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Valuation of the Four Largest Pure Play Manufacturers in the Tire Industry

Bridgestone, Goodyear, Michelin, and Pirelli

Master's Thesis

Cand.merc. Finansiering og Regnskab

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Executive Summary

The purpose of this Master's thesis is to determine the equity value of the world's four largest tire manufacturers, Bridgestone, Michelin, Goodyear, and Pirelli as of 1st January 2014 and establish which of stocks look most attractive from an investment perspective. This thesis aims at benefitting from the increased level of knowledge about peers that arise when multiple companies are analyzed, resulting in more accurate valuations for all companies.

The thesis begins by introducing the industry and the main players in it. It then moves on to a strategic analysis of the tire industry using a top-down approach. PEST, 5 forces and internal analyses are applied to the industry and on firm level to reveal characteristics about the industry as a whole and how the four companies are positioned.

Following the strategic analysis, a financial analysis dives into determining how profitable each company has been historically and how value has been created. For these findings to be comparable, a thorough reclassification of the companies' financial statements is made to assure equivalent accounting standards. The combination of the strategic and financial analysis leads to a SWOT assessment of each company.

The thesis moves on to forecasting future performance of the four companies and determine each company's weighted average cost of capital based on the information obtained in the first parts of the thesis. Regression models are applied to forecast future sales, as the relationship between tire sales and macroeconomic growth proves to be strong. This is done on a regional basis for each company. Finally, the equity values of the companies are determined via the discounted cash flow approach and this is supplemented by multiple and sensitivity analysis. This leads to identifying the best investment opportunity.

The findings reveal that Michelin is the most attractive stock, as it is estimated to have an upside of 23.5% compared to the level it traded at on 1st January 2014. Goodyear comes in 2nd with an estimated 9.6% upside but it is noted that Goodyear's value is very sensitive to unfavorable changes in the underlying assumptions. Bridgestone and especially Pirelli are valued very close to their prevailing share prices at the time.

It is concluded that it is advantageous that the thesis seeks to value multiple competing companies, as this has allowed for insightful comparisons of both historical and future performance. It has especially been beneficial when determining the financial drivers used in the forecasting. This is obviously desirable as it should enhance the accuracy of values determined.

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1.0 Introduction

1.1 Problem Statement

The purpose of this thesis is to do a detailed and well-informed valuation of the major players within an industry. In a traditional valuation paper it is typically only one company that is being valued and this makes it difficult to do an accurate comparison with its competitors. This is partially due to the lack of detailed knowledge of the competitors as well as a poor foundation for comparison, as differences from different accounting standards arise, providing noise in ratio comparisons. In this thesis, we wish to address these problems by valuing all major companies within an industry. To do this, we have chosen to analyse the global tire industry, as four almost completely specialised international companies make up a large part of this industry. The four companies we will value are Bridgestone Corporation., Compagnie Générale des Établissements Michelin, The Goodyear Tire and Rubber Company, and Pirelli & C. SpA. With these four company valuations we wish to answer the following research question:

What is the estimated equity value of Bridgestone, Goodyear, Michelin, and Pirelli as of January 1st 2014 and which of these companies looks most attractive from an investing perspective?

Based on the problem statement above, it is our goal to assess the equity value of the four companies as accurately as possible as of January 1st. We will do this through an in-depth analysis of the companies and their surroundings. Based on publicly available information such as annual reports, news articles, industry reports etc. we will first perform a strategic analysis and a financial statement analysis. These will provide the foundation for our forecasting and finally lead to our four valuations. By valuing the four competitors we are able to do a thorough comparison of the companies, aiding in clarifying their relative strengths and weaknesses and allowing for a more informed and accurate valuation of each of the companies. The full analysis will conclusively enable us to rank the four stocks from an investment point of view, by determining in which stocks we see most potential investment upside.

It should be noted that in this thesis we have decided to exclude the 4th largest global tire producer Continental AG and instead include the 5th largest, Pirelli. The reason for doing this is that we wish to analyse companies that are as comparable as possible and where Bridgestone, Michelin, Goodyear and Pirelli all have more than 84.5%

of their revenue streams coming from tire sales, this is only 28% for Continental.[1] By choosing four companies that focus almost solely on their tire business, we ensure that they are financially comparable. Had we on the other hand chosen to include Continental, it would mean that for every time we do a peer analysis, we would need to address the fact that continental is involved in other areas as well.

1.2 Methodology

In the following section, we will introduce the different methods we intent to use in our analysis of the companies. As already mentioned, the structure of this assignment is that we start out by doing a strategic analysis of the tire industry and hereafter of each individual company. Following this, we will do a detailed financial statement analysis of the companies' historical performance. These two parts will thereafter enable us to forecast the companies' future developments which will enable us to complete our budgeting. With the budgeting complete, we will be able to value the four companies and determine a share price for each stock. By comparing the actual share prices at January 1st 2014 to our forecasted share prices, we will finally be able to rank each share in terms of which has most potential upside.

This thesis will be based on publicly available information. The main data sources will be the four companies' financial statements as well as market reports, the companies' websites and various articles etc. In order to ensure that our data and forecasted outlooks will not be biased, we will to the extent possible verify all information with secondary sources. This approach will help us minimise potential bias in the data.

1.2.1 Strategic Analysis

In order to do a thorough analysis of the four companies and the tire industry, we intend to make use of a set of frameworks in our strategic analysis, which will enable us to analyse the companies on both macro- and micro levels. This top-down approach will aid us in our analysis of future growth potential for both the industry and each individual company.[2]

In order to do an analysis of the macro-environmental factors, we will do a PEST analysis. By analysing the Political, Economic, Social, and Technological aspects of the industry, we will be able to determine important macro factors influencing the four companies depending on their geographical presence and their legislative obligations etc. Furthermore, we want to analyse the tire industry itself. In order to do this, we apply Porter's five forces. This will enable us to determine the competitive intensity of the industry and establish the competitive landscape in which the companies operate. Finally, we will analyse the four companies individually

[1] Continental Annual Report 2013, page 90
[2] Petersen & Plenborg, Financial Statement Analysis, page 187

to understand how they position themselves relatively to their competitors and how they perform. The company level analysis is further complimented by an internal analysis of their value chains as well as benchmarking and resource endowments. By applying these frameworks, we will ensure that we cover all important aspects of our strategic analysis and establish the information necessary to provide input for our forecasting of the companies' future performance.

1.2.2 Financial Statement Analysis

Our financial statement analysis will be based on the financial statements of the four companies' from 2009 to 2013. We will start out by reclassifying and adjusting the financial statements to make them comparable and determine key financial ratios, multiples and metrics like invested capital and net interest bearing debt. This will enable us to determine the companies' historical return on invested capital. We will further decompose these figures into profit margins and turnover rates of invested capital in order to understand the drivers behind the developments within the ratios. This will be done for each company by undertaking a trend analysis of both the income statement and balance sheet to more accurately explain the changes in the return on invested capital we see throughout the period. All this will assist us in assessing the companies' historical relative performance and their abilities to create value for their shareholders. This concludes our financial analysis and by combining this with our strategic analysis, we obtain the information necessary to forecast the four companies' future performance. To summarise our findings from both the strategic and financial analysis, we will apply the SWOT analysis on firm level and outline each company's strengths, weaknesses, opportunities and threats.

When doing a valuation it is of utmost importance to find a good balance between strategic analysis and financial statement analysis, as both are important to accurately forecast future performance of a company. It varies from company to company whether the strategic analysis or the financial statement analysis needs to be emphasised more. When forecasting future performance of a steady production company, historical data and financial statement analysis will give good insights into future performance, [3] however, for a growth company on the other hand, historical figures will often not provide much useful information about the future, and the strategic analysis is therefore of higher importance. Our focus is on the prior mentioned manufacturing companies; nevertheless their global presence and complex industry means that a sole focus on the financial statements might not be sufficient. Therefore both the strategic analysis and financial statement analysis will be included with equal balance.

[3] Petersen & Plenborg, Financial Statement Analysis, page 187

1.2.3 Forecasting

As mentioned, the strategic analysis and financial statement analysis will provide a foundation for our forecasting of the companies' future performance. We will use this to forecast future earnings and expenses leading us to forecast future income statements, balance sheets and cash flow statements. This will provide the foundation for doing a valuation of each of the four companies. Following our budgeting, we will determine the companies' cost of capital necessary for our valuation.

1.2.4 Valuation and Sensitivity Analysis

We will make use of the present value approach when valuing the companies and use two different present value models to ensure there are not technical errors in our models. The models we intent to use are the discounted cash flow model (DCF) and economic value added model (EVA). The discounted cash flow model works by determining the companies' future free cash flows and discounting these back to present value using the companies' weighted average cost of capital (WACC). The sum of the future cash flows gives us each company's enterprise value, which after subtracting net interest bearing debt, returns the value of equity. By dividing this with the outstanding number of shares we will be able to determine the company's share price. When using the economic value added model, we forecast invested capital and net operating profit after tax (NOPAT) for our budget years to determine economic value added for each year. We find the sum of the present values of EVA for each budget year and add the most recent years' invest capital to this. This again returns the company's enterprise value, like in the DCF model. Our reason for choosing the present value approach to determining the companies' values is that this is the most commonly used method by practitioners.[4] However, the method presents some challenges. One of the challenges of using this approach is that we need to forecast the future performance of the companies. In doing so, we assume rather steady developments and need to take a lot of different factors into account. Furthermore, the nature of the present value approaches makes the terminal period represent the majority of the total company value in the valuations. It is therefore of utmost importance that we develop our estimates of the terminal period on reliable sources and an in-depth analysis. As already mentioned, we intend to achieve this by doing both detailed strategic and financial analyses. If this is not done, we may not identify the correct value drivers and potentially bias the estimates we calculate.

After arriving at share prices for the companies we also want to analyse them from a multiples perspective. The advantages of using multiples are among others that we will be able to identify how cheap or expensive the companies currently look relative to each other. To further analyse the effect of changes in key drivers for future

[4] Petersen & Plenborg, Financial Statement Analysis, page 211

estimates, we intent to do a sensitivity analysis of each share price against a number of factors. This will reveal how sensitive the found share prices are to movements in key inputs.

1.3 Delimitations

As it is not possible to cover all aspects that influence the valuations of the companies, it is necessary for us to limit the scope of this assignment. We have decided on the following limitations:

- We will determine WACC for each company and assume that this will remain constant throughout the budgeting period, which means we assume a flat term structure. We do this as a result of much insecurity in determining future WACCs and that an attempt to forecast future WACCs will arguably only leave us with marginally better results.
- All four companies are not 100% pure play on manufacturing tires as two are involved in other activities somewhat related to tire production. When we do our budgeting we will, however, only focus on their tire business. This accounts for minimum 84.5% of sales for all companies.
- We will not take into account information from after June 1st 2014, as this is our cutoff date.
- The four companies are from different parts of the world and hence they use different accounting standards (IFRS, U.S. GAAP and Japanese GAAP). We will where possible make corrections for greater comparability. It will, however, not be possible for us to correct all differences. Furthermore, we are aware that even as accounting standards are similar, major differences can occur as a result of management needs to make estimates, judgments and predictions.[5]
- The lack of detail in the companies' financial reports does not allow us to perform a comprehensive analysis of the companies' product segments. Instead, all four companies segment according to geography and this will therefore serve as point of departure in our analysis.

2.0 Presentation of the Four Companies

The following section will start out with a brief introduction of the four tire producers and thereafter walk through the characteristics of the tire industry. Throughout this thesis we will analyze the companies in the following order: Michelin, Pirelli, Goodyear and Bridgestone. We have chosen this order according to the companies' accounting standards as Michelin and Pirelli use International Financial Reporting Standards (IFRS), Goodyear uses U.S. Generally Accepted Accounting Principles (GAAP) and Bridgestone uses Japanese GAAP.

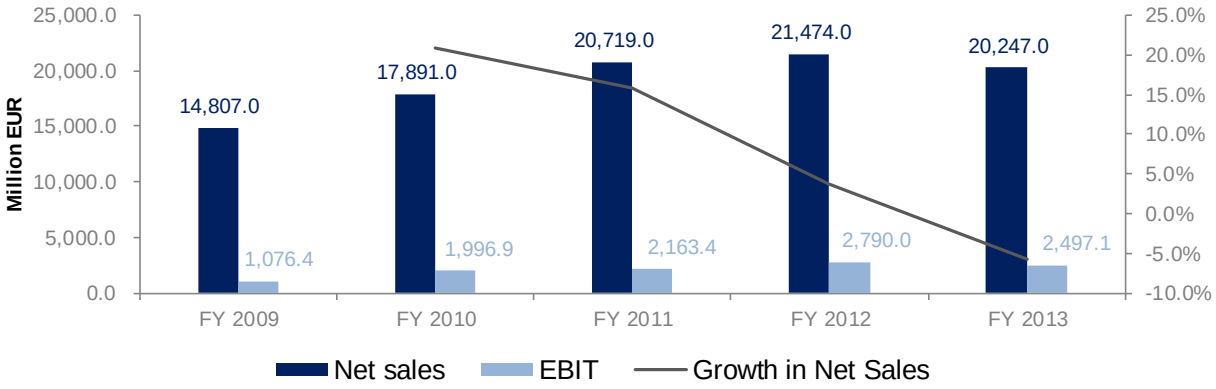
[5] Petersen & Plenborg, Financial Statement Analysis, page 376

This order provides a good structure for our financial analysis and we have subsequently chosen to apply this order throughout the thesis for a better overview.

2.1 Compagnie Générale des Établissements Michelin

Michelin is based in Clermont-Ferrand, France and is the 2nd largest tire manufacturer in the world. The company was founded in 1889 and as of December 31st 2013 the company employed 111,190.[6] Michelin captured a global market share in 2012 of 14.0% trailing behind Bridgestone but with a considerable margin to number 3, Goodyear, at 10.1%.[7] Michelin divides its business into three segments; Passenger car/Light truck and related distribution, Truck and related distribution, as well as Specialty Business. Specialty Business includes both Michelin Travel Partner and Michelin Lifestyle where Michelin Travel Partner includes Michelin maps and guides and Michelin Lifestyle includes car and bike accessories as well as sport and leisure gear.

Figure 1: Michelin, Development in Sales and EBIT, EUR



This segment accounted for 15.5% of Michelin's net sales in 2013 whereas Passenger car/Light truck accounted for 52.8% and Truck accounted for 31.7%.[8] Michelin operates worldwide and has 40% of its net sales from Europe, 35% from North America and 25% in the rest of the world. Furthermore, Michelin has broken down sales between mature and fast-growing markets, where mature markets are defined as North America, Western Europe and Japan. These markets account for 66% of total sales and 34% comes from fast-growing markets.[9] Michelin has 67 production facilities in 17 countries and marketing operations in 170 countries.[10] On January 1st 2014 the company had a market capitalization of EUR 14,349.9 million. Michelin's share price was EUR 77.25

[6] Michelin Group website, Company Overview, 2013
[7] Michelin Annual Report, Data from Tire Business, 2013, page 19
[8] Michelin Annual Report, 2013, page 27
[9] Michelin Annual Report 2013, page 67
[10] Michelin Annual Report 2013, page 6

and the historical high was in 2008 prior to the financial crisis at EUR 105.19. Appendix 1 shows the historical share price performance for all four companies. To provide an overview of the company's recent historical performance from 2009 to 2013, Figure 1 highlights Michelin's net sales, EBIT and growth in net sales.

It is evident that Michelin has managed to grow both sales and EBIT in the years 2009 to 2012, though at a declining growth rate. In 2013 the company experienced sales of EUR 20,247 million which meant a decline of approximately EUR 1,227 million from 2012 caused mainly by unfavorable exchange rates as sales volumes were flat from 2012 to 2013.[11] Furthermore, it is clear that Michelin has experienced declining growth rates in sales from 2009 to 2013 and in 2013 this was negative.

2.2 Pirelli & C. S.p.A.

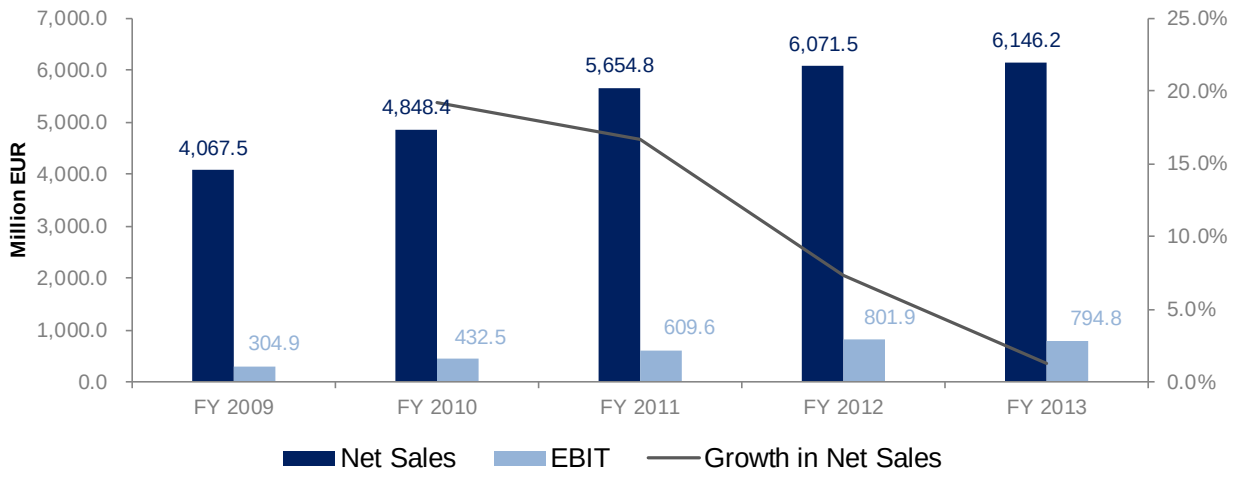
Pirelli was founded in 1872 and is based in Milan, Italy. The company is in close competition with Sumitomo Corporation to be the 5th largest tire manufacturer in the world and Pirelli had a global market share of 4.1% in 2012.[12] Pirelli focuses almost solely on tire production and 99% of sales are from tires.[13] Pirelli is slightly different from the other three companies as their main focus is on the premium and emerging markets segments. This means that their sales is divided with 34% of total sales from Europe, 34% from South America, 12% from US, Canada and Mexico, 9% from Middle East and Africa, 7% from Asia Pacific, and 4% from Russia.[14] The company has production at 21 plants in 13 different countries around the world. In terms of product segments, 67% of tire sales come from cars tires, 25% from trucks, 7% from bikes, and 1% from others. On January 1st 2014 the company had a market capitalization of EUR 5,975.3 million. The share traded at EUR 12.58 and the stocks reached its all-time highest level in 2001, where it was at EUR 41.91.

Like Michelin, the figure below illustrates the company's development in net sales, EBIT and growth in sales.

From Figure 2, it is clear that both Net Sales and EBIT have been steadily increasing the previous five years. In 2013 the company had net sales of EUR 6,146 million though with a slight decline in EBIT of EUR 7.1 million. Higher wage and depreciation expenses mainly caused this.[15] Like Michelin, growth in net sales has been flattening out throughout the period.

