LISBON
SCHOOL OF
ECONOMICS &
MANAGEMENT
UNIVERSIDADE DE LISBOA

MASTER OF SCIENCE IN
FINANCE

MASTERS FINAL WORK
PROJECT

EQUITY RESEARCH:
GOODYEAR TIRE & RUBBER CO.

BERNARDO GONÇALVES

OCTOBER 2019

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SUPERVISOR:
ANA ISABEL ORTEGA VENÂNCIO

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Abstract

The following work consists on an Equity Research of Goodyear Tire and Rubber for the year ending 2019F, based on assumptions considered to be viable for the next five years, as well as, in the historical performance of the last five years. The decision to evaluate a company such as Goodyear Tire and Rubber came from a personal preference to further develop an analysis of a Tire and Rubber industry company.

The research report follows the CFA Institute format and begins with the company overview, which contains a brief history that summarizes the main events up to date. Additionally, there is an analysis of both business units and operating segments, as well as, of other complementary brands the company has. In this part, the main metrics taken into consideration are revenues evolution, cost of goods relative weights, and each operating segment or business unit contribution to the overall firm performance. To complement the business overview, it is taken into consideration the 2019 strategy roadmap and the ongoing rationalizations. Then, there is an overview of the company shareholder structure, and how it is organized in terms of Board Members. To complement the company snapshot, a ESG Score is computed to better understand how the company, and the management, position in terms of Environment, Social, Governance, and Controversies.

The next phase is centred into a more macroeconomic overview, where GDP is taken into consideration, as a way to understand how the economic environment will shape the industry trends and forecasts to the next years. From there follows an Industry Overview, which is more focused on the tire and rubber market, its key revenue and costs drivers, as well as, the competitive forces that shape todays industry performance.

After the analytical study, an Investment analysis is performed. The main model followed is the Discounted Free Cash Flow to Firm, which gives a target price of $17.09/sh for 2019YE, meaning that a buy recommendation is issued, following a low risk strategy for Goodyear Tire and Rubber. This valuation is supported by the Adjusted Present Value, the Free Cash Flow to Equity, and the Multiples Approach, for which the price targets where of $17.70/sh, $16.91/sh, and $18.15/sh respectively.

For the above recommendation, the main risks are the risk-free and the growth rate considered for the perpetuity. Nonetheless, to assess those risks and others also considered, sensitivity analysis are elaborated to determine the impact of such variables on the target price.

Resumo

O trabalho elaborado consiste numa avaliação do preço por ação da Goodyear Tire and Rubber Co. para o fim do ano de 2019, tendo por base pressupostos de performance para os próximos cinco anos, bem como os dados históricos dos últimos cinco anos. A decisão de avaliar a Goodyear baseia-se no desejo de proceder a uma análise de uma empresa que se enquadre na indústria dos pneus e borracha.

O relatório baseia-se no formato do CFA Institute e tem como inicio a descrição da empresa, a qual contém um breve resumo dos acontecimentos marcantes da sua história até a data. Adicionalmente, é feita uma análise em termos de unidades de negócios e segmentos operacionais, bem como outras marcas complementares à Goodyear. Nesta análise, as métricas em destaque foram a evolução das receitas, o peso relativo dos custos, e o peso relativo de cada unidade de negócio, e segmento, para a performance da empresa. Para complementar esta análise, é feito um apanhado do Strategy Roadmap 2019 e das Rationalizations que a Goodyear tem vindo a desenvolver. Posteriormente, aborda-se a estrutura de gestão da empresa, os seus acionistas, a sua organização em termos de Diretores. É feita também uma análise em termos de ESG Score, o que permite perceber como é que a empresa se desempenha em termos de Environment, Social, Governance e Controversies.

A fase seguinte centra-se numa abordagem macroeconómica, baseada no GDP, de forma a perceber como é que o ambiente económico vai moldar as tendências e o futuro da indústria para os próximos anos. De seguida, é feita uma análise da indústria, mais focada nos principais geradores de receitas e custos, bem como as forças competitivas que moldam o desempenho da indústria.

Depois da análise do mercado, seguem-se os modelos. O principal modelo seguido é o do Discounted Free Cash Flow to Firm, que se traduz num preço de $17.09 por ação para o final de 2019, o que indica uma recomendação de compra. Esta avaliação é suportada pelo modelo do Adjusted Present Value, pelo método Free Cash Flow to Equity e uma análise através de Múltiplos, em que os preços apresentados são de $17.70 por ação, $16.61 por ação, e de $18.15 por ação, respetivamente.

Para a recomendação acima referida, os principais riscos são a risk-free e a taxa de crescimento aplicadas ao valor terminal. Contudo, o modelo DCF foi sujeito a análises de sensibilidade para determinar o impacto dessas variáveis, e de outras consideradas relevantes no preço atingido.

Acknowledgements

In this section, I will take some time to thank to all of those who directly or indirectly helped me complete the final master's thesis, as well as, those who supported me through my academic adventure.

First of all, I want to thank all the professors that I met along the master course. You were able to extend my knowledge on several financial topics, as well as, prepared me to better perform both in the academic but also in the professional field. A special acknowledgment to Professora Ana Venâncio for all the valuable inputs concerning the elaboration of this thesis.

I would also like to thank to every one of my close friends, the ones that are by my side since I was a kid. I do not need to elaborate on how important you are to me, and how much influence you have on the person I am today. Thank you for the memories, the friendship, and the times I taught I was going to do my thesis and ended up with a beer in my hand.

To Inês, for always believing that there is nothing I cannot do. It is no coincidence that my most significant achievements have been made since I am with you. I wish this never changes.

To my family, for having the difficult task to deal with a little trouble maker, and making him realize that nothing in this life comes without hard work and dedication. This thesis, and my life, would not be same without you. To my parents, Celso and Fernanda, despite all the times we may not be in the same page, you know I deeply value your insights and our moments together. I will never be able to thank you enough for all the efforts you made so I would never miss on anything in life. I could never have asked for a better set of parents. I hope I made you proud along the way.

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Goodyear Tire & Rubber Co.

Buy

Medium risk

11 September 2019

United States

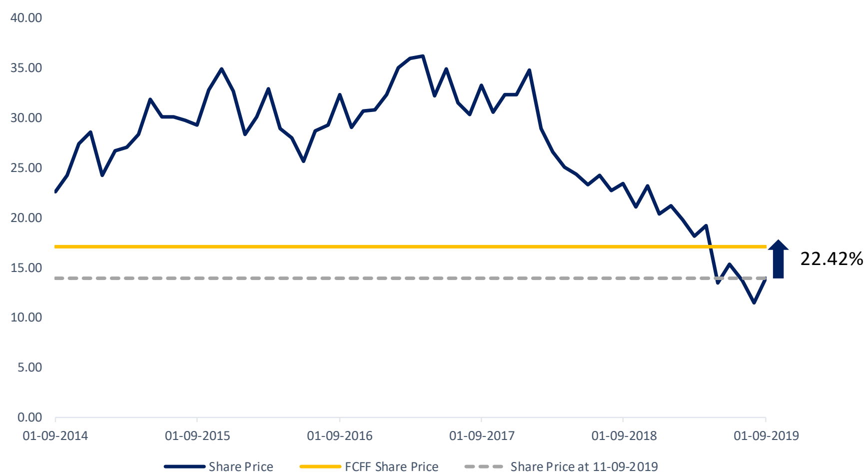
Goodyear: The Road to Premiumtization

(YE2019 Price Target of $17.09 (+22.42%); recommendation is to Buy with Medium Risk)

Research Snapshot

The Goodyear Tire & Rubber Co. is an american company, and is one of the market leaders in the manufacturing and commercialization of tires. Our recommendation is to **BUY** under medium risk, for Goodyear Tire & Rubber (GT), with a 2019YE price target of $17.09/sh based on the discounted Free Cash Flow to Firm method, implying an upside potential of 22.42% from the September 11, 2019 closing price of $13.96/sh.

Figure 1: Historical share price



Source: Reuters; Author

The company operates in a very competitive and mature market, where raw materials increases and low cost providers affected margins. Nevertheless, as one of the leading tire companies in the world, Goodyear is moving towards high-value segments, betting on product differentiation, quality, and security. In addition, the strong focus on research and development activities to launch new customer-specific and segment-specific products, the increasing production efficiency from ongoing rationalization plans, and expansion opportunities in both India, Brazil, and China, present a positive outlook for share performance. The Free Cash Flow to the Firm, the Adjusted Present Value, the Free Cash Flow to Equity and the Multiples Approach support this view that GT is currently undervalued.

Table 1: Risk assessment

Low	Medium	High

Source: Author

Table 2: GT market data at September 11, 2019

Share Price Summary	
Closing price ($)	$13.96
52 week price range ($)	$10.75-$23.84
Shares outstanding (m units)	232.00
Market Capitalization ($m)	3238.72
Forward P/E	20.71
Dividend yield (%)	4.58%

Source: Reuters; Author

Table 3: Reuters Target Price

	23-jun-19	23-jul-19	23-ago-19	11-set-19
Median	$19.00	$17.00	$17.00	$17.00
Mean	$17.92	$17.79	$17.00	$17.00

Source: Reuters; Author

Table 4: Share Price Summary ($)

Share Price Summary	
FCFF	$17.09
APV	$17.70
FCFE	$16.91
Multiples	$18.15
Gordon Growth	$9.38
Multi-Stage Growth	$9.24

Source: Author

Goodyear Tire & Rubber Co.

The **Goodyear Tire & Rubber Company (GT)** is an American multinational tire manufacturing company listed on the NASDAQ. Founded in 1898 by Frank Seiberling and based in Akron, Ohio. Goodyear started by producing bicycle and carriage tires, rubber horseshoe pads, and poker chips. Then, the company grew with the advent of the automobile, making it one of the world's leading manufacturers of tires. Currently, GT has 47 manufacturing facilities in 21 countries around the world, employing 64,000 people. The company reported revenues of $15,475 million for 2018FY, an increase of 0.6% over 2017FY. In 2018FY, the company's margin was 8.1%, compared to an operating margin of 7.7% in 2017FY. In 2018FY, the company recorded a net margin of 4.5%, compared to a net margin of 2.3% in 2017FY.

Business Units

Goodyear Tire & Rubber Co. operates in the Tire and Rubber industry. The company has a wide portfolio ranging from tire units to chemicals, as well as, retail services and service related sales (Figure 3).

Tire unit sales accounts for 85.28% of Goodyear total net sales in 2018. It consists of consumer, commercial, farm and off-the-road tire sales, including the sale of new company-branded tires through company-owned retail channels. **Other tire and related sales** accounts for 6.62% of Goodyear sales in 2018. It consist of aviation, race, motorcycle and all-terrain vehicle tire sales, retread sales and other tire related sales. **Retail services and service related sales** accounts for 4.36% of Goodyear sales in 2018. It consist of automotive services performed for customers through company-owned retail channels, and includes service related products. **Chemical sales** accounts for 3.58% of Goodyear sales in 2018. It relates to the sale of synthetic rubber and other chemicals to third parties, excluding intercompany sales. **Other sales** accounts for 0.16% of Goodyear sales in 2018. It include items such as franchise fees and ancillary tire parts, such as tire rims, tire valves and valve systems.

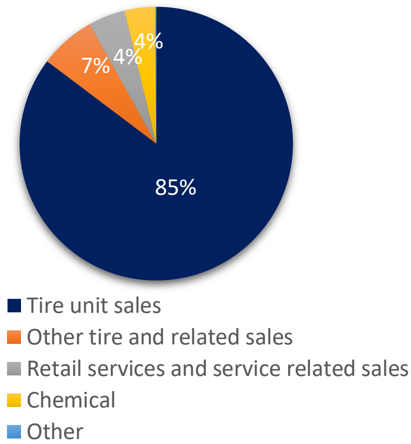
Goodyear core business activity is the development, manufacture, distribution and sale of tires and related products worldwide. Rubber tires are manufactured and marketed for a wide range of applications, from automobiles and trucks, to aircraft and industrial equipment. In each case, tires are offered for sale to vehicle manufactures for mounting as **original equipment (OE)** and for **replacement (RT)**. OE products include tires as a component of newly supplied vehicles. The main customers of OE products are carmakers. On the other side, RT customer target are drivers that already own a car, but decide to, due to aging and wearing, switch their existing tires. Figure 4 shows that in 2018YE, OE represented approximately 28% of total unit sales, and RT accounted for the remaining 72%. In terms of volume, this represents 44.1 million OE, and 115.1 million RT, being sold, for a total value of $14,222 million (Figure 6).

Operational Segments

Goodyear as a multinational company conducts business activities at a worldwide scale. In terms of geographical presence, its operations are divided into Americas; Europe, Middle East and Africa (EMEA); and Asia Pacific. All the regions are responsible for manufacturing and selling tires for automobiles, trucks, buses, aircraft, earthmoving, mining and industrial equipment. Moreover, each segment

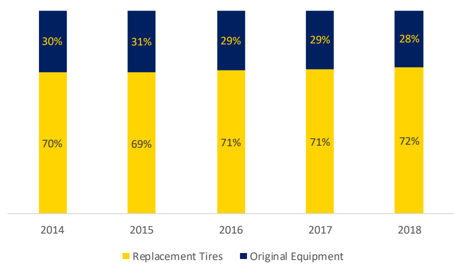
Figure 2: Goodyear Tire & Rubber Logo

Figure 3: GT net sales by product



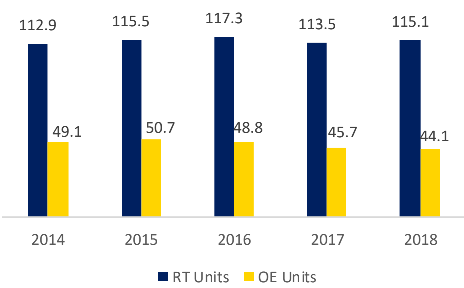
Source: Company data; Author

Figure 4: OE and RT evolution (%)



Source: Company data; Author

Figure 5: OE and RT units (in millions)



Source: Company data; Author

provides related products and services, including retreaded truck and aviation tires, as well as, automobile maintenance and repair services.

Americas is the main revenue generator, accounting for 52.78% of total sales. The region additionally provides tread rubber, as well as chemical and natural rubber products to GT other business segments, and to unaffiliated customers. As Figure 7 depicts, both sales and operating margin have decreased in this region, from 2014FY to 2018FY. Lower sales combined with higher costs led to a lower segment profitability.

Europe, Middle East and Africa (EMEA) accounts for 32.89% of sales. The segment specific business activities are based on rethreading and related services for commercial truck and earthmoving, mining and industrial equipment. From 2014FY to 2018FY has been struggling with lower sales and lower profitability every year (Figure 8).

Asia Pacific generates 14.33% of GT sales. Like Americas, it is responsible for providing tread rubber. Nonetheless, from Figure 9, it is possible to see that this is the most profitable and growing segment for Goodyear.

Brands

Additionally to Goodyear, the company manufactures and sells tires under the brands Dunlop, Kelly, Debica, Sava and Fulda and various other GT owned "house" brands, and private-label brands of certain customers. This diversification strategy enables the company to be present in a variety of market segments, which ultimately places its products closer to different customer needs.

Dunlop is one of the world's leading high and ultra-high performance tire brands with an impressive track record of motor sport successes. Dunlop's racing experience is the driving force behind its product development philosophy "from track to road", which leads to innovative technologies for tires designed for everyday motoring.

Fulda, one of Germany's leading tire brands, offers a complete, high-quality product with an emphasis on safeness, long-lasting performance and outstanding value for money across a wide variety of applications, from passenger cars to truck and farm applications.

Sava tire quality comes at a reasonable price with good tire performance. That gives you reassurance that you have made a cost-saving purchase with peace-of-mind.

Debica offers a wide product range of passenger car tires that are designed for stable handling and economy. Debica also produces tires for commercial vehicles including all-steel truck tires, off-road tires, and tires for agricultural machinery as well as other products from the tire industry.

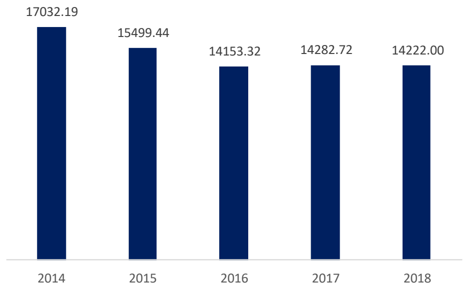
Kelly integrates Goodyear North America. It is responsible for the manufacturing of tires for motor vehicles, following a strategy of high quality products at honest prices.

Rationalization Program

In order to maintain its global competitiveness, GT has implemented rationalization actions over the past several years to reduce excess, high-cost manufacturing capacity and costs.

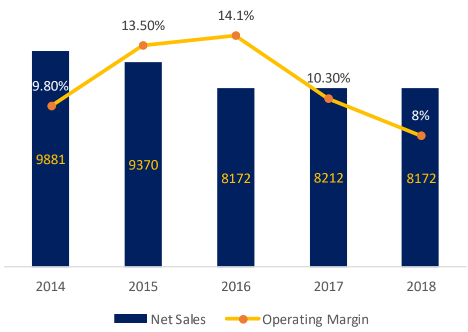
As Figure 10 details, the core Rationalizations hit its peak at $210 million in 2016. From then on, the remaining Rationalizations have been decreasing, to $135 million and $44 million in 2017 and 2018, respectively.

Figure 6: GT tire units sold (in $m)



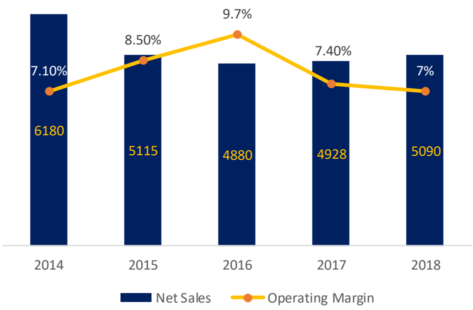
Source: Company data; Author

Figure 7: Americas segment analysis (in $m)



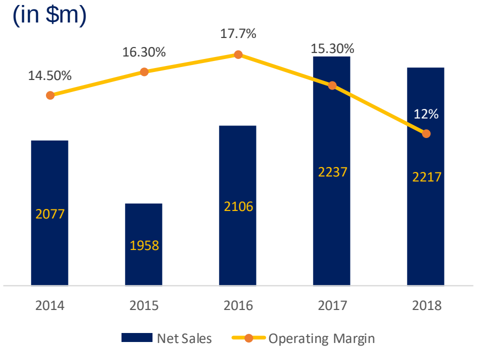
Source: Company data; Author

Figure 8: EMEA segment analysis (in $m)



Source: Company data; Author

Figure 9: Asia Pacific segment analysis (in $m)

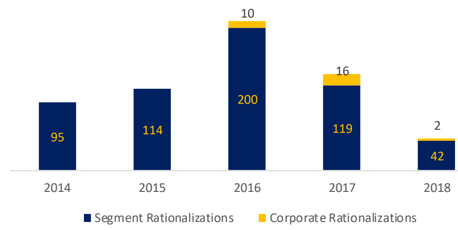


Source: Company data; Author

From a segment point of view (Figure 11), one can observe that the **EMEA** region is the main rationalization target region. This is a company strategy to increase the segment operating income. On the other hand, **Asia Pacific**, because of a strong economic development, is the most profitable segment, making this cost efficient program less relevant. Additionally, corporate rationalizations that started in 2016YE also complement GT strategy to reduce excessive costs.

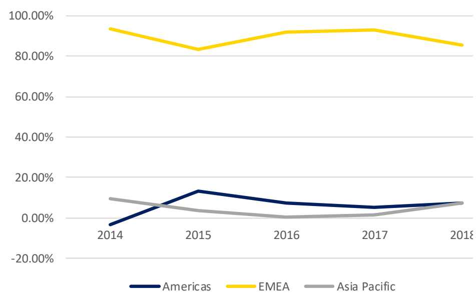
In 2018YE, GT incurred in a cost of $28 million related to the global plan to reduce Selling, General and Administrative headcount, and $13 million related to plans to reduce manufacturing headcount and improve operating efficiency in EMEA. Additionally, net prior year plan charges recognized in 2018YE include $15 million related to the closure of one tire manufacturing facility in Philipsburg, Germany, $3 million related to a plan to reduce manufacturing headcount in EMEA, and $3 million related to a global plan to reduce SAG headcount. Ongoing rationalization plans will total $800 million expected to be incurred in future periods.

Figure 10: Rationalization plan (in $m)



Source: Company data; Author

Figure 11: Rationalization segment analysis (in $m)



Source: Company data; Author

Company strategies

In order to grow and address the challenging economic environment, Goodyear Strategy Roadmap highlights three interdependent elements (Figure 12):

Innovation excellence by developing great products and services that anticipate and respond to the needs of consumers. An example of such is the introduction of Roll, a new retail format where Goodyear can deploy in high-traffic retail locations, such as high-end-life-style centers and business districts. It also offers consumers an innovative alternative to traditional tire retail locations, allowing them to shop on their terms and select the installation option that best fits their busy schedules.

Sales and Marketing excellence by building the brand value, helping its customers win in their markets, and becoming consumers' preferred choice. An example of such is the introduction, of TireHub, a newly national wholesale tire distributor in the United States. Complemented by the company's network of aligned regional distributors and designed to provide best in class service, TireHub enhances GT ability to capture the full brand value by selling the full depth and breadth of its portfolio.

Operational excellence by improving manufacturing efficiency and enhancing the supply chain, GT focus on reducing total delivered costs, optimizing working capital levels and delivering the best customer service in the industry. An example of such is the development of Goodyear Mobile Install, a mobile installation, available at the consumer's preferred location and time. Working alongside its industry-leading e-commerce platform, Goodyear Mobile Install meets consumers where they are and makes the tire buying and installation process easier.

Overall, these strategies will help Goodyear achieve its ultimate goal "deliver sustainable revenue and profit growth while increasing the brand value".

