.78	20.84	18.39
<b>3.00%</b>		38.29	34.71	29.51	25.48	22.24	19.56	17.30
<b>4.00%</b>		35.01	31.93	27.38	23.78	20.84	18.39	16.29