[11] Michelin Annual Report 2013, section 2.3 page 26-28
[12] Michelin Annual Report, Data from Tire Business, 2013, page 19
[13] Pirelli Annual Report, 2012, page 36
[14] Pirelli Annual Report, 2012, page 37
[15] Pirelli Annual Report, 2012, page 1

Figure 2: Pirelli, Development in Sales and EBIT, EUR



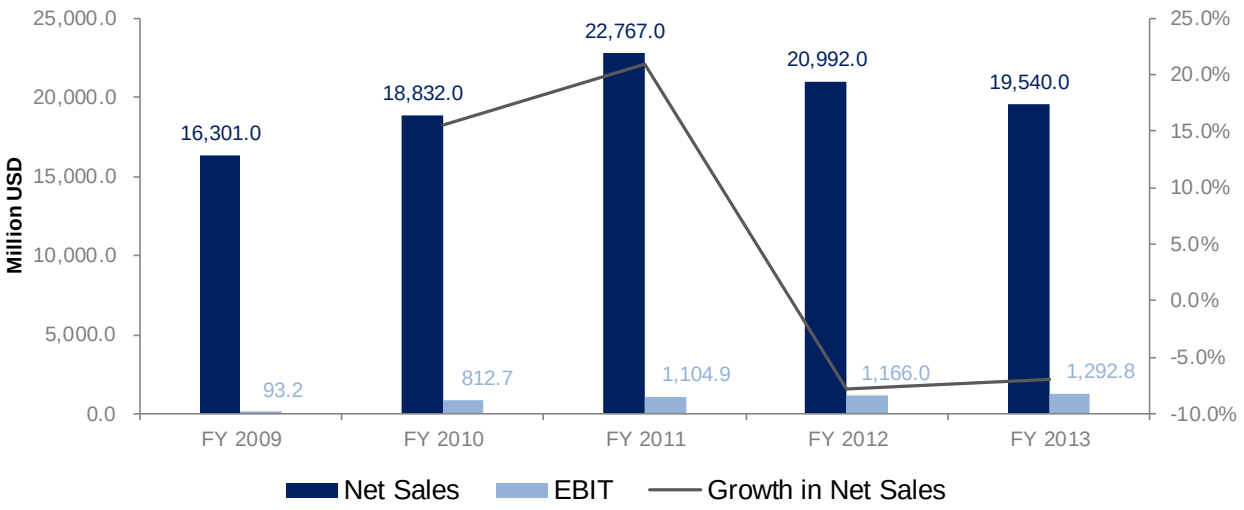
2.3 The Goodyear Tire & Rubber Company

Goodyear is the 3rd largest tire manufacturer in the world with a global market share in 2012 of 10.1%. Based in Akron, Ohio, United States the company employed 69,000 as of December 31st 2013. Goodyear was founded in 1898. Like Pirelli, the company focuses almost solely on tire production and produces a limited amount of rubber products. The company operates its business through four operating segments representing the company's regional presence. The four segments are North America; Europe, Middle East and Africa; Latin America; and Asia Pacific. In 2013 sales in North America represented 44.4% of total sales, EMEA 33.6 %, Latin America 10.6% and Asia Pacific 11.4%.[16] The company has 52 manufacturing facilities across 22 countries worldwide. On January 1st 2014 the company had a market capitalization of USD 5,914.8 million. The share price was USD 23.85 and the share peaked in the mid-1990s at USD 75.75.

From 2009 to 2011, Goodyear managed to improve their Net Sales at an impressive pace. Despite significantly declining Net Sales from 2011 to 2013 from USD 22,767 to 19,540 million, Goodyear has been successful in increasing EBIT every year from 2009 to 2013. That sales rates are volatile is evident from their growth in Net Sales as this increased substantially from 2009 to 2011 before declining with more than 5% each year in 2012 and 2013. This can be seen in Figure 3.

[16] Goodyear Annual Report, 2013, page 20

Figure 3: Goodyear, Development in Sales and EBIT, USD



2.4 Bridgestone Corporation

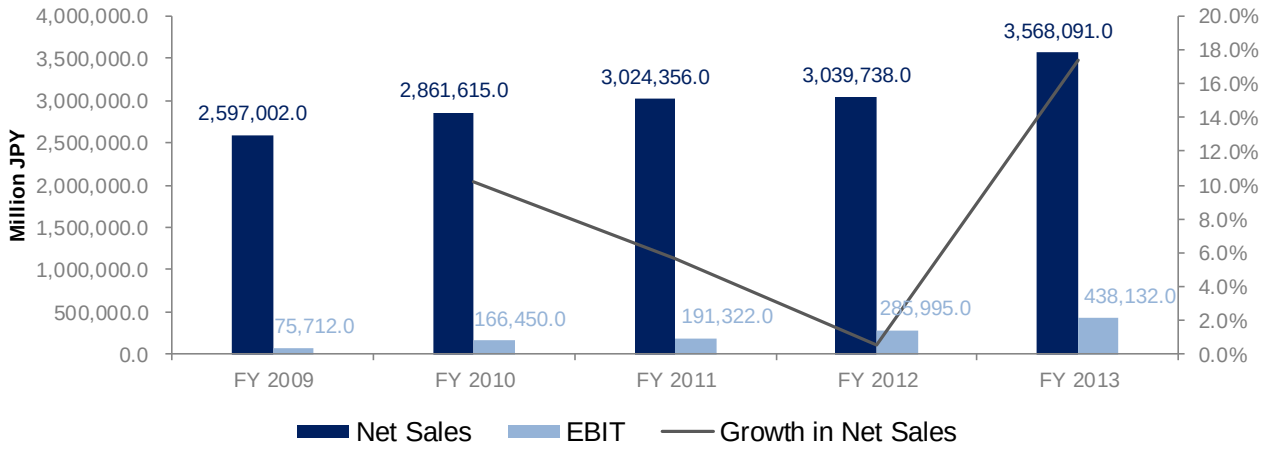
Bridgestone is the world's largest tire manufacturer based in Tokyo, Japan.[17] The company has existed since 1931 and employed 145,029 per December 31st 2013.[18] In 2012, Bridgestone accounted for 15.3% of the global tire and rubber market making it the largest tire manufacturer in the world ahead of Michelin and Goodyear.[19] Bridgestone divides its business into two parts, Tire Business and Diversified Products Business. The tire business accounts for 85% of net sales and includes tires for passenger cars, trucks, industrial and agricultural machinery etc. The diversified products business consists of various products somewhat related to tires and rubber and accounts for 15% of net sales. Products include chemicals and industrial products, Sporting goods and Bicycles and other.[20] Bridgestone has a global presence with 19% of net sales from Japan, 46% from the Americas, 12% from Europe, 23% from the rest of the world.[21] The company has more than 180 manufacturing plants and R&D facilities around the world and operations in 25 countries worldwide.[22] On January 1st 2014 the company had a market capitalization of JPY 3,116.3 billion. The share price was JPY 3,980 and the all-time high was a few days before on the 27th at JPY 3,990.

In Figure 4 we see that Bridgestone has been able to grow sales in a similar fashion as Michelin and Pirelli from 2009 to 2012 but in 2013 they managed to increase Net Sales rapidly with a 17.4% increase to 3,568 billion JPY.

[17] Bridgestone Corporation, MarketLine, 2013
[18] Bridgestone Group website, Production, 2013
[19] Michelin Annual Report, Data from Tire Business, 2013, page 19
[20] Bridgestone Annual Report 2013, Operational Report, page 2
[21] Bridgestone Annual Report 2013, Operational Report, page 3
[22] Bridgestone Group website, Locations, 2013

This rapid increase can to a large extent be explained by increased domestic demand and the devaluation of the yen throughout the year as a result of Japan's efforts to create inflation.[23] This increase in Net Sales has also caused a substantial growth in EBIT.

Figure 4, Bridgestone: Dev. in Net Sales and EBIT, JPY



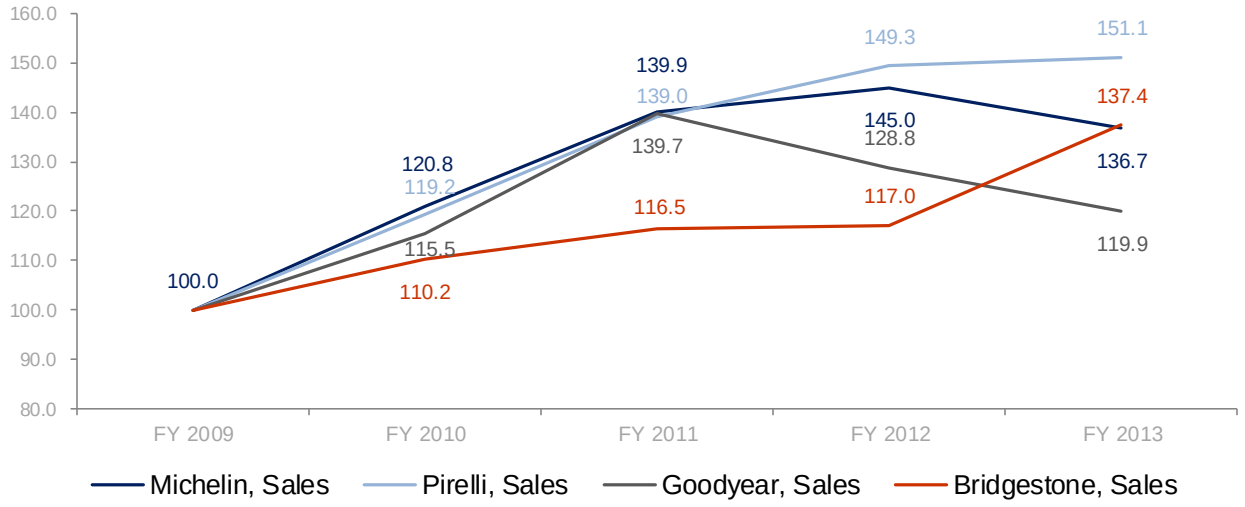
2.5 Relative Sales Growth

After this quick introduction of the companies we will now look briefly at how the companies have performed relatively to each other. To provide an overview of this we have indexed each company's net sales development for the years 2009 to 2013 with 2009 as our base year. The reason for doing this is to be able to view the trend in which each company's sales has developed without being disturbed by exchange rate differences.

From Figure 5 it is clear that all four companies have seen significant growth in net sales the past years. From 2009 to 2011 all companies experienced high growth with Bridgestone being the outlier with lower growth than the others. From 2011 to 2013 however, growth flattens out and only Pirelli and Bridgestone manages to keep increasing sales. As already mentioned, Bridgestone has a vast increase in sales in 2013 and thus stands out compared to Michelin and Goodyear that both experience declines this year. Pirelli stands out with the highest and most steady growth. However, it should be noted that Bridgestone finishes second in terms of growth, and being the largest of the four in terms of sales, this whiteness of a substantial increase in the total number of tires sold. In the financial analysis section of this thesis, we will investigate the reasons for these fluctuations in sales.

[23] Bridgestone

Figure 5: Development Net Sales, Index



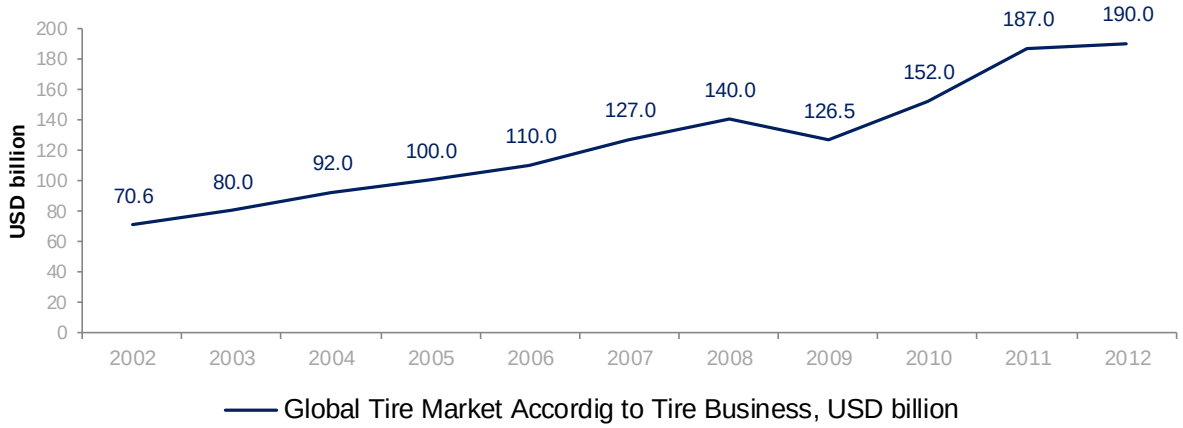
2.6 Introduction to the Tire Industry

The global tire and rubber market has been fluctuating between levels of decline and significant growth since 2008. These developments have been highly dependent on the economic development in different parts of the world with e.g. slow economic development in Europe causing regional declining demand.[24] The tire market consists of more than 75 tire manufacturers globally but a small part of these make up most of the market as the 10 largest accounts for nearly 65% of global sales.[25] Top five consisting of Bridgestone, Michelin, Goodyear, Continental, and Pirelli make up 49.1% of the market. These manufacturers are all characterized by their global presence, which explains their large market shares.

As shown in Figure 6, the tire market has been steadily growing the past 10 years and in 2012 the global tire market was valued at approximately USD 190 billion.[26] It should be noted that some market research companies choose to define the market as approximately USD 60 billion smaller because they exclude tire producers in emerging and frontier markets.[27] By these accounts, the market in 2012 would total USD 124.9 billion, and as a result the five largest tire manufacturers would all have considerably larger market shares. This would place Bridgestone at a market share of 25.6%, Michelin at 22.1%, Goodyear at 16.8%, Continental at 13.6%, and Pirelli at 6.2%. As a result hereof the five largest tire manufacturers would therefore control 84.3% of the market witnessing of their huge positions globally.

[24] Global Tires & Rubber Industry Profile, MarketLine, 2013, page 6
[25] Tire Business website, Bridgestone's No. 1 for 5th straight year, 2013
[26] Michelin Annual Report, Data from Tire Business, 2013, page 19
[27] Global Tires & Rubber Industry Profile, MarketLine, 2013, page 6

Figure 6: Market size of the Global Tire Market



Tire sales can be divided into two categories across segments, Original Equipment and Replacement tires. Original equipment is tires that are sold as a part of new vehicles whereas replacement tires are sold separately. As of 2013, three out of four tires sold were in the replacement market. Furthermore, the market can be divided into three different segments, car and light truck (light-vehicle) tires, truck tires, and specialty tires. 60% of tires sold are for light vehicles, 30% for trucks and the remaining 10% for specialty.[28] For the car and light truck market, original equipment demand increased 3% overall in 2013 from 2012 caused by sales growth of 5% in North America, South America and Asia, whereas Europe grew by 1% and Africa, India, and Middle-East contracted by 6%.[29] The replacement improved 3% as well caused by global growth between 4% and 10% except for Europe, which saw a small contraction of less than 1%. For both original equipment and replacement the second half of the year was considerably better than the first half witnessing of improving economies across the globe. The truck tire market for both original equipment and replacement demand grew in 2013 with original equipment growing 6% and replacement 5%. The growth in original equipment came mainly from emerging markets (South America and Asia) while North America and Europe were flat combined.[30] For the replacement market the development is approximately the same with North America and Europe remaining weak and growth coming from the emerging economies. The specialty market remained relatively flat in 2013. It is evident that global tire demand relies heavily on macroeconomic development. Looking at growth for 2013, it is clear that the slow recovery in Europe has meant that this is the region that has struggled most in terms of growth in the car and light truck market. On the other hand, emerging markets and the stronger economic recovery in the United

[28] Michelin Annual Report, Data from Tire Business, 2013, page 19
[29] Michelin Annual Report, Data from Tire Business, 2013, page 20
[30] Michelin Annual Report 2013, 23

States has driven global growth.[31] We will return to this in our strategic analysis, Section 3.1.2. The main cost driver for tire manufacturing is the price of rubber, which is the key component in tire manufacturing. In 2013, 58% of Michelin's use of raw materials was rubber and cost of raw materials totaled 30% of sales.[32] It is therefore evident that the rubber price is important to tire manufacturers and that fluctuating rubber prices highly influence the profitability of tire manufacturers. Two types of rubber are used for tire manufacturing, natural rubber and synthetic rubber. Natural rubber is derived from rubber trees that originate from South America. Rubber latex can be tapped from the trees when they are old enough and does not affect the health of the tree. Today, more than 90% of the world's natural rubber production is done in Southeast Asia. As rubber trees are in need of a warm climate they can only grow in the equatorial zone that stretches around the world. Rubber has been used since the 1800s and specific rubber farms have existed since the 1870s.[33] Synthetic rubber, on the other hand, is produced from petrochemical feedstock with crude oil as the main raw material. Large-scale production of synthetic rubber was initiated by the United States during World War II as the country experienced a large shortage of natural rubber. After the war was over, the government sold the production plants to the industry. Synthetic rubber is mainly produced from two oil derivatives, butadiene and styrene. Combined, styrene-butadiene rubber is one of the most versatile rubber compounds and the mix between styrene and butadiene gives the rubber different attributes. For tire manufacturing, the mix is usually three times more butadiene than styrene.[34] These two oil derivatives mixed with other chemicals create approximately 20 different types of synthetic rubber where each type has its own advantages and properties. This allows the tire manufactures to choose the rubber that most clearly matches their indented use. As a result of this, synthetic rubber often is favored over natural rubber as it can be customized specifically to the needs of the manufacturers. As mentioned, synthetic rubber is produced with crude oil as the main component. It is estimated that approximately 26 liters of crude oil is used in the production of one tire. Approximately 19 liters is used as feedstock for the tire and the remaining 7 liters supply the energy necessary for the manufacturing process. Today, 70% of all rubber used is synthetic rubber, which means that oil consumption in the tire industry is high.[35] The rubber price is therefore highly dependent on the oil price. The oil price therefor influences both the price on synthetic rubber and natural rubber as e.g. an increasing oil price will make synthetic rubber more

[31] Michelin Annual Report 2013, page 21
[32] Michelin Annual Report 2013, page 15
[33] Rubber Manufacturers Association, website, FAQ, 2014
[34] Rubber Manufacturers Association, website, FAQ, 2014
[35] Rubber Manufacturers Association, website, FAQ, 2014

expensive and therefore increase demand for natural rubber causing prices to rise.[36] We will return to this discussion in our strategic analysis.

2.6.1 Research and Development in the Industry

A tire is a relatively homogenous product. Despite variations in product design there are few changes that can be made to remain competitive. Nonetheless, tire manufacturers spend considerable amounts of money each year to develop new technologies and potentially gain competitive edges. For example has research and development prolonged the lifetime of a tire considerably in recent years. Where tires in the 1970s typically lasted 30,000 km, tires today can last more than 120,000 km.[37]

In 2013, the four companies we analyse spent between 2.0% and 3.2% of their sales on research and development.[38] Of some of the new inventions that have been made in resents years, it is worth mentioning the run-flat technology. This technology allows tires that puncture to run for approximately 300 km before they need to be changed. This is a result of a stronger tire that can hold the weight of the car even without air.[39] Besides this, tire manufacturers work on different ways of improving tires and one of the new products that has been made is Pirelli's Cyber tire. The cyber tire is a new tire with electronics inside that communicates with the car. An electronic device is mounted inside the tire and can predict tire failures and advise tire pressure etc. depending on driving style and weather conditions.[40]

These examples of different inventions showcase the innovation in the industry. However, there is a good possibility that the inventions will never be seen on ordinary cars. These innovative tires are considerably more expensive that regular tires and even run-flat tires are only currently being sold to the premium segment. The cyber tires will be ready for customers in 2015 but it is expected that they will only be sold for super cars. As a result, the research and development activities that are conducted is primarily targeted the premium segment and we are not expecting any paradigm shifts in the tire industry in the near future.