Figure 12: Strategy Roadmap 2019

Source: Company data

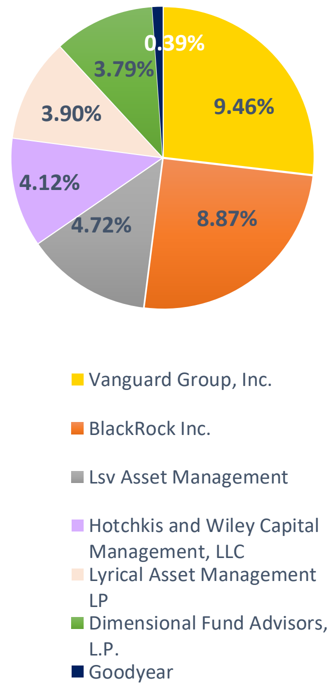
Management and Corporate Governance

Ownership Structure

Goodyear's largest shareholder (Figure 13) is Vanguard Group, Inc., an investment advisory and hedge fund firm, with a 9.46% stake in the company. BlackRock Inc., an American global investment management corporation, is the second largest shareholder with 8.87%. The third largest holder, with 4.72%, is Lsv Asset Management. The remaining shareholders are Hotchkis and Wiley Capital Management, LLC, with 4.12%. The remaining 544 Institutional Investors hold less than 4% each. Notably, inside ownership only accounts for 0.39% of outstanding shares.

Since 2013, as part of the share repurchase program, Goodyear has purchased 52.9 million shares for a total of $1.5 billion. For 2018YE, the amount of repurchased was of 8.9 million shares of its common stock for $220 million. For 2019 no significant amount of share repurchases are expected to be made. The recent share capital repurchase puts Goodyear at approximately 231 million shares outstanding. These ordinary shares trade on NASDAQ and do not grant any special rights beyond the shareholder's general rights.

Figure 13: Main shareholders



Source: Reuters; Author

Corporate Governance

Mr. Richard J. Kramer serves as both Chairman of the Board, Chief Executive Officer and President since 2011. After his Bachelor of Science in Business Administration from John Carrol University in 1986, he joined PwC in Cleveland from 1987 to 2000. Thereafter, he moved to Goodyear as Vice President of Corporate Finance. The Chairman and CEO roles enhances the company's ability to coordinate the development, articulation and execution of a unified strategy at both the Board and management levels.

Mr. Darren Wells serves as Chief Financial Officer and Executive Vice President. He graduated from DePauw University in 1987, with a degree on Spanish and English Composition. Adding to that, he obtained a MBA in Finance at Indiana University Bloomington. In 1989, he joined Ford Motor Company, as a Finance Specialist, staying in that company during 11 years. Afterwards he joined Goodyear as a Treasure in 2002, and then moved up until becoming CFO in 2008.

Since Goodyear operates in different regions of the world, the company has a president for each region. Accordingly, **Mr. Christopher Delaney** is the President for the Europe, Middle East and Africa regions, **Mr. Stephen McClellan** is the President for the Americas region and **Mr. Ryan Patterson** is the President for the Asia Pacific region.

Regarding Goodyear's Board, **Mr. McCollough** was elected by the independent members of the Board to serve as Independent Lead Director. Having an extensive senior executive management experience, particularly in operations and consumer merchandising and marketing, as a Chairman and CEO of Circuit City, provides him with the necessary skills to the role.

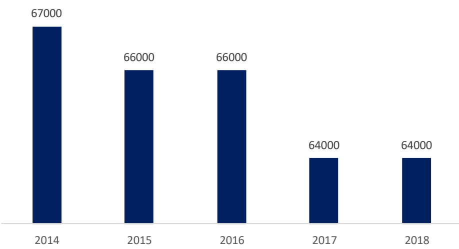
The Board believes that the current leadership structure is the most appropriate to promote a corporate culture that is committed to acting with honesty, integrity and respect in all that they do. Moreover, Goodyear's Board is composed of thirteen directors, 85% of them independent and elected annually, and includes six committees: Audit, Compensation, Corporate Responsibility and Compliance, Finance, Governance, and Executive

Table 5: Total Shareholders (%)

Investor name	(%) Shares Held
Vanguard Group, Inc.	9.46%
BlackRock Inc.	8.87%
Lsv Asset Management	4.72%
Hotchkis and Wiley Capital Management, LLC	4.12%
Lyrical Asset Management LP	3.90%
Dimensional Fund Advisors, L.P.	3.79%
Goodyear	**0.39%**
Others	64.76%

Source: Reuters; Author

Figure 14: Number of employees



Source: Reuters; Author

The Executive Committee is responsible for defining the strategic plan that enables the company to achieve its operational and financial goals. Its seven members range from the President, Mr. Richard J. Kramer, to Ms. Laurette T. Kellner, the Lead Chairman.

The Finance Committee has as a Chairman Mr. James Firestone, and the main responsibilities are related with the financial planning of the company. Additionally, the four members tend to review management's plan for significant financing transactions, as well as, review the company's planned Capital Expenditures.

The Audit Committee, with five members, oversees the accounting and financial reporting processes of the company, the compliance with legal and regulatory requirements, and the performance of independent accountants and the internal auditors. Mr. James Firestone is also present in this committee, where Mr. Peter S. Hellman is Chairman.

The Compensation Committee role is to manage the compensation of the Company's Directors, officers, and other employees that the Committee may determine. Mr. John McGlade is the Chairman of this committee, sharing it with other three members.

The Corporate Responsibility and Compliance Committee oversee matters relating to the composition and organization of the Board of Directors, as well as, to manage the company policy of adherence to the highest legal and ethical standards. Mr. Werner Geissler is the main responsible, of four members, to monitor how the Company manages its business in a responsible manner.

Table 6: Board members compensation

Name	Compensation ($)
Mr. Richard (Rich) Kramer	6,213,100.00
Mr. Darren Wells	2,240,913.00
Mr. Christopher (Chris) Delaney	1,717,745.00
Mr. Stephen (Steve) McClellan	2,163,222.00
Mr. Ryan Patterson	n.a
Mr. David Phillips	n.a
Mr. Jon Bellissimo	n.a
Ms. Laura Duda	n.a
Mr. Gary S VanderLind	n.a
Mr. Christopher Helsel	n.a
Mr. Evan Scocos	n.a
Mr. David (Dave) Bialosky	1,609,014.00
Mr. Warren McCollough	372,994.00
Mr. Michael Wessel	322,565.00
Mr. Thomas (Tom) Williams , II	n.a
Mr. James (Jim) Firestone	333,977.00
Mr. Werner Geissler	318,291.00
Mr. Peter Hellman	323,369.00
Ms. Laurette Koellner	288,463.00
Mr. John McGlade	311,653.00
Mr. Roderick (Rick) Palmore	309,756.00
Ms. Stephanie Streeter	314,775.00
Mr. Thomas Weidemeyer	327,714.00

Source: Reuters; Author

Corporate Responsibility

The Committee on Corporate Responsibility and Compliance oversees GT's corporate responsibility objectives and regularly monitors progress. In 2018, it was conducted an assessment to review corporate responsibility topics that are high priorities to the company, and its stakeholders, and to highlight opportunities for ongoing improvement. The updated Corporate Responsibility Strategy highlights a sustainable raw materials and sourcing policy, responsible operations regarding safety and health, operational impacts, product quality, end-of-life tires and business continuity.

Reuters presents the **ESG Score** for GT in terms of Environmental, Social, Governance and Controversies factors (Table 7).

In terms of **Environmental** awareness, GT achieved a rate of B+, in 2018, mainly due to the creation of an environmental management team, which performs the functions dedicated to environmental issues.

The **Social** criterion examines how GT manages relationships with stakeholders. With a score of B+ there are no signs of relevant disputes with existing clients, suppliers, or communities.

The **Governance** deals with a company leadership, executive pay, audits, internal controls and shareholders rights. For 2018, GT had a score of C+ in this dimension, in line with the last years, due to tight policy executive compensation.

In terms of **Controversies**, GT has a score of D+, mainly due to allegations that defective Goodyear motor home tires caused crashes that killed or injured 95 people during the past two decades. Altogether, this leads to an ESG Combined Score of C (Table 8), placing Goodyear in the 51st place in terms of Environment, Social, Governance and Controversies, within the Auto & Auto Parts Industry.

Table 7: GT ESG score

Ratings Score	2014	2015	2016	2017	2018
Environment	B-	B	B	B-	B+
Social	B+	B	B	B-	B+
Governance	C-	C	C+	C+	C+
ESG Score	**B-**	**B-**	**B-**	**B-**	**B+**
ESG Controversies	D+	B	B	C-	D+
ESG Combined Score	**C-**	**B-**	**B-**	**C**	**C**

Source: Reuters; Author

Table 8: ESG Score Ranking

Rank	Company Name	Country	Current Market Cap
1	Michelin SCA	FR	$20,056 MM
15	Continental AG	DE	$26,001 MM
35	Sumitomo Electric Industries Ltd	JP	$10,247 MM
51	Goodyear Tire & Rubber Co	US	$3,199 MM

Source: Reuters; Author

Economic Overview

From the global financial crisis (2007-2008) onwards, the economy has been expanding, with **World GDP** stabilizing at 3.6% in 2018. Nevertheless, from the second half of 2018, global expansion weakened because of US-China trade tensions, macroeconomic stress in Argentina and Turkey, disruptions in the auto sector in Germany, and tighter credit policies in China. Accordingly, the IMF World Economic Outlook (2019) projects a 70% decline of the global economy, with global growth, that peaked at 4% in 2017, to decline to 3.3% in 2019 (Figure 15).

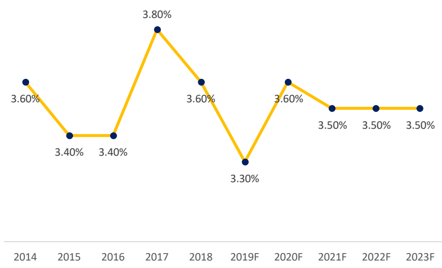
During the current year, in response to rising global risks, the US Federal Reserve stopped interest rate increases. The European Central Bank, the Bank of Japan and the Bank of England moved to a more accommodative policy. China created fiscal and monetary stimulus to counter the negative effects of trade tariffs. Currently, the outlook for US-China trade tensions has improved as an eminence of a trade agreement is on sight. These policies have helped reverse the overall financial conditions, however, measures of industrial production and investment remain weak for most advanced and emerging economies, and global trade has yet to recover. Accordingly, in 2020 global economic growth is expected to return to 3.6%, while beyond that is going to stabilize at around 3.5%, mainly driven by growth in China, and India and their increasing relative importance in the world income.

The **Europe, Middle East and Africa (EMEA)** region slowed more than expected in 2018 (Figure 16). This results from weakening consumer and business sentiment, as well as, growing concerns about a no-deal Brexit that influenced the spending in the euro area. In Germany, one of the most relevant European Union members, suffered from delays associated with the introduction of new fuel emission standards for diesel-powered vehicles, which negatively affected the country's economic activity. In Middle East countries, geopolitical tensions contributed to weaker activity. Altogether, GDP growth for 2018 was of 2.20%, lower than the 2.50% GDP growth of 2017. For the future, IMF World Economic Outlook (2019) expects the region gross domestic product to grow at 1.8% in both 2019 and 2020, before stabilizing at 2.60% until the end of 2023.

The **Americas** region is also expected to follow the global economic downturn (Figure 17). In 2018 the region had a GDP growth of 2.70%, for 2019 the value is expected to be of 2.20%. While the United States economy has exceeded other major advanced economies, the fiscal policy impetus seems to fade by the end of 2019. Moreover, the impact of US tariffs will also contribute to slower economic growth. Sectors that have international competition, as the Tire and Rubber industry, will be negatively impacted by higher prices for tariff-affected imports and retaliatory tariffs imposed on US exports. Accordingly, as the fiscal policies fades and growth tends towards its modest potential, given saturated markets, the Americas region is projected to register a GDP growth of 2.20% in 2019 and 2020, which will stabilize at 2.60% from 2021 onwards.

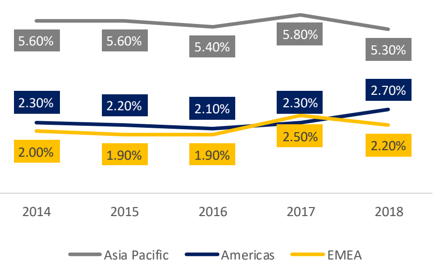
The **Asia Pacific** region has been, in recent years, the global economy's growth engine. GDP growth was of 5.80%, in 2017. However, it felt to 5.30%, in 2018, and for 2019, it is expected to be 5.10%. This is a result of slowdown in China's industrial activity, that reflects declining exports, as well as cooling real estate market and slowing automotive sector. The region economy is highly dependent on external trade performance, and with uncertain negotiations between China and the US, a stable GDP growth rate of 5.20% is expected for the 2020 to 2023 period.

Figure 15: Real GDP growth (%)



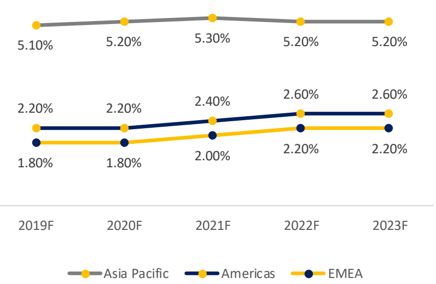
Source: IMF

Figure 16: GDP Growth by Regions (%)



Source: IMF

Figure 17: GDP Growth by Regions Forecasted (%)



Source: IMF

Industry Overview and Competitive Positioning

As mentioned before, the Tires and Rubber industry sales can be divided into two categories, Original Equipment (OE) and Replacement Tires (RT). Original Equipment, is a crucial component of newly supplied vehicles and accounts for approximately 9% of the total market volume. On the other hand, Replacement Tires, which account for 91% of the total market volume, are related to the number of cars in circulation and the life expectancy of tires.

The global Tires and Rubber market register, in 2018YE, a total market value of \$612 billions, a CAGR of 7.1% from the \$465.4 billions set in 2014YE. In comparison, the Asia Pacific and United States markets grew at CAGR's of 5.5% and 4.3%, respectively. Nevertheless, the performance of the market is forecasted to decelerate, with an anticipated CAGR of 5.3% for the next five years, which is expected to drive the market to a value of \$794 billions by 2023YE (Figure 18).

This industry is, therefore, on a mature phase and has high entry barriers, which leads to a high firm concentration. In fact, the main five companies account for around 50% of the total market share (Figure 19).

Political tensions limit industry profitability

Traditional players are based in developed countries, as Germany and United States, where there is no relevant political tensions risk due to a stable government activity. Nonetheless, manufacturers are being attracted towards the developing markets, as India and China, due to its increased tire demand and lower production costs. For those economies, unstable government actions lead to unemployment and high inflation levels. As a result, political tensions may negatively affect the companies that try to operate on those markets. Current cases, like the U.S. trade war with China and Brexit, can jeopardise the industry profitability with tariffs burden. China is set to impose a 10% import tariff on various synthetic rubber and tire products originating from the United States. Moreover, in the event of a "no-deal" Brexit, U.K. tire industry will witness a 10% tariff imposed by the European Union. Altogether, the tire manufacturers are expected to increase prices by 3% to 8% as a response.

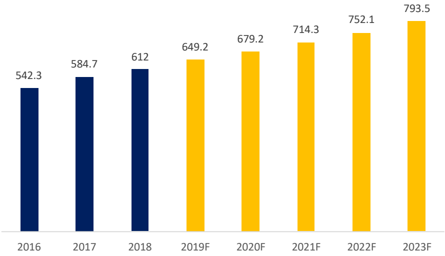
Technological Innovation enhances a premium segment

Product innovation has become indispensable for traditional tire manufacturers focused on the high-end segment. According to Pirelli (2017), the market outlook for this segment presents growth opportunities of 10% YoY until 2022YE. What makes it so attractive, is that companies with a strong brand name and a reputation for high-quality products are able to raise prices without a severe negative impact on demand in the premium segments. Moreover, R&D investments allow firms to cut down production costs while improving profitability margins. Recent research is focused on improving tires, raising their life expectancy and increasing their security. For example, there are tires in the market that are able to repair themselves without human intervention due to a substance that makes them airtight and fills the hole.

Sustainability and Environmental awareness shape the future

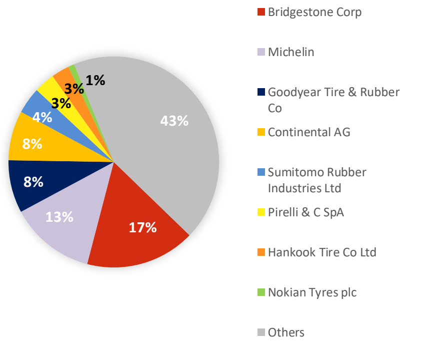
The manufacturing process of tires involves the use of many chemicals, like antioxidants and antiozonants, leading to potential environmental hazards. Efforts have been made towards the decrease in waste from dismantling and recycling of

Figure 18: Global Tire and Rubber market value (in \$bn)



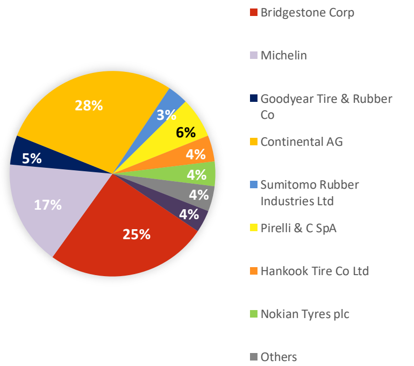
Source: Market Line, Global Tire & Rubber Industry 2019

Figure 19: Market share of main industry players (%)



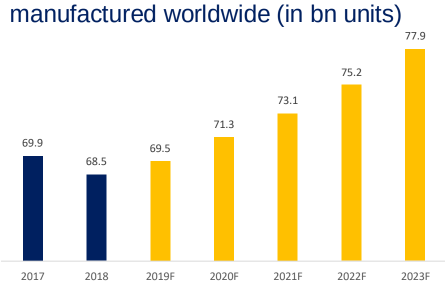
Source: Reuters

Figure 20: Industry players market capitalization (%)



Source: Reuters

Figure 21: Number of cars manufactured worldwide (in bn units)



Source: Market Line, Global Tire & Rubber Industry end of life vehicles (ELVs), and development of a more environmentally friendly production process. In addition, in response to the demand of car manufacturers' clients, the tire producers make regular improvement on the rolling resistance, to reduce the CO2 emissions as well as to reduce fuel usage that accounts for as much as 40% of running costs in Europe.

Mobility habits provide positive outlook for Demand

Consumer preferences are moving towards more sustainable and convenient mobility solutions, due to technological and lifestyle changes. Car sharing are becoming an attractive option over the tradition car rentals. Additionally, there are several factors, as a rise in traffic and shifting thoughts towards vehicle ownership, which are encouraging car sharing services to grow in urban communities. In 2017, Uber registered 17.7 million smartphone on its car sharing app. Additionally, user behaviour will move more and more towards autonomous mobility. According to PwC (2018), 40% of the mileage driven in Europe and U.S. could be covered by autonomous vehicles in 2030, whereas in China, the penetration of shared and autonomous mobility will happen faster than in the Western world. Overall, more people will travel additional kilometres, which for the tire industry represents a positive shift in demand.

Higher regulatory requirements improve transparency

The industry has witnessed an increase on regulation and transparency over the last 10 years towards safety concerns. Requirements regarding tire labelling (EC/1222/2009) allow for better comparison between different tires on measures like performance, fuel efficiency and noise. Regulatory requirements make it harder for low cost competitors to penetrate and survive on the market.

Key Drivers

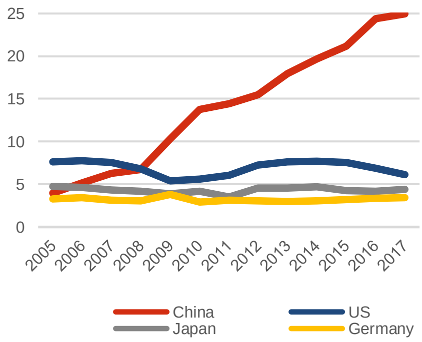
The Tire and Rubber industry performance is positively and directly related to the automotive industry. From 2014YE to 2018YE, global demand for automobiles has grown 3.92% YoY (Figure 23) mainly driven by emerging markets. China experienced an increase of vehicle demand by 16% YoY in the same period (Figure 20).

Car production increased at a 1.3% CAGR from 2014YE 64.9 million units, to 68.5 in 2017YE. Demand for OE, as a crucial component of newly supplied vehicles, is expected to follow the overall trend of **automobile increasing demand**.

Global car fleet in circulation is following a similar growing trend. In 2010 there were 1055 million cars in circulation, and by 2015 the number reached 1282 million. However, by 2025 global transport is set to be at 1600 million units, representing a CAGR of 2.76% from 2015 (Figure 25). Additionally, improvements in rubber quality and better road conditions have increased the life tire expectancy to 30,000 km for automobiles tires, leading to a decrease of the replacement turnover. However, cars are driven more frequently, making it necessary to buy replacement tires every 18 months. All in all, RT demand have been positively affected by those developments, as well as for a positive outlook regarding **the number of cars in circulation** worldwide.

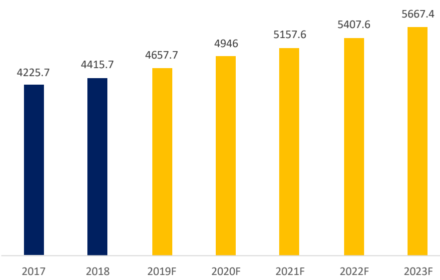
The main cost drivers of tires are **natural rubber** and **synthetic rubber**. Natural rubber is obtained through rubber trees, which requires warm climates. As a result, the main countries that export this good are Thailand and Indonesia. On the other hand, synthetic rubber can be produced from petrochemical feedstocks with crude

Figure 22: Passengers car sales in selected countries (in million units)



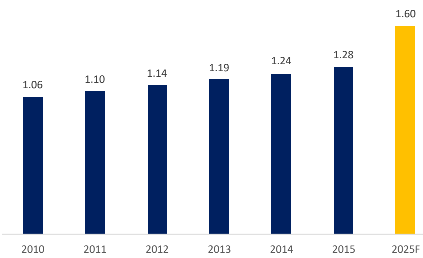
Source: The International Organization of Motor Vehicles Manufacturers

Figure 23: Total car sales volume (in million units)



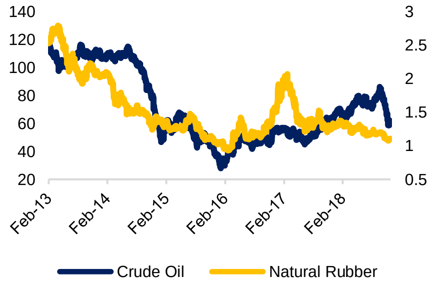
Source: The International Organization of Motor Vehicles Manufacturers

Figure 24: Number of cars in circulation worldwide (in bn units)



Source: The International Organization of Motor Vehicles Manufacturers oil as the main input. Accordingly, an increase in the oil price leads to an increase in synthetic rubber price, increasing the demand for natural rubber (Figure 25).

Figure 25: Crude oil $ per barrel and natural rubber($/kg)



Source: Bloomberg

Competitors Analysis

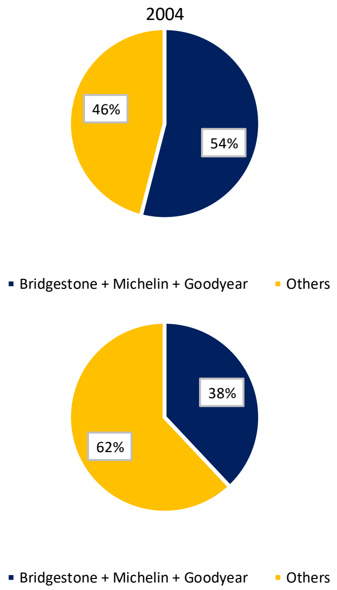
The companies more representative of the Tire and Rubber Industry, ranked by market share and size, are: (1) Bridgestone; (2) Michelin; (3) Goodyear; (4) Continental; (5) Sumitomo; (6) Pirelli; (7) Nokian and (8) Hankook.

In 2004YE, the main three tire manufacturers (Bridgestone, Michelin and Goodyear) accounted for 54% of the total market, whereas in 2017YE its market share reduced to 38% (Figure 26), due to the entry of new players from emerging countries and Asia Pacific economic expansion.

The traditional players are investing in a product differentiation strategy, focusing on brand recognition, product quality and safety, which allow them to have an average selling price (ASP) 31% higher than low cost companies. Therefore, to protect their gross margins of 30%, traditional players are moving towards the tires premium segment, where product quality is in high demand.

By opposition, the low-cost players follow a cost efficiency strategy, which allows them to deliver the product at an ASP of € 58 and still be profitable. Gross margins of 21.9% are established through a light cost structure and lower labour costs. Additionally, Asian companies tend to produce tires with a smaller percentage of natural rubber, and a higher percentage of synthetic rubber, at the expense of the overall product quality.

Figure 26: Industry top 3 market players (%)



Source: Bloomberg

Porter’s Five Forces

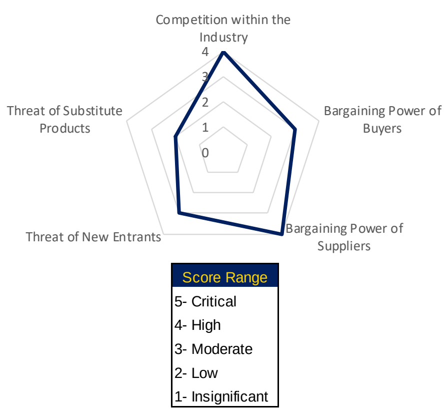
Competition within the industry (High)

High concentrated industry, where top 5 market companies have roughly 50% of the market. Low levels of product differentiation, within each segment, translates in competition on prices. Companies are now trying to gain competitive advantage by investing in other parameters such as performance, reputation and customer service. Decreasing operating margins due to the competitive environment and growing influence of low-cost Asian competitors, means that industry profitability is dependent on input prices. Industry sales are expected to grow at a CAGR of 5.1% from 2018YE to 2023YE (Figure 23). Consequently, firms need to fight for market share, which contributes for the overall high level of competition within the industry.

Bargaining Power of Buyers (Moderate)

Tire manufacturers face two main group of buyers, the vehicle manufacturers, such as General Motors and Ford, and tire dealers, such as the Tire Kingdom and Vianor. The tires and rubber market is difficult to enter due to high fixed-costs. It is also concentrated with a relatively small number of established players, like Continental, Bridgestone and Goodyear. Overall, this reduces buyer power since buyers have limited options when deciding which tires to purchase. Nevertheless, many players in the auto industry, such as BMW and Ford, possess significant financial power as well as operational scale. Accordingly, those companies have a high bargaining capacity, since any order they place in the market is for a significant amount of tires to be supplied. And as a result, tire manufacturing companies would not mind to lower their usual prices in order to accommodate such a large order. Regarding the RT segment, tire dealers are often smaller and more numerous. This decreases buyer power, as these dealers do not possess the same financial leverage that automotive players have. OE manufacturers’ contracts create a higher switching cost for automotive manufacturers, whereas the RT

Figure 27: Porter's Five Forces



Source: Author

segment is more likely to place periodically orders, reducing these costs. On the other hand, tire dealers and vehicle manufacturers tend to be price sensitive, increasing buyer power. Even though these buyers have different dimensions, they all are highly price sensitive because their goal is to minimize costs and increase profits. In order to do so they have to get the cheapest contracts from the tire manufacturers. Small size, tire dealers, do not have a big economic power, thus they cannot bargain a better deal. However, vehicle manufacturers have higher economic power, being able to negotiate better and cheaper deals. Overall, the bargaining power of buyers is moderate.

Bargaining Power of Suppliers (High)

Few large world players dominate the manufacturing and processing of both natural and synthetic rubber. Hence, the existence of organisations that control the supply of natural rubber and petroleum such as OPEC, translates in higher bargaining power of suppliers. Tire profitability is highly sensitive to price fluctuations of rubber and other petroleum derivatives since those raw materials are essential to tire production. To mitigate the dependence on few providers of raw materials, some manufactures started to perform backward integration, as in the case of Goodyear, where the company produces some percentage of its rubber needs. Overall, leads to a high bargaining power of suppliers.

Threat of New Entrants (Moderate)

The industry has high barriers to entry, because most tires are relatively undifferentiated, meaning that companies to be profitable, need to produce in large quantities to achieve economies of scale. High capital expenditures are required, so it is challenging new entrants to match the scale of the existing producers. Furthermore, a substantial amount of R&D is required to develop and test new tire models, whose approvals are difficult and costly to get due to strict legal and safety regulations. Market leaders dominate the OE manufacturers market, whereas the RT segment has a greater degree of fragmentation and therefore is at greater risk of new entrants. Although there is product differentiation and differences in quality, new entrants can compete on price due to the moderate level of regulation and performance requirements. This can be seen in the increased number of Chinese brands entering the United States market and the subsequent tariffs imposed by the US. The issue of scale means it is difficult for these new players to compete for large OE manufacturers' contracts with established automotive manufacturers. However, the consolidation of smaller manufacturers could lead to increased competition at the premium end. Altogether, the current and forecasted growth rate for the market make it an attractive option for companies, leading to a moderate risk level of new entrants.

Threat of Substitutes Products (Low)

The likelihood of substation in this market is weak. Players could suffer if tire rethreads became more common for all vehicles. This service involves applying new treads to existing tire casings. However, the service is undertaken by players in the market and is unlikely to move into mass-market tires. It would not affect the OE segment, as new vehicles cannot be sold without a corresponding set of tires. On the other hand, counterfeit tires accounts for 7.5% of direct tire sales lost each year, in the EU. However, the manufacture of counterfeit objects is dangerous to consumers as counterfeiters are not concerned with quality checks and tests.

Accordingly, on the long run, the counterfeit market share is not expected to increase, not being considerate a viable substitute for tires.

SWOT Analysis

Strengths

Goodyear is one of the market leaders in the tire and rubber industry, with operations at a worldwide scale. The company is one of the leading tire makers in North America, and the second largest tire manufacturer in Europe, having 48 manufacturing facilities spread across 21 countries. A well-spread network of operations enables the company to achieve scale economies, as well as, take advantage of resources available locally for manufacturing, thereby reducing costs and maximizing profits. The focus on research and development activities, enables the company is able to create new customer-specific and market-specific products. Altogether, increasing investment, combined with a strong market position and a well-known brand, enables the company to gain more customers, strengthen its customer base, which results in improved sales.

Weaknesses

The company reported a decline on its cost efficiency since 2017YE. Goodyear had increasing operating costs, leading to a decrease on its operating margins. Additionally, there have been various lawsuits filed against Goodyear, which may negatively impact its profitability and damage its reputations.

Opportunities

The company's business expansion initiatives strengthen GT geographical presence, as well as, increasing its scope of business operations. Those activities reinforce the company competitive position in the industry. Additionally, a robust forecasted growth for the global automotive manufacturing provides a positive outlook for the Tires and Rubber industry. Hence, the company is well positioned to benefit from the growing markets.

Threats

The company is exposed to foreign currency risk due to its global operations. The financial results of operations of the company's subsidiaries are recorded in various foreign currencies and then converted into US dollars, at the applicable exchange rate, for consolidation into GT financial statements. Accordingly, volatility of currency exchange rates may adversely affect Goodyear's operating results.

Additionally, the production of tires as suffered from increasing regulation in the last years. Goodyear operations, in particular, are subjected to various regulations in many countries in which it operates. These regulations could increase production costs and distress company's earnings and margins. Accordingly, the company had capital expenditures for pollution control facilities and occupational safety and health projects of $40 million in 2017YE, and $50 million in 2018YE.

Figure 28: SWOT Analysis

Source: Author

Investment Summary

With a price target of $17.09/sh and an upside potential of 22.42% for 2019YE using the Discounted Free Cash Flow to Firm Method, and a medium risk assessment, the recommendation stands for **BUY** (Table 8). The Adjusted Present Value method, the Free Cash Flow to Equity, and a relative valuation through Multiples supports this buy recommendation, with price targets of $17.70/sh, $16.91/sh and $18.15/sh, respectively, indicating that GT is currently undervalued. The analyst consensus also shares this view, with Reuters valuing the company at $17.00/sh (Table 9).

Key value drivers and potential catalysts

Goodyear is one of the leading tire companies, with a stable market position and operations at a worldwide scale. Its presence in the US has been deepened with the introduction of TireHub and Roll, services that can easily be replicated in the remaining regions where GT operates. In addition, the recent drop in price, the strong focus on research and development activities to launch new customer-specific and segment-specific products, the increasing production efficiency from ongoing rationalization plans, and the expansion opportunities in both India, Brazil, and China, present a positive outlook for share performance, thus justifying the above **BUY** recommendation.

Earnings Forecast

The forecasted period, between 2019YE and 2023YE, started with a sharp decrease in net income, from $693 million, in 2018YE, to $156 million, in 2019YE. This is mainly due to the increase on the costs of raw materials and the decrease in global demand for tires. As a result, the **Earnings per Share (EPS)** for 2019YE drop to $0.68 per share. Nevertheless, the economic downturn is expected to revert, meaning that from 2020YE onwards, the EPS is expected to move from $1.14, in 2021YE, to $1.74, in 2023YE (Figure 29).

On the other side, the dividend policy of Goodyear is going to be favourable to investors who seek to cash in dividends from holding this stock. For 2019YE the company plans to pay a quarterly $0.16/sh dividend, $0.06/sh higher than the amount paid in 2018YE. This represents, in absolute terms, the same value of Dividends Paid for 2019YE, however, due to the company policy to buy back some of its stock, there are less shares outstanding. For the remaining period, from 2020YE to 2023YE, the dividends will average at $0.64/sh (Figure 30).

Valuation Methodologies

In order to evaluate Goodyear, both absolute and relative methodologies were used (Figure 31). For the absolute valuation methods, the principal models followed were the Discounted Free Cash Flow to Firm (FCFF), the Adjusted Present Value (APV) and the Free Cash Flow to Equity (FCFE). Additionally, the Dividend Discount Model was computed as complementary model (Appendix 22). The relative valuation model was done through the Market Multiples approach, where a Peer Group of companies were chosen taking into consideration their similarity degree with Goodyear, in terms of size, risk, and market value (Appendix 20 and 21).

Table 9: Discounted FCFF output

FCFF Output	
Enterprise Value (million $)	9,376.23
Net Debt (million $)	5,202.72
Minority Shareholders' Interests (million $)	208.66
Equity Value (million $)	3,964.85
Number of Shares (million)	232.00
Price Target at 2019YE ($)	**17.09**
Price at 11th September 2019 ($)	**13.96**
Downside/Upside	22.42%

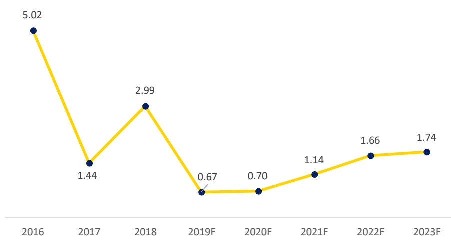
Source: Author

Table 10: Reuters Target Price

	23-jun-19	23-jul-19	23-ago-19	11-set-19
Median	$19.00	$17.00	$17.00	$17.00
Mean	$17.92	$17.79	$17.00	$17.00

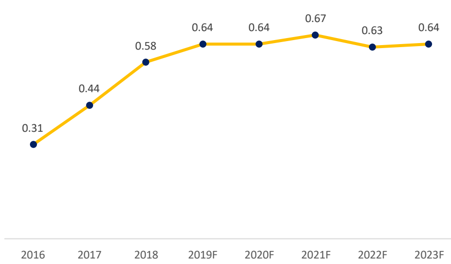
Source: Reuters

Figure 29: Earnings Per Share (in $)



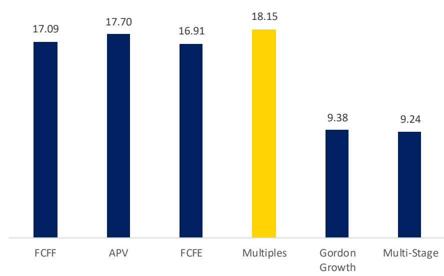
Source: Author

Figure 30: Dividends Per Share (in $)



Source: Author

Figure 31: Valuation Methods Comparison (in $)



Source: Author

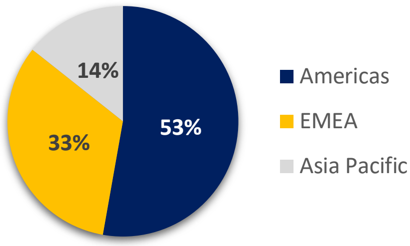
Valuation

As mentioned before, Goodyear valuation comprises both absolute and relative methodologies. Regarding the absolute valuation model, the **Discounted Free Cash Flow to Firm**, the **Adjusted Present Value** and the **Free Cash Flow to Equity** were followed. As for the relative valuation, the **Market Multiples** model was used.

For the absolute valuation, the **Discounted Free Cash Flow to Firm** method seemed the most reliable one, because with the financial information gathered it was possible to forecast the company's cash flows. Based on the Free Cash Flows to the Firm (FCFF's), the Enterprise Value was computed. Additionally, since the company is going to issue more debt, from 2019YE onwards, the **Adjusted Present Value** was computed in order to highlight the changing capital structure. The **Free Cash Flow to Equity** depicts how much value the equity component of the company was generating. The decision to compute this method was based on the fact that during 2019YE and 2020YE the debt levels were still low, meaning that equity was the main responsible for value generation.

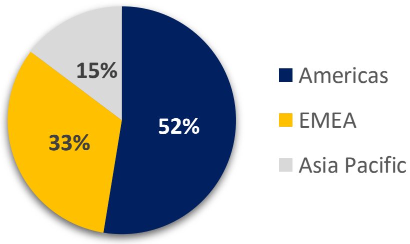
For the relative valuation model, in order to achieve a price target through the **Market Multiples**, it was necessary to define a Peer Group from a large sample of Tire and Rubber groups. The Tire and Rubber companies had to meet a number of criteria, in order to have a Peer Group comparable in terms of structure, dimension and risk. Accordingly, companies with a market capitalization in excess of $6 billion, as Continental and Bridgestone, were not considered. For this valuation, the multiples Enterprise Value to EBITDA (EV/EBITDA) and Price to Book Value (P/BV) were used. More details about other valuation methods can be seen in Appendix 22.

Figure 32: Net sales by region (2018)



Source: Author

Figure 33: Net sales by region (2023)



Source: Author

Forecast Analysis

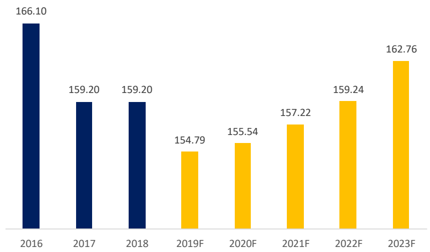
Revenues

To forecast Net Sales for the period between 2019YE to 2023YE, it was necessary to decomposed revenues into Tire Unit Sales, Retail Services and Service Related Sales, Chemical and Other Sales. Tire Unit Sales are the main driver of revenues, due to the fact that selling tires is the company's core business activity.

Tire Unit Sales consist mainly of consumer, commercial, farm and off-the-road tire sales, including the sale of new company-branded tires through company-owned retail channels. Additionally, Other Tire and Related Sales were also included as a part of Tire Unit Sales, so, aviation, race, motorcycle and all-terrain vehicle tire sales, retread sales and other tire related sales are also in this category. However, due to the lack of company specific information regarding each type of tires, Tire Unit Sales are going to vary in accordance with the expected evolution of both **Original Equipment Tires (OE)** sales and **Replacement Tires (RT)** sales.

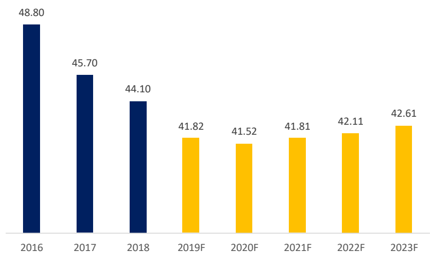
In the case of **OE**, until 2022YE, sales are going to decrease at a 1.38% CAGR, mainly due to a weaker vehicle production in China and India, as well as, strategic exit fitment choices made by GT. From 2023YE onwards, trade wars effects are expected to be overcome. Moreover, a positive global economic outlook will

Figure 34: Tire units evolution (in million units)



Source: Author

Figure 35: OE units evolution (in million units)



Source: Author

influence global vehicle production, and OE volume is expected to increase at a 1.19% CAGR for 2023YE (Figure 35).

Regarding **RT**, sales are expected to decrease from 115.10 million units, in 2018YE, to 112.97 million units, in 2019YE. This is mainly a result of an economic slowdown that began in the second half of 2018. This leads to a decrease on the average car use. From 2020YE to 2023YE, RT sales are going to increase to 121.64 million units, as a result of improvements in the macro economic environment, combined with new premium products offered (Figure 36).

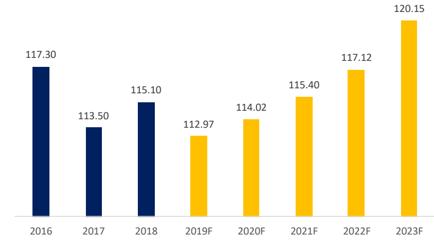
Retail Services and Service Related Sales consist of automotive services performed for customers through company-owned retail channels, and includes service related products. As a result of the implementation of Roll, the company plans to open several stores on lifestyle centers and on other strategic locations. This will place the brand closer to its customer, which will lead to more retail services being performed in the long-run. Initially this service will be implemented in the United States, reason way the Americas region is its main driver of growth. From 2019YE to 2023YE, Retail Services are expected to grow at 2.78% CAGR, increasing its relative weight on the total company sales from 4.47% to 4.73%, respectively (Figure 37).

Chemical sales tell respect to the sale of synthetic rubber and other chemicals to third parties, and exclude intercompany sales. As a way to overcome its dependence of natural rubber suppliers, GT will improve its synthetic rubber production capabilities in the US. Following the increase in demand for rubber and other chemicals, chemical sales are expected to grow at a 1.02% CAGR, from 2019YE to 2023YE.

Other Sales include items such as franchise fees and ancillary tire parts, such as tire rims, tire valves and valve stems. As new GT retail stores open, franchise fees are expected to increase. Accordingly, other sales are expected to increase at a 3% CAGR, from 2019YE to 2023YE.

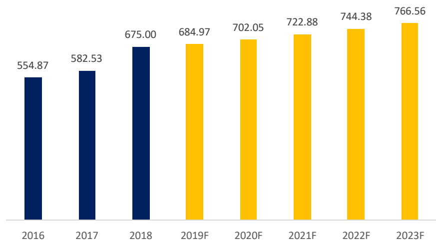
All the computations related to Net Sales Forecast can be found on Appendix 11.

Figure 36: RT tire units evolution (in million units)



Source: Author

Figure 37: Retail Services and Service Related Sales (in $m)

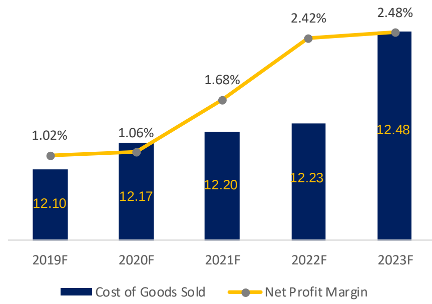


Source: Author

Selling Price

The selling price for the historical period 2014-2018 is the arithmetic average between Tire Units Net Sales and the Tire Units Volume. Based on that, the predicted price for the forecasted period 2019Y and 2023YE has in consideration the expected future net sales and volume of tires sold. For 2019YE, the average selling price (ASP) is going to increase, from $89.33, in 2018YE, to $90.74, as a strategy to incorporate the increasing raw materials costs, which enables the company to protect margins. From 2020YE to 2022YE, the average selling price is also going to increase, from $90.94 to $91.27, respectively. However, this results from the increasing presence of the company in the premium segment, where tires can be sold at a higher price.