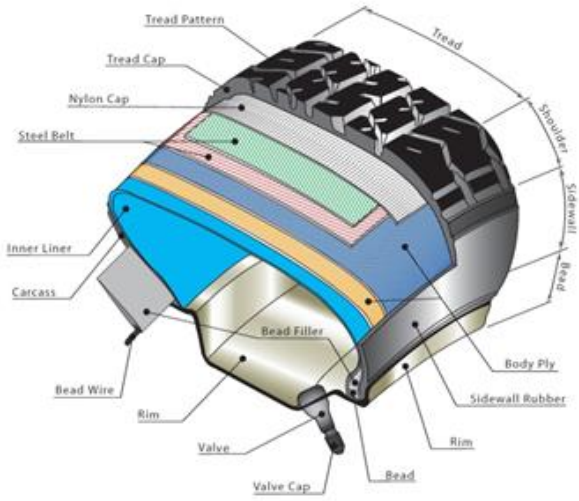
2.6.2 How a Tire is made

To understand some of the dynamics of the tire industry we will briefly account for how tires are typically produced and the different materials used. As already mentioned, the key component in tire production is rubber. Other materials are fillers, chemicals, steel cord and textiles. Figure 6 displays the typical layers in a tire.

[36] ICIS, Record natural rubber values tug at synthetic rubber prices, 2010
[37] TireRack, website, Tire Aging, 2014
[38] Annual reports of the four companies, 2013
[39] GoAuto, website, Run-flats 'not for cheap cars', 2013
[40] GoAuto, website, Pirelli's 'cyber tyre' for cars, 2013

The process of producing a tire starts out with the rubber compound mixing process. Here, the rubber compound is mixed with filler to achieve various objectives. The objectives depend on the tires' intended use. These uses can e.g. be winter tires or to maximize the tires traction in wet conditions. Typically fillers are carbon black or silica but can be made from many different materials. Once a decision is made on what to combine, the mix is made at a temperature of 160-170 degrees Celsius. As the mix is complete, the batch of rubber is made into sheets that can be formed into the shape of a tire. Because tires have to carry heavy loads, they are enforced using steel wires, nylon caps, and other materials to gain strength. To make sure the strengtheners and rubber stick together, they go through a calendaring process which presses the steel wires and other elements into the rubber. This step is critical to performance of the tire as it is necessary to make the tire strong enough to withstand the pressure form a car. After this, a thin inner liner is applied to ensure the tire holds pressure. From there, bead wires are mounted at each side of the tire to make it fit on a rim without losing air pressure (see Figure 6). Once all components have been pressured together, the tire is put into a machine to form the tread. This is done in a mold under high pressure and heat to have the rubber "melt" into the right tread pattern. Machines do this entire process and once the process is done, the tire needs to go through several inspections. This is to ensure that the tire does not have any flaws and that its weight distribution is correct etc. and concludes the production of a tire.[41]

Figure 6: Tire Structure



Source: Maxxis.com

3.0 Strategic Analysis

In this section of the thesis we intend to analyse the surroundings in which global tire manufacturers operate. Furthermore, we wish to analyse important macro factors, industry specifics and characteristics of each company. We will do this with a top-down approach and start out by analysing the macro environment by applying a PEST analysis. As we are analysing companies that all have a global presence we will not dive into a PEST analysis of each country they operate in but rather highlight important macroeconomic factors that may influence one or several companies. Furthermore, we find some parts of this PEST analysis more relevant than

[41] Mixxis, website, How a tire is made, 2014

others for e.g. our analysis of Technology, as we are analysing four companies that all reside in developed economies and have access to state of the art technology. We will discuss the relevance of the different parts as we walk through them.

3.1 PEST Analysis

3.1.1 Political Factors

As we have already mentioned, the four companies generate a great deal of their sales in developed economies. As a result of this, the companies have limited exposure to countries with high political risk. In 2013, 75% of Michelin's sales were generated in developed economies, 46% of Pirelli's sales, 78% of Goodyear's sales, and 88% of Bridgestone's sales.[42] This means that three of the four companies have generated more than 75% of their sales in developed economies, with the exception of Pirelli that is more exposed to emerging markets. As we assess political risk to be fairly low in developed economies, we will not focus on analysing these countries and instead focus on the developing economies. This is also the countries where most potential for future growth lies.[43] Nonetheless, we will start out by looking at potential challenges that the tire industry may face caused by political decisions in both developed and developing economies. As we have stated in Section 2.6 concerning how tires are manufactured, it is evident that producing tires poses some environmental and safety hazards and challenges. Tire manufactures are therefore exposed to the risk of political decisions that changes the demands of how tires perform and how they are produced. These legislative changes can be both costly to implement and potentially lower margins on products or even make them illegal.

An example of this can be seen in the European Union where new laws require all tires to have mandatory performance ratings displayed on standards labels. This was introduced in November 2012 and has been gradually imposed across Europe.[44] The system works similarly to energy labels found on kitchen appliances and gives customers a rating on how tires compare on wet grip, fuel efficiency and noise, hence informing about safety and environmental impact from the tires. Similar standards have been introduced in South Korea and more strict rules have existed in Japan since 2010. Furthermore, Michelin mentions that similar systems are under consideration in the United States, China, and Brazil.[45] The results from imposing quality standards like the ones mentioned above is that special types of tires will score better than others in tests and thus favour specific tires. For example, the new regulation in Europe favours low resistance tires, which forces manufacturers to develop tires that perform well on this account. This will mean that tires gradually will become narrower and increase

[42] Our own calculations based on the companies' financial reports
[43] MarketWatch, website, World Tires Market, 2014
[44] European Commission website, Tire Labeling Regulation, 2013
[45] Michelin Annual Report 2013, page 19

diameter over the next years to score as highly as possible in the new test.[46] New regulation can therefore be very costly to the companies who need to develop new products and potentially challenge profit margins. Moving on to developing economies, we will not be able to account for the political risks arising in all countries as different political systems pose vastly different potential political threats. As a result, we have chosen to focus on three of the most interesting emerging markets; Russia, Brazil and China. We further believe the political risks arising from these economies are representative for what political risks the tire manufacturers may encounter.

Starting out with Russia, Pirelli has considerable presence with both operations and sales. In 2014, the political tensions between Ukraine and Russia have provided a good example of the potential problems companies that operate in developing economies may face. Some of the consequences of the conflict have been asset freezes and other sanctions for some Russian companies and persons. These circumstances make it increasingly difficult to do business in Russia for European companies and as a result, political risk must be assessed as high in Russia currently.[47] In the large growth markets Brazil and China, different issues arise. In Brazil the political instability, high inflation, and protests has lessened investor confidence and poses a threat to the future growth in the country.[48] Workers and unemployed in Brazil want reforms, as Brazil's growth is having a hard time gaining momentum. However, inflation lies well above 5% and this limits political flexibility. A situation like this threatens future growth in Brazil, which is a key growth emerging market for all four tire manufactures. This again adds to the fact that emerging markets are more volatile and that higher potential growth comes with higher risk. On another note, some political initiatives have been introduced in Brazil, which the tire manufacturers can benefit from. An example of this is the FINAME initiative, where domestic companies are offered lower borrowing costs if they buy domestically produced products. With both Michelin and Pirelli having established production in Brazil they benefit from increased demand through these subsidies.[49] Moving on to China, the political situation matters a great deal as the communist government plays a considerably larger role in the country than most other governments around the world. Chinese growth has slowed the past years while the country is struggling with local government's high debt. This also translates to the banking sector, where the bank's poor performance has led to fear of deterioration in depositor confidence, which would be devastating for the banking sector.[50] Besides this, the country is facing structural problems such as the continuing rising wages while demand from especially Europe continues to be sluggish.[51] There is therefore no

[46] GoAuto.com, website, Future looks skinny for tires, 2013
[47] Reuters, website, Russia criticises EU sanctions, raps U.S. over Ukraine role, 2014
[48] Political Risk Yearbook, Brazil, 2014, page 5
[49] Michelin Annual Report 2013, page 19
[50] China Country Monitor, 2014, page
[51] Political Risk Yearbook, China, 2012, page 4

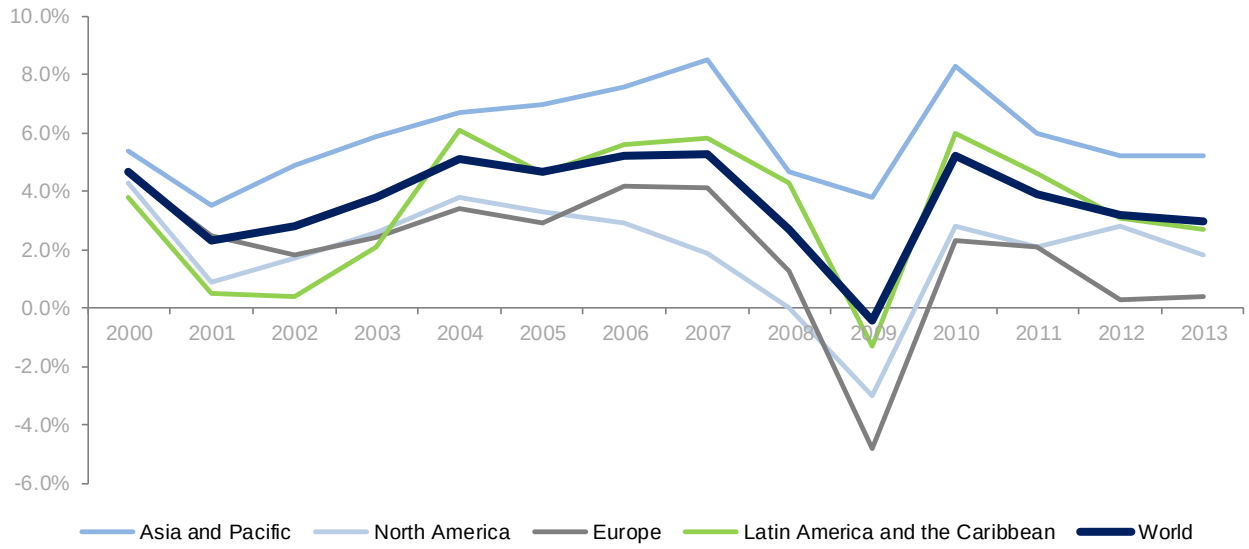
doubt that the Communist Party of China needs to address the challenges ahead to ensure a stable path to a sustainable growth level.

To conclude, it therefore poses both potential threats and opportunities to operate in emerging markets. There is little doubt that for tire manufacturers these will be the largest growth markets in the coming years and the challenges of mitigating risks while growing is essential.

3.1.2 Economic Factors

As already mentioned in Section 2.6, macroeconomic development is a key determinant for tire sales. The future performance of the tire industry is therefore highly dependent on future macroeconomic growth. Figure 8 shows economic growth from 2000 to 2013 segmented by world parts where the tire manufacturers have most of their sales:[52]

Figure 8: GDP growth in the World, Regions

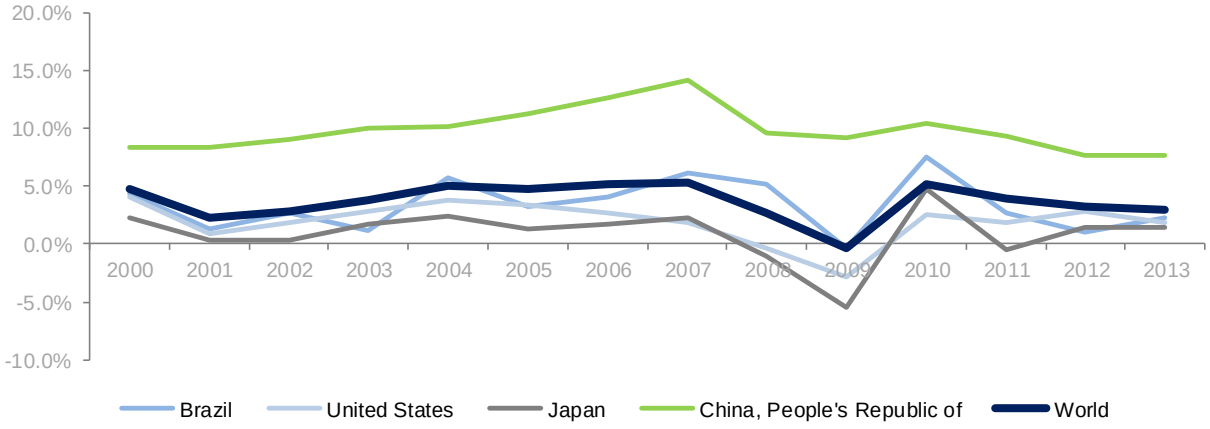


It is clear that despite different levels of growth, all world parts have to a large extent followed the same pattern from 2000 to 2013 with individual exceptions. First of all we can see the results of the dotcom bubble from 2000 to 2002 and the financial crisis that caused negative growth in 2009 and started in 2007-2008, which we are still in the aftermath of today.[53] [54] Looking at the effects of the financial crisis on global growth, it is clear that the entire world was hit hard by the downswing. Especially the European and North American economy were hit the

[52] IMF, website, Data Mapper, 2014
[53] Business Insider, website, Here's Why The Dot Com Bubble Began And Why It Popped, 2010
[54] The Guardian, website, Financial crisis: timeline, 2012

hardest with a contraction of 4.8% and 3.0%, respectively. Besides this, we see that the world economy contracted 0.4 % in 2009 and while growth definitely slowed down in Asia and Pacific, the economy still grew by 3.8 % in this region. In the period from 2010 to 2013 the world economy has struggled to regain momentum and we see declining growth rates across the board. Asia and Pacific lies considerably above the other regions, mainly driven by high growth in e.g. China. It is evident that the European economy has been struggling to return to growth. After following North America closely from 2009 to 2011, further development in Europe has more or less stopped while North America has continued to expand at around 2% per year. In Europe, the missing growth was only 0.3% in 2012 and 0.4% in 2013. The fact that the European economy has hardly expanded in recent years, made it a difficult period for the tire industry. Coming out of a recession, other effects of slow growth include high unemployment and uncertainty about the business environment. This causes many companies to hesitate making new investments, which also impacts tire sales to slow down.[55] Governments around the world have initiated different initiatives to attempt to help the economy back on track with e.g. the United States Federal Reserve doing quantitative easing and the European Central Bank keeping interest rates very low.[56] These are attempts to create growth and inflation to ensure a quicker recovery, and the first signs of Europe returning to growth are expected to be seen in 2014. Before moving on, we will take a look at some specific economies in the different geographical regions, as they are key markets to the tire manufacturers. These are Brazil, China, Japan and the United States. Their developments can be found in Figure 9.

Figure 9: GDP growth in Selected Countries



First of all, we can see that the development in the US economy is very closely linked to the development we see for North America and will therefore not look further into this. Moving on to China, we can see that the country

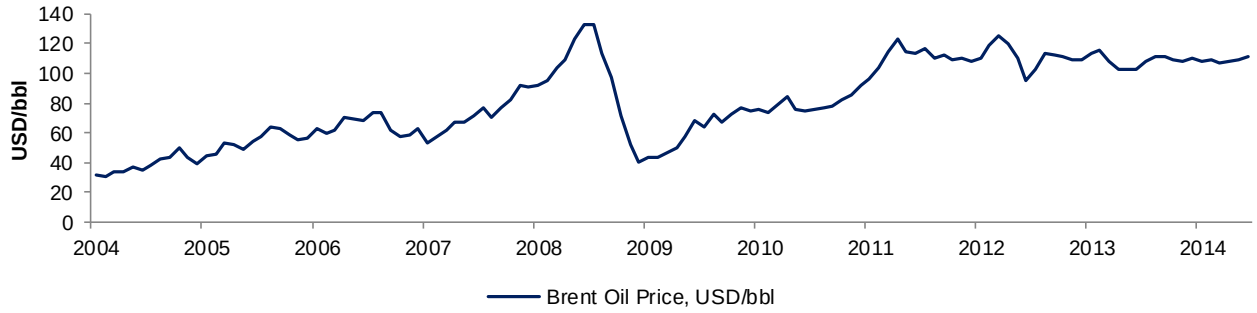
[55] The Economist, website, Six years of low interest rates in search of some growth, 2013
[56] Reuters, website, ECB cuts rates to new low, ready to do more if needed, 2013

has experienced incredible growth in the past years and despite the current slow-down, growth is still above 7% per year. Furthermore, it is clear that the Chinese growth has been much less exposed to the global dips and continued to expand at high levels. Next, it is clear that Brazil's development has been volatile but looks to be rising now with growth of 2.3 % in 2013. Brazil has been challenged by slower demand of the country's exports; however this can be expected to change when the world economy recovers. Furthermore, the country is struggling with high inflation and therefore needs to find a proper balance between supporting growth while keeping inflation down.[57] Japan, on the other hand, has been fighting with deflation for many years and it is clear that the country has not managed to grow much. This has been addressed with "Abenomics" named after the country's Prime Minister Shinzō Abe, which aims at creating growth and inflation in Japan. So far, this has caused the Japanese yen to devalue strongly, boosted exports and created modest growth.[58]

3.1.2.1 Rubber and Oil Price Analysis

Another key determinant for the profitability of tire manufacturers linked to macroeconomic development is the changes in oil prices. As described earlier, oil is the key raw material in producing synthetic rubber and the oil price influences both natural and synthetic rubber prices. The following development has been seen in oil price, natural rubber and oil derivatives relevant for tire production:

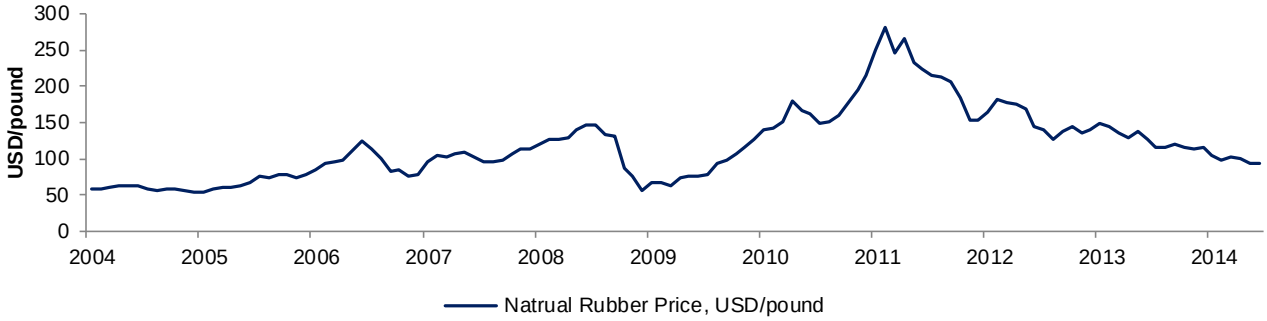
Figure 10: Brent Oil Price, USD/bbl



Source: Thomson Reuters

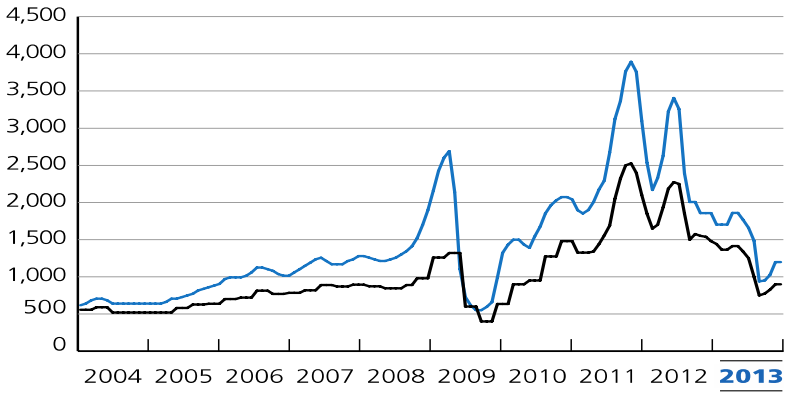
[57] BBC News, website, Brazil's economy grows at twice the rate expected, 2014
[58] Business Insider, website, THE TRUTH ABOUT ABENOMICS - The Japanese Economic Experiment That's Captivating The World, 2013