Figure 38: Net Profit Margin and COGS (in $m)

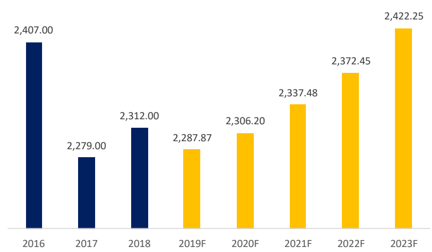


Source: Author

Cost of Goods Sold (COGS)

Over the historical period, the company Cost of Goods Sold as a percentage of Net Sales averaged 75%. However, since the current raw materials cycle is expected to keep the rubber and oil price high in the foreseeable future, COGS are going to represent, in 2019YE and 2020YE, 79% of Net Sales (Figure 38). For 2021YE, raw materials costs are expected to decrease. However, since Goodyear uses First In First Out (FIFO) inventory method, there is a three to six month lag between the moment when GT buys the raw materials and the time when it affects the Income Statement. Accordingly, as a conservative approach, COGS in 2021YE will

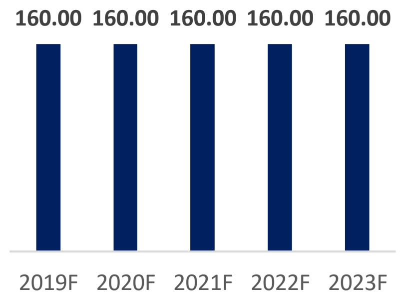
Figure 39: Selling, General and Administrative Expenses (in $m)



Source: Annual Report 2018; Author

account for 78% of Net Sales. In the end of the valuation period, between 2022YE and 2023YE, COGS are expected to represent 77% of net sales. In this lies the assumption that the planned Capital Expenditures combined with a slight decrease of raw materials prices will lead to a more cost efficient production process for GT, which ultimately will reduce the company costs to sell.

Figure 40: Forecasted Rationalizations (in $m)



Source: Annual Report 2018; Author

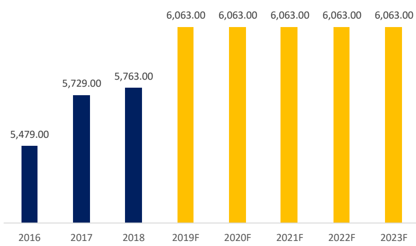
Selling, General and Administrative (SGA)

The Selling, General and Administrative Expenses decreased at a 3.75% CAGR, from 2014YE to 2018YE. This is in line with GT rationalization plans to reduce Goodyear's SGA headcount expenses, lowering wages, benefits, and incentive compensation. As a result, for 2019YE, SGA expenses will be kept at 14.94% of net sales. From 2020YE to 2023YE, SGA is expected to increase at 1.46% CAGR, as a result of new factories and stores opening, that require additional headcount costs.

Depreciation and Amortization (D&A)

The Depreciation and Amortization, as a percentage of Net Sales, average at 4.64% from 2014YE to 2018YE. For the forecasted period, D&A is going to be kept at 5 years average relative weight to sales. As for Amortizations, GT expects to incur expenses of $2 million from 2019YE to 2021YE, and from them onwards this amount is going to be of $1 million. Depreciations are calculated as the difference between the total amount of D&A and the Amortizations component.

Figure 41: Total Debt Evolution (in $m)

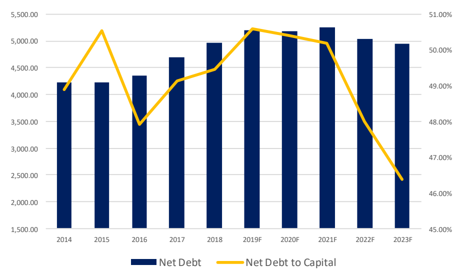


Source: Annual Report 2018; Author

Rationalization

In order to maintain global competitiveness, GT has implemented rationalization actions over the past several years to reduce high-cost manufacturing capacity and associate costs. Also, this comes as a byproduct of the current strategy of GT to exit from low value market segments into premium ones. For 2018YE, ongoing rationalization plans had approximately $720 million in charges and it is forecasted that $80 million can be incurred later on. As a result, those $800 million of charges will be evenly incurred during the 2019YE-2023YE period.

Figure 42: Net debt and net debt to capital (in $m)

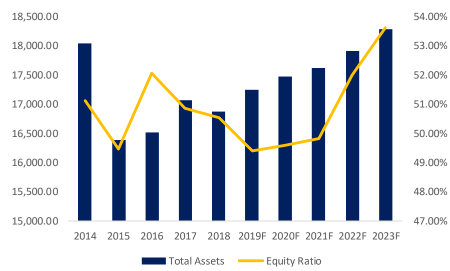


Source: Annual Report 2018; Author

Debt

Debt for the forecasted period is computed following the assumption that the company will start to finance its Capital Expenditure needs through Debt. As a result, GT will start to issue new debt in 2019YE ($300 million), in 2020YE ($478 million) and in 2023YE ($1621 million). As a result, the Cash and Cash Equivalents will be kept at a stable level of no less than $800 million in each year, which combined with the accounts receivables, enables the company to have enough security to face the upcoming necessity to repay the borrowed capital and associated interests to its creditors.

Figure 43: Capital structure analysis (in $m)



Source: Annual Report 2018; Author

Capital Expenditures (CapEx)

For Intangible Assets, Capital Expenditures are going to be of $5 million, in 2019YE, resulting in a total value of $139 million. From 2020YE onwards, CapEx is expected to equal Amortizations, meaning that during the remaining forecasted period Intangible Assets will be recorded at $139 million.

For Property, Plant and Equipment (PPE), Capital Expenditures will be of $795 million in 2019YE. This value follows the company's forecasted total capital needs of $800 million, less the amount already incurred with Intangible Assets. For the remaining forecast period, Capital Expenditures will be kept at the average relative weight of Net Sales of the last 6 years of historical information. This means that the strategy of the company, while moving to higher value segments, is to better use its existing facilities in developed markets, and increase GT presence in other regions of the world, like China, India and Brazil. For the terminal value, Capital Expenditures are going to equal D&A, meaning that all the investment is going to be classified as maintenance CapEx.

Net Working Capital (NWC)

During the historical period, NWC requirements moved from $245 million, in 2014YE, to $758 million, in 2018YE. This led to incremental requirements of capital of $318 million in 2018YE. For 2019YE, there will be $161.4 million additional capital requirements to be incurred into working capital, driven by the increase investment made in Inventories. However, for the remaining period, between 2020YE to 2023YE, Accounts Payables will start to increase, offsetting the amounts needed to be put aside for working capital requirements. In 2023YE the NWC variance is expected to be of negative $5.63 million. However, for the Terminal Value (TV), it is not expected that NWC changes are negative, since it would mean that the company would have to be always investing into working capital, during the perpetuity, what is not a realistic assumption. Accordingly, for the TV, NWC capital is going to be equal to $662 million, meaning that there will be no NWC variance.

Discounted Free Cash Flow to Firm Assumptions

The **Valuation Period** considered was of 5 years. The period went from December 31st, 2019 until December 31st, 2023. After 2023YE, the Terminal Value is added.

The **Weighted Average Cost of Capital (WACC)** was estimated to discount the cash flows of the firm. Goodyear financial structure is composed by both equity and financial debt, and the WACC is therefore dependent on each component value and its relative weight (Table 7). The Weighted Average Cost of Capital was firstly computed using Book Value measures of both Net Debt and Equity. Afterwards, a target WACC of 7% was defined for the Terminal Period. By doing so, it was possible to calculate, through backwardation, the WACC with the market value of both Net Debt and Equity (Appendix 16).

Capital Structure (Figure 44) is formed by both Equity and Debt. For 2019YE, GT Enterprise Value is expected to account for 60.33% of Equity and 39.67% of Net Debt, which translates into a Debt to Equity ratio of 66%. Nevertheless, from 2020YE to 2023YE, the company Debt to Equity ratio will move towards the industry average of 100.17%. This is a result of newly entered loans that will provide the company with the needed liquidity to face its capital requirements. Accordingly, by 2023YE, it is expected that the company capital structure is formed by 51.66% of Net Debt and 48.34% of Equity.

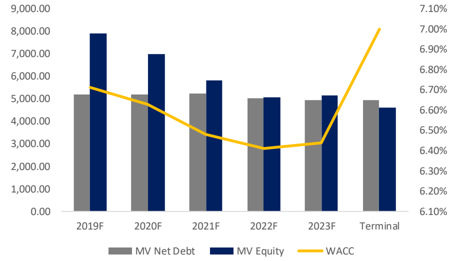
The **Cost of Equity** (Table 12) was estimated under the Capital Asset Pricing Model (CAPM). Since GT has its headquarters in the United States, and its cash flows are recorded in US dollars, the risk-free rate used was the yield of the 10-year U.S. Treasury Bonds, measured at the September 11th, 2019. These financial instruments are believed to have no default risk and no reinvestment risk, which enables them to be considered riskless.

Table 11: WACC Calculation (%)

WACC MV	2019F	2020F	2021F	2022F	2023F	Terminal
rE	7.89%	7.89%	7.89%	7.89%	7.89%	8.36%
rD	4.92%	4.92%	4.92%	4.92%	4.92%	5.72%
Equity	60.33%	57.50%	52.54%	50.16%	51.09%	48.34%
Debt	39.67%	42.50%	47.46%	49.84%	48.91%	51.66%
WACC	**6.71%**	**6.63%**	**6.48%**	**6.41%**	**6.44%**	**7.00%**

Source: Annual Report 2018; Author

Figure 44: Capital structure and WACC



Source: Annual Report 2018; Author

Table 12: Cost of Equity (%)

Cost of Equity	
Risk-free rate	1.65%
Beta Levered	0.85
Market Risk Premium	6.19%
Country Risk Premium	0.97%
Cost of Equity (rE)	**7.89%**

Source: Damodaran; Author

Table 13: Market Risk Premium (%)

Goodyear	Region (%)	Market Risk Premium
Americas	52.78%	6.02%
EMEA	32.89%	6.07%
Asia Pacific	14.33%	7.12%
Goodyear	**100.00%**	**6.19%**

Source: Damodaran; Author

Table 14: Country Risk Premium (%)

Goodyear	Region (%)	Country Risk Premium
Americas	52.78%	0.68%
EMEA	32.89%	1.15%
Asia Pacific	14.33%	1.64%
Goodyear	**100.00%**	**0.97%**

Source: Damodaran; Author

Table 15: Cost of Debt (%)

COST OF DEBT	
Risk-free	2.46%
Company Default Spread	3.60%
Country Default Spread	0.97%
Cost of Debt	**7.03%**

Source: Damodaran; Author

The **Levered Beta** was computed following Damodaran's approach. Firstly, the return interval was set to be monthly, in order to reduce the noise of daily returns, or even weekly returns, that would end up affecting the Beta output. Afterwards, it was computed the 5 year correlation between the monthly returns of NASDAQ market prices and GT market prices. The Levered Beta of 0.85 shows that Goodyear has less risk than the market. A regression of the NASDAQ monthly returns and GT monthly returns was also computed to complement the previous calculation. Additionally, the Pure Play Method Adjusted for Cash was also computed by taking the Unlevered Industry Beta of 0.24, levering it to the company Debt to Equity ratio and taking out the tax effect. Nevertheless, this method provided a Levered Beta of 0.42, which did not seem representative of the company's risk.

For the **Market Risk Premium (MRP),** as well as, for the **Country Risk Premium (CRP)** it was necessary to understand the global position of GT operations, and from there, calculate the MRP and CRP taking in consideration the values of each geographic location where Goodyear operates. So each country CRP and MRP was considered given its relative weight towards the company Net Sales (Table 6 and 7).

Finally, the **Cost of Equity**, of 7.89%, is calculated by multiplying the Beta Levered and the Market Risk Premium, and then, adding them to the risk-free rate and the Country Risk Premium. For the Terminal Period, however, the Cost of Equity is expected to be of 8.36%, since the company is increasing its debt levels, and so, equity holders demand a higher return for their invested capital.

The **Cost of Debt** takes into consideration the risk-free rate, the company default spread, and the country default spread. Both the risk-free rate and the country default spread have been previously calculated. For the company default spread, it was necessary to resort to historical information. Accordingly, the past five years average of both EBIT and Interest Payments were used to obtain a 3.17 Interest Coverage Ratio. Then, with resource to Damodaran (2018) synthetic rating estimator, it was possible to obtain the company default spread of 3.60% (Appendix 15). The Cost of Debt of 7.03% results from adding both the country, as well as, the company default spread to the risk-free rate (Figure 15).

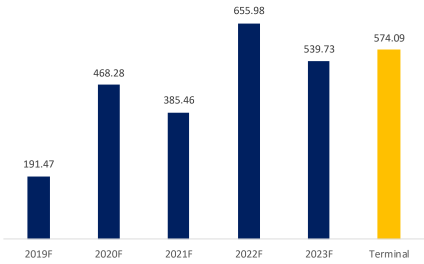
Discounted Free Cash Flow to Firm Valuation

Based on the forecasts previously explained, the Free Cash Flows to the Firm (FCFF's) and the discount rate for those same cash flows (WACC) are available, enabling the calculation of the Enterprise Value (Figure 45).

This model relies on a valuation period, 2019YE to 2023YE, and a perpetuity, commonly referred as the Terminal Value. Accordingly, the Terminal Value FCFF is computed according to a perpetuity, where the growth rate is considered to be of 1%, which is slightly less than the global economy growth of 3.6%, but is aligned with the historical five years average growth of the forecasted period. This is a conservative approach to realistically predict the future stable performance of Goodyear.

Afterwards, it is necessary to discount those FCFF's to 2019YE, and, the sum of all the discounted cash flows is going to lead to an Enterprise Value of $9,375.66 million. From there it is necessary to deduct both Net Debt, as well as, Minority Shareholder's Interests, leading to an Equity Value of $3,964.76 million. Finally, it is necessary to divide the Equity Value by the outstanding 232 million shares,

Figure 45: FCFF forecasted (in $m)



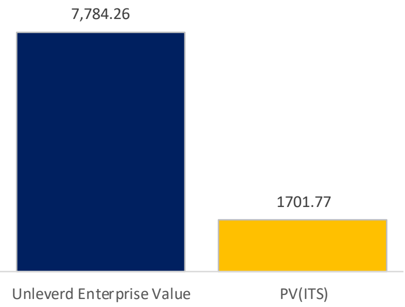
Source: Damodaran; Author

Table 16: Adjusted Present Value

APV Output	
Enterprise Value (million $)	9,518.83
Net Debt (million $)	5,202.72
Minority Shareholders' Interests (million $)	208.66
Equity Value (million $)	4,107.45
Number of Shares (million)	232.00
Price Target at 2019YE ($)	**17.70**
Price at 11th September 2019 ($)	**13.96**
Downside/Upside	26.82%

Source: Author

Figure 46: APV Computations



Source: Author

Table 17: FCFE Output

FCFE Output	
Equity Value (2019YE)	3,923.36
Number of Shares	232.00
Price Target at 2019YE ($)	**16.91**
Price at 11th September 2019 ($)	**13.96**
Downside/Upside	21.14%

Source: Author

which leads to the GT price per share of $17.09 for 2019YE. Accordingly, with an upside potential of 22.42%, a buy recommendation is issued.

Adjusted Present Value (APV) Valuation

The Adjusted Present Value methodology separates the value of operations into two components. One component is the value of operations as if the company were all-equity financed, and the second component is based on the value of tax shields that arise from debt financing (Appendix 18).

In order to compute the unlevered enterprise value, it was necessary to compute the unlevered cost of capital. The rate of 7.89% is an unlevered cost of capital, which equalled the cost of equity. From there, the FCFF previously computed, are discounted, which leads to an Unlevered Enterprise Value of $7,784.26 million.

The debt financing tax shields are calculated as Interest Paid times Corporate Tax Rate. The present value of those tax shields is calculated with resource to the cost of debt, since there is no target Debt to Equity ratio. As a result, GT has a total PV(ITS) value of $1,701.77 million.

The sum between the unlevered enterprise value with the present value of the tax shields, leads to the Enterprise Value of $9,486.03 million. Again, it is necessary to deduct the Net Debt and the Minority Shareholder's Interest, to get the Equity Value of $4,075.13 million (Table 16). Finally, the Equity Value divided by the outstanding 232 million shares leads to a GT share price of $17.70 for 2019YE. Accordingly, with an upside potential of 26.82%, this model supports the buy recommendation from the Discounted Free Cash Flow to Firm approach.

Free Cash Flow to Equity

The Free Cash Flow to Equity method was computed in order to value the company by taking into consideration the free cash flow available to equity holders, taking into account all payments to and from debt holders. In order to arrive to the Equity Value, the FCFE is discounted with the cost of capital previously calculated. Accordingly, an Equity Value of $3,923.36 million, leads to a 2019YE price target of $16.91/sh, and with an upside potential of 21.14%, supports the buy recommendation (Table 17).

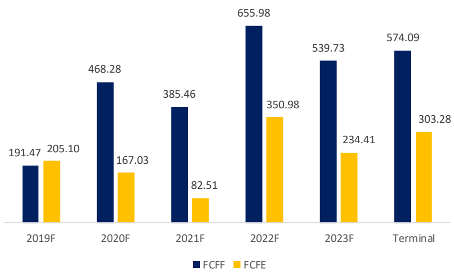
The FCFE during the forecasted period tends to be higher than the dividends paid, meaning that the company is using the excess cash to increase its cash levels. In 2021YE, however, the dividend payment was higher than the FCFE, meaning that the company will fund that amount with either debt or existing capital (Figure 48).

Multiples Assumptions

The peer group consisted of four companies, which is less than half of the initial sample of eleven companies. Respectively, the companies that form the peer group have similar dimension, size and market capitalization, as Goodyear (Table 10 and 11).

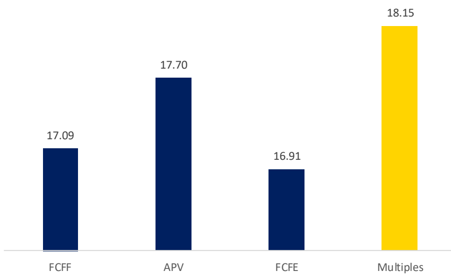
The peer group served as benchmark to compute the median forecast EV/EBITDA and P/BV for 2019YE, in order to achieve a price target regarding the forward valuation for multiples. Forward multiples are not normalized because all peers are integrated and operating worldwide.

Figure 47: FCFF vs FCFE (in $m)



Source: Author

Figure 48: Share Price from different methods ($)



Source: Author

Table 18: Relative Valuation Output

Multiples Approach Output	
Price Target at 2019YE ($)	**18.15**
Price at 11th September 2019 ($)	**13.96**
Downside/Upside	30.05%

Source: Author

Table 19: Peers EV/EBITDA

Company Name	EV/EBITDA
Sumitomo Rubber Industries Ltd	5.00
Yokohama Rubber Co Ltd	5.78
Pirelli & C SpA	7.38
Nokian Tyres plc	7.96
Maximum	7.96
Minimum	5.00
Average	6.53
Median	**6.58**

Source: Reuters

Relative Valuation

In order to obtain the price target trough the multiples valuation, the Forecast Multiples Approach relative to 2019YE was used. The peers were identified as the companies that were similar, both in terms of market capitalization and total assets. Accordingly, companies with a market capitalization in excess of $6 billion, such as Continental and Bridgestone, were not considered.

The companies in Appendix 20 served as the benchmark to compute the company EV/EBITDA, P/BV. The multiples P/Sales and P/E were not taken into consideration since those values were considered outliers, which would influence largely the average share price achieved through the Multiples Approach.

For the **EV/EBITDA** (Table 19), the multiples median of 6.58x led to a price per share of $14.76/sh for 2019YE, which represents an upside of 5.71% in comparison with the current price. On the other side, for the **P/BV** (Table 20), the multiples median of 0.98x led to a price target of $21.55/sh for 2019YE, representing an upside potential of 54.39%.

These results solidify the output from the Discounted FCFF Valuation, as well as the APV Valuation and FCFE, supporting the perspective that GT is currently **undervalued**. Taking into consideration the two multiples, an average upside potential of 30.05% is reached, with a multiple's approach price target of $18.15 per share. Accordingly, the recommendation remains to be a **BUY**.

Despite the useful information that the multiples method provide, it is considered the Discounted FCFF as a better estimator of GT intrinsic value, being the multiples approach considered a complementary valuation.

Table 20: Peers P/BV

Company Name	P/BV
Sumitomo Rubber Industries Ltd	0.69
Yokohama Rubber Co Ltd	0.84
Pirelli & C SpA	1.13
Nokian Tyres plc	2.08
Maximum	2.08
Minimum	0.69
Average	1.18
Median	**0.98**

Source: Reuters

Table 21: Peers P/Sales

Company Name	P/Sales
Sumitomo Rubber Industries Ltd	0.60
Yokohama Rubber Co Ltd	0.88
Pirelli & C SpA	1.87
Nokian Tyres plc	2.25
Maximum	2.25
Minimum	0.60
Average	1.40
Median	**1.38**

Source: Reuters

Table 22: Peers P/E

Company Name	P/E
Sumitomo Rubber Industries Ltd	9.51
Yokohama Rubber Co Ltd	8.07
Pirelli & C SpA	9.66
Nokian Tyres plc	11.12
Maximum	11.12
Minimum	8.07
Average	9.59
Median	**9.58**

Source: Reuters

Table 23: EV/EBITDA Multiples Approach

EV/EBITDA	
EBITDA 2019YE (in $m)	1342.60
Multiples	6.58
EV ($m)	8834.88
Net Debt ($m)	5202.72
Minority Shareholders Interest ($m)	208.66
Equity ($m)	3423.50
# shares (millions)	232.00
Price per share ($)	**14.76**
Price at 11th September 2019 ($)	13.96
Downside/Upside	5.71%

Source: Reuters; Author

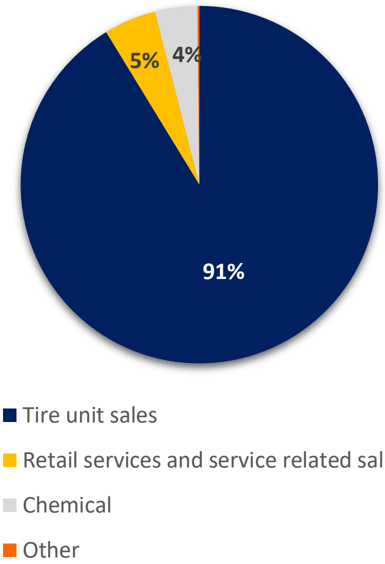
Financial Analysis

In respect to Goodyear, **Americas** are its main revenues generator. However, from 2014YE to 2018YE, the company witnessed a decrease, from 54.48% to 52.78%, on Americas net sales relative weight. For the forecasted period, from 2019YE to 2023YE, the trend is to continuously drop the relative weight of Americas on the company's sales. In 2023YE, it will account for 52.58% of Net Sales. Europe, Middle East and Africa (EMEA) have been a target for rationalizations, specially through the closer of some factories that were not achieving their desired performance. As a result, from 2014YE to 2018YE, the segment relative weight decreased from 34.07% to 32.89%. However, from 2019YE to 2021YE the trend is expected to reverse, with EMEA relative weight averaging at 33.14%, due to Capital Expenditures towards new facilities and machinery that are expected to increase the company presence in high-value segments, affecting the level of this region net sales. From 2022YE to 2023YE the relative weight is going to decrease to 32.69%, as a result of Asia Pacific high growth potential. Asia Pacific was only responsible for 11.45% of GT net sales in 2014YE, and, in 2018YE, this value was already at 14.33%. Without trade wars and political tensions, the potential growth would be strongly felt in the years to come. However, since those macro-economic challenges were in place, the region will, in 2019YE and 2020YE, decrease its relative capacity to generate net sales. From 2021 onwards it is expected that the effects of trade wars to have disappear, and for that reason, the relative weight will move from 13.86%, in 2021YE, to 14.73%, in 2023YE (Figure 50).

Regarding the **Capital Structure**, measured at Book Values, Goodyear kept during its historical period an approximate 50/50 ratio between Debt and Equity. For the forecasted period, there is a slight increase on the absolute value of Debt, mainly due to new loans incurred in 2019YE, 2020YE, and 2023YE. This measure is necessary in order to keep the cash balance levels above the $800 million. Nevertheless, this will not compromise the company stable ratio between Debt and Equity. In fact, by 2022YE, the Debt level will start to decrease, accounting for 48% in that year. In 2023YE, Debt will account for around 46.37%, whereas Equity will weight 53.63% relative to Enterprise Value. This results of increased retained earnings, due to a lower payout ratio, as well as, higher cash reserves that will reduce Debt. It is important to note that total liabilities are expected to increase, mainly driven by an increase in Non-Current Liabilities, which reflects the newly entered loans.

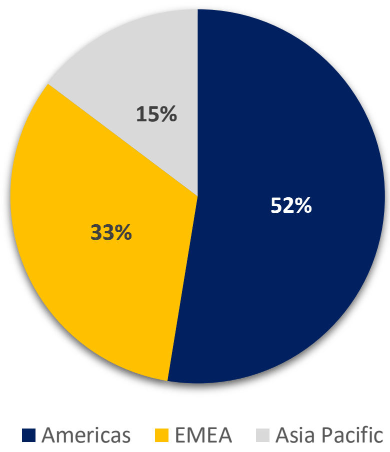
In terms of **liquidity**, GT current and quick ratio, during its historical period, reduced from the 2014YE peak of 1.51 and 0.95, respectively, to 1.24 and 0.64 in 2018YE. This is mainly due to the fact that Current Assets reduced at a 4.31% CAGR, whereas Current Liabilities stayed at a stable level. The downward trend is expected to continue to 2019YE, with an expected current ratio of 1.17 and a quick ratio of 0.56 for the year. Nevertheless, with the exception of 2022YE, where $2274 million worth of loans are expected to be amortized in less than one year time, the trend for the remaining period is of a current and quick ratio increase. This is due to an increase of Current Assets, driven by higher cash reserves, combined with Current Liabilities expected to decrease, as a result of the amortization of previously incurred loans (Figure 51).

Figure 49: Business units (%) in 2023



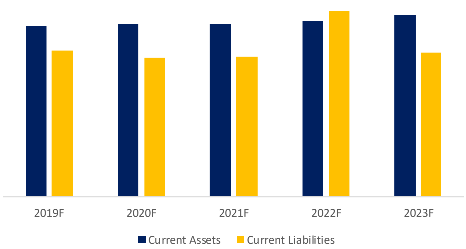
Source: Author

Figure 50: Segments weight (%) in 2023



Source: Author

Figure 51: Current Assets and Current Liabilities Comparison



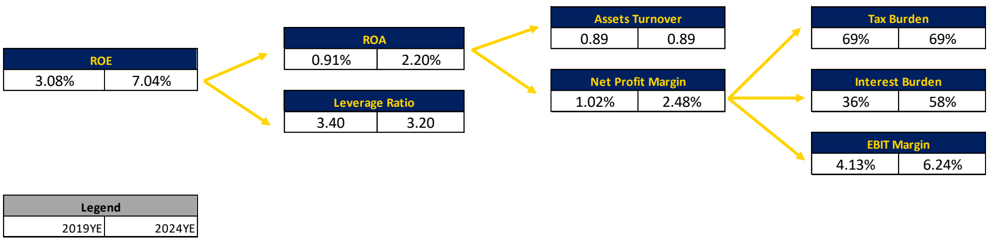
Source: Author

The company's **profitability** peaked in 2014YE, with a Gross Profit Margin and a Net Profit Margin of 23.33% and 13.52%, respectively. For the remaining historical period, those values are not close to be achieved, due to lower global sales and higher costs. The forecasted period **profitability** is characterized by harsh macro conditions and a raw materials price increase that is expected to negatively affect the margins of 2019YE, 2020YE and 2021YE. For 2022YE and 2023YE, GT is expected to be able to recover its sales volume, while decreasing its costs structure, which ultimately will lead to a Gross Margin of 23% and a Net Profit Margin of 2.48% (Figure 53). The company performance during the entire forecasted period, will not match the values registered during the historical period. From 2019YE to 2023YE, following a strategy towards high-value segments, the **earnings per share** will move from $0.67 to $1.74, respectively. On the other hand, **dividends per share**, are going to stay stable at around $0.64/sh, while keeping the outstanding shares constant at 232 million. Accordingly, this translates to a total dividends paid, in 2019YE, of $148 million, in line with the amount expected to be paid in 2023YE.

DuPont Analysis

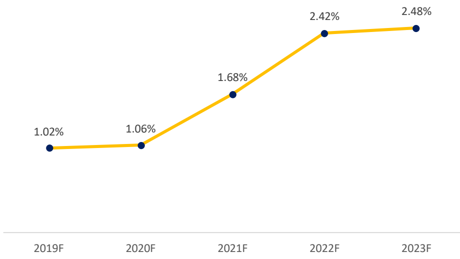
The DuPont Analysis (Figure 55) is a framework used to decompose the different drivers of Goodyear's return on equity (ROE). Accordingly, from 2014YE to 2018YE, due to an abnormal tax burden, ROE experienced a sharp decrease, from 55.39% to 13.67%, respectively. The downward trend is expected to continue into 2019YE, where ROE is forecasted to be of 3.08%. Nevertheless, to overcome this lower return on equity, the company started to increase its dividend payout ratio in 2019YE (Figure 54). From 2020YE onwards, ROE is going to start to increase until 7.04% in 2024YE. This increase is a result of the company's high-value segmentation strategy, which increased its operations profitability.

Figure 55: DuPont Analysis for 2019YE and 2024YE



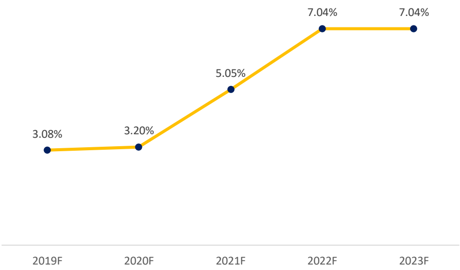
Source: Author

Figure 53: Net Profit Margin



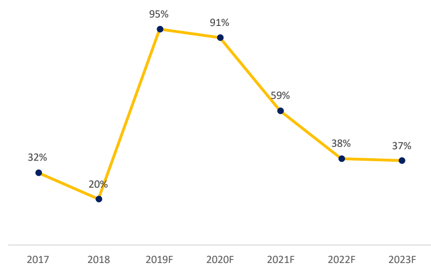
Source: Author

Figure 52: Return on Equity (ROE)



Source: Author

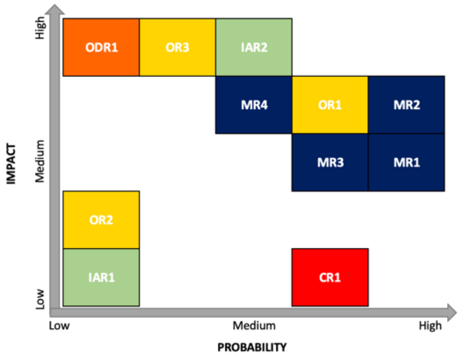
Figure 54: Dividend Payout Ratio



Source: Author

Investment Risks

Figure 56: Risk matrix



Source: Author

Market Risk I Foreign Currency Risk (MR1)

The company's products are spread around the world, requiring business transactions in several currencies. The financial position and results of operations of many of the company's international subsidiaries are initially recorded in various foreign currencies, and are then translated into US Dollars at the applicable exchange rate for inclusion in its financial statements. Change in exchange rates affect the values recorded for sales, expenses, assets, and liabilities in all countries outside the United States, when converted into dollars. In general terms, dollar appreciation against other leading currencies tends to depress the financial results, while dollar depreciation tends to have a favorable impact. Volatility of currency exchange rates may adversely impact Goodyear's operating results.

Market Risk I Competition (MR2)

GT operates in a highly competitive industry. The company competes on the basis of product design, performance, price, reputation, warranty terms, customer service and consumer convenience. Its competitors tend to be major players with larger size and more financial resources than those of the company. Also, GT competes worldwide with a number of other manufacturers and distributors that produce and sell similar products. In emerging markets, the company faces competition from regional companies, where these local companies have formed strong relationships with regional vehicle manufactures, have better distribution and brand recall in the replacement market. Hence, intense competition from global and regional tire manufactures could force the company to reduce prices, which would impact the bargaining power of the company and reduce its margin.

Market Risk I Tariffs (MR3)

GT is exposed to risks associated with additional or higher tariffs. This can be a result of increasing protectionist tendencies around the world, as well as, political developments, such as Brexit. Accordingly, those tariffs can be applied on raw materials, components, and products it supplies or purchases. As a result, demand for Goodyear products can drop and costs increase, which would have a negative impact on GT business and operating results.

Market Risk I Raw Materials Price Fluctuations (MR4)

For its production, GT depends largely on raw materials like oil, natural rubber and synthetic rubber. The prices for these raw materials are exposed to considerable fluctuations worldwide, the so called "raw materials cycle". In 2010/2012, the cycle focused on a natural rubber increase, where the price increased by four times its average price. In most recent times, the cycle has been focusing in synthetic rubber, with annual increases of around $300 million for Goodyear. Accordingly, if the company is not able to compensate for the increased costs or to pass them on to customers, the raw materials price increases will eventually reduce GT profit margins.

Operational Risk I Demand for Tires (OR1)

The core revenue generator for Goodyear is the selling of tires, either as OE or as RT. Demand for tires in each country where the company operate depends on national consumer spending, automotive fuel prices, and a range of other local market variables. Any combination of trends that might cause demand for tires to decline, or to grow at a slower rate, could adversely affect the operating results and financial position of Goodyear.

Operational Risk I System Failures (OR2)

The complex operations of the company are increasingly dependent on the smooth, round-the-clock functioning of various computing and IT systems. Failure of such technical systems due to external causes, such as natural disasters or computer viruses, or through human error, could cause significant operational disruption, with the potential for major adverse effects on performance. The company have instituted comprehensive measures to safeguard IT and computing systems and related data, and to upgrade network security on an ongoing basis in order to prevent systemic failures.

Operational Risk I Market Dependency (OR3)

GT generates 53% of its total net sales in Americas, and around half of that comes from United States alone. By comparison, EMEA accounts for 33%, and Asia Pacific for only 14%. Therefore, in the event of an economic downturn in the United States, for example, GT results and operations could be affected more adversely than that of its competitors. Furthermore, the tire market in the North America and Europe is largely saturated. To minimize these risks, and improve its net sales, Goodyear is increasing its presence in emerging markets, especially Asia. However, the emerging markets, particularly in China, are developing much more weakly than in the past, while displaying increasing volatility and uncertainty, which makes it more difficult to plan and implement suitable measures to reduce regional market dependencies.

Compliance Risk I Legal, regulatory, and litigation risk (CR1)

Goodyear operations are subject to diverse national, and supranational, laws and regulations governing all aspects of business activity, including trade, investment, foreign exchange transactions, anticompetitive practices, and environmental protection. Laws and regulations that affect the company business have been established and introduced. These include labelling systems and regulations regarding tire performance, as well as, regulations regarding chemicals overseas. Accordingly, new or revised laws and regulations could limit the scope of business activities, raise operating costs, or otherwise adversely affect the operating results and financial position of the company. The company operating results and financial position could be adversely affected by unpredictable legal or regulatory changes in overseas markets. The company could be subject to lawsuits or to investigations by governmental authorities in regard to their business activities as it happen in the case of defective Goodyear motor home tires, that caused crashes that killed or injured 95 people. In the event that an important lawsuit is filled or investigation by governmental authorities has commenced, the operation results and financial position could be affected.

Industrial Action Risks I Corporate and brand image (IAR2)

The company strives to enhance their corporate and brand image consistently through global business activities. Systematic efforts are made to ensure compliance with all applicable laws and regulations and to promote the highest ethical standards. Programs are in place across the company to prevent industrial incidents, particularly fires and any accidents that could cause occupational injuries, and to respond immediately to any accidents that occur. Despite such preventive measures, serious ethical lapses or industrial accidents, which are by their nature unpredictable, have the potential to adversely affect the operating results and financial position of the company by damaging the image and reputation of the company, diminishing the general public's confidence, or leading to a drop in share price.

Sensitivity Analysis

The following sensitivity analysis are performed based on the target price achieved through the Discounted FCFF model.

Note that certain assumptions were made regarding the valuation model of this Research Report. One of those is related with the calculations of the risk-free and the perpetuity growth rate. The Risk-Free is the value of the 10 year U.S. Government Treasury Bonds, collected at 11th of September, 2019. It is important to note that, in the future, those bonds may have different values, as a result of a Federal Reserve strategy to increase or decrease the incentives for investment. As it is possible to observe, the higher this rate is the lower will be the share price. This is due to the fact that the Rf impacts both the Cost of Equity, as well as, the Cost of Debt, which ultimately results in a higher discount rate. Accordingly, if you keep the same cash flows, but discount them at a higher WACC, the resulting share price will be smaller. Another risk to be considered is the long-term growth rate. This rate choice yields some degree of subjectivity, since the future outlook of the company is highly uncertain. In this case, the terminal growth rate was computed as the average growth rate of the forecasted period, as a proxy to realistically predict the business potential of the company. Nevertheless, if the rate was 0.5% lower, the recommendation would change from a buy to an hold (Table 24). And if the growth considered was higher, the share price would be, in excess, of $32.13, what would mean that the company was highly undervalued.

Table 24: Sensitivity analysis for the long-term risk free (Rf) and the perpetuity growth rate (g)

		Long-term Rf						
	17.09	0.75%	1.00%	1.50%	2.12%	2.50%	3.00%	3.50%
Terminal Growth Rate	0.00%	16.18	15.70	14.76	13.68	13.06	12.28	11.54
	0.50%	18.44	17.81	16.63	15.28	14.51	13.55	12.65
	0.75%	19.70	19.00	17.67	16.16	15.30	14.24	13.25
	1.00%	21.07	20.27	18.78	**17.09**	16.14	14.97	13.88
	1.50%	24.18	23.15	21.25	19.15	17.97	16.54	15.23
	2.00%	27.92	26.58	24.15	21.51	20.05	18.31	16.73
	2.50%	32.48	30.73	27.59	24.24	22.44	20.31	18.40
	3.60%	47.28	43.83	37.96	32.13	29.15	25.76	22.85

Source: Author

The sales and cost of goods sold (COGS) were also tested, in order to better understand the impact those variables could have on the firm value. For the terminal value, the sales growth is expected to be of 2.10%, driven by both OE and RT increasing sales of 1.18% and 2.59%, respectively. Based on Table 25, if sales were to be kept at 2023YE levels, the share price would decline to $15.83/sh, and with an upside potential of 13.40%, an hold recommendation would be issued. In terms of COGS, unexpected growth rates of 4% or 5% would drive GT price towards $15.69/sh and $14.93/sh, respectively. Again, an hold recommendation would be issued. However, such abnormal changes are not expected to happen due to GT strategy to cut costs and, therefore, have a more cost efficient production process.

Table 25: Sensitivity analysis for the Sales Growth and the COGS Growth

		Sales Growth					
	17.09	0.50%	1.00%	1.50%	2.10%	3.00%	4.00%	5.00%
COGS Growth	0.50%	17.00	17.42	17.83	18.33	19.09	19.93	20.78
	1.00%	16.62	17.03	17.44	17.94	18.69	19.54	20.38
	1.50%	16.23	16.64	17.06	17.55	18.30	19.14	19.99
	2.10%	15.78	16.19	16.60	**17.09**	17.84	18.67	19.51
	3.00%	15.10	15.50	15.91	16.40	17.14	17.97	18.80
	4.00%	14.35	14.75	15.15	15.64	16.37	17.19	18.02
	5.00%	13.61	14.01	14.40	14.88	15.61	16.42	17.25

Source: Author

Table 26: Monte Carlo Results

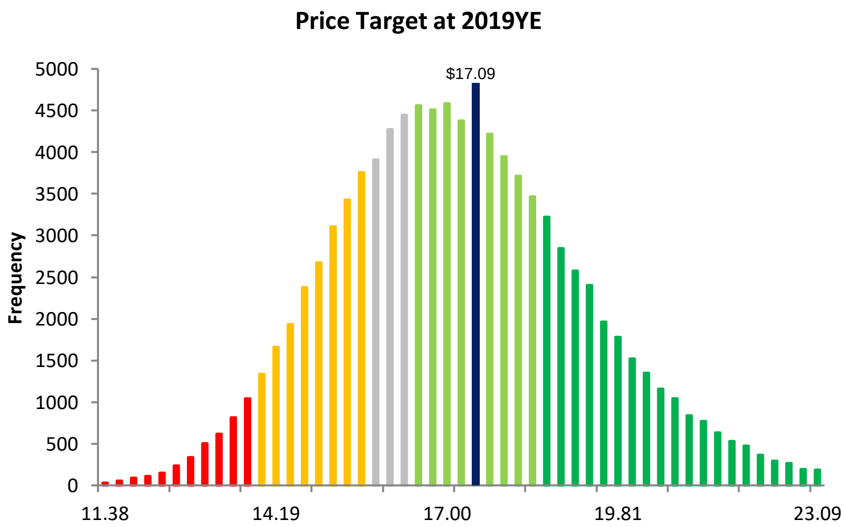
Monte Carlo Output	
Trials	100,000
FCFF	$17.14
Mean	$17.24
Median	$17.09
Minimum	$9.83
Maximum	$31.40

Source: Crystal Ball; Author

Monte Carlo Simulation

To further extend the sensitivity analysis to the price target reached through the FCFF method, the Monte Carlo simulation (Figure 57) was run in Crystal Ball. Accordingly, the factors considered for the simulation were the perpetuity growth rate, the COGS growth rate, the sales growth rate, the cost of debt and the cost of equity, as well as, the debt and equity weights on the terminal period. The average price target, after 100,000 trials was of $17.24/sh, supporting the **BUY** recommendation, with a 23.50% upside potential.