Figure 11: Natrual Rubber Price, USD/pound



Source: Indexmundi

Figure 12: Butadiene Price USD/t (top) and EUR/t (bottom)



Starting out with Brent oil, we can see that the oil price has been steadily returning to pre-crisis levels since the great drop in 2009. Since 2011 the price has been fluctuating less and currently lies just below USD 110 per barrel. In 2008 the oil price peaked at USD 140 per barrel but fell drastically as demand suddenly fell as a result of the financial crisis. Demand was reduced by 2 million barrels per day.[59] The relatively flat oil price in recent years is the result of a lack of pickup in the economy. Moving on to natural rubber, prices have been steadily declining since 2011. While we have seen a flat oil price during recent years, the natural rubber price has more than halved in price since its peak in 2010 and now lies below USD 3 per kg. This fall is a result of weak demand from rubber manufacturers. As described in Section 2.6, natural rubber comes from trees. This means that production level is relatively rigid and does not fluctuate with changes in demand. Furthermore, as it takes years to grow trees to a size where rubber can be tapped, there is a considerable time lack between planned output and demand. Since 2011, the natural rubber production has been growing at approximately 3% per year

[59] Resilience, website, Oil and the future, 2009

while demand has been falling.[60] In 2012, natural rubber production exceeded consumption by nearly 500,000 tonnes. As a result, the price of natural rubber has fallen, because production is not able to adjust to current lower demand. This development has caused tire manufacturers to increase their use of natural rubber, as this is now relatively cheap compared to synthetic rubber. For Michelin, natural rubber constituted more than 50% of rubber used in production in 2013.[61] Moving on to butadiene, this is as earlier mentioned the main component in the production of synthetic rubber constituting more than 70% of the raw materials used. Here we can see a development that to some extent follows both development in oil price and natural rubber prices. Butadiene is as stated an oil derivative and therefore naturally dependent on the oil price, which we can see in the period from 2004 to 2011. From 2011, butadiene prices have generally been falling as a result of weak demand due to the low natural rubber prices and uncertainty of the fragile world economy.[62] It is therefore evident, that the excess production of natural rubber has caused natural rubber prices to fall, which has put downward pressure on the synthetic rubber price as well. All this has been caused by sluggish economic growth. Once the world economy picks up again, this picture can be expected to change. As demand will expectedly increase in the future, the production of natural rubber will no longer be able to meet demand and it is expected that the price of both natural rubber and synthetic rubber will increase. With this, we can expect synthetic rubber to return to constituting 70% of total rubber used. As this returns to normal, we can therefore expect the oil price to once again be the main determinant of both synthetic rubber and natural rubber.[63]

3.1.2.2 Factors influencing the Oil Price

From the look at historical prices we can conclude that the oil price definitely influences the price of natural rubber and synthetic rubber, especially in growth periods. We therefore wish to interrogate what factors influence the oil price, as knowledge of where the oil price might be headed is important information for us to access the future profitability of the tire manufacturers.

The oil price is influenced by three factors; demand, supply, and market sentiment.[64] Demand can be described as driven by per capita consumption and population growth, whereas supply is driven by new oil discoveries and production capacity. Market sentiment accounts mainly for short-term movement, as this is price movement caused by new expectations about future development, causing traders and investors to buy or sell. Many factors can influence sentiment and we will start out by looking at some facts influencing oil. According to John Hess of

[60] Daily Mirror, website, Natural Rubber future appears uncertain, 2013
[61] Michelin Annual Report 2013, page 73
[62] Global Rubber Markets, website, Asia butadiene prices near bottom but may fall further on ample supply, 2013
[63] Global Rubber Markets, website, Asia butadiene prices near bottom but may fall further on ample supply, 2013
[64] Dunn Tire, website, How oil prices impact tire pricing, 2012

the multinational energy company Hess Corporation there are three current facts that are critical influencers to the future oil price.[65]

1. "85% of the world's energy comes from oil, natural gas, and coal. While renewable energy will be needed to meet future demands it is currently not near having the scale or economics needed to replace oil and natural gas. These resources will therefore be the main energy sources for several decades.
2. Once the economy recovers, there will be an expected increase in oil demand of 1 million barrels per day each year. This is mainly caused by increased consumption in emerging markets and world population growth from 6.8 billion today to 9.0 billion by 2050. Furthermore, it is expected that the total number of vehicles will increase from 1 billion to 2 billion in the next 30 years.
3. The world is not running out of oil anytime soon. 1 trillion barrels of oil has been produced and there are still 3 trillion barrels to be recovered. However, the easily accessible oil has already been recovered and it is getting more and more difficult to extract. As a result, production capacity is therefore the main bottleneck in keeping up with future demand."

Several important points are raised here. First of all, we cannot expect renewable energy to impact the oil price noticeably in the near term. Today, the 85 % of the world's energy consumption comes from 35 % oil, 30 % coal, and 20 % natural gas and this does not appear to change in the next years.[66]

Another point that it made from the above is that oil demand is expected to grow in the next years and decades. As the world population is expected to increase by more than 3 billion towards 2050 it is expected that there will be an increase in demand. Besides vast population growth, many more vehicles will populate the earth in the coming years as especially emerging markets continue to develop. This development will cause people in emerging markets to improve their living standards and buy more cars. In 2011, there were 786 cars for every 1000 people in the US. This number was 69 cars per 1000 people in China, a figure that has been growing with a CAGR of 17 % per year from 2008 to 2011.[67] This rapid growth is expected to continue in the coming years and put considerably more cars on the road globally. This high increase will undoubtedly increase oil demand even as cars become more economical. On the supply side of things, it is evident that output needs to be increased to meet future demand. Not only will demand grow by 1 million barrels per day when the economy has recovered, output is also currently decreasing at existing oil fields by 5 % per year. This can be translated to a decrease of 4 million barrels per day. As a result, output will need to grow with 5 million barrels per day each year to keep up

[65] Mining.com, website, Hess: $140 oil was not an Aberration – it was a Warning!, 2010
[66] Mining.com, website, Hess: $140 oil was not an Aberration – it was a Warning!, 2010
[67] The World Bank, website, Motor Vehicles per 1000 People, 2014

with the future growth in demand.[68] To put that into perspective, the total oil consumption in 2014 is expected to be 92.8 million barrels per day.[69] Today, most crude oil production is concentrated in a small number of countries with a limited amount of giant oil fields. Approximately 100 oil fields account for more than 50 % of global production and a single oil field, Gahwar, in Saudi Arabia accounts for 7 %.[70] Most of these giant oil fields have peaked in terms of production and levels are now declining. The discovery of new giants has also been declining since the 1960 meaning that the size of each new discovery is smaller today. Besides this, the easily accessible oil has been recovered and it is getting more difficult to extract, as mentioned by Hess. An example of this is one of the new giant oil fields called Kashagan in Kazakhstan. The oil field is, once at full capacity, expected to produce 1.6 million barrels per day but the process of constructing the plant was initiated in 2005 and it is still not properly operational today.[71]

From our analysis this far, we have been able to conclude that the demand for oil is expected to rise considerably in the next years while traditional supplies will be challenged in keeping up to speed. There are however several factors that influence demand and supply. As already mentioned in our analysis of the historical oil price, prices have remained more or less flat since 2010 until now, as a result of sluggish demand and economic recovery. These slow years has given the oil industry time to prepare for larger demand as the global economy picks up. Furthermore, it could still take some time for the economy to return to strong growth, meaning that a price hike in the short term seems fairly unlikely in the absence of shocks caused by major events. That the oil industry has had time to prepare can e.g. be seen by the current levels of spare capacity, which is the oil production capacity that is currently not being used. This currently lies at 4.65 million barrels per day, well above the consensus minimum level of 2.5 million barrels per day.[72] Besides this, the discovery and production of shale gas and shale oil can be expected to have an impact on oil prices in terms of increased supply. Shale oil has been discovered in large quantities around the world in e.g. the United States and the United Kingdom and is a fairly new oil source extracted from the ground through the process of fracking. Last year, supply of 1 million barrels per day was added from US shale, with only a fraction of the total shale supply being extracted. There are however some potential downsides to shale in terms of being a sustainable source of oil. The decline rate in terms of output is extremely high for shale with an expected decline rate of 90 % in the first 5 years of operation.[73] Constant new drillings therefore has to be made challenging the profitability of shale oil and its ability to become a reliable source of high amounts of oil. Despite the potential for falling oil prices short-term, there is a bottom level of

[68] Mining.com, website, Hess: $140 oil was not an Aberration – it was a Warning!, 2010
[69] International Energy Agency, Oil Market Report, 2014 page 1
[70] The Guardian, website, Former BP geologist: peak oil is here and it will 'break economies', 2013
[71] Quartz, website, Kazakhstan's largest oilfield will be shut down for at least two years, 2014
[72] International Energy Agency, Oil Market Report 2014, page 18
[73] The Guardian, website, Former BP geologist: peak oil is here and it will 'break economies', 2013

which the oil price is not expected to fall below, known as "the floor price". This level varies but it is set by suppliers. If the oil price falls below a certain level, the producers will no longer run profitable operations and they will shut down plants. The cost of extracting oil varies a great deal across the world and some places are therefore more exposed to falling oil prices than others. What happens when the oil price falls below a profitable level for some manufacturers is that they slow down or stop production. This eventually causes a shortage in supply and finally drives prices up above the floor. The current floor is expected to be somewhere between UDS 80-90 per barrel.[74]

The section above has described the current situation of the oil market. There are several factors that have the potential to change the fundamentals of oil pricing. First of all, new technological inventions have the potential to make oil recovery at difficult locations or poor oil quality considerably more commercially viable. Of today's remaining oil supply, 50% consists of what is known as heavy oil. Currently, a limited amount of this is processed, as it is not nearly as profitable as processing regular crude oil. Many companies research in making new ways commercialising heavy oil production and if this happens it could change the supply situation significantly and result in falling prices.[75] On a different note, other events that have the potential to impact oil prices are exogenous shocks. Such shocks can for example be natural disasters or changes in political stability in key production countries. Major events like these can pose serious threats to the continued supply of oil of a country or a part of the world. Uncertainty like this can affect oil prices a great deal and for example the current tensions between Ukraine and Russia cause fluctuations.[76] Finally, a change that may cause falling oil prices is the emergence of electrical cars. As already described, more economical petroleum driven cars will have a significant impact on oil consumption as the number of cars rise. However, oil consumption could fall if electrical cars gain a significant market share. This concludes our analysis of the drivers of oil prices. As mentioned, the future oil price is extremely important for the profitability of tire manufacturers and affects the selling price of tires. We will return to the oil price in our forecasting section where we will look at what can be expected to happen with the oil price in the coming years.

3.1.3 Social Factors

We now move on to the Social part of our PEST analysis. As we have already described in the economic section above, the tire industry is highly dependent on economic growth as population growth and prosperity is of major importance to tire sales. As the world economy picks up, tire sales are expected to rise with it. Furthermore, social factors such as the vast growth in people populating the earth will as earlier mentioned cause more cars on

[74] MarketWatch, website, Why Oil's $100 'floor' is so fragile, 2014
[75] Schlumberger, website, Heavy Oil, 2014
[76] MarketWatch, website, Oil tops $106 for highest close in almost 9 months, 2014

the road leading tire sales of both original equipment and replacement higher. However, most of both population growth and rising purchasing power is expected to come from emerging markets.[77] When putting this in relation to tire sales, it is evident that a large part of the increase in demand for tires will be for the cheap end of the scale. As we have described in our introduction to the tire industry there are different sub segments in the tire industry with e.g. premium and winter tires. It is essential for manufacturers to adapt their product lines to future development in demand. The four companies we analyse all have different strategies in terms of products offered, which we will return to when we analyse the companies on firm level. In todays' market environment there is a great focus on sustainability, and being environmentally responsible is important to any company. In the tire industry increased awareness about corporate social responsibility is causing manufacturers to focus on sustainable products and environmental footprints. Manufacturing tires is a process that involves the use of many chemicals and potential environmental hazards evolve around the production of tires. According to TireBusiness.com it is a key concern that customers take into consideration when buying tires and the four tire manufacturers we analyse all have different initiatives to increase recyclability and minimise their environmental footprints.[78] For example, both Goodyear and Michelin are experimenting with using oils from various trees etc. to replace fossil fuels in production. Furthermore, what can be recycled from old tires is recycled at a rate of 95 % for Michelin in Europe.[79] Another example is Bridgestone's "existing in harmony with nature" initiative where focus is on reducing CO_2 emission.[80] It is therefore evident that there is a social expectation of acting responsibly and the companies take this very seriously. Failing to do so can result in substantial headwinds if something goes wrong.

3.1.4 Technological Factors

As already mentioned in our description of how tires are produced, it is a fairly uniform process. Nonetheless, all companies constantly invest in research and development to discover new ways of cutting production costs and create better and safer tires.

Tire companies are reliant on good infrastructure and the continued high use of cars and trucks to sell tires. All four companies have most of their sales in developed economies and they are all based in developed economies. As a result, they all have state of the art technology available and invest to ensure their competitive position. We do therefore not see any specific technology advantages towards any of the four manufacturers we are analysing.

This concludes our PEST analysis and we can now move on to analysing the tire industry.

[77] MarketWatch, website, World Tires Market, 2014
[78] TireBusiness, website, What does sustainability mean to the tire industry?, 2013
[79] Michelin Annual Report 2013, page 54
[80] Bridgestone Operationl Report 2013, page 9

3.2 Five Forces Analysis

To get a proper overview of how this industry works we will apply Porter's five forces. We do this to determine the competitive intensity of the tire market, with the tire manufacturers as market players.

3.2.1 Threat of New Entrants

As we mentioned in our introduction to the tire industry in Section 2.6, there are more than 75 tire manufacturers globally. As a result of this, the market can be described as fairly saturated with many different options to choose from for consumers. Gaining access to suppliers and raw materials for tire manufacturing is not difficult and does therefore not present a barrier to entry.[81] However, most tires are relatively undifferentiated, which increases competition and drives down margins. This of course means that switching costs for buyers is fairly low as it is easy to change between tire brands at no cost to the buyer. More important is the fact that tires are undifferentiated, which means that tires have to be produced in large volumes for production to be profitable. These factors make it difficult for new entrants to enter the market, as the scale of the existing producers is difficult to match, without massive capital expenditures from the beginning. Furthermore, a substantial amount of research and development would have to be done to enter the tire market: Despite undifferentiated products, a lot of work has to be put into developing tire models and have these tested and approved. This point is further substantiated by what we deducted in our PEST analysis, with governments around the world having imposed strict environmental and safety regulations making it costly and difficult to get approvals etc. Furthermore, there are many strong brands in the tire industry making it a very difficult task entering with an unknown product. All these elements make entering the tire industry quite difficult. Combined with the recent years' slow economic growth, lowering the possibilities and attractiveness of entry, the threat of new entrants can be seen as relatively low.[82]

3.2.2 Threat of Substitute Products and Services

Moving on to threat of substitute products and services, it is evident that there are not really any products that can substitute tires. One potential threat is the continued emergence of fake tires with brand names on them. This is a threat to any brand and does also happen in the tire industry. However, the market share of these counterfeit tires is very small and is not expected to grow.[83]As a result, the threat of substitute tires is very low. There are, however, some factors that can cause people to use cars less and thereby decrease demand for tires. As environmental awareness continues to increase it is likely that more people will substitute their cars with

[81] Global Tires & Rubber, MarketLine industry profile, 2013 page 15
[82] Global Tires & Rubber, MarketLine industry profile, 2013 page 15
[83] Global Tires & Rubber, MarketLine industry profile, 2013 page 16

bicycles or public transportation.[84] Nevertheless, as already mentioned in the PEST analysis, the number of cars will over the next years increase at a pace so high that any decrease from people in developed countries using public transportation is likely to be quite insignificant. We can therefore conclude that the risk of substitute products is very low.

3.2.3 Bargaining Power of Customers

When looking at the bargaining power of customers there are several factors that need to be taken into account. First of all, tires are sold in a number of different ways to different customers. As mentioned earlier, some tires are sold as original equipment as a part of new vehicles. For the replacement tire market, tires are sold by independent dealers, retail stores, garages, and warehouses. As a result, the bargaining power of the different buyers differs a great deal. For special vehicle tires, a contractual agreement is often made and e.g. Goodyear supplies tires for Boeing airplanes.[85] This means that individual tire manufacturers secure large on-going orders that are of great importance to them. As a result, bargaining power of suppliers is high in such cases. For the more general tire market, the number of buyers is very high which decreases the buyers' individual bargaining power. However, for example garages are often part of chains like the Danish Super Dæk Service and European wide Euromaster.[86] These tire chains have significantly higher bargaining power as they buy in very large quantities and can put pressure on prices. Furthermore, the aforementioned relatively undifferentiated tire selection of most tire manufacturers also increases the bargaining power as buyers can easily choose other manufactures. As a result of this, it is evident that tire prices are subject to negotiation and that buyers can pressure prices lower.[87] In conclusion, we therefore see that buyers definitely have bargaining power but that this also depends highly on who the buyer is.

3.2.4 Bargaining Power of Suppliers

Moving on to bargaining power of suppliers, we have already described how the tire manufacturers make use of both synthetic and natural rubber for the production. Besides these products they also make use of different metal etc. but rubber takes up the most significant part. There are no substitutes for synthetic and natural rubber and the tire manufacturers therefore have to choose between the two. As already mentioned, the mix chosen depends on price of the two rubbers and natural rubber is relatively cheap currently. The manufacturing and processing of both types of rubber is done by a few large players, who produce great volumes around the

[84] Global Tires & Rubber, MarketLine industry profile, 2013 page 16
[85] Goodyear, website, Aviation Tires, 2014
[86] www.sds.dk and www.euromaster.dk
[87] Global Tires & Rubber, MarketLine industry profile, 2013 page 13

world.[88] This increases the bargaining power of suppliers. Furthermore, the tire manufactures are very reliant on high quality rubber, which again gives more bargaining power to suppliers. To mitigate the high supplier power, many tire manufacturers have chosen to do backward integration. Consequently, e.g. Goodyear produces some a part of the company's rubber on its own while Pirelli and Michelin owns stakes in rubber plantations, significantly lowering the bargaining power of the suppliers in these cases.[89]

3.2.5 Intensity of Competitive Rivalry

Finally, looking at the competitive rivalry, we have already accounted for the key determinants of the industry in the introduction to the tire industry, Section 2.6. There are many tire manufacturers globally but the four companies we analyse take up a significant part of the market and account for more than 50% of global sales. The number of tire manufacturers and the fact that products are fairly similar means that there is heavy competition on prices and that the top market players must compete on other parameters than price. These other parameters include product design, performance, payment and terms, reputation, customer service, and consumer convenience.[90] The heavy competition in the market puts pressure on margins, and also means that profitability is heavily dependent on input prices. In times of rising commodity prices it is therefore common to see price increases are passed on to consumers to a certain extent.[91] As we mentioned in the introduction of the four companies, both Michelin and Bridgestone have diversified their operations and sell other rubber related products with Michelin also having their travel segment. This diversification aids the companies in securing other revenue streams than solely tires. However, these other products account for less than 15% of revenue for both companies.[92]

3.3 Value Chain and Cost Structure Analysis

We will now conduct an analysis of the value chain of the industry. This we will do in order to identify the cost structure of the industry by comparing the major income statement items of the four players. For this purpose we have created Table 1. Here we see the major operational expenses and the net financial expenses expressed as a percentage of sales. All numbers are 2013 numbers. Only Michelin reports research and development expenses as a separate item in their income statement. Pirelli and Bridgestone include this expense in the SG&A expense and Goodyear incudes it in the COGS expense.[93] As a result, we have subtracted the research and development

[88] Global Tires & Rubber, MarketLine industry profile, 2013 page 14
[89] Global Tires & Rubber, MarketLine industry profile, 2013 page 14
[90] Global Tires & Rubber, MarketLine industry profile, 2013 page 17
[91] Global Tires & Rubber, MarketLine industry profile, 2013 page 17
[92] Global Tires & Rubber, MarketLine industry profile, 2013 page 17
[93] Goodyear Annual Report 2013, page 50

expense of from the SG&A expense for Pirelli and Bridgestone and from the COGS expense for Goodyear to make the figures comparable.

Table 1: Expenses as a % of Net Sales	Production (COGS)	SG&A (incl. R&D)	R&D expense	Depreciation and amortization
Michelin, 2013	63.2%	17.2%	3.2%	5.2%
Pirelli, 2013	52.1%	30.3%	3.2%	4.8%
Goodyear, 2013	73.2%	14.1%	2.0%	3.7%
Bridgestone, 2013	58.6%	21.7%	2.5%	4.9%

We will start out with looking at the production related expenses, namely the cost of goods sold (COGS). We see that this is the largest of the expenses as it spans between 52.1% and 73.2% of sales. This level is not surprising for production companies like tire manufactures. As previously mentioned, raw materials account approximately half of the total production cost per tire. Michelin has provided a further breakdown of the raw materials. Here it is shown that the raw materials are composed of natural rubber (33%), synthetic rubber (25%), fillers (17%), chemicals (12%), steel cords (8%), and textile (5%).[94] This means that the companies are exposed to a number of commodities despite oil. This is in line with the findings from our analysis of Porter's five forces concluding that the tire industry is more sensitive to change in market driven commodity prices that high supplier bargaining power. From Table 1, is it interesting to see how relatively large the differences between COGS for the companies are. Pirelli has the lowest relative COGS, which may be attributed to the fact that Pirelli is focusing on the premium segment of tires and thereby earn better margins of their products.[95] Furthermore, it can be seen as a sign that they have a more lean production as costs other than raw materials most likely also are lower. Goodyear, on the other hand, has the highest cost of sales. This may be caused by the fact that they focus on the mid- and low market segments.[96] However, in their annual report they state that they have made efforts in the past years to increase the low-cost country sourcing, indicating that they are focused on reducing this expense.[97] Lastly, it is worth noticing that cost effective tire production is a tradeoff between optimizing the use of raw materials, i.e. minimizing COGS, to price the tires competitively and not compromising tire performance.[98] When we look at selling, general, and administrative expenses, the picture is rather the opposite as Goodyear has the lowest SG&A expense. Goodyear has decreased this expense thought a cost savings program focused on

[94] Michelin Annual Report 2013, page 32
[95] Pirelli Annual Report 2013, page 103
[96] Tire Business website, Goodyear focus: 'profitable volume', 2012
[97] Goodyear Annual Report 2011, page 5
[98] Michelin Annual Report 2013, page 15

doing so.[99] Pirelli has the highest SG&A expense with 30.3% of sales spent on marketing, administration and other general expenses. This may be a result of the fact that Pirelli is focusing on the premium segment and hence spending more resources on their advertising and marketing efforts. The focus on different market segments seems like a reasonable explanation why the cost structure between Pirelli and Goodyear are so different. Michelin has the second lowest SG&A expense relative to sales. As we will see later in the financial analysis, this is partially owing to their ability to have made their marketing efforts more effective during the period from 2010 to 2013. Lastly, Bridgestone has SG&A expenses of 21.7% of sales and COGS expenses of 58.6%. By combining the two expenses, we have the total expenses that affect the EBITDA margins of the companies when excluding other operating income and expenses. Here we see that Bridgestone actually has the lowest overall cost structure, resulting in the highest EBITDA margin (excluding other items). The total cost in terms of COGS and SG&A are 80.3% of sales for Bridgestone and 80.4%, 82.4%, and 87.3% of sales for Michelin, Pirelli, and Goodyear, respectively. This data suggests that there may be some scale advantages for the tire producers which seem reasonable. Goodyear falls outside this trend, but this may also be due to their different market segment focus as described earlier. Another insight from this analysis is that the operating margins in the tire industry are fairly low. This is not surprising given that we are dealing with large scale producers of physical goods. The research and development expense is the key measure for identifying how much is invested in innovating and developing new technologies and products. We see that this expense varies from 2.0% to 3.2% of sales. This is within the range we would expect production companies to invest in these activities. Pirelli and Michelin are the companies that invest most in R&D with 3.2% of sales each. Pirelli states in their annual report that their R&D efforts have previously been focused mainly on new high-end premium products. These include Ultra High Performance tires, runflat tires, winter tires, and motorcycle tires.[100] However, these efforts are now being complimented by attention to reduce the environmental impact of the tire production through a strategy called "Green Performance".[101] Out of the total R&D costs, 82.0% were related to the premium segment which again underlines this segments strategic importance to Pirelli.[102] Lastly, Pirelli states that it will develop fourteen new product lines within the coming four years.[103] Michelin also invests heavily in R&D and due to the relative size of the company the R&D budget in absolute terms is more than three times that of Pirelli. Michelin states that it plans to invest around EUR 270 million in a modernization program for their global research and development center in France which is the largest R&D center in the tire industry.[104]

[99] Goodyear Annual Report 2011, page 5
[100] Pirelli Annual Report 2013, page 55
[101] Pirelli Annual Report 2013, page 55
[102] Pirelli Annual Report 2013, page 55
[103] Pirelli Annual Report 2013, page 55
[104] Michelin Annual Report 2013, page 55

[105] Bridgestone spends 2.5% of their sales on R&D. In their annual report, they highlight how they invest in R&D activities related to both vertical (inputs like raw materials) and horizontal (production and sales) areas of the business.[106] Furthermore, like Pirelli, they stress the fact that they strive to be as environmentally friendly as possible with a 2050 plan to source only sustainable materials.[107] In addition, they have engaged in for example collaboration with BMW to deliver tires for the BMW i3 series of electric cars. The last company, Goodyear, provides less detailed information about their R&D activities and it is the company with the smallest R&D budget relative to sales (2.0%). Nevertheless, Goodyear has historically been innovative in the tire industry as they were the first to develop the first tubeless tire, the first runflat tire, and more.[108]

The last operational expense we have included in Table 1 is depreciation and amortization. This expense spans from 3.7% to 5.2% of sales. We do not have the necessary information to correct for any possible difference related to how assets are depreciated but we have examined the depreciation schedules of the four companies and recognized that they depreciate their assets over rather similar timelines. Goodyear has the lowest expense of the four companies. As we will see in Section 4.2.5, this is owing to the fact that Goodyear manages their property, plant and equipment more efficiently than their competitors. Michelin has the highest depreciation and amortization ratio of 5.2% but it is fairly close to that of Pirelli and Bridgestone.

Concluding on the value chain and cost structure analysis, we have seen that the tire industry is an industry with high production cost which mainly consists of raw materials costs. Furthermore, it is evident that there may be a difference in the cost structure depending on which segment is being target as well as the company size may influence the cost structure through scale advantages. Lastly, the companies invest between 2.0% and 3.2% of their revenues in research and development, and there is a trend that the companies are focusing more on producing environmentally friendly products. These findings are not surprising but necessary to have confirmed in order to conduct the further analysis.

3.4 Company Resource Analysis

We have now thoroughly analyzed the tire industry on the macro level and the industry level. In the following section, we will analyze the company specific factors that influence their ability to generate cash flows and be competitive. These factors are defined by a number of resources that can be divided into four types, namely physical resources, human resources, financial resources, and intangibles.[109] We believe that all four types are

[105] Michelin Annual Report 2013, page 2
[106] Bridgestone Annual Report 2013, Operational Review, page 9
[107] Bridgestone Annual Report 2013, Operational Review, page 9
[108] Goodyear website, Research, Development, Engineering & Quality (RDE&Q), 2014
[109] Petersen & Plenborg, Financial Statement Analysis, page 191

relevant for tire industry but as we have a detailed analysis of financial resources, like leverage and profit generation ability in the financial analysis section, we have decided not to also include it here as well. Furthermore, we have decided not to include a detailed analysis of the human resources the companies' possess. We have examined the corporate governance structures of each company as well as their senior managements, and we have not found anything surprising. All companies are managed by senior professionals with vast amounts of industry experience. This is as we would expect for four major listed companies. As a result, we do not find it interesting to make further comments on this. Hence, we will now explore the four companies' physical resources as well as their intangibles. In terms of physical resources, we will look into the locations of their plants and operations. We will cover their intangibles related to the brands they own, the company image and their strategic alliances.

3.4.1 Company Resources, Michelin

3.4.1.1 Physical resources

Michelin is based in Clermont-Ferrand, France where they have their headquarters as well as their main research center. The two additional research centers are based in Ota, Japan and Greenville, SC, U.S.A. The Greenville facilities also include the American headquarters of Michelin.[110] In terms of production facilities, Michelin operates 56 tire production facilities in 17 countries across four continents as well as 11 plants for semi-finished products and components based in 7 countries.[111] The semi-finished product and component plants are mainly producing metal cables (8 plants) and synthetic rubber (2 plants). Of the total 67 production facilities the majority is based in France (15 plants) and to some extend the United States (13 plants) and Germany (6 plants).

In December 2013, Michelin's new plant in Grenville, SC, U.S.A. came online after a USD 750 million investment. The plant is meant for production of tires specialized for mining equipment. [112] Short after the opening of the South Carolina plant, another Michelin plant was also opened in Chennai, India. This plant is dedicated for production of tires for commercial vehicles like trunks and busses.[113] With a plant capacity of 300,000 tires per year, it will be a major production hub for Michelin and it underlines their efforts to capture a part of the Indian growth market. The same is the case in Brazil where the new Itatiaia plant is ramping up production. The plant will expand the capacity of car tires in Brazil by 3.5 times Michelin's previous capacity.[114] Lastly, Michelin's largest project is in Shenyang, China. The new USD 1.5 billion plant is Michelin's largest

[110] Michelin Annual Report 2013, page 11
[111] Michelin Annual Report 2013, page 9-11
[112] PR Newswire website, Michelin Opens New South Carolina Manufacturing Plant, 2013
[113] The Hindu Business Line website, Michelin's Chennai plant to go on stream soon, 2014
[114] Data Mark website, With unit in Rio, Michelin to double slice in South America, 2012

plant in the world with a capacity of 12 million tiers per year for cars, trucks and busses.[115] It came online in 2013 but will ramp up production during 2014.[116] Due to the huge capacity of these plants as well as the fact that they are mainly located in expected growth markets, these strategic investments will drive the company's growth in the coming years.

Based on this information, it is clear that Michelin is a truly global company with production and sourcing across the globe. Furthermore, the facts that three out of four of the new high capacity plants being opened are based in emerging markets, illustrates that Michelin will increase its focus in the developing part of the world.

3.4.1.2 Intangibles

The first item we will look at related to intangible assets is brands Michelin owns and sells. We have divided them into three, namely the tire brands, logo of the Michelin man, and the Michelin Guide.

Michelin sells its premium tires globally under the Michelin name. Moreover, they own a number of regional brands such as UNIROYAL in North America, KLEBER in Europe and WARRIOR in China, a number of national brands, as well as brands dedicated to certain segments like e.g. sports cars and SUVs.[117] These are the main brands for car tires but Michelin are also active in a number of segments like truck, farm machinery, earthmovers, motorcycles, aircraft and subway train tires.[118] Together, these brands represent the strongest brand portfolio in the tire industry as the many targeted segments results in diversification as well as the ability to pursue all growth opportunities in the market.[119] Furthermore, Michelin controls a number of brands that are not related to their tire business. The Michelin man, or Bibendum as he is called, is a widely known logo and trademark. This is one of the areas where Michelin differ from their competitors, as Michelin is embodied through this logo making the brand recognizable also to people who are not, as such, interested in tires. Another brand that makes Michelin stand out is the Michelin Guide. The Michelin Guide is known world-wide as the premium guide for restaurants and hotels and it is seen a one of the highest honors in the restaurant industry to receive a Michelin star.[120] Furthermore, they also leverage the Michelin guide in combination with other services. An example of this is the website viamichelin.com which is an online travel planner. Through the site, users can get driving directions and access maps of all of Europe and combine the trips with the recommendations made in the Michelin guide.[121] In this ways, Michelin's products and services do not only

[115] China Daily website, Michelin opens $1.5b factory in Shenyang, 2013
[116] Michelin Annual Report 2013, page 17
[117] Michelin Annual Report 2013, page 1
[118] Michelin Annual Report 2013, page 1
[119] Michelin Company Profile, MarketLine, 2013
[120] Michelin Travel website, The Michelin Guide – Selecting Out Stars, 2014
[121] Michelin Annual Report 2013, page 1

relate to tires but also to the trip and driving experience itself, thereby offering a more holistic customer experience. Moreover, as for the Michelin Guide is a strong and well established premium brands, there may be positive spillover effects to other Michelin products and services. This is one of the areas where Michelin clearly differentiate themselves from their competitors.

The last area we look at is Michelin's significant strategic alliances and collaborations. One of the major partnerships that Michelin has is with the German luxury car producer Porsche. Through the past 12 years, the two companies have had collaboration in areas such as research, tire development, purchasing, marketing and sales. The partnership is currently agreed to continue to the end of 2016.[122] In 2014, Porsche will return to the prestigious 24 hour Le Mans race after absence since 1998 and this will be done exclusively with Michelin tires.[123] Furthermore, new Porsches will be equipped with Michelin tires produced at one of three locations in France, Hungary, and Italy.[124] Michelin also collaborate with other car manufactures like PSA Peugeot Citroën.[125] We believe that Michelin is in a very strong position in terms of intangibles and products due to their strong global presence, very strong tire brand portfolio, the non-tire related premium brands, as well as their cobranding with premium car manufactures.

3.4.2 Company Resources, Pirelli

3.4.2.1 Physical Resources

Pirelli owns and operates 21 plants in 13 countries. Of these, 2 plants are dedicated steel cord plants where as the rest are producing car tires, truck tires, motorcycle tires, tires for agricultural use of a mix of these. The locations of production facilities differ significantly from Michelin. Whereas Michelin has their production plants mainly in Europe or the United States (52 out of 67 plants), only 8 of Pirellis plants are located here (7 in Europe and 1 in the U.S.).[126] The rest are based in emerging markets like for example 2 plants in Russia, 5 plants in Brazil, and 1 plant in China. This is clearly due to the fact that Pirelli has chosen to focus on two market segments, namely premium tires and emerging market tire sales as previously mentioned. This is also the case with their production expansion. Their second Russian plant was opened in 2013 with plans to double its capacity through 2014.[127] The facility will produce premium tires, mainly winter tires and off-road tires. From this it is obvious that Pirelli is both willing and committed to invest in emerging markets even though the risks in these markets are higher, as covered in the political section of our PEST analysis. An even stronger piece of evidence for this it the fact that

[122] Michelin Annual Report 2013, page 47
[123] Michelin Annual Report 2013, page 47
[124] Michelin Annual Report 2013, page 47
[125] Michelin website, A Strategic Partnership With Psa Peugeot Citroën, 2014
[126] Pirelli website, Investors – Production Footprint, 2014
[127] Ria Novosti Business, Pirelli Launches 2nd Tire Facility in Southwest Russia, 2013

Pirelli in 2013 decided to invest USD 200 million to double the capacity of the car tire production at their plant in Yanzhou, China in 2014.[128] Furthermore, truck tire production will also be increased by more than 20%. This will make the plant Pirelli's largest plant worldwide. The result of their expansion plan will mean that Pirelli will be able to produce 81 million tires for cars and motorcycles (consumer segment) in 2017 opposed to 69 million tires in 2013. Furthermore, the production of tires for industrial applications will increase from 6.2 million tires to 6.8 million.[129] This means that in 2017, 80% of all Pirelli's consumer tires will be produced in low-cost countries opposed to 78% today.. In total, Pirelli plans to spend EUR 1.6 billion over the next four years in plant expansions.[130]

3.4.2.2 Intangibles

Pirelli sells all its tires under the Pirelli brand and name. Their product portfolio spans over a number of different models from the top premium product P Zero or segmented products like SUV tires or winter tires. It is obvious from Pirelli's tire models that they mainly focus on premium tires, as for example only three car tire options exists for urban or touring driving whereas they have five options for performance driving, and many more for racing.[131] Pirelli has a considerable number of collaborations with car makers. For their P Zero product line, the partnerships include car brands like Lamborghini, Bentley, Aston Martin, Porsche, Audi, and BMW.[132] The fact that many of these car brands belong to the VW Group makes Pirelli the second largest supplier to the group in total.[133] This is made more significant as Pirelli only supplies to the premium car brands that are produced in much smaller quantities than other VW Group car brands like Volkswagen or SEAT. In addition, Pirelli also has partnerships in other segments. For instance, Pirelli tires are original equipment on agricultural machines from the producers John Deer, CNH, and AGCO.[134] Another area where Pirelli's intangibles stand out is in racing. Pirelli has for three years been the sole supplier of tires to the Formula 1 World Championship and the parties have signed a deal to continue the collaboration until the end of 2016.[135] Moreover, Pirelli supplies to a number of other motorsports events like the Rally series and single-brand events like the Ferrari Challenge. This makes them the largest supplier of tires to motorsports globally.[136]

Summing up on Pirelli's intangibles, it is clear that Pirelli wants to clearly be a premium brand and has been successful at obtaining this image by being associated with premium car brands and the most prestigious

[128] Tire Business website, China plant to become Pirelli's largest, 2013
[129] Pirelli website, Investors – Production Footprint, 2014
[130] Pirelli website, Investors – Production Footprint, 2014
[131] Pirelli website, Pirelli Catalogue, 2014
[132] Pirelli Annual Report 2013, page 62-63
[133] Pirelli Annual Report 2013, page 66
[134] Pirelli Annual Report 2013, page 56
[135] Formula 1 website, Pirelli to remain as official F1 tyre supplier until end of 2016, 2014
[136] Pirelli Annual Report 2013, page 67

motorsport events. Pirelli have been good at positioning themselves in this market segment and so far been successful at executing as well.