Figure 57: Monte Carlo Simulation



Source: Crystal Ball; Author

Appendices

Appendix 1: Statement of Financial Position

BALANCE SHEET ($m)	2014	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
	31-Dec-2014	31-Dec-2015	31-Dec-2016	31-Dec-2017	31-Dec-2018	31-Dec-2019	31-Dec-2020	31-Dec-2021	31-Dec-2022	31-Dec-2023
Cash and cash equivalents	2,161.00	1,476.00	1,132.00	1,043.00	801.00	860.76	882.56	814.60	1,026.42	1,119.67
Accounts Receivable	2,126.00	2,033.00	1,769.00	2,025.00	2,030.00	1,900.18	1,915.40	1,941.38	1,970.42	2,011.78
Inventories	2,671.00	2,464.00	2,627.00	2,787.00	2,856.00	3,215.83	3,241.60	3,285.56	3,175.92	3,242.59
Prepaid Expenses and Other Current Assets	201.00	153.00	190.00	224.00	238.00	*238.00*	*238.00*	*238.00*	*238.00*	*238.00*
Current Assets	***7,159.00***	***6,126.00***	***5,718.00***	***6,079.00***	***5,925.00***	***6,214.77***	***6,277.55***	***6,279.54***	***6,410.75***	***6,612.04***
Goodwill	601.00	555.00	535.00	595.00	569.00	569.00	569.00	569.00	569.00	569.00
Intangible Assets	138.00	138.00	136.00	139.00	136.00	139.00	139.00	139.00	139.00	139.00
Deferred Income Taxes	2,253.00	2,141.00	2,414.00	2,008.00	1,847.00	1,847.00	1,847.00	1,847.00	1,847.00	1,847.00
Other Assets	740.00	654.00	668.00	792.00	1,136.00	1,136.00	1,136.00	1,136.00	1,136.00	1,136.00
Property, Plant and Equipment	7,153.00	6,777.00	7,040.00	7,451.00	7,259.00	7,345.96	7,501.80	7,659.71	7,818.96	7,981.53
Non-Current Assets	***10,885.00***	***10,265.00***	***10,793.00***	***10,985.00***	***10,947.00***	***11,036.96***	***11,192.80***	***11,350.71***	***11,509.96***	***11,672.53***
Total Assets	**18,044.00**	**16,391.00**	**16,511.00**	**17,064.00**	**16,872.00**	**17,251.73**	**17,470.35**	**17,630.25**	**17,920.71**	**18,284.57**
Accounts Payable-Trade	2,878.00	2,769.00	2,589.00	2,807.00	2,920.00	2,988.65	3,189.54	3,236.45	3,281.96	3,384.37
Compensation and Benefits	724.00	666.00	584.00	539.00	471.00	471.00	471.00	471.00	471.00	471.00
Other Current Liabilities	950.00	886.00	963.00	1,026.00	737.00	*737.00*	*737.00*	*737.00*	*737.00*	*737.00*
Notes Payables and Overdrafts	30.00	49.00	245.00	262.00	410.00	410.00	410.00	410.00	410.00	410.00
Long Term Debt and Capital Leases Due Within (	148.00	585.00	436.00	391.00	243.00	721.00	243.00	243.00	1,864.00	243.00
Current Liabilities	***4,730.00***	***4,955.00***	***4,817.00***	***5,025.00***	***4,781.00***	***5,327.65***	***5,050.54***	***5,097.45***	***6,763.96***	***5,245.37***
Long Term Debt and Capital Leases	6,216.00	5,074.00	4,798.00	5,076.00	5,110.00	4,932.00	5,410.00	5,410.00	3,789.00	5,410.00
Compensation and Benefits	1,676.00	1,468.00	1,460.00	1,515.00	1,345.00	1,345.00	1,345.00	1,345.00	1,345.00	1,345.00
Deferred Income Taxes	90.00	91.00	85.00	100.00	95.00	95.00	95.00	95.00	95.00	95.00
Other Long Term Liabilities	905.00	661.00	626.00	498.00	471.00	471.00	471.00	471.00	471.00	471.00
Non-Current Liabilities	***8,887.00***	***7,294.00***	***6,969.00***	***7,189.00***	***7,021.00***	***6,843.00***	***7,321.00***	***7,321.00***	***5,700.00***	***7,321.00***
Total Liabilities	**13,617.00**	**12,249.00**	**11,786.00**	**12,214.00**	**11,802.00**	**12,170.65**	**12,371.54**	**12,418.45**	**12,463.96**	**12,566.37**
Common Stock	269.00	267.00	252.00	240.00	232.00	232.00	232.00	232.00	232.00	232.00
Capital Surplus	3,141.00	3,093.00	2,645.00	2,295.00	2,111.00	2,111.00	2,111.00	2,111.00	2,111.00	2,111.00
Retained Earnings & Others	4,331.00	4,570.00	5,808.00	6,044.00	6,597.00	6,605.43	6,620.39	6,728.90	6,967.33	7,221.94
Accumulated Other Comprehensive Loss	-4,131.00	-4,010.00	-4,198.00	-3,976.00	-4,076.00	-4,076.00	-4,076.00	-4,076.00	-4,076.00	-4,076.00
Goodyear Shareholders' Equity	***3,610.00***	***3,920.00***	***4,507.00***	***4,603.00***	***4,864.00***	***4,872.43***	***4,887.39***	***4,995.90***	***5,234.33***	***5,488.94***
Minority Shareholders' Equity- Nonredeemable	235.00	222.00	218.00	247.00	206.00	208.66	211.42	215.90	222.42	229.26
Minority Shareholders' Equity	582.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Shareholders' Equity	**4,427.00**	**4,142.00**	**4,725.00**	**4,850.00**	**5,070.00**	**5,081.08**	**5,098.81**	**5,211.79**	**5,456.75**	**5,718.20**
Total Equity + Total Liabilities	**18,044.00**	**16,391.00**	**16,511.00**	**17,064.00**	**16,872.00**	**17,251.73**	**17,470.35**	**17,630.25**	**17,920.71**	**18,284.57**

Appendix 2: Income Statement

INCOME STATEMENT ($m)	2014	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
Period End Data	31-Dec-2014	31-Dec-2015	31-Dec-2016	31-Dec-2017	31-Dec-2018	31-Dec-2019	31-Dec-2020	31-Dec-2021	31-Dec-2022	31-Dec-2023
Net Sales	**18,138.00**	**16,443.00**	**15,158.00**	**15,377.00**	**15,475.00**	**15,313.49**	**15,436.19**	**15,645.53**	**15,879.58**	**16,212.95**
Americas	9,881.00	9,370.00	8,172.00	8,212.00	8,168.00	8,114.58	8,179.26	8,281.07	8,384.45	8,525.12
EMEA	6,180.00	5,115.00	4,880.00	4,928.00	5,090.00	5,090.74	5,116.73	5,168.58	5,220.96	5,299.77
Asia Pacific	2,077.00	1,958.00	2,106.00	2,237.00	2,217.00	2,108.18	2,140.19	2,195.87	2,274.17	2,388.06
Cost of Goods Sold	**13,906.00**	**12,164.00**	**10,972.00**	**11,680.00**	**11,961.00**	**12,097.66**	**12,171.43**	**12,203.51**	**12,227.28**	**12,483.97**
Gross Profit	**4,232.00**	**4,279.00**	**4,186.00**	**3,697.00**	**3,514.00**	**3,215.83**	**3,264.75**	**3,442.02**	**3,652.30**	**3,728.98**
Selling, General and Administative Expenses	2,720.00	2,614.00	2,407.00	2,279.00	2,312.00	2,287.87	2,306.20	2,337.48	2,372.45	2,422.25
Rationalizations	95.00	114.00	210.00	135.00	44.00	160.00	160.00	160.00	160.00	160.00
Other (Income) Expense	286.00	505.00	-10.00	70.00	-174.00	135.40	135.40	135.40	135.40	135.40
EBIT	**1,131.00**	**1,046.00**	**1,579.00**	**1,213.00**	**1,332.00**	**632.56**	**663.15**	**809.14**	**984.46**	**1,011.33**
Interest Expenses	444.00	438.00	372.00	335.00	321.00	405.30	426.40	426.40	426.40	426.40
Income (Loss) before Income Taxes and Equity	**687.00**	**608.00**	**1,207.00**	**878.00**	**1,011.00**	**227.26**	**236.75**	**382.74**	**558.06**	**584.93**
in Earnings of Subsidiaries										
United States and Foreign Tax (Benefit) Expense	-1,834.00	232.00	-77.00	513.00	303.00	68.18	71.03	114.82	167.42	175.48
Net Income (Loss)	**2,521.00**	**376.00**	**1,284.00**	**365.00**	**708.00**	**159.08**	**165.73**	**267.92**	**390.64**	**409.45**
Less: Minority Shareholders Net Income	69.00	69.00	20.00	19.00	15.00	2.66	2.77	4.47	6.52	6.84
Goodyear Net Income	**2,452.00**	**307.00**	**1,264.00**	**346.00**	**693.00**	**156.43**	**162.96**	**263.44**	**384.12**	**402.61**
Adjusted EBITDA	**1,863.00**	**1,744.00**	**2,306.00**	**1,994.00**	**2,110.00**	**1,342.60**	**1,378.88**	**1,534.57**	**1,720.74**	**1,763.07**
Depreciations and Amortizations	732.00	698.00	727.00	781.00	778.00	710.04	715.72	725.43	736.28	751.74

Appendix 3: Cash Flow Statement

CASH FLOW STATEMENT ($m)	2019F	2020F	2021F	2022F	2023F
	31-Dec-2019	31-Dec-2020	31-Dec-2021	31-Dec-2022	31-Dec-2023
Operating Activities	***1,113.06***	***1,467.75***	***1,396.73***	***1,679.44***	***1,581.96***
+EBIT	632.56	663.15	809.14	984.46	1,011.33
+D&A	710.04	715.72	725.43	736.28	751.74
-Income Tax	68.18	71.03	114.82	167.42	175.48
-DNWC	161.36	159.90	23.02	126.11	5.63
+-Other non-cash adjustments	0.00	0.00	0.00	0.00	0.00
Investment Activities	***800.00***	***871.55***	***883.35***	***895.53***	***914.31***
-CAPEX	800.00	871.55	883.35	895.53	914.31
+-Other Inv.	0.00	0.00	0.00	0.00	0.00
Financing Activities	***253.30***	***574.40***	***581.34***	***572.09***	***574.40***
-Interest paid	405.30	426.40	426.40	426.40	426.40
-Dividends	148.00	148.00	154.94	145.69	148.00
-DDebt	300.00	0.00	0.00	0.00	0.00
Change in Cash	59.76	21.80	67.96	211.82	93.25
Begining	801.00	860.76	882.56	814.60	1,026.42
End	860.76	882.56	814.60	1,026.42	1,119.67

Appendix 4: Key Financial Ratios

Key Financial Ratios	2014	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
Liquidity Ratios										
Current Ratio (x)	1.51	1.24	1.19	1.21	1.24	1.17	1.24	1.23	0.95	1.26
Quick Ratio (x)	0.95	0.74	0.64	0.66	0.64	0.56	0.60	0.59	0.48	0.64
Cash Ratio (x)	0.46	0.30	0.24	0.21	0.17	0.16	0.17	0.16	0.15	0.21
Efficiency Ratios										
Total Assets Turnover (x)	1.01	1.00	0.92	0.90	0.92	0.89	0.88	0.89	0.89	0.89
Accounts Receivables Turnover (x)	8.53	8.09	8.57	7.59	7.62	8.06	8.06	8.06	8.06	8.06
Collection Period (days)	42.78	45.13	42.60	48.07	47.88	45.29	45.29	45.29	45.29	45.29
Inventory Turnover (x)	5.21	4.94	4.18	4.19	4.19	3.76	3.75	3.71	3.85	3.85
Days in Inventory (days)	70.11	73.94	87.39	87.09	87.15	97.03	97.21	98.27	94.81	94.81
Payables Turnover (x)	4.83	4.39	4.24	4.16	4.10	4.05	3.82	3.77	3.73	3.69
Payables Period (days)	75.54	83.09	86.13	87.72	89.11	90.17	95.65	96.80	97.97	98.95
Operating Cycle (days)	112.89	119.06	129.99	135.16	135.03	142.32	142.50	143.56	140.10	140.10
Cash Cycle (days)	37.35	35.98	43.86	47.44	45.93	52.15	46.85	46.76	42.13	41.15
Assets Turnover	1.01	1.00	0.92	0.90	0.92	0.89	0.88	0.89	0.89	0.89
Profitability Ratios										
Gross Profit Margin (%)	23.33%	26.02%	27.62%	24.04%	22.71%	21.00%	21.15%	22.00%	23.00%	23.00%
EBITDA Margin (%)	10.27%	10.61%	15.21%	12.97%	13.63%	8.77%	8.93%	9.81%	10.84%	10.87%
EBIT Margin (%)	6.24%	6.36%	10.42%	7.89%	8.61%	4.13%	4.30%	5.17%	6.20%	6.24%
Net Profit Margin (%)	13.52%	1.87%	8.34%	2.25%	4.48%	1.02%	1.06%	1.68%	2.42%	2.48%
ROA (%)	13.59%	1.87%	7.66%	2.03%	4.11%	0.91%	0.93%	1.49%	2.14%	2.20%
ROCE (%)	13.63%	14.40%	20.74%	14.45%	15.01%	7.32%	7.27%	8.70%	12.76%	10.64%
ROE (%)	55.39%	7.41%	26.75%	7.13%	13.67%	3.08%	3.20%	5.05%	7.04%	7.04%
EPS (x)	8.99	1.13	4.78	1.38	2.91	0.68	0.70	1.14	1.66	1.74
SG&A/Sale (%)	15.00%	15.90%	15.88%	14.82%	14.94%	14.94%	14.94%	14.94%	14.94%	14.94%
Solvency Ratios										
Short-term Debt Ratio (%)	2.78%	11.11%	12.43%	11.40%	11.33%	18.65%	10.77%	10.77%	37.51%	10.77%
Long-term Debt Ratio (%)	97.22%	88.89%	87.57%	88.60%	88.67%	81.35%	89.23%	89.23%	62.49%	89.23%
Net Debt to Equity Ratio (x)	0.96	1.02	0.92	0.97	0.98	1.02	1.02	1.01	0.92	0.86
Equity Multiplier (x)	4.08	3.96	3.49	3.52	3.33	3.40	3.43	3.38	3.28	3.20
Net Debt to EBITDA	2.27	2.43	1.89	2.35	2.35	3.87	3.76	3.42	2.93	2.80
Interest Coverage Ratio (x)	5.65	5.46	3.47	4.72	4.33	9.58	9.14	7.49	6.16	6.00

Appendix 5: Common-Size Statement of Financial Position

% of Net Sales

COMMON SIZE BALANCE SHEET	2014	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
	31-Dec-2014	31-Dec-2015	31-Dec-2016	31-Dec-2017	31-Dec-2018	31-Dec-2019	31-Dec-2020	31-Dec-2021	31-Dec-2022	31-Dec-2023
Cash and cash equivalents	11.98%	9.00%	6.86%	6.11%	4.75%	4.99%	5.05%	4.62%	5.73%	6.12%
Accounts Receivable	11.78%	12.40%	10.71%	11.87%	12.03%	11.01%	10.96%	11.01%	11.00%	11.00%
Inventories	14.80%	15.03%	15.91%	16.33%	16.93%	18.64%	18.55%	18.64%	17.72%	17.73%
Prepaid Expenses and Other Current Assets	1.11%	0.93%	1.15%	1.31%	1.41%	1.38%	1.36%	1.35%	1.33%	1.30%
Current Assets	**39.68%**	**37.37%**	**34.63%**	**35.62%**	**35.12%**	**36.02%**	**35.93%**	**35.62%**	**35.77%**	**36.16%**
Goodwill	3.33%	3.39%	3.24%	3.49%	3.37%	3.30%	3.26%	3.23%	3.18%	3.11%
Intangible Assets	0.76%	0.84%	0.82%	0.81%	0.81%	0.81%	0.80%	0.79%	0.78%	0.76%
Deferred Income Taxes	12.49%	13.06%	14.62%	11.77%	10.95%	10.71%	10.57%	10.48%	10.31%	10.10%
Other Assets	4.10%	3.99%	4.05%	4.64%	6.73%	6.58%	6.50%	6.44%	6.34%	6.21%
Property, Plant and Equipment	39.64%	41.35%	42.64%	43.67%	43.02%	42.58%	42.94%	43.45%	43.63%	43.65%
Non-Current Assets	**60.32%**	**62.63%**	**65.37%**	**64.38%**	**64.88%**	**63.98%**	**64.07%**	**64.38%**	**64.23%**	**63.84%**
Total Assets	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
Accounts Payable-Trade	15.95%	16.89%	15.68%	16.45%	17.31%	17.32%	18.26%	18.36%	18.31%	18.51%
Compensation and Benefits	4.01%	4.06%	3.54%	3.16%	2.79%	2.73%	2.70%	2.67%	2.63%	2.58%
Other Current Liabilities	5.26%	5.41%	5.83%	6.01%	4.37%	4.27%	4.22%	4.18%	4.11%	4.03%
Notes Payables and Overdrafts	0.17%	0.30%	1.48%	1.54%	2.43%	2.38%	2.35%	2.33%	2.29%	2.24%
Long Term Debt and Capital Leases Due Within One Year	0.82%	3.57%	2.64%	2.29%	1.44%	4.18%	1.39%	1.38%	10.40%	1.33%
Total Current Liabilities	**26.21%**	**30.23%**	**29.17%**	**29.45%**	**28.34%**	**30.88%**	**28.91%**	**28.91%**	**37.74%**	**28.69%**
Long Term Debt and Capital Leases	34.45%	30.96%	29.06%	29.75%	30.29%	28.59%	30.97%	30.69%	21.14%	29.59%
Compensation and Benefits	9.29%	8.96%	8.84%	8.88%	7.97%	7.80%	7.70%	7.63%	7.51%	7.36%
Deferred Income Taxes	0.50%	0.56%	0.51%	0.59%	0.56%	0.55%	0.54%	0.54%	0.53%	0.52%
Other Long Term Liabilities	5.02%	4.03%	3.79%	2.92%	2.79%	2.73%	2.70%	2.67%	2.63%	2.58%
Total Non-Current Liabilities	**49.25%**	**44.50%**	**42.21%**	**42.13%**	**41.61%**	**39.67%**	**41.91%**	**41.53%**	**31.81%**	**40.04%**
Total Liabilities	**75.47%**	**74.73%**	**71.38%**	**71.58%**	**69.95%**	**70.55%**	**70.81%**	**70.44%**	**69.55%**	**68.73%**
Common Stock	1.49%	1.63%	1.53%	1.41%	1.38%	1.34%	1.33%	1.32%	1.29%	1.27%
Capital Surplus	17.41%	18.87%	16.02%	13.45%	12.51%	12.24%	12.08%	11.97%	11.78%	11.55%
Retained Earnings & Others	24.00%	27.88%	35.18%	35.42%	39.10%	38.29%	37.89%	38.17%	38.88%	39.50%
Accumulated Other Comprehensive Loss	-22.89%	-24.46%	-25.43%	-23.30%	-24.16%	-23.63%	-23.33%	-23.12%	-22.74%	-22.29%
Goodyear Shareholders' Equity	**20.01%**	**23.92%**	**27.30%**	**26.97%**	**28.83%**	**28.24%**	**27.98%**	**28.34%**	**29.21%**	**30.02%**
Minority Shareholders' Equity- Nonredeemable	1.30%	1.35%	1.32%	1.45%	1.22%	1.21%	1.21%	1.22%	1.24%	1.25%
Minority Shareholders' Equity	3.23%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total Shareholders' Equity	**24.53%**	**25.27%**	**28.62%**	**28.42%**	**30.05%**	**29.45%**	**29.19%**	**29.56%**	**30.45%**	**31.27%**
Total Equity + Total Liabilities	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Appendix 6: Common-Size Income Statement

% of Net Sales

COMMON SIZE INCOME STATEMENT	2014	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
Period End Data	31-Dec-2014	31-Dec-2015	31-Dec-2016	31-Dec-2017	31-Dec-2018	31-Dec-2019	31-Dec-2020	31-Dec-2021	31-Dec-2022	31-Dec-2023
Net Sales	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
Americas	54.48%	56.98%	53.91%	53.40%	52.78%	52.99%	52.99%	52.93%	52.80%	52.58%
EMEA	34.07%	31.11%	32.19%	32.05%	32.89%	33.24%	33.15%	33.04%	32.88%	32.69%
Asia Pacific	11.45%	11.91%	13.89%	14.55%	14.33%	13.77%	13.86%	14.04%	14.32%	14.73%
Cost of Goods Sold	**76.67%**	**73.98%**	**72.38%**	**75.96%**	**77.29%**	**79.00%**	**78.85%**	**78.00%**	**77.00%**	**77.00%**
Gross Profit	**23.33%**	**26.02%**	**27.62%**	**24.04%**	**22.71%**	**21.00%**	**21.15%**	**22.00%**	**23.00%**	**23.00%**
Selling, General and Administative Expenses	15.00%	15.90%	15.88%	14.82%	14.94%	14.94%	14.94%	14.94%	14.94%	14.94%
Rationalizations	0.52%	0.69%	1.39%	0.88%	0.28%	1.04%	1.04%	1.02%	1.01%	0.99%
Other (Income) Expense	1.58%	3.07%	-0.07%	0.46%	-1.12%	0.88%	0.88%	0.87%	0.85%	0.84%
EBIT	**6.24%**	**6.36%**	**10.42%**	**7.89%**	**8.61%**	**4.13%**	**4.30%**	**5.17%**	**6.20%**	**6.24%**
Interest Expenses	2.45%	2.66%	2.45%	2.18%	2.07%	2.65%	2.76%	2.73%	2.69%	2.63%
Income (Loss) before Income Taxes and Equity	**3.79%**	**3.70%**	**7.96%**	**5.71%**	**6.53%**	**1.48%**	**1.53%**	**2.45%**	**3.51%**	**3.61%**
in Earnings of Subsidiaries										
United States and Foreign Tax (Benefit) Expense	-10.11%	1.41%	-0.51%	3.34%	1.96%	0.45%	0.46%	0.73%	1.05%	1.08%
Net Income (Loss)	**13.90%**	**2.29%**	**8.47%**	**2.37%**	**4.58%**	**1.04%**	**1.07%**	**1.71%**	**2.46%**	**2.53%**
Less: Minority Shareholders Net Income	0.38%	0.42%	0.13%	0.12%	0.10%	0.02%	0.02%	0.03%	0.04%	0.04%
Goodyear Net Income	**13.52%**	**1.87%**	**8.34%**	**2.25%**	**4.48%**	**1.02%**	**1.06%**	**1.68%**	**2.42%**	**2.48%**
EBITDA	**10.27%**	**10.61%**	**15.21%**	**12.97%**	**13.63%**	**8.77%**	**8.93%**	**9.81%**	**10.84%**	**10.87%**
Depreciations and Amortizations	4.04%	4.24%	4.80%	5.08%	5.03%	4.64%	4.64%	4.64%	4.64%	4.64%

Appendix 7: Forecasting Assumptions

INCOME STATEMENT	Notes	2019F	2020F	2021F	2022F	2023F	Assumptions
Net Sales	YoY	-1.04%	0.80%	1.36%	1.50%	2.10%	According to Net Sales Forecast
Original Equipment Tires	YoY	-5.18%	-0.70%	0.70%	0.72%	1.18%	According to Net Sales Forecast
Replacement Tires	YoY	-1.85%	0.93%	1.21%	1.49%	2.59%	According to Net Sales Forecast
Cost of Goods Sold	(%) Net Sales	79.00%	78.85%	78.00%	77.00%	77.00%	Vary as a percentage of Net Sales, highly influenced by the increase on raw materials price
Selling, General, and Administrative Expenses	YoY	14.94%	14.94%	14.94%	14.94%	14.94%	The company will reduce in 20% its workforce in 2018 as part of its restructuring plan. Stock based compensation will also decrease in 2018. Sharpe decrease in 2018 followed for a more steady decrease in the remaining years (page 41, 10K, 2017)
Depreciation and Amortization	Absolute Value	710.04	715.72	725.43	736.28	751.74	According to the 5 Years Average D&A rate
Amortization Expense	Absolute Value	2	2	2	1	1	According to the 2018 10-k, page 66
Depreciation Expense	Absolute Value	708.04	713.72	723.43	735.28	750.74	Computed as the difference between the D&A in absolute value and the Amortization Expense in absolute value
Rationalizations	Absolute Value	160.00	160.00	160.00	160.00	160.00	Ongoing rationalization plans have approximatelly $800 in charges (GT 10k 2018)
Interest Expense	Interest rate	7.03%	7.03%	7.03%	7.03%	7.03%	Relation between the cost of the debt and the outstanding financial debt
Effective Tax Rate		30.00%	30.00%	30.00%	30.00%	30.00%	Deloitte range of effective tax rate between 21% to 30%
Minority Shareholders' Net Income	(%) Net Income	1.67%	1.67%	1.67%	1.67%	1.67%	Expected to follow last 3 years average trend

BALANCE SHEET	Notes	2019F	2020F	2021F	2022F	2023F	Assumption
Current Assets							
Cash and Cash Equivalents	Absolute Value	860.76	882.56	814.60	1,026.42	1,119.67	Computed through the Cash Flow Statement
Accounts Receivables	(%) Net Sales	12.41%	12.41%	12.41%	12.41%	12.41%	Accounts Receivables to Net Sales is going to keep constant at the 5 Years average rate
Prepaid Expenses	YoY	0%	0%	0%	0%	0%	There is no evidence of any planned increased of Prepaid Expenses
Inventories	(%) Net Sales	21%	21%	21%	20%	20%	Expected to increase from 2019YE to 2021YE as a result of higher raw materials price
Non-current Assets							
Goodwill	YoY	0%	0%	0%	0%	0%	There is no evidence of any future change to occur regarding Goodwill
Deferred Income Taxes	YoY	0%	0%	0%	0%	0%	There is no evidence of any future change to occur regarding Deferred Income Taxes
Other Assets	YoY	0%	0%	0%	0%	0%	There is no evidence of any future change to occur regarding Other Assets.
Current Liabilities							
Accounts Payable-Trade	(%) COGS	24.70%	26.21%	26.52%	26.84%	27.11%	In 2019YE represent the 5 year average. Nonetheless, for the remaining years it is expected that accounts payables increase due to the increasing capacity of the firm to better negotiate with suppliers (Management overview 2019)
Compensation and Benefits	YoY	0%	0%	0%	0%	0%	There is no evidence of any future change to occur regarding Compensation and Benefits.
Other Current Liabilities	YoY	0%	0%	0%	0%	0%	There is no evidence of any future change to occur regarding Other Current Liabilities.
Long Term Debt and Capital Leases Due Within One Year	Absolute Value	478.00	0.00	0.00	1621.00	0.00	Forecasted to increase with the amounts of Non-Current Long Term Debt and Capital Leases that begin to have a one year maturity.
Non-Current Liabilities							
Compensation and Benefits	YoY	0%	0%	0%	0%	0%	There is no evidence of any future change to occur regarding Compensation and Benefits.
Deferred Income Taxes	YoY	0%	0%	0%	0%	0%	There is no evidence of any future change to occur regarding Deferred Income Taxes.
Other Long Term Liabilities	YoY	0%	0%	0%	0%	0%	There is no evidence of any future change to occur regarding Other Long Term Liabilities.
Shareholders' Equity							
Common Stock	YoY	0%	0%	0%	0%	0%	There is no evidence of any future change to occur regarding Common Stock.
Capital Surplus	YoY	0%	0%	0%	0%	0%	There is no evidence of any future change to occur regarding Capital Surplus.
Accumulated Other Comprehensive Loss	YoY	0%	0%	0%	0%	0%	There is no evidence of any future change to occur regarding Accumulated Other Comprehensive Loss.
Minority Shareholders' Equity	YoY	0%	0%	0%	0%	0%	There is no evidence of any future change to occur regarding Minority Shareholders' Equity.