3.4.3 Company Resources, Goodyear

3.4.3.1 Physical Resources

Goodyear has 59 facilities in 25 countries of which 52 are manufacturing facilities.[137] The global headquarters are based in Akron, Ohio in the U.S.A. where the company was founded. The current headquarters were finished in May 2013 after an USD 170 million investment.[138] This is also the location of Goodyear's innovation center (research and development facilities) as well as the base for one of three corporate airships used for advertising purposes.[139] Like Michelin, Goodyear has the majority of their facilities in the United States and Europe but slightly skewed towards the U.S. with 19 plants and 17 in Europe. This shows that Goodyear has, like Michelin, historically been focus on the developed market opposed to Pirelli. However, with 7 plants in Latin America, 9 plants in Asia, 3 plants in the Middle East, and one plant in South Africa it is obvious that Goodyear is also a global company with a global presence. Besides the new headquarters, Goodyear has not made a lot of investments in the resent years. However, in 2012, they decided to acquire 100% ownership of the Nippon Giant Tire Co. Ltd. joint venture in Japan and invest USD 250 million in the plant for capacity expansions.[140] The plant produces the off-the-road tire line and the investment will also allow them to produce larger tires for industrial use.

From the above it is evident that Goodyear has a stronger presence in the United States than its competitors, which is not surprising. Furthermore, we see that Goodyear has been less aggressive in their expansion strategy than Michelin and Pirelli since they have only made one major expansion in the resent years.

3.4.3.2 Intangibles

Goodyear sells tires under five brands, namely Goodyear, Dunlop Tires, Kelly Tires, Sava, and Fulda.[141] Goodyear is the main brand. It is sold globally, and it contains tires for all main segments. Goodyear owns the right to produce and sell Dunlop Tires is the Unites States and Europe which we will describe a bit further down in this section. Dunlop Tires mainly focus on premium tires and racing tires for cars and motorcycles.[142] The Kelly Tires brand is sold the United States and is a mainly targeted the economy segment of consumers.[143] The

[137] Goodyear website, Worldwide Facilities, 2014
[138] WKSU website, Goodyear celebrates new global headquarters in Akron, 2013
[139] Goodyear Blimp website, Our Fleet, 2014
[140] Tire Business website, Goodyear to expand Japan OTR unit (updated), 2012
[141] Goodyear website, Corporate, 2014
[142] Dunlop Tires website, About Dunlop, 2014
[143] Rubber News website, Goodyear eyes stronger replacement tire market, 2014

Sava brand was fully acquired by Goodyear in 2004.[144] Sava Tires is a Slovenian brand and is mainly sold in the economy segment in Europe. Lastly, the Fulda brand is a German brand sold in Europe but it has been owned by Goodyear since 1966.[145] Their focus is also affordable like Kelly in the U.S. and Sava in Europe. From this we see that Goodyear has a stronger focus on the economy and affordable segment than its peers as it has more brands targeted these segments. In 1999, Goodyear entered into an alliance with Sumitomo Rubber Industries Ltd. which gave Goodyear effective control of Sumitomo's operations in the United States and in Europe as well a minority stake in Sumitomo itself.[146] In the deal, Goodyear paid Sumitomo USD 1 billion as their contribution to six joint ventures that were incorporated as a result of the deal. The two main JVs concern Western Europe and the United States, where Goodyear now owns 75% of the shares and Sumitomo 25%. At these former Sumitomo facilities, the ventures now produce Goodyear products as well as Sumitomo's Dunlop brand and other Sumitomo brands which means that Goodyear effectively own 75% of the Dunlop brand in these two regions.

One of the other main parts of the deal was two other JVs where one focuses on global purchasing and the other on joint research and development efforts. This was done to seek larger scale advantages as well as eliminate duplications in product-development efforts.[147] Both these JV are controlled by Goodyear through majority ownership. The last two JV were set up for the Japanese market and controlled by Sumitomo. Here, Sumitomo would take over Goodyear's marketing operations in Japan.[148] This rather complex alliance was set up to allow scale advantages and growth opportunities for Goodyear, as Sumitomo at the time, like many other Japanese companies, were in a period of financial distress.[149] Moreover, it is written in the agreement that Sumitomo has a number of exit rights that obligates Goodyear to purchase Sumitomo's share of the two main JVs in the United States and Europe.[150] It is also worth mentioning that the deal was well received by the Goodyear shareholders. Lastly, in February this year, it was revealed that Goodyear has asked the International Chamber of Commerce to arbitrate the dissolution, as they claim that Sumitomo has engaged in "anticompetitive conduct."[151] It is still unclear what the full implications will be, but Goodyear will most likely end up acquiring the remaining shares in the JVs related to the Dunlop brand.[152] As previously mentioned, Goodyear has a tradition for using airships for advertising purposes. This started in 1925, where Goodyear built the first "Goodyear blimp" – their term for

[144] Truck News website, Goodyear to complete Sava Tires purchase, 2004
[145] Fulda website, About Fulda,
[146] The Wall Street Journal website, Goodyear, Sumitomo Rubber Unveil Plan to Form Alliance, 1999
[147] The Wall Street Journal website, Goodyear, Sumitomo Rubber Unveil Plan to Form Alliance, 1999
[148] The Wall Street Journal website, Goodyear, Sumitomo Rubber Unveil Plan to Form Alliance, 1999
[149] The Wall Street Journal website, Goodyear, Sumitomo Rubber Unveil Plan to Form Alliance, 1999
[150] Goodyear Annual Report 2013, page 28
[151] Rubber News website, Goodyear wants to dissolve alliance with Sumitomo, 2014
[152] Rubber News website, Goodyear wants to dissolve alliance with Sumitomo, 2014

the airships.[153] For a number of years, Goodyear was also producing and selling airships, among others the US army for the Second World War.[154] Goodyear currently operates three airships with one based at the headquarters in Ohio, one in California, and one in Florida. In the United States, airships are associated with Goodyear and vice versa and it must be considered one of Goodyear's greatest marketing assets.[155]

Summing up, we see that Goodyear is different from its peers. Generally, they have a larger focus on the economy segment and more exposure to their home market. However, through their alliance with Sumitomo they gained increased access to the premium and racing segment through the Dunlop brand. Lastly, they have been very successful at marketing in the United States.

3.4.4 Company Resources, Bridgestone

3.4.4.1 Physical Resources

The Bridgestone Group is based in Tokyo, Japan where it was founded. Bridgestone has 191 facilities in 25 countries globally which is significantly more than any of its peers. 170 of these are production plants of which 75 are tire plants or for tire related parts, 18 are processing raw materials, and 77 are diversified product plants.[156] Of the plants for production of tires or tire related parts, 14 plants are based in the United States, 10 in Latin America, 11 plants in Europe, 17 plants in Asia, 10 plants in Japan, 2 plants in South Africa, and 1 plant in the Middle East and Canada. Furthermore, of the raw materials plants, 7 are based in the United States, 1 plant in Europe, 1 plant in Africa, 7 in Asia, and 1 in Japan. This shows that Bridgestone has invested heavily in the Unites States, which is also their largest market in terms of sales. In terms of research and development, Bridgestone has 6 technical centers and 10 proving grounds, the latter being test centers. Two of the technical centers are based in Japan and the remaining four are based in Ohio, U.S.A (same city as Goodyear is headquartered), Italy, China, and Thailand. Lastly, the majority of their diversified products group plants are based in either the Americas or Asia. This all illustrates that Bridgestone is a truly global company but is must also be the case that their average plant size is smaller the for example Michelin's.

Bridgestone currently has six plants under construction of which five are tire production plants and one is for the diversified products segment. The new tire plants will be based in the United States, Russia, Turkey, Vietnam, and Thailand.[157] The new facility in the United States will be based in South Carolina and USD 1.2 billion will be invested in the plant. The production will mainly by focus on off-road tires and production will commence in

[153] Goodyear Blimp website, History/FAQ, 2014
[154] Gizmag website, Goodyear's new state-of-the-art airship makes its first flight, 2014
[155] Yahoo Finance website, How the Goodyear Blimp Became America's Greatest Marketing Invention, 2014
[156] Bridgestone website, Corporate – Locations, 2014
[157] Bridgestone website, Corporate – Locations, 2014

2014 with full capacity reached in 2015.[158] The new plant in Russia will be Bridgestone's first in the country. The USD 375 million project is expected to start production in 2016 but will only reach full capacity in 2018. The plant will produce passenger car tires mainly to the Russian market.[159] In Turkey, the USD 290 million plant is also expected to go online in 2018 and reach full capacity in 2022. The plant will produce the Brisa brand which is owned by Bridgestone through a joint venture.[160] The Vietnamese plant is an expansion of a plant already under construction. The plant will be operational this year and due to the new expansion, reach full capacity of passenger tires in 2017.[161] The last of the new plants will be based in Thailand and focus on production of off-the-road tires for construction and mining vehicles. Operations will begin in 2015 and full capacity reached in 2019.[162] From this, it is evident that Bridgestone is expanding rather aggressively. Furthermore, it is interesting that four out of five of the new plants are based in non-core markets. However, it is a similar tend shown by Michelin and Pirelli as the companies seek growth opportunities in less developed economies.

3.4.4.2 Intangibles

The main Bridgestone brands are Bridgestone, Firestone, and Dayton but they also own a number of regional and national brands like the aforementioned Brisa in Turkey. The Bridgestone brand is the largest of the four main brands and it can be divided into six sub-brands. Potenza is their road-gripping performance tires and is a premium brand for sports cars, DriveGuard is their run-flat tire series, Turanza is for luxury cars and with a focus on noise reduction, Ecopia is the tire series for fuel-saving, Dueler are for off-road tires, and the sixth brand Blizzak is their winter tires series.[163] This shows that the Bridgestone brand is a premium brand with the segments it is targeting. The Firestone brand is very strong the United States. It was founded in Akron, Ohio where Goodyear is also based and was acquired by Bridgestone in 1988.[164] Firestone also has a full product range of ties like the Bridgestone brand but Firestone is target the mid-quality segment. Furthermore, Firestone has a large focus on truck tires and tires for agricultural purposes.[165] Dayton is a brand dedicated to truck tires and mainly sold in the United States.[166] As previously mentioned, Bridgestone has a very strong position in the United States with both the premium Bridgestone brand and the mid-market segment Firestone brand. Firestone has become famous in the United States as it supplied all tires to Ford in the first half of the last century as well

[158] Bridgestone US website, Bridgestone Americas Announces $1.2 Billion Dollar Investment In SC, 2011
[159] Bridgestone website, Corporate – News, Bridgestone to Build Passenger Car Tire Plant in Russia. 2013
[160] Tire Business website, Brisa to build $290M car tire plant in Turkey, 2013
[161] Bridgestone website, Corporate – News, Bridgestone to Increase Production Capacity in Vietnam. 2013
[162] Bridgestone website, Corporate – News, Bridgestone to Build a New Plant in Thailand, 2012
[163] Bridgestone US website, Home, Tire Catalog, 2014
[164] The New York Times website, Bridgestone In Deal for Firestone, 1988
[165] Bridgestone Firestone website, Who We Are, 2014
[166] Dayton website, Home, 2014

as for the jingle "where the rubber meets the road" which has become a common phrase in the English language.[167] Furthermore, Bridgestone is an active sponsor of different sports and for example the Bridgestone Arena which is the home stadium of the Nashville Predators, Tennessee's ice hockey team.[168] In 2008, the Bridgestone formed an alliance with another large Japanese tire producer Toyo Tire & Rubber Co.[169] According to the press release, the alliance was formed as a response to increased competition in the industry as well as high raw material prices. The alliance included that the companies would initiate join research and development as well as procuring of raw materials. Furthermore, they would take equity stakes in each other worth JPY 8 billion corresponding to Bridgestone acquired 8.7% of Toyo and Toyo 0.5% of Bridgestone.[170] Moreover, the alliance gave the companies limited access to utilize each other's production facilities. This concludes our resource analysis of Bridgestone. Bridgestone is the largest of the tire producers in terms of sales and we have seen that they also have the most extensive and global production plant network. They are currently expanding in a number of developing economies like Russia and South East Asia which was also the case for Michelin and Pirelli. Furthermore, Bridgestone has a strong premium brand in the Bridgestone brand as this is complimented well by the Firestone brand which offers mid-range products. Lastly, Bridgestone entered into an alliance similar to the one between Goodyear and Sumitomo, however far less significant in magnitude.

3.5 Conclusion to the Strategic Analysis

In the strategic analysis, we have analyzed the tire industry from a top down approach and identified key characteristics and risks. Our PEST analysis emphasized how important the macroeconomic environment is to tire sales and further described some of the main risks of operating multinational companies with presence across the globe. The five forces analysis identified main characteristics on an industry level where it is clear that the tire industry is high competitive but with a smaller group of companies possessing large market shares. Finally, we looked at each company individually to describe their individual structures and further understand where the companies are headed based on their investments etc. We therefore now possess the information necessary to understand the dynamics of the industry and each individual player from a strategy point of view.

With these insights, we are now ready to move on to the financial analysis to better understand the historical performance of the companies.

[167] The New York Times website, Where Rubber Meets the Road, 2000
[168] Bridgestone Arena website, Corporate Partnerships, 2014
[169] Reuters website, UPDATE 2-Bridgestone, Toyo Tire form alliance in tougher times, 2008
[170] Reuters website, UPDATE 2-Bridgestone, Toyo Tire form alliance in tougher times, 2008

4.0 Financial Analysis

We are now ready to do our financial analysis. We will start out by making corrections to the four companies' financial statements in order to make them comparable. Following, we will analyze the profitability of each company to shed light of the companies' historical performance. This will be done by decomposing the key financial ratios. Lastly, we will analyze the companies' capital structures.

4.1 Accounting Standards and Corrections to the Financial Statements

To be able to assess of the future potential of the four companies, we need to do a detailed analysis of the companies' historical financial statements. In the following section, we will walk through the four companies' financial statements from 2009 to 2013 to get an overview of the companies' abilities to create value.

In order to be able to compare our results, it is necessary to make corrections to the financial statements. First of all, we need to address the fact that the companies use different accounting standards. Michelin and Pirelli use International Financial Reporting Standards (IFRS), Goodyear uses U.S. Generally Accepted Accounting Principles (GAAP) and Bridgestone uses Japanese GAAP. As stated in our delimitations, it is not possible for us to correct all differences between IFRS, U.S. GAAP and Japanese GAAP. We are therefore aware that some differences exist but we have corrected the major ones to enhance comparability. Some of the general adjustments are:

- Research and Development costs: The companies all invest considerable amounts in research and development efforts. Under IFRS, research costs are generally expensed as incurred whereas development costs are capitalized. Under U.S. and Japanese GAAP, however, also development costs are expensed. This gives rise to the most significant difference in the three accounting standards. We have consulted the financial statements to find details about how the companies treat these expenses/assets and concluded that we do not have the necessary level of detail to correct for this difference. This is mainly because Michelin and Pirelli do not disclose how large a portion of their R&D efforts each year are either expensed or capitalized.[171] Over a long period of time, the effects of this difference will however be fairly small if the companies maintain a steady level of R&D investments. We do thus not consider this difference to have any major impact on our analysis of conclusions hereof.
- Change of operating leases to financial leases: Michelin, Goodyear, and Bridgestone all use operating leases. By consulting their financial statements, we have found the necessary data to convert the operating

[171] Michelin Annual Report 2013, note 3.10, page 207

leases to financial leases using the Imhoff, Lipe, and Wright (ILW) method.[172] We have assumed for all companies that leases have duration of ten years and all leases are also depreciated over ten years. The companies have reported their minimum future payments in future value terms and Goodyear also in present value terms. This has allowed us to precisely adjust the balance sheet for Goodyear as well as calculate the implied interest rate on the lease obligations given the afore mentioned assumptions. For Michelin and Bridgestone, we have assumed that the interest rate is similar to their long term borrowing rate. For Bridgestone, however, we have not been able to make any adjustments to the income statement as they do not disclose any details about their operation lease expense.

With these initial changes we have minimized the major errors arising from the use of different accounting standards. We will now move on to restating the historical income statements and balance sheets for the four companies in order to remove non-recurring items from the income statements and classify balance sheet items all to determine key ratios based on e.g. NOPAT, invested capital and net interest bearing debt.

4.1.1 Michelin Analytical Financial Statements

Michelin reports their financial statements according to IFRS with all numbers in Euros. In order to analyze their results, we have made a number of corrections to the reported numbers. In the following section we will highlight the items that we have found necessary to reclassify.

Income statement:

- In the reported income statement, the item "Other operating income and expenses" consists of both recurring and non-recurring items. We have chosen to classify "Net restructuring costs", "(Charge)/reversal on impairment of intangible assets and PPE", and "Gain on disposal of intangible assets and PPE" as non-recurring items and they are thus excluded from the operating result in analytical income statement. The reason for doing this is that these items cannot be considered a part of the company's operations and they are thus contributing to creating a wrong picture of the company's operating result. We consider the remaining items in "Other operating income and expenses" recurring items related to the operations of the business and they are therefore included in the operating result.[173]
- Michelin has reported an item labelled "Non-recurring income and expenses". In 2013, the cost of €260 million represented restructuring costs related to plants in France, Columbia, and Algeria, in 2012 income of €46 million represented a net gain from property sales in France and an impairment loss in China[174], and

[172] Bostwick et al., Effects of lease capitalization techniques on key measures of financial performance, 2014
[173] Michelin Annual Report 2013, note 8, page 219
[174] Michelin Annual Report 2013, note 9, page 219-220

in 2009 an expense of €412 million due to plant restructuring in France, North America, and Japan.[175] We agree with Michelin's classification of these items as non-recurring and we have therefore excluded them from the operating result the income statement.

- The item "Net interest on employee benefit obligations" has been introduced in the 2013 annual report. This item is a result of the IAS 19 amendment from June 2011, which makes companies liable to recognize net interest on plan obligations.[176] Michelin has reported this figure for 2013 and 2012 and even though it was previously a part of the comprehensive income statement, we have not been able to determine the value of this item for the year prior to 2012. Based on the trend we see in the figure for 2012 and 2013, this most likely implies in a slight overstatement of EBT and hence the historical after tax profitability measures, but it will not affect the before-tax measures and ratios.

Besides the above, we have calculated a number of profitability measures not presented by Michelin. These are:

- EBITDA: In order to find EBITDA for Michelin, it has been necessary to correct the reported Cost of Sales. In Michelin's income statement, Cost of Sales includes the company's depreciation, amortization and impairment expense and we have thus added this expense back to Cost of Sales. This result in a higher Gross Income than reported in all years. We have then subtracted the relevant operational expenses in order to arrive at EBITDA.
- NOPAT: We have calculated the Net operating profit after tax by applying the effective tax rate (Income tax divided by Income before taxes) to EBIT.

Balance Sheet: In order to determine the sources of value creation we have classified the balance sheet items into operating and financing items. This will enable us to calculate the company's invested capital and the net interest bearing debt, which is a central part of finding a number of key ratios for the financial statement analysis. In the following section, we have described the items that are not obviously classified as either operational or financial.

- Non-current financial assets and other assets: This item consists of "Available-for-sale financial assets" (equity stakes, mainly listed companies), "Loans and deposits", and "Derivative instruments".[177] As Michelin's derivative positions are used mainly for speculative purposes rather than purely hedging[178], we consider them to be financing related activities together with the two other items making up the non-current financial assets. We thus consider this item a part of the financial assets.

[175] Michelin Annual Report 2010, note 9, page 179
[176] Michelin Annual Report 2013, note 2.3, page 202
[177] Michelin Annual Report 2013, note 15, page 226
[178] Michelin Annual Report 2013, note 16.1, page 227

- Investments in associates: This item is composed by a small number of companies in which Michelin has invested. The companies are all a part of Michelin's supply chain and core business area and can be seen as part of the operational assets.[179]
- Current financial assets: This item is made up by "Loans and deposits", "Cash management financial assets", and "Derivative instruments". As previously, we consider the derivative positions to be finance related. Furthermore, it is stated that the cash management financial assets are liquid euro deposits[180] and we thus consider them financial as well, making all the Current financial assets a part of the financial assets.
- Other current assets: Other current assets consist of Supplier advances, Tax advance payments and Other tax receivables.[181] We believe that it is fair to assume that the tax related items are interest bearing and hence a part of the financial assets. The Supplier advances are considered operational and are as a result included as a separate item on the balance sheet.
- Cash and cash equivalents: All cash and cash equivalents are interest bearing and we have classifies them as a financing item.[182]
- Provisions and other non-current liabilities: All provision items are related to the operations, making this item operational.[183]
- Other current liabilities: This item consists of mainly Customer deferred rebates, Employee benefits, and Social security liabilities. We consider these a part of the operations.

This concludes the discussion of the analytical income statement and balance sheet for Michelin.

4.1.2 Pirelli Analytical Financial Statements

Pirelli uses, like Michelin, the IFRS standards for their financial reporting as well as the Euro as their currency. We have made the following changes to their financial statements.

Income statement: Pirelli has chosen to state all non-recurring parts of their line items in their income statement. By consulting the notes to the financial statements, we agree with these classifications and have excluded the non-recurring items from the analytical income statement. This relates to items part of:

- Other income: in 2013 was 17.6 % classified as non-recurring. This relates to disposal of properties and settlement gains.[184] Similar corrections have been made in the previous years and we agree with these classifications.

[179] Michelin Annual Report 2013, note 17, page 229
[180] Michelin Annual Report 2013, note 21, page 232
[181] Michelin Annual Report 2013, note 22, page 232
[182] Michelin Annual Report 2013, note 23, page 233
[183] Michelin Annual Report 2013, note 29, page 254

- Personal expenses: The non-recurring items relates to restructuring costs and charges related to the settlement of a law suit in Brazil in 2013 and similar in the prior years.[185]
- Amortization, depreciation and impairment: The non-recurring part of this item is related to extraordinary impairment losses.[186]
- Other costs: Other costs consist of all selling, general, and administrative costs. The non-recurring part of this item relates to real estate in Brazil and similar.[187]

Like for Michelin, we have calculated Gross Income, EBIDTA and NOPAT. In order to calculate the Gross Income, we had to make the following judgments:

- Personal expenses: Pirelli has reported a single item called Personal expenses which includes all wage and salary expenses for the company as well as expenses for social security contributions, pension funds, and healthcare plans.[188] We wish to divide this item into wage and salary expenses that relate to Cost of sales and Other personal expenses that relate to general and administrative costs. We have done so by extracting the Wage and salaries expenses from the total Personal expenses and then subtracting the Management remuneration from the Wage and salaries expense. We have found the management compensation in the Remuneration report submitted by Pirelli which is a part of the annual report.[189] By doing so, we have arrived at the labour costs related to Cost of Sales. The remaining part of the total Personal expenses has been subtracted as general and administrative costs before EBITDA. This approach has, however, not been possible for 2009 and 2010 due to lack of detail in the annual reports. We have circumvented this by assuming the 2011 level of fixed compensation for both 2009 and 2010. We acknowledge that this general approach may not give us the true picture of exact expenses incurred each year as Cost of sales or general and administrative expenses but we consider it the best possible estimate given the available information.

Balance Sheet: Again, we have classified the balance sheet items into operating and financing items in order to determine the sources of value creation. Below, we present the items which are not obviously classified as either operational or financial.

- Investments in associates: Pirelli holds equity stakes in eight associated companies (2013) and have historically been financial investments in non-core business related companies. However, in 2013, Pirelli

[184] Pirelli Annual Report 2013, note 30, page 125
[185] Pirelli Annual Report 2013, note 31, page 126
[186] Pirelli Annual Report 2012, note 32, page 234
[187] Pirelli Annual Report 2013, note 33, page 128
[188] Pirelli Annual Report 2013, note 31, page 126
[189] Pirelli Annual Report 2013, Remuneration Report, page 39

invested in a joint venture for a motorcycle tire plant in Indonesia.[190][191] The latter has been classified as operational and the rest as financial investments.

- Other receivables: This item consists of both operating and financing assets and we have chosen to extract the operating assets from the item stated by Pirelli. This relates to "Accrued income and prepaid expenses" and "Other receivables", the latter consisting of supplier advance payments and lawsuits.[192]
- Tax receivables (both current and non-current): We assume that the tax receivables are interest bearing and hence a part of the financial assets.[193]
- Derivative financial instruments (both assets and liabilities): The majority of this item relates to derivatives used for speculative purposes making this a financial asset.[194]
- Other payables (both current and non-current): We classify Other payables as operating liabilities as their relate to mainly "Payables to employees" and "Trade accrued liabilities and deferred income". A small part of Other payables is classified as "Tax payable" but this relates to VAT or equivalent taxes and we assume that these are not interest bearing.[195]
- Tax payable: We assume that the tax payables are interest bearing and hence a part of the financial liabilities.[196]

4.1.3 Goodyear Analytical Financial Statements

Goodyear's financial statements are prepared according to the U.S. GAAP with numbers stated in U.S. dollars. We have the following comments to the income statement:

- Goodyear has in their Income statement chosen to report Net sales and subtracts all relevant expenses until they arrive at Income before income tax (EBT). We have organized these costs into relevant groups in order to also calculate the Gross income, EBITDA, EBIT and NOPAT.
- Depreciation and Amortization is included in Cost of goods sold.[197] We have thus added this back in order to arrive at the Gross income and subtracted it after EBITDA in order to find EBIT.
- Other expense: Other expense contains a number of items relevant for the analytical income statement and we have consequently chosen to expand this section of the income statement.[198]

[190] Pirelli Annual Report 2013, note 11, page 80
[191] Tirebusiness.com, Pirelli breaks ground on Indonesian M/C tire plant, 2013
[192] Pirelli Annual Report 2013, note 15, page 92
[193] Pirelli Annual Report 2013, note 16, page 94
[194] Pirelli Annual Report 2013, note 27, page 119
[195] Pirelli Annual Report 2013, note 25, page 117
[196] Pirelli Annual Report 2013, note 26, page 118
[197] Goodyear Annual Report 2013, page 10
[198] Goodyear Annual Report 2013, note 4, page 57

- Rationalizations: This item relates to restructuring costs coursed by efforts to reduce high-cost manufacturing capacity and optimization.[199] During the period from 2009 to 2013, Goodyear has incurred significant costs related to these efforts but at a declining rate. We are aware that it is common for companies to have continuous restructuring costs but consider this level unusually high and have decided to categorize them as non-recurring as a result hereof.
- Net foreign currency exchange losses: In order to adjust for the difference between IFRS and U.S. GAAP, we have removed this item from the income statement.
- Financing fees and financial instruments: This expense originates from fees and charges incurred in connection with financing transactions and which we consider an operational expense.[200]
- General and product liability - discontinued products: Expense related to insurance claims which can be considered operational.[201]
- Net gains on asset sales: This income from sales of assets must be considered non-recurring and is excluded from the income statement.[202]

Balance sheet:

- Other assets: This item includes investments in other companies related to the core business, mainly shares in Sumitomo Rubber Industries Ltd., making this item an operational asset.[203]
- Accounts Receivable: Accounts receivable also includes derivative assets but as Goodyear only use derivatives for hedging purposes, we can consider the entire item operational.[204]
- Prepaid Expenses and Other Current Assets: this is operational where the majority of Other current assets are composed by PPE assets available for sale.[205]
- Minority Shareholders' Equity: This item is, despite the name, reported outside the equity section of the balance sheet. It arises from Goodyear's obligation to purchase the remaining parts of a number of less-than-wholly-owned subsidiaries, mainly parts of the Sumitomo alliance. This will happen in case of change in control of the subsidiaries, bankruptcy of the subsidiaries, or other non-specified circumstances. As mentioned in the strategic analysis, Goodyear is currently seeking to dissolve the alliance, and we thus

[199] Goodyear Annual Report 2013, note 2, page 55
[200] Goodyear Annual Report 2013, note 4, page 57
[201] Goodyear Annual Report 2013, note 4, page 57
[202] Goodyear Annual Report 2013, note 4, page 57
[203] Goodyear Annual Report 2013, note 11, page 67
[204] Goodyear Annual Report 2013, note 1, page 53
[205] Goodyear Annual Report 2013, note 11, page 67

consider it correct to include this as a part of the equity. This is because the most likely outcome will be Goodyear's acquiring the remaining parts.[206]

- Deferred and Other Noncurrent Income Taxes: It is not specified clearly in the notes to the financial statements what the exact components of the item are. The reported balance sheet refers to note 5 but this note does not contain a detailed breakdown.[207] We have decided to classify this item as operational due to the nature of deferred taxes but acknowledge that this may to some extent be wrong if the item also contains interest bearing tax payables. If the latter is the case, this would imply that we to a small extend overstate the invested capital.
- Other long term liabilities: Other long term liabilities include potential general and product liabilities as well as potential environmental liabilities. We therefore treat them as provisions and classify the item as operational.[208]
- Other current liabilities: Consists of current provisions (see above) and derivatives for hedging purposes, hence it is operational.[209]

4.1.4 Bridgestone Analytical Financial Statements

Bridgestone use Japanese GAAP for their financial reporting and Japanese Yen as their reporting currency. We have the following comments to the income statement:

- Depreciation and amortization: We have found the Depreciation and amortization in the Cash flow statement and subtracted it from Cost of Sales in order to find the adjusted Gross profit.
- Foreign currency exchange loss: Bridgestone has recorded currency exchange gains/losses in the income statement.[210] We have removed this from the income statement to comply with the IFRS standards.
- Gain on sales of property, plant and equipment: We consider this a non-recurring event and have thus removed it from the Income statement.[211]
- Impairment loss: Impairment losses arise when carrying amounts of assets are written down.[212] We have decided to exclude this from the Income statement due to its non-recurring nature.
- Loss on disposals of property, plant and equipment: Arises from sale of assets below carrying amounts, which is a non-recurring item and thus excluded from the Income statement.[213]

[206] Rubber News website, Goodyear wants to dissolve alliance with Sumitomo, 2014
[207] Goodyear Annual Report 2013, note 5, page 58
[208] Goodyear Annual Report 2013, page 36
[209] Goodyear Annual Report 2013, note 18, page 91
[210] Bridgestone Annual Report 2013, note 3, page 18
[211] Bridgestone Annual Report 2013, note 12, page 27
[212] Bridgestone Annual Report 2013, note 12, page 27

- Losses from a natural disaster: This item relates to restoration expenses for PPE and scrapping expenses incurred due to the 2011 earthquake and tsunami in Japan and is non-recurring.[214]
- Loss on valuation of investments in securities: This expense arises from financial decisions and is hence not related to the operations of the company.[215] We have excluded it from the Income statement.
- Loss on adjustments for changes of accounting standard for asset retirement obligations: Due to changes in the Japanese GAAP in 2011[216], Bridgestone had to incur this expense. It is non-recurring.
- Loss related to U.S. antitrust law and U.S. Foreign Corrupt Practices Act: Expenses arising from law settlements in the USA due to sales of certain automobile parts.[217] This is non-recurring.
- Loss on recall of merchandise: in 2013, this expense was recognized due to recall of certain tires produced at the Tochigi Plant in Japan and replacement of tires produced at the Shenyang plant in China.[218] In 2010, the expense was recognized due to recalls of merchandise from the bicycle business.[219] This item is non-recurring.
- Loss on provision for environmental remediation: In 2009, the company increased the provision for environmental remediation in preparation for rising costs of waste disposal due to legal changes.[220] This is non-recurring event.
- Loss on business withdrawal: In 2012, the company redrew their operations in the electronic paper business.[221] This is non-recurring event.
- Plant restructuring costs: in 2013, this item related to restructuring of plants in Japan and Europe.[222] In 2009, it was incurred due to discontinuation of production of passenger tires in certain American subsidiaries.[223]
- Gain on sales of investment securities: We remove this item as it is not related to the operations of the company.[224]
- Dismantlement expenses and Other-net: Prior to 2012, dismantlement expenses were included in Other-net. Due to the nature of dismantlement expenses and the fact that Other-net previously contained this non-

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[213] Bridgestone Annual Report 2013, note 12, page 28
[214] Bridgestone Annual Report 2011, note 12, page 26
[215] Bridgestone Annual Report 2011, note 3, page 17
[216] Bridgestone Annual Report 2011, note 3, page 17
[217] Bridgestone Annual Report 2013, note 12, page 28
[218] Bridgestone Annual Report 2013, note 12, page 28
[219] Bridgestone Annual Report 2010, note 12, page 25
[220] Bridgestone Annual Report 2009, note 13, page 25
[221] Bridgestone Annual Report 2012, note 13, page 28
[222] Bridgestone Annual Report 2013, note 12, page 28
[223] Bridgestone Annual Report 2009, note 13, page 25
[224] Bridgestone Annual Report 2013, note 5, page 22

recurring item, we have decided to categorize both items as non-recurring and hence excluded them from the Income statement.[225]

Balance sheet:

- Investments in and advances to affiliated companies: Bridgestone reports that they have 146 affiliated companies (ownership of 20 to 50 %) in 2013 but they do not specify the nature of these companies.[226] We assume that these are core-business related and we thus characterize them as operational assets.
- Other assets: We have not been able to find any information on what this item includes which of course is unfortunate. We have chosen to include it in the operational assets.
- Allowance for doubtful accounts (both current and non-current): This item is a negative item on the balance sheet and is established based on the companies past credit loss experience related to outstanding receivables.[227] It is therefore an operational asset.
- Provision for environmental remediation: These provisions arise from estimated amounts of future obligation related to legally required removal of waste and are therefore a part of the operation.[228]
- Other liabilities: Similar to other assets, we do not have any information about this item. We have included them in the interest bearing debt.
- Income taxes payable: We assume that the income tax payables are interest bearing and thus a part of the financial liabilities.
- Current provisions: We consider all these provisions part of the operations of the business.

This concludes our corrections to the four companies' income statements and balance sheets. We have corrected for non-recurring items and reclassified balance sheets to determine the companies' invested capital and NIBD.

4.2 Profitability Analysis

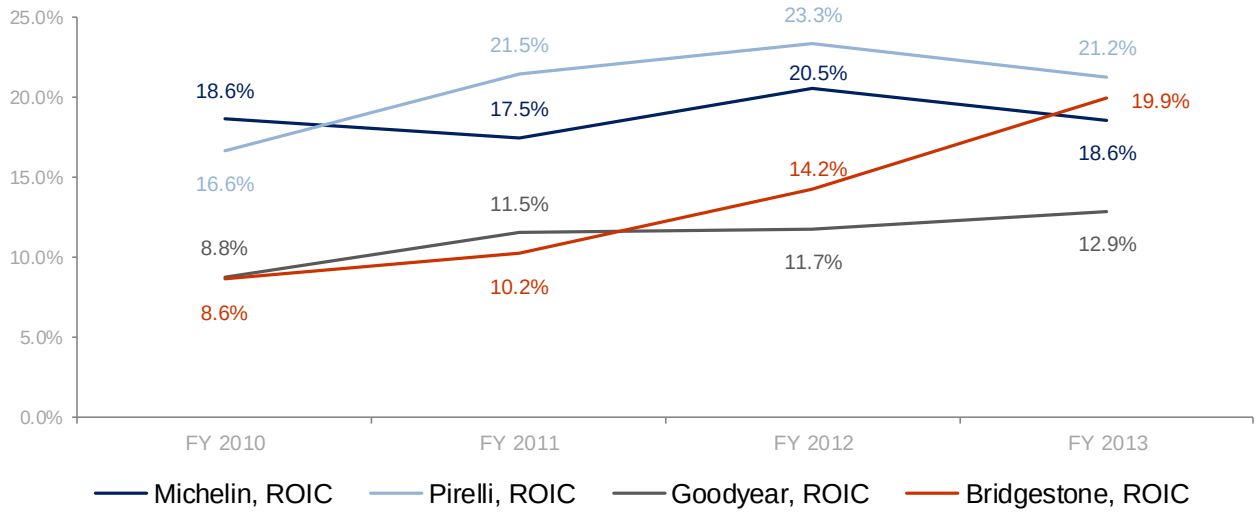
One of the key areas of measuring a company's financial situation is the profitability analysis. A profitability analysis will allow us to determine the sources of value creation as well as determine trends in the historical period investigated. Furthermore, the historical profitability is a pivotal element for helping us determine the future expectations for the companies. In this section, we wish to investigate the historical operating profitability of the four tire producers. Based on the analytical income statements and balance sheets created in the previous section, we have calculated a number of profitability measures. In Figure 13, we have presented the development in the companies' return on invested capital, ROIC, for the period 2010 to 2013. We have chosen to use the

[225] Bridgestone Annual Report 2012, note 3, page 19
[226] Bridgestone Annual Report 2013, note 3, page 16
[227] Bridgestone Annual Report 2013, note 3, page 17
[228] Bridgestone Annual Report 2013, note 3, page 18

before tax ratios as we wish to compare the companies' operational profitability without the disturbance created by the fact that they operate under different tax regimes. ROIC is calculated as EBIT for the year divided by the average of the opening and closing Invested Capital for the year.

As we see in the figure, the four companies have generally seen improvements in their ROIC over the period. Pirelli has the highest ROIC compared to its peers in 2011, 2012, and 2013. Bridgestone has the strongest improvement trend of the four companies. Michelin and Goodyear both have relatively steady performances with Michelin being the strongest performing of the two. In order to determine what effects are coursing the movements in ROIC over time for the companies, we will decompose the ROIC for each company individually.

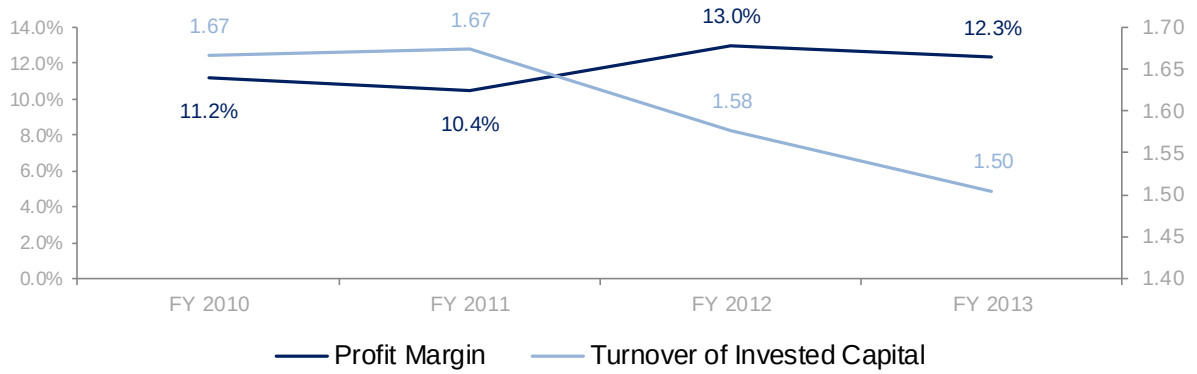
Figure 13: Development in ROIC before tax



4.2.1 Decomposing ROIC for Michelin

The return of invested capital is composed of two drivers, namely the profit margin and turnover rate of the invested capital. The profit margin is calculated as EBIT divided by net sales and is a measure for the company's ability to generate profit from its operations. The turnover of the invested capital is calculated as the net sales divided by the average invested capital and shows how effectively the company utilizes the capital invested in the operations.