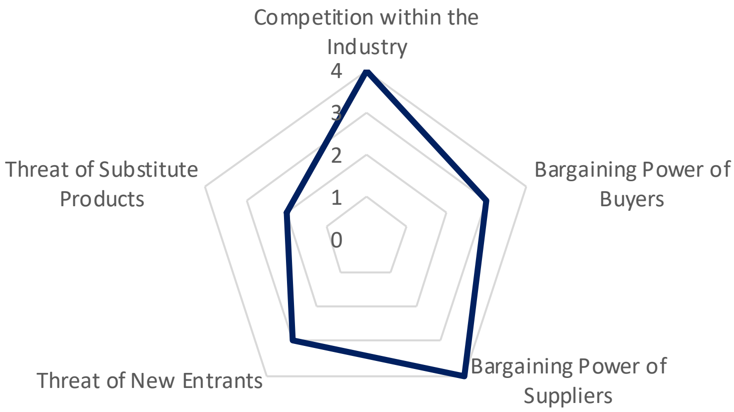
Appendix 8: Business and Corporate Structure

Name	Age	Current Position	Officer/Director	In Position	Total Compensation ($)
Mr. Richard (Rich) Kramer	55	Chairman of the Board, President, Chief Executive Officer	20 Years	9 Years	6213100.00
Mr. Darren Wells	53	Chief Financial Officer, Executive Vice President	17 Years	1 Year	2240913.00
Mr. Christopher (Chris) Dela	57	President, Europe, Middle East and Africa	4 Years	2 Years	1717745.00
Mr. Stephen (Steve) McClell	53	President, Americas	11 Years	4 Years	2163222.00
Mr. Ryan Patterson	45	President, Asia Pacific	2 Years	2 Years	n.a
Mr. David Phillips	--	Senior Vice President, General Counsel	< 1 Year	< 1 Year	n.a
Mr. Jon Bellissimo	63	Senior Vice President - Global Operations & Technology	1 Year	1 Year	n.a
Ms. Laura Duda	49	Senior Vice President - Global Communications and Chief Communications Officer	1 Year	1 Year	n.a
Mr. Gary S VanderLind	56	Senior Vice President	1 Year	1 Year	n.a
Mr. Christopher Helsel	53	Chief Technology Officer, Vice President	2 Years	2 Years	n.a
Mr. Evan Scocos	47	Vice President, Controller	3 Years	3 Years	n.a
Mr. David (Dave) Bialosky	61	Secretary	10 Years	< 1 Year	1609014.00
Mr. Warren McCollough	69	Lead Independent Director	12 Years	8 Years	372994.00
Mr. Michael Wessel	59	Director	14 Years	14 Years	322565.00
Mr. Thomas (Tom) Williams	60	Director	1 Year	1 Year	n.a
Mr. James (Jim) Firestone	64	Independent Director	12 Years	12 Years	333977.00
Mr. Werner Geissler	65	Independent Director	9 Years	9 Years	318291.00
Mr. Peter Hellman	69	Independent Director	9 Years	9 Years	323369.00
Ms. Laurette Koellner	64	Independent Director	5 Years	5 Years	288463.00
Mr. John McGlade	65	Independent Director	7 Years	7 Years	311653.00
Mr. Roderick (Rick) Palmore	67	Independent Director	7 Years	7 Years	309756.00
Ms. Stephanie Streeter	60	Independent Director	11 Years	11 Years	314775.00
Mr. Thomas Weidemeyer	71	Independent Director	15 Years	15 Years	327714.00

Appendix 9: Investors

Investor Rank	Investor Name	Latest Filing Date	% O/S	Position
1	The Vanguard Group, Inc.	30-06-2019	9.46%	22.00M
2	BlackRock Institutional Trust Company, N.A.	30-06-2019	8.87%	20.62M
3	LSV Asset Management	30-06-2019	4.72%	10.97M
4	LLC	30-06-2019	4.12%	9.58M
5	Lyrical Asset Management LP	30-06-2019	3.90%	9.07M
6	Dimensional Fund Advisors, L.P.	30-06-2019	3.79%	8.81M
7	D. E. Shaw & Co., L.P. [Activist]	30-06-2019	3.47%	8.08M
8	State Street Global Advisors (US)	30-06-2019	2.63%	6.12M
9	Arrowstreet Capital, Limited Partnership	30-06-2019	2.57%	5.98M
10	Mellon Investments Corporation	30-06-2019	2.14%	4.97M
11	Adage Capital Management, L.P.	30-06-2019	1.55%	3.61M
12	Citadel LLC	30-06-2019	1.51%	3.51M
13	Newport Trust Company	30-06-2019	1.42%	3.29M
14	Levin Easterly Partners LLC	30-06-2019	1.30%	3.02M
15	Geode Capital Management, L.L.C.	30-06-2019	1.17%	2.73M
16	Millennium Management LLC	30-06-2019	1.11%	2.58M
17	Letko, Brosseau & Associates Inc.	30-06-2019	1.05%	2.44M
18	Norges Bank Investment Management (NBIM)	31-12-2018	0.94%	2.18M
19	QMA LLC	30-06-2019	0.86%	2.01M
20	Towle & Company	30-06-2019	0.85%	1.98M

Appendix 10: Porter's Five Forces



Porter's Five Forces	
Category	**Score**
Competition within the Industry	4
Bargaining Power of Buyers	3
Bargaining Power of Suppliers	4
Threat of New Entrants	3
Threat of Substitute Products	2

Score Range
5- Critical
4- High
3- Moderate
2- Low
1- Insignificant

Appendix 11: Net Sales Forecast

Net Sales by reportable segment (%)	2014	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
Tire unit sales	93.90%	94.26%	93.37%	92.88%	91.90%	91.72%	91.63%	91.57%	91.52%	91.52%
Retail services and service related sales	3.05%	3.33%	3.66%	3.79%	4.36%	4.47%	4.55%	4.62%	4.69%	4.73%
Chemical	2.72%	2.28%	2.70%	3.20%	3.58%	3.65%	3.66%	3.65%	3.63%	3.59%
Other	0.32%	0.13%	0.27%	0.12%	0.16%	0.16%	0.16%	0.16%	0.16%	0.16%
Net Sales	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Net Sales by reportable segment ($m)	2014	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
Tire units volume	*162.00*	*166.20*	*166.10*	*159.20*	*159.20*	*154.79*	*155.54*	*157.22*	*159.24*	*162.76*
Average Selling Price Tires	*105.14*	*93.26*	*85.21*	*89.72*	*89.33*	*90.74*	*90.94*	*91.13*	*91.27*	*91.17*
Tire unit sales	17032.19	15499.44	14153.32	14282.72	14222.00	14044.89	14144.62	14327.07	14533.49	14838.48
Retail services and service related sales	553.77	546.88	554.87	582.53	675.00	*684.97*	702.05	722.88	744.38	766.56
Chemical	494.05	374.80	408.60	492.72	554.00	*559.54*	565.14	570.79	576.49	582.26
Other	57.99	21.89	41.21	19.03	24.00	*24.10*	24.38	24.79	25.21	25.65
Net Sales	**18,138.00**	**16,443.00**	**15,158.00**	**15,377.00**	**15,475.00**	**15,313.49**	**15,436.19**	**15,645.53**	**15,879.58**	**16,212.95**

Americas (%)	2014	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
Tire unit sales	90.15%	91.15%	89.15%	88.15%	86.15%	85.85%	85.71%	85.63%	85.54%	85.51%
Retail services and service related sales	4.45%	4.75%	5.50%	5.75%	6.90%	7.09%	7.22%	7.32%	7.42%	7.50%
Chemical	5.00%	4.00%	5.00%	6.00%	6.78%	6.90%	6.91%	6.89%	6.88%	6.83%
Other	0.40%	0.10%	0.35%	0.10%	0.16%	0.16%	0.16%	0.16%	0.16%	0.16%
Net Sales	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Net Sales Americas ($m)	2014	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
Tire units volume	*78.50*	*79.10*	*74.10*	*70.90*	*70.90*	*69.43*	*69.74*	*70.24*	*70.75*	*71.98*
Average Selling Price Tires	*113.48*	*107.98*	*98.32*	*102.10*	*99.25*	*100.34*	*100.53*	*100.94*	*101.36*	*101.28*
Tire unit sales	8908.05	8541.06	7285.61	7239.15	7037.00	6966.63	7010.63	7090.72	7171.89	7289.85
Retail services and service related sales	439.38	444.77	449.19	471.92	564.00	575.28	590.24	606.17	622.54	639.35
Chemical	494.05	374.80	408.60	492.72	554.00	559.54	565.14	570.79	576.49	582.26
Other	39.52	9.37	28.60	8.21	13.00	13.13	13.26	13.39	13.53	13.66
Net Sales	**9,881.00**	**9,370.00**	**8,172.00**	**8,212.00**	**8,168.00**	**8114.58**	**8179.26**	**8281.07**	**8384.45**	**8525.12**

EMEA (%)	2014	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
Tire unit sales	99.19%	99.19%	99.19%	99.19%	99.19%	99.18%	99.17%	99.16%	99.15%	99.14%
Retail services and service related sales	0.67%	0.67%	0.67%	0.67%	0.67%	0.68%	0.69%	0.70%	0.71%	0.72%
Chemical	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Other	0.14%	0.14%	0.14%	0.14%	0.14%	0.14%	0.14%	0.14%	0.14%	0.14%
Net Sales	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Net Sales EMEA ($m)	2014	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
Tire units volume	*60.50*	*61.10*	*61.10*	*57.10*	*57.80*	*56.78*	*56.98*	*57.59*	*58.37*	*59.36*
Average Selling Price Tires	*101.33*	*83.04*	*79.23*	*85.61*	*87.35*	*88.92*	*89.06*	*89.00*	*88.69*	*88.52*
Tire unit sales	6130.22	5073.80	4840.69	4888.30	5049.00	5049.06	5074.36	5125.22	5176.59	5254.36
Retail services and service related sales	41.28	34.17	32.60	32.92	34.00	34.61	35.24	36.15	37.09	38.06
Chemical	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	8.50	7.03	6.71	6.78	7.00	7.07	7.14	7.21	7.28	7.36
Net Sales	**6,180.00**	**5,115.00**	**4,880.00**	**4,928.00**	**5,090.00**	**5,090.74**	**5,116.73**	**5,168.58**	**5,220.96**	**5,299.77**

Asia Pacific (%)	2014	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
Tire unit sales	96.00%	96.25%	96.25%	96.35%	96.35%	96.25%	96.24%	96.14%	96.08%	96.07%
Retail services and service related sales	3.52%	3.47%	3.47%	3.47%	3.47%	3.56%	3.58%	3.67%	3.73%	3.73%
Chemical	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Other	0.48%	0.28%	0.28%	0.18%	0.18%	0.18%	0.19%	0.19%	0.19%	0.19%
Net Sales	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Net Sales Asia Pacific ($m)	2014	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
Tire units volume	*23.00*	*26.00*	*30.90*	*31.20*	*30.50*	*28.58*	*28.83*	*29.38*	*30.12*	*31.43*
Average Selling Price Tires	*86.69*	*72.48*	*65.60*	*69.08*	*70.03*	*71.01*	*71.44*	*71.85*	*72.55*	*72.99*
Tire unit sales	1993.92	1884.58	2027.03	2155.27	2136.00	2029.20	2059.64	2111.13	2185.02	2294.27
Retail services and service related sales	73.11	67.94	73.08	77.69	77.00	75.08	76.58	80.56	84.75	89.15
Chemical	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	9.97	5.48	5.90	4.04	4.00	3.90	3.98	4.18	4.40	4.63
Net Sales	**2,077.00**	**1,958.00**	**2,106.00**	**2,237.00**	**2,217.00**	**2,108.18**	**2,140.19**	**2,195.87**	**2,274.17**	**2,388.06**

Tire Units (%)	2014	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
Original Equipment	**30%**	**31%**	**29%**	**29%**	**28%**	**27%**	**27%**	**27%**	**26%**	**26%**
Replacement Tires	**70%**	**69%**	**71%**	**71%**	**72%**	**73%**	**73%**	**73%**	**74%**	**74%**
Tire Units	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Tire Units (million units)	2014	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
Original Equipment Tires	**49.10**	**50.70**	**48.80**	**45.70**	**44.10**	**41.82**	**41.52**	**41.81**	**42.11**	**42.61**
OE (%) Change		*3.26%*	*-3.75%*	*-6.35%*	*-3.50%*	*-5.18%*	*-0.70%*	*0.70%*	*0.72%*	*1.18%*
Replacement Tires	**112.90**	**115.50**	**117.30**	**113.50**	**115.10**	**112.97**	**114.02**	**115.40**	**117.12**	**120.15**
RT (%) Change		*2.30%*	*1.56%*	*-3.24%*	*1.41%*	*-1.85%*	*0.93%*	*1.21%*	*1.49%*	*2.59%*
Tire Units	**162.00**	**166.20**	**166.10**	**159.20**	**159.20**	**154.79**	**155.54**	**157.22**	**159.24**	**162.76**

Americas (%)	2013	2014	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
Original Equipment	**35%**	**32%**	**32%**	**30%**	**29%**	**29%**	**28%**	**28%**	**27%**	**27%**	**27%**
Replacement Tires	**65%**	**68%**	**68%**	**70%**	**71%**	**71%**	**72%**	**72%**	**73%**	**73%**	**73%**
Tire Units	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Americas (million units)	2013	2014	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
Original Equipment Tires	**27.70**	**25.50**	**25.20**	**22.60**	**20.90**	**20.60**	**19.43**	**19.24**	**19.24**	**19.24**	**19.43**
OE (%) Change		*-7.94%*	*-1.18%*	*-10.32%*	*-7.52%*	*-1.44%*	*-5.68%*	*-1.00%*	*0.00%*	*0.00%*	*1.00%*
Replacement Tires	**51.90**	**53.00**	**53.90**	**51.50**	**50.00**	**50.30**	**50.00**	**50.50**	**51.01**	**51.52**	**52.55**
RT (%) Change		*2.12%*	*1.70%*	*-4.45%*	*-2.91%*	*0.60%*	*-0.59%*	*1.00%*	*1.00%*	*1.00%*	*2.00%*
Tire Units	**79.60**	**78.50**	**79.10**	**74.10**	**70.90**	**70.90**	**69.43**	**69.74**	**70.24**	**70.75**	**71.98**

EMEA (%)	2013	2014	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
Original Equipment	**29%**	**33%**	**33%**	**33%**	**33%**	**31%**	**31%**	**30%**	**31%**	**30%**	**30%**
Replacement Tires	**71%**	**67%**	**67%**	**67%**	**67%**	**69%**	**69%**	**70%**	**69%**	**70%**	**70%**
Tire Units	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

EMEA (million units)	2013	2014	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
Original Equipment Tires	**17.56**	**19.70**	**20.20**	**20.20**	**18.60**	**17.80**	**17.37**	**17.37**	**17.59**	**17.76**	**17.94**
OE (%) Change		*12.19%*	*2.54%*	*0.00%*	*-7.92%*	*-4.30%*	*-2.42%*	*0.00%*	*1.25%*	*1.00%*	*1.00%*
Replacement Tires	**43.24**	**40.80**	**40.90**	**40.90**	**38.50**	**40.00**	**39.41**	**39.61**	**40.00**	**40.60**	**41.42**
RT (%) Change		*-5.64%*	*0.25%*	*0.00%*	*-5.87%*	*3.90%*	*-1.47%*	*0.50%*	*1.00%*	*1.50%*	*2.00%*
Tire Units	**60.80**	**60.50**	**61.10**	**61.10**	**57.10**	**57.80**	**56.78**	**56.98**	**57.59**	**58.37**	**59.36**

Asia Pacific (%)	2013	2014	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
Original Equipment	14%	17%	20%	19%	20%	19%	18%	17%	17%	17%	17%
Replacement Tires	86%	83%	80%	81%	80%	81%	82%	83%	83%	83%	83%
Tire Units	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Asia Pacific (million units)	2013	2014	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
Original Equipment	3.10	3.90	5.30	6.00	6.20	5.70	5.02	4.92	4.99	5.11	5.24
OE (%) Change		*25.81%*	*35.90%*	*13.21%*	*3.33%*	*-8.06%*	*-12.00%*	*-2.00%*	*1.50%*	*2.50%*	*2.50%*
Replacement Tires	18.80	19.10	20.70	24.90	25.00	24.80	23.56	23.91	24.39	25.00	26.19
RT (%) Change		*1.60%*	*8.38%*	*20.29%*	*0.40%*	*-0.80%*	*-5.00%*	*1.50%*	*2.00%*	*2.50%*	*4.75%*
Tire Units	21.90	23.00	26.00	30.90	31.20	30.50	28.58	28.83	29.38	30.12	31.43

Appendix 12: Country and Market Risk Premium

Americas	Nº of facilities	Country Risk Premium
United States	17	0%
Brazil	3	4.17%
Canada	3	0%
Chile	1	0.98%
Colombia	1	2.64%
Peru	1	1.67%
Americas	**26**	**0.68%**

EMEA	Nº of facilities	Country Risk Premium
Belgium	1	0.84%
Finland	1	0.55%
France	4	0.69%
Germany	5	0.00%
Luxembourg	1	0.00%
Netherlands	1	0.00%
Poland	1	1.18%
Slovenia	1	2.22%
South Africa	1	3.06%
Turkey	2	5.00%
EMEA	**18**	**1.15%**

Asia Pacific	Nº of facilities	Country Risk Premium
China	2	0.98%
India	2	2.64%
Indonesia	1	2.64%
Japan	1	0.98%
Malaysia	1	1.67%
Singapore	1	0.00%
Thailand	1	2.22%
Asia Pacific	**9**	**1.64%**

EMEA	Nº of facilities	Market Risk Premium
Belgium	1	6.20%
Finland	1	5.90%
France	4	5.90%
Germany	5	5.30%
Luxembourg	1	5.80%
Netherlands	1	5.80%
Poland	1	6.00%
Slovenia	1	7.20%
South Africa	1	6.90%
Turkey	2	7.70%
EMEA	**18**	**6.07%**

Americas	Nº of facilities	Market Risk Premium
United States	17	5.40%
Brazil	3	8.40%
Canada	3	6%
Chile	1	6.10%
Colombia	1	8.70%
Peru	1	7.30%
Americas	**26**	**6.02%**

Asia Pacific	**Nº of facilities**	**Market Risk Premium**
China	2	6.30%
India	2	7.90%
Indonesia	1	8.80%
Japan	1	5.70%
Malaysia	1	7.10%
Singapore	1	5.20%
Thailand	1	8.90%
Asia Pacific	**9**	**7.12%**

Goodyear	**Region (%)**	**Market Risk Premium**
Americas	52.78%	6.02%
EMEA	32.89%	6.07%
Asia Pacific	14.33%	7.12%
Goodyear	**100.00%**	**6.19%**

Appendix 13: Debt

DEBT	2014	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
Total Debt	**6,394.00**	**5,708.00**	**5,479.00**	**5,729.00**	**5,763.00**	**6,063.00**	**6,063.00**	**6,063.00**	**6,063.00**	**6,063.00**
Unamortized deferred financing fees	0.00	-48.00	-42.00	-41.00	-36.00	-36.00	-36.00	-36.00	-36.00	-36.00
Capital Lease obligations	59.00	48.00	41.00	40.00	37.00	37.00	37.00	37.00	37.00	37.00
Long Term Debt and Capital Leases					**5,110.00**	**4,932.00**	**5,410.00**	**5,410.00**	**3,789.00**	**5,410.00**
Note (maturity=2020)					278.00	0.00	0.00	0.00	0.00	0.00
Note (maturity=2023)					1,000.00	1,000.00	1,000.00	1,000.00	0.00	0.00
Euro Notes(maturity=2023)					286.00	286.00	286.00	286.00	0.00	0.00
Bond (maturity=2026)					900.00	900.00	900.00	900.00	900.00	900.00
Bond (maturity=2027)					700.00	700.00	700.00	700.00	700.00	700.00
Bond (maturity=2028)					150.00	150.00	150.00	150.00	150.00	150.00
Loan (maturity=2025)					400.00	400.00	400.00	400.00	400.00	400.00
Pan-European (maturity=2023)					335.00	335.00	335.00	335.00	0.00	0.00
Mexican credit facilities (maturity=2020)					200.00	0.00	0.00	0.00	0.00	0.00
Chinese credit facilities					187.00	187.00	187.00	187.00	187.00	187.00
Other foreign and domestic debt					673.00	673.00	673.00	673.00	673.00	673.00
New Note (maturity=2025)						300.00	778.00	778.00	778.00	778.00
New Note (maturity=2028)										1,621.00
Short-term debt					**653.00**	**1,131.00**	**653.00**	**653.00**	**2,274.00**	**653.00**
Notes Payables and Overdrafts					410.00	410.00	410.00	410.00	410.00	410.00
Long term Debt and Capital Leases					243.00	243.00	243.00	243.00	243.00	243.00
Note (maturity=2020)					0.00	278.00	0.00	0.00	0.00	0.00
Note (maturity=2023)					0.00	0.00	0.00	0.00	1,000.00	0.00
Euro Notes (maturity=2023)					0.00	0.00	0.00	0.00	286.00	0.00
Pan-European (maturity=2023)					0.00	0.00	0.00	0.00	335.00	0.00
Mexican facilties (maturity=2020)					0.00	200.00	0.00	0.00	0.00	0.00
D Debt					**0.00**	**300.00**	**0.00**	**0.00**	**0.00**	**0.00**
Amortizations					0.00	0.00	478.00	0.00	0.00	1,621.00
New Debt						300.00	478.00	0.00	0.00	1,621.00

Appendix 14: DuPont Analysis

ROE	
55.39%	3.08%
7.41%	3.20%
26.75%	5.05%
7.13%	7.04%
13.67%	7.04%

ROA	
13.59%	0.91%
1.87%	0.93%
7.66%	1.49%
2.03%	2.14%
4.11%	2.20%

Leverage Ratio	
4.08	3.40
3.96	3.43
2.28	3.38
2.26	3.28
3.33	3.20

Assets Turnover	
1.01	0.89
1.00	0.88
0.92	0.89
0.90	0.89
0.92	0.89

Net Profit Margin	
13.52%	1.02%
1.87%	1.06%
8.34%	1.68%
2.25%	2.42%
4.48%	2.48%

Tax Burden	
356.91%	68.83%
50.49%	68.83%
104.72%	68.83%
39.41%	68.83%
68.55%	68.83%

Interest Burden	
60.74%	35.93%
58.13%	35.70%
76.44%	47.30%
72.38%	56.69%
75.90%	57.84%

EBIT Margin	
6.24%	4.13%
6.36%	4.30%
10.42%	5.17%
7.89%	6.20%
8.61%	6.24%

Legend	
2014	2019F
2015	2020F
2016	2021F
2017	2022F
2018	2023F

Appendix 15: Cost of Debt

COST OF DEBT	
Risk-free	2.46%
Company Default Spread	3.60%
Country Default Spread	0.97%
Cost of Debt	**7.03%**

COMPANY DEFAULT SPREAD	
Average EBIT	1260.2
Average Interest Payment	397.25
Average Interest Coverage	3.17
Company Default Spread	3.60%

If interest coverage ratio is			
greater than	≤ to	Rating is	Spread is
-100000	0.499999	D2/D	19.38%
0.5	0.799999	C2/C	14.54%
0.8	1.249999	Ca2/CC	11.08%
1.25	1.499999	Caa/CCC	9.00%
1.5	1.999999	B3/B-	6.60%
2	2.499999	B2/B	5.40%
2.5	2.999999	B1/B+	4.50%
3	3.499999	Ba2/BB	3.60%
3.5	3.9999999	Ba1/BB+	3.00%
4	4.499999	Baa2/BBB	2.00%
4.5	5.999999	A3/A-	1.56%
6	7.499999	A2/A	1.38%
7.5	9.499999	A1/A+	1.25%
9.5	12.499999	Aa2/AA	1.00%
12.5	100000	Aaa/AAA	0.75%

Appendix 16: Weighted Average Cost of Capital Calculation

Growth Rate (%)	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F
ROE	**7.41%**	**26.75%**	**7.13%**	**13.67%**	**3.08%**	**3.20%**	**5.05%**	**7.04%**	**7.04%**
EBIT*(1-t)	814.0	1,656.0	700.0	1,029.0	442.8	464.2	566.4	689.1	707.9
D&A	698.0	727.0	781.0	778.0	710.0	715.7	725.4	736.3	751.7
ΔNWC	0.0	0.0	0.0	0.0	(161.4)	159.9	(23.0)	126.1	(5.6)
CAPEX	0.0	0.0	0.0	0.0	(800.0)	(871.6)	(883.3)	(895.5)	(914.3)
Reinvestment Rate	**-85.75%**	**-43.90%**	**-111.57%**	**-75.61%**	**56.76%**	**-0.88%**	**31.95%**	**4.81%**	**23.76%**
Growth Rate	**-6.36%**	**-11.74%**	**-7.96%**	**-10.33%**	**1.75%**	**-0.03%**	**1.61%**	**0.34%**	**1.67%**

WACC BV	2019F	2020F	2021F	2022F	2023F
Cost of Equity					
Risk-free rate	1.65%	1.65%	1.65%	1.65%	1.65%
Beta Levered	0.85	0.85	0.85	0.85	0.85
Market Risk Premium	6.19%	6.19%	6.19%	6.19%	6.19%
Country Risk Premium	0.97%	0.97%	0.97%	0.97%	0.97%
Cost of Equity (rE)	**7.89%**	**7.89%**	**7.89%**	**7.89%**	**7.89%**
Cost of Debt					
Cost of Debt (rD)	7.03%	7.03%	7.03%	7.03%	7.03%
Marginal Tax Rate	30.00%	30.00%	30.00%	30.00%	30.00%
After-tax Cost of Debt	**4.92%**	**4.92%**	**4.92%**	**4.92%**	**4.92%**
WACC					
BV Equity	5,081.08	5,098.81	5,211.79	5,456.75	5,718.20
BV Net Debt	5,202.24	5,180.44	5,248.40	5,036.58	4,943.33
Enterprise Book Value	10,283.33	10,279.26	10,460.20	10,493.33	10,661.53
Weight of Equity BV	49.41%	49.60%	49.83%	52.00%	53.63%
Weight of Debt BV	50.59%	50.40%	50.17%	48.00%	46.37%
WACC	**6.39%**	**6.39%**	**6.40%**	**6.47%**	**6.51%**

WACC Target	**7.00%**
g	**1.00%**

WACC MV	2019F	2020F	2021F	2022F	2023F	Terminal
Cost of Equity						
Risk-free rate	1.65%	1.65%	1.65%	1.65%	1.65%	2.12%
Beta Levered	0.85	0.85	0.85	0.85	0.85	0.85
Market Risk Premium	6.19%	6.19%	6.19%	6.19%	6.19%	6.19%
Country Risk Premium	0.97%	0.97%	0.97%	0.97%	0.97%	0.97%
Cost of Equity (rE)	**7.89%**	**7.89%**	**7.89%**	**7.89%**	**7.89%**	**8.36%**
Cost of Debt (rD)						
Cost of Debt (rD)	7.03%	7.03%	7.03%	7.03%	7.03%	8.17%
Marginal Tax Rate	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%
After-tax Cost of Debt	**4.92%**	**4.92%**	**4.92%**	**4.92%**	**4.92%**	**5.72%**
WACC						
Total Equity Value	7,911.51	7,008.40	5,809.56	5,102.25	5,162.14	4,622.41
Total Net Debt Value	5,202.72	5,181.40	5,249.86	5,038.52	4,945.75	4,945.75
EV	13,114.23	12,189.81	11,059.42	10,140.77	10,107.89	9,568.16
Weight of Equity	60.33%	57.49%	52.53%	50.31%	51.07%	48.31%
Weight of Debt	39.67%	42.51%	47.47%	49.69%	48.93%	51.69%
WACC	**6.71%**	**6.63%**	**6.48%**	**6.42%**	**6.44%**	**7.00%**

Appendix 17: Free Cash Flow to Firm

FREE CASH FLOW ($m)	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F	Terminal
		31-Dec-2016	31-Dec-2017	31-Dec-2018	31-Dec-2019	31-Dec-2020	31-Dec-2021	31-Dec-2022	31-Dec-2023	
EBIT*(1-t)	814.00	1,656.00	700.00	1,029.00	442.79	464.21	566.40	689.12	707.93	574.09
D&A	698.00	727.00	781.00	778.00	710.04	715.72	725.43	736.28	751.74	751.74
ΔNWC	69.00	84.00	180.00	318.00	161.36	159.90	23.02	126.11	5.63	0.00
Investment Activities	983.00	996.00	881.00	811.00	800.00	871.55	883.35	895.53	914.31	751.74
FCFF	**598.00**	**1,303.00**	**420.00**	**678.00**	**191.47**	**468.28**	**385.46**	**655.98**	**539.73**	**574.09**
PV(FCFF) by WACC					***191.47***	***439.17***	***339.49***	***542.95***	***419.70***	***7,442.90***

Appendix 18: Adjusted Present Value

FREE CASH FLOW ($m)	2019F	2020F	2021F	2022F	2023F	Terminal
	31-Dec-2019	31-Dec-2020	31-Dec-2021	31-Dec-2022	31-Dec-2023	
EBIT*(1-t)	*442.79*	*464.21*	*566.40*	*689.12*	*707.93*	*574.09*
D&A	710.04	715.72	725.43	736.28	751.74	751.74
ΔNWC	161.36	159.90	23.02	126.11	5.63	0.00
Investment Activities	800.00	871.55	883.35	895.53	914.31	751.74
FCFF	**191.47**	**468.28**	**385.46**	**655.98**	**539.73**	**574.09**
Unlevered Cost of Capital		7.89%	7.53%	7.48%	7.46%	8.26%
PV(FCFF)	***191.47***	***434.03***	***332.27***	***526.09***	***402.79***	***5897.61***

Unleverd Enterprise Value	7,784.26

VALUE OF DEBT FINANCING ($m)	2019F	2020F	2021F	2022F	2023F	Terminal
Interest Paid	405.30	426.40	426.40	426.40	426.40	
Corporate Tax	30.00%	30.00%	30.00%	30.00%	30.00%	
ITS	121.59	127.92	127.92	127.92	127.92	1565.18
Cost of Debt	7.03%	7.03%	7.03%	7.03%	7.03%	8.17%
PV(ITS)	**121.59**	**119.51**	**111.66**	**104.32**	**97.47**	**1180.04**

APV Output	
Enterprise Value ($m)	9,518.83
Net Debt ($m)	5,202.72
Minority Shareholders' Interests ($m)	208.66
Equity Value ($m)	4,107.45
Number of Shares (million)	232.00
Price Target at 2019YE ($)	**17.70**
Price at 11th September 2019 ($)	**13.96**
Downside/Upside	26.82%

Appendix 19: Free Cash Flow to Equity

FREE CASH FLOW TO EQUITY ($m)	2019F	2020F	2021F	2022F	2023F	Terminal
	31-Dec-2019	31-Dec-2020	31-Dec-2021	31-Dec-2022	31-Dec-2023	
Net Income	*156.43*	*162.96*	*263.44*	*384.12*	*402.61*	*303.28*
D&A	710.04	715.72	725.43	736.28	751.74	751.74
ΔNWC	161.36	159.90	23.02	126.11	5.63	0.00
CapEx	800.00	871.55	883.35	895.53	914.31	751.74
Net Borrowing	300.00	0.00	0.00	0.00	0.00	0.00
FCFE	**205.10**	**167.03**	**82.51**	**350.98**	**234.41**	**303.28**
PV(FCFE)	***205.10***	***154.82***	***70.88***	***279.48***	***173.00***	***3,040.08***

Cost of Equity	2019F	2020F	2021F	2022F	2023F	Terminal
Cost of Equity						
Risk-free rate	1.65%	1.65%	1.65%	1.65%	1.65%	2.12%
Beta Levered	0.85	0.85	0.85	0.85	0.85	0.85
Market Risk Premium	6.19%	6.19%	6.19%	6.19%	6.19%	6.19%
Country Risk Premium	0.97%	0.97%	0.97%	0.97%	0.97%	0.97%
Cost of Equity (rE)	**7.89%**	**7.89%**	**7.89%**	**7.89%**	**7.89%**	**8.36%**

FCFE Output	
Equity Value ($m)	3,923.36
Number of Shares (million)	232.00
Price Target at 2019YE ($)	**16.91**
Price at 11th September 2019 ($)	**13.96**
Downside/Upside	21.14%

Appendix 20: Peers Overview

Sumitomo Rubber Industries, Ltd. is a Japan-based tire manufacturer. The Company operates in three business segments. The Tire segment manufactures and sells tires and tubes for automobiles, construction vehicles, industrial vehicles, race rallies and motorcycles. The Sports segment is engaged in the manufacture and sale of sports items, including golf clubs, golf balls and other golf-related supplies, and tennis-related supplies, as well as the operation of golf tournaments, golf and tennis schools and fitness center. The Industrial Products and Others segment offers vibration suppression dampers, printing blankets, medical precision rubber, slope for wheelchair, and fenders, among others.

The Yokohama Rubber Company, Limited operates tire, MB and ATG businesses. The Company operates through three business segments. The Tire segment is mainly engaged in the manufacture and sale of tire tubes, aluminum wheels and automobile products for cars, trucks, buses, construction vehicles and industrial vehicles. The MB segment is engaged in the manufacture and sale of conveyor belts, rubber plates, hoses, fenders, oil spill booms, marine hoses, moldings, air springs, highway joints, bridge rubber bearings, building seismic isolation laminated rubber, waterproof materials, water stop materials, insulation and vibration control products, adhesives, sealing materials and aerospace parts, among others. The ATG segment provides tires for agriculture, industrial vehicles, construction vehicles and forestry machineries. The Company is also engaged in the manufacture and sale of sports goods, the provision of information processing services, as well as real estate leasing business.

Pirelli & C SpA is an Italy-based company. It is a tire player. The Company is the global player focused on the consumer tire market, which includes tiers for cars, motorcycles and bicycles. The tire activity consists of two main segments: the Consumer segment focuses on tires for consumer cars, motor vehicles, sports utility vehicles (SUVs), light commercial vehicles and motorcycles; and the Industrial segment, manufacturing tires for buses, heavy trucks and agricultural machinery. Its products are used by car maker partners such as Bentley, Aston Martin and Porsche, among others. Through its subsidiaries Pirelli & C. Eco Technology SpA, Pirelli & C. Ambiente SpA and PZero Srl, it is active in emissions control technologies, renewable energy sources and fashion. In addition, Pirelli & C SpA focuses on the partnerships with car and motorcycle manufacturers, technological innovation and wide portfolio of performance and customized products.

Nokian Tyres plc is a Finland-based company active in the tire manufacturing industry. The Company diversifies its activities into three main business segments: Passenger Car Tires, Heavy Tires and Vianor. The Passenger Car Tires business segment comprises the development and production of summer and winter tires for cars and vans. The Heavy Tires business segment comprises tires for forestry machinery, special tires and agricultural machinery, tractors and industrial machinery. The Vianor business segment is specialized in car maintenance and tyre services. The tyre products cover all sorts of tyres for passenger cars, vans and trucks, as well as heavy specialist machinery. In addition to Nokian Tyres' products, Vianor also represents and sells other tyre brands. The Company diversifies its activities into six geographical segments: Finland, Sweden, Norway, Russia and the CIS (Commonwealth of Independent States), Other Europe and North America.

Appendix 21: Multiples Valuation

Company Name	EV/EBITDA	P/BV	P/Sales	P/E
Sumitomo Rubber Industries Ltd	5.00	0.69	0.60	9.51
Yokohama Rubber Co Ltd	5.78	0.84	0.88	8.07
Pirelli & C SpA	7.38	1.13	1.87	9.66
Nokian Tyres plc	7.96	2.08	2.25	11.12
Maximum	7.96	2.08	2.25	11.12
Minimum	5.00	0.69	0.60	8.07
Average	6.53	1.18	1.40	9.59
Median	**6.58**	**0.98**	**1.38**	**9.58**

Company Name	Market Capitalization	Total Assets	Beta
Goodyear Tire & Rubber Co	3,238.72	16,872.00	0.85
Sumitomo Rubber Industries Ltd	3,093.33	9,031.29	1.06
Yokohama Rubber Co Ltd	3,374.22	7,747.01	1.38
Pirelli & C SpA	5,971.44	14,724.58	1.04
Nokian Tyres plc	3,923.77	2,388.42	1.18

EV/EBITDA	
EBITDA 2019YE (in $m)	1342.60
Multiples	6.58
EV ($m)	8834.88
Net Debt ($m)	5202.72
Minority Shareholders Interest ($m)	208.66
Equity ($m)	3423.50
# shares (millions)	232.00
Price per share ($)	**14.76**
Price at 11th September 2019 ($)	13.96
Downside/Upside	5.71%

P/BV	
Equity BV 2019YE	5080.60
Multiples	0.98
Equity MV	5000.27
# shares	232.00
Price per share ($)	**21.55**
Price at 11th September 2019 ($)	13.96
Downside/Upside	54.39%

P/Sales	
Revenues 2019YE	15313.49
Multiples	1.38
EV	21076.72
Net Debt	5202.72
Minority Shareholders Interest	208.66
Equity	15665.34
# shares	232.00
Price per share ($)	**67.52**
Price at 11th September 2019 ($)	13.96
Downside/Upside	383.69%

P/E	
Net Income 2019YE	156.43
# shares	232.00
EPS	0.67
Multiple	9.58
Price per share ($)	**6.46**
Price at 11th September 2019 ($)	13.96
Downside/Upside	-53.72%

Multiples Approach Output	
Average Share Price ($)	**18.15**
Price at 11th September 2019 ($)	**13.96**
Downside/Upside	30.05%

Appendix 22: Dividend Discount Model

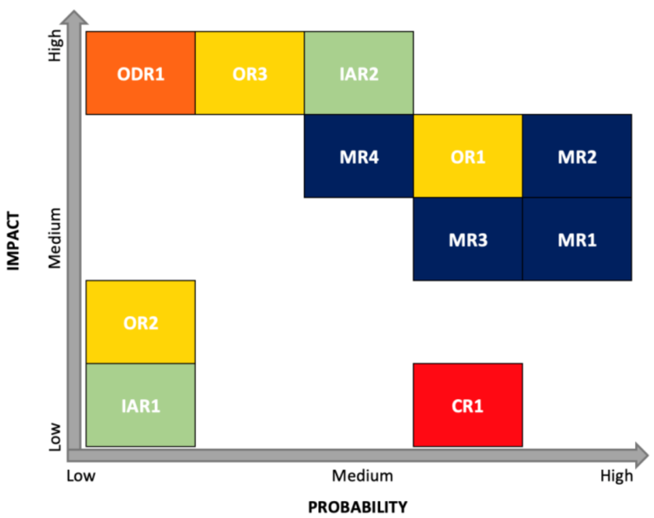
In order to have a broader set of valuation methods, the Dividend Discount Model, through the Gordon Growth Model and through the Multi-Stage Growth Model, was computed. The Gordon Growth Model yields a price target for GT of $9.38/sh, whereas the Multi-Stage Model prices the company at $9.24/sh. Therefore, the methods present a downside risk that would lead to a sell recommendation. Nevertheless, there is a certain degree of subjectivity in the dividends forecast, since it is based on Management Previsions. Accordingly, if along the forecasted period, the management decides to increase the dividend per share, it would positively influence the share price of the company. For this reason, it does not seem suitable to base any investing recommendation on these models.

Gordon Growth Model Output	Value
Dividend	0.65
Rate of Return	7.89%
Growth Rate	1.00%
Price Target at 2019YE	**9.38**
Price at 11th September 2019	**13.96**
Downside/Upside	-32.79%

Multi-Stage Model	2019	2020	2021	2022	2023	Terminal
Dividends	0.64	0.64	0.67	0.63	0.64	8.75
PV(Dividends)	0.64	0.59	0.58	0.50	0.47	6.46

Multi-Stage Model Output	Value
Price Target at 2019YE	**9.24**
Price at 11th September 2019	**13.96**
Downside/Upside	-33.82%

Appendix 23: Risk Matrix



Operational Disruptions Risk I Natural disasters, wars, terrorist actions, civil strife, and social and political unrest (ODR1)

Globally dispersed operations expose the company to a broad range of natural and man-made risks that could constitute force majeure, including natural disasters such as earthquakes and floods, wars, terrorist actions, civil strife, boycotts, epidemics, energy supply problems, and general social or political unrest. Such events have the potential to adversely affect the operating results and financial position of the company.

The risk of earthquakes is particularly high in the Asia Pacific region, where the company has key facilities. Such a serious risk could disrupt or reduce the scale of operations or cause damage to facilities, leading to expensive repairs or restoration work. The costs involved could adversely affect the company operating results and financial position.

Industrial Action Risks I Strikes (IAR1)

Prolonged strikes or other industrial action could cause operational disruptions and thereby adversely affect the operating results and financial position of the company. Management strives to minimize the risk of labor unrest by fostering good labor management relations throughout global operations.

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Abbreviations

APV	Adjusted Present Value
BN	Billion
CAGR	Compound Annual Growth Rate
CAPEX	Capital Expenditure
CFA	Chartered Financial Analyst
COGS	Cost of Goods Sold
DCF	Discounted Cash Flow
EBITDA	Earnings before Interests Depreciations and Amortizations
EMEA	Europe Middle East and Asia
ESG	Environment Social and Governance
EV	Enterprise Value
EU	European Union
FCFE	Free Cash Flow to Equity
FCFF	Free Cash Flow to the Firm
GDP	Gross Domestic Product
GT	Goodyear Tire & Rubber Co
IMF	International Monetary Fund
Kg	Kilogram
R&D	Research and development
Rf	Risk-free rate
RT	Replacement Tire
MN	Million
OE	Original Equipment Tire
OPEC	Organization of the Petroleum Exporter Countries
US	United States of America
WACC	Weighted Average Cost of Capital
YE	Year End
YoY	Year on Year
$	US Dollar