Figure 14: Michelin, Profit Margin (L) and Turnover of Invested Cap. (R)



In Figure 14, we see the development of these ratios for Michelin. The profit margin has improved over time from 11.2% in 2010 to 12.3% in 2013, but with a peak in 2012 at 13.0%. The turnover rate, on the other hand was stable in 2010 and 2011 but fell from 1.67 in 2011 to 1.50 in 2013. As there are significant changes in both ratios, we find it necessary to investigate the drivers behind them both. We do this by making a trend analysis of both the analytical income statement and the analytical balance sheet.

4.2.1.1 Trend Analysis of Michelin's Analytical Income Statement

In order to identify the most significant implications for the changes in the profit margin, we have prepared Table 2. In this table, we use 2010 as the base year and have indexed the financials accordingly. As we only have numbers for balance sheet items from 2010 and onwards (because we use average numbers), we have decided not to use 2009 as the base year since changes between 2009 and 2010 would disturb the picture.

We see that sales increase by 20.0% from 2010 to 2012 but fell 5.7% from 2012 to 2013. This upswing was caused by a number of factors due to changing trends in the market but especially sales in speciality tires propelled growth.[229] In 2013, sales in terms of volume was flat but a decline the price-mix and especially unfavourable currency movements as a result of the appreciation of the euro resulted in an overall decline in sales.[230] It is thus worth noticing that the decline in sales in 2013 was not caused by worsening of their operation but mainly by external factors.

The overall sales trend is also reflected in the development for EBIT with increases until 2012 but declines in 2013. It is, however, evident that EBIT increases more that net sales from 2010 to 2012, causing the increased

[229] Michelin Annual Report 2011, page 2
[230] Michelin Annual Report 2013, section 2.3, page 26-28

profit margin, meaning that some of the costs must have decreased relatively to the sales increase over this period.

Table 2: Michelin, Trend Analysis of Income Statement	FY 2010	FY 2011	FY 2012	FY 2013
Net sales	**100.0**	**115.8**	**120.0**	**113.2**
Cost of Sales	100.0	119.6	119.2	111.7
Depreciation, amortization and impairment	100.0	96.7	105.9	108.9
Adjusted Cost of Sales	100.0	121.6	120.3	112.0
Adjusted Gross Income	**100.0**	**105.6**	**119.5**	**115.3**
Sales and marketing expenses	100.0	105.3	112.1	106.7
Research and development expenses	100.0	109.2	114.8	118.6
General and administrative expenses	100.0	112.1	118.9	122.8
Retiree benefit costs	100.0	36.9	43.1	13.8
Share-based payments – cost of services rendered	100.0	77.8	77.8	122.2
Other operating income/(expenses)	100.0	73.2	22.0	46.3
EBITDA	**100.0**	**104.6**	**128.4**	**119.8**
Depreciation, amortization and impairment	100.0	96.7	105.9	108.9
EBIT	**100.0**	**108.3**	**139.7**	**125.0**

First we look at cost of sales adjusted for depreciation, amortization and impairment and here we see that adjusted cost of sales has increased by 20.0% to 2012 and see a similar decline in 2013. This means that it is not costs of sales coursing changes in the company's profitability. Furthermore, it is evident that Michelin is doing well at adjusting their production costs to the relevant sales level. Sales and marketing expenses is the largest expense other than cost of sales and it thus has a significant impact on EBIT. We see that it only increased 12.1% from 2010 to 2012 where sales increased by 20.0% and the sales and marketing expense is thus the main contributor to the increase in the profit margin. This means that the company is generating more sales per euro they invest in marketing. Moreover, there is also a positive contribution from the research and development expense but to a smaller extent. Retiree benefit costs, share-based payments and other operating expenses have declined but these expenses are small in absolute terms making the contribution negligible. Lastly, the level of depreciation, amortization and impairment has remained fairly constant over the period which contributes positively to the profit margin.

We are also interest in knowing why the profit margin declines in 2013. Here we see that both the research and development expense and the more importantly the general and administrative expense have increased in 2013 despite the decline in sales. Due to the size of the latter expense, this is the most influential change in 2013.

Nevertheless, we see that expenses in 2013 generally have not declined by the same pace as sales making the identification of a single most important factor less significant.

We have now identified that is especially is Michelin's ability to generate more sales per euro invested in marketing that is driving the profit margin from 11.2% to 13.0% from 2010 to 2012. Furthermore, the general and administrative expense increased in 2013 where sales dropped by 5.7%, and as costs generally did not decline at the same pace, the profit margin fell from 13.0% to 12.3%.

4.2.1.2 Trend Analysis of Michelin's Analytical Balance Sheet

In the following section, we will make a similar trend analysis of the company's invested capital. We use the average invested capital for the year as this is the most correct picture of how much capital the company needed to generate a return on in any given year. Therefore, the invested capital for the year is again found as the average of opening balance and the closing balance of the invested capital for a given year. The results are presented in Table 3.

Table 3: Michelin, Trend Analysis of Invested Capital	FY 2010	FY 2011	FY 2012	FY 2013
Invested Capital				
Operational Assets				
Goodwill	100.0	101.5	101.2	97.9
Other intangible assets	100.0	110.1	116.4	125.4
Property, plant and equipment (PP&E)	100.0	107.7	117.3	124.8
Investments in associates	100.0	129.9	197.6	243.3
Deferred tax assets	100.0	119.4	136.1	122.1
Inventories	100.0	123.8	133.3	124.1
Trade receivables	100.0	115.0	115.6	104.6
Supplier advances	100.0	112.5	132.9	154.6
Total Operational Assets	100.0	113.3	121.9	121.2
Operational Liabilities				
Provisions and other non-current liabilities	100.0	85.3	81.2	99.8
Deferred tax liabilities	100.0	145.9	195.3	152.9
Trade payables	100.0	125.3	131.1	129.4
Other current liabilities	100.0	107.1	108.0	103.4
Total Operational Liabilities	100.0	108.7	110.5	111.7
Invested Capital	**100.0**	**115.3**	**126.8**	**125.3**

The invested capital grew from 2010 to 2012 with 26.8% after which is declined slightly in 2013. This trend implies that Michelin is investing more capital in their operations and hence need a higher return in absolute terms to stay at the same profitability. In 2011, the invested capital grew by 15.3%. Simultaneously, sales grew

by 15.8% (see Table 2) resulting in a flat turnover rate of the invested capital of 1.67 times per year. This corresponds to a turnover of the invested capital of 219 days, meaning that the company has the invested capital tied up in the operations for 219 days (we use 365 days per year for these calculations). We can use this number as a benchmark for Michelin in other years as well as for comparison with its peers as it tells us how effectively a company manages its capital. In 2012, net sales grew by 3.6% but the invested capital over the year grew by 10.0%. This results in a turnover rate of 1.58 times per year and a turnover in days of 231 days. I.e., due to the changes in 2012, Michelin now needs to fund its full operations for 12 additional days per year. Furthermore, in 2013, sales declined by 5.7% while the invested capital only declined by 1.2% meaning that the turnover rate fell to 1.50 corresponding to additional 12 days per year the company needs funding compared to the 2012 level. We will now look into the reasons why this happened.

We start out with looking at the largest items of the operational assets, namely property, plant and equipment, deferred tax assets, inventories, and trade receivables. PPE increased by 7.7% in 2011, 8.8% in 2012 and 6.4% in 2013. This means the PPE investments contribute to the slower turnover rate in 2012 and 2013 but not 2011. Deferred tax assets, which is the smallest item of the four, grew by 19.4% in 2011, 14.0% in 2012, and fell by 10.3% in 2013. This means that it had a negative effect on the turnover rate of the invested capital in 2011 and 2012 but a positive effect in 2013 as it fell by more than the corresponding decline in sales that year. Looking at inventory, we see that it has increased at a faster pace than the overall invested capital through 2012 contributing to a higher total invested capital. Trade receivables increased by 15.0% in 2011 but were relatively stable in 2012 and declined in 2013, thereby not having a negative impact in the latter years. We do not go into detail with the remaining operational assets due to the rather negligible size of these. Looking at the operational liabilities, we see that provisions and other non-current liabilities had a small decline 2011 and 2012 but with no major impact on the invested capital. Trade payables grew significantly in 2011 contributing positively to the turnover rate of the invested capital and the changes in 2012 and 2013 were largely in line with the changes in sales. Other current liabilities, the largest item of the four, barely grew in 2012 and 2013 and as growth in the operational liabilities lowers the invested capital, this means that the invested capital grew consequently.

Summing up, the decline in the turnover rate of the invested capital in 2012 and 2013 was not caused by a single item in the balance sheet but rather a number of factors, the most significant being PPE, inventory, and other current liabilities.

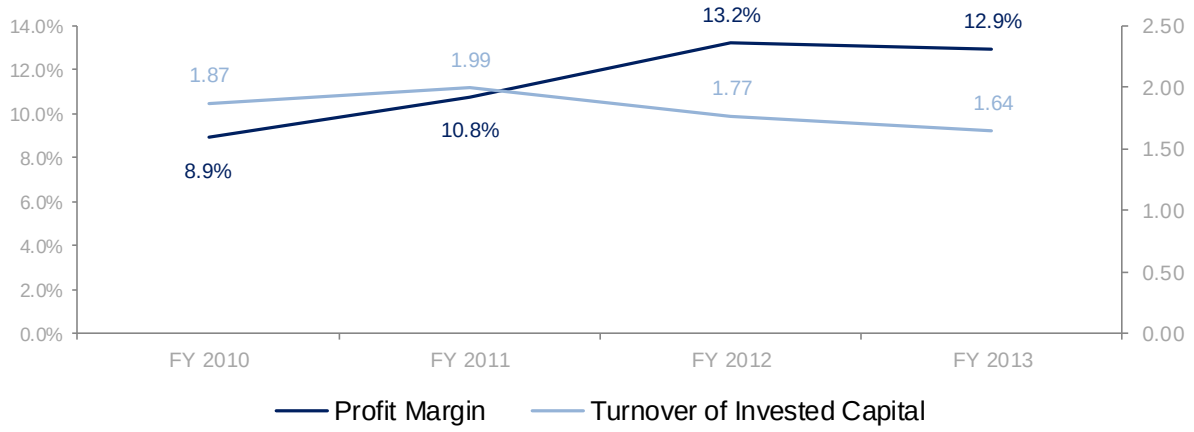
Concluding on the financial analysis of Michelin, we have seen that Michelin has managed to improve their profit margin but due to falling sales in 2013, both the profit margin and the turnover rate of the invested capital was hurt. Furthermore, the turnover rate was negatively affected by changes in PPE, inventory, and other current

liabilities. It is, however, worth noticing that the decline in sales in 2013 was mainly coursed by unfavourable exchange rate changes and it is therefore likely that Michelin will be able to improve their ROIC in the future given less significant exchange rate changes.

4.2.2 Decomposing ROIC for Pirelli

We will now do the same exercise for Pirelli. We take our point of departure by examining the profit margin and turnover rate of the invested capital. In Figure 15 we see that Pirelli's profit margin has increased significantly over the period while the turnover rate of the invested capital as seen a slight negative trend. In 2011, both the profit margin and the turnover rate increased substantially, causing an improvement of ROIC from 16.6% to 21.5%. ROIC was also improved in 2012, as the decline of the turnover rate was more than offset by a steep increase in the profit margin. Both the profit margin and the turnover rate declined in 2013 causing the drop in ROIC to 21.2% that year. We will now look at a trend analysis of analytical income statement and the balance sheet to identify the drivers behind the above described trends.

Figure 15: Pirelli, Profit Margin (L) and Turnover of Inv. Cap. (R)



4.2.2.1 Trend Analysis of Pirelli's Analytical Income Statement

In Table 4, we have prepared an indexed version of the analytical income statement with 2010 as the base year. Pirelli's net sales has increased by 16.6% in 2011 mainly due to an overall better price/mix ratio,[231] 7.4% in 2012 driven by the premium segment,[232] and 1.2% in 2013 driven by increased sales in the premium segment and emerging markets but this was almost neutralized negative exchange rate effects.[233] In comparison, EBIT grew

[231] Pirelli Annual Report 2011, page 55
[232] Pirelli Annual Report 2012, page 61
[233] Pirelli Annual Report 2013, page 25

by 41.0% in 2011, 31.5% in 2012 and fell by 0.9% in 2013. These numbers show that Pirelli has significantly improved their operation over the period from 2010 to 2012 and that it was the best performing company of the four in this period, but that the trend flatted out in 2013. From Table 4, we see that the reason for the stable performance in 2013 was that basically all items remained at their 2012 level, but with slight increases in wages and salaries and amortisation, depreciation and impairment, the net result was a decline in the profit margin of 0.3% percentage points.

Looking at the period from 2010 to 2012, we see that there are a number of items causing the increased profit margin. Raw materials and consumables, the largest expense, grew by a slightly lower rate than sales in the period (22.3%) which had a positive effect on the profit margin. Wages and salaries and other costs (SG&A) also had a positive effect on the profit margin, as they only grew by 13.8% and 24.2% in the period, respectively. The last two influential, yet largely smaller, items that have influenced the profit margin are other personal expenses and amortisation, depreciation and impairment. These grew by 4.4% and 22.5% respectively, thereby also increasing the profit margin.

Table 4: Pirelli, Trend Analysis of Income Statement	FY 2010	FY 2011	FY 2012	FY 2013
Net Sales	**100.0**	**116.6**	**125.2**	**126.8**
Change in inventories of work in progress, semifinished and fir	100.0	465.1	212.5	22.7
Raw materials and consumables (net of change in inventories)	100.0	128.6	122.3	119.8
Wages and salaries related to COGS	100.0	106.5	113.8	118.6
Adjusted Gross Income	**100.0**	**115.4**	**133.2**	**134.0**
Additions to property, plant and equipment for internal work	100.0	37.4	38.2	32.1
Other costs (SG&A)	100.0	108.6	124.2	126.5
Other Personal expenses	100.0	104.2	104.4	90.6
EBITDA	**100.0**	**127.7**	**164.1**	**166.7**
Amortisation, depreciation and impairment	100.0	101.8	122.5	133.5
EBIT	**100.0**	**141.0**	**185.4**	**183.8**

Summing up, Pirelli have done really well at controlling costs in a period of rapid growth while also hindering cost increases when the growth stalled. We will now investigate what have caused the changes in the turnover rate of the invested capital.

4.2.2.2 Trend Analysis of Pirelli's Analytical Balance Sheet

We have presented the indexed analytical balance sheet in Table 5. We see here, that the invested capital has increased in all years. In 2011, the increase was 9.2% resulting in an improved turnover rate of the invested

capital as net sales that year grew 16.6%. The turnover rate grew from 1.87 to 1.99, corresponding to decrease in the turnover of the invested capital from 196 to 183 days which is considerably lower than Michelin's best year. This improvement was largely caused by a decline in intangible assets and a stable development in trade

Table 5: Pirelli, Trend Analysis of Invested Capital	FY 2010	FY 2011	FY 2012	FY 2013
Invested Capital				
Operational Assets				
Property, plant and equipment	100.0	118.2	135.6	141.2
Intangible assets	100.0	92.7	101.8	107.4
Deferred tax assets	100.0	166.9	252.4	259.5
Accured income and prepaid expenses	100.0	12.7	16.3	20.8
Other receivables (supplier advances and lawsuits)	100.0	132.9	147.1	157.5
Inventories	100.0	126.1	156.0	152.4
Trade receivables	100.0	100.7	102.6	97.1
Accured income and prepaid expenses	100.0	76.7	125.8	140.4
Other receivables (supplier advances and lawsuits)	100.0	81.7	88.8	88.9
Total Operational Assets	100.0	111.3	127.6	130.2
Operational Liabilities				
Provisions for liabilities and charges	100.0	96.7	89.7	77.6
Provisions for deferred tax liabilities	100.0	88.7	117.4	136.4
Trade payable	100.0	119.2	129.1	122.3
Provisions for liabilities and charges	100.0	97.5	95.4	81.4
Other payables	100.0	126.4	164.7	194.9
Other payables	100.0	115.7	117.3	95.2
Total Operational Liabilities	100.0	114.4	120.9	110.8
Invested Capital	**100.0**	**109.2**	**132.3**	**144.0**

receivables.

More interestingly, we will now look at the decline in the turnover rate in 2012 and 2013. In 2012, the invested capital grew by 21.2% compared to 7.4% in sales. The rapid growth in invested capital in 2012 was mainly driven by increases in property, plant and equipment and inventories while being partially offset by an increase in trade payables. PPE grew as Pirelli was investing in a number of growth projects in South America, Romania, and China related to increasing the production mix[234] and premium segment production in Italy, Romania, and Mexico.[235] Inventories grew due to increasing commodity prices in late 2011[236] and a higher price/mix of the

[234] Pirelli Annual Report 2011, note 10, page 169
[235] Pirelli Annual Report 2012, note 9, page 192
[236] Pirelli Annual Report 2012, note 18, page 179-180

stock in 2012.[237] Pirelli does not specify why the reasons for the increased trade payables but they contribute to a lower invested capital and a better cash flow. In 2013, the invested capital grew 8.8% where sales grew by 1.2%. The operational assets were increased slightly by an additional increase in PPE but the main effect coursing the growth in the invested capital was an overall decrease in the operational liabilities. The main drivers behind this were decreases in trade payables, and current and non-current other payables.

Table 6: Pirelli, Turnover of NWC	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**
Turnover of Inventories	7.07	6.54	5.68	5.88
Turnover of Inventories, days	52	56	64	62
Turnover of trade receivables	6.87	7.95	8.38	8.97
Turnover of trade receivables, days	53	46	44	41
Turnover of trade payables	4.72	4.62	4.58	4.89
Turnover of trade payables, days	77	79	80	75
Total turnover of NWC in days	**27**	**23**	**28**	**28**

The last thing we want to look into is the development in Pirelli's net working capital (NWC). A common problem for companies experiencing rapid growth is keeping their working capital under control. In order to fully see how Pirelli has managed this situation, we have prepared Table 6. We have found the turnover rates by dividing the net sales with average NWC item. We have found the turnover in days by dividing 365 days per year with the turnover rates. Looking at inventories, we see that the turnover in days is increasing over the period. We know from earlier that this is coursed by both increasing commodity prices and an increased price/mix of the inventory due to a strategic shift towards premium products. Increases in the inventory level are generally bad from a cash flow perspective, but since it is owing to market prices and a strategic decision, we cannot say that Pirelli does not have control of this development. The turnover in days of trade receivables has declined. This means that in 2010, Pirelli gave their customers 53 days of credit but in 2013, they only give them 41 days of credit. This is a very positive development for the company showcasing strong cash management. Lastly, the turnover in days of trade payables has remained fairly constant, which means that the company has unchanged credit terms with their suppliers. The net effect of the changes in the NWC items is that the turnover of the net working capital in days has remained basically constant over the period, being 27/28 days. This is a strong indication of good cash management in a period of rapid growth for the company, which shows that the Pirelli has been in control of their operations.

[237] Pirelli Annual Report 2012, note 17, page 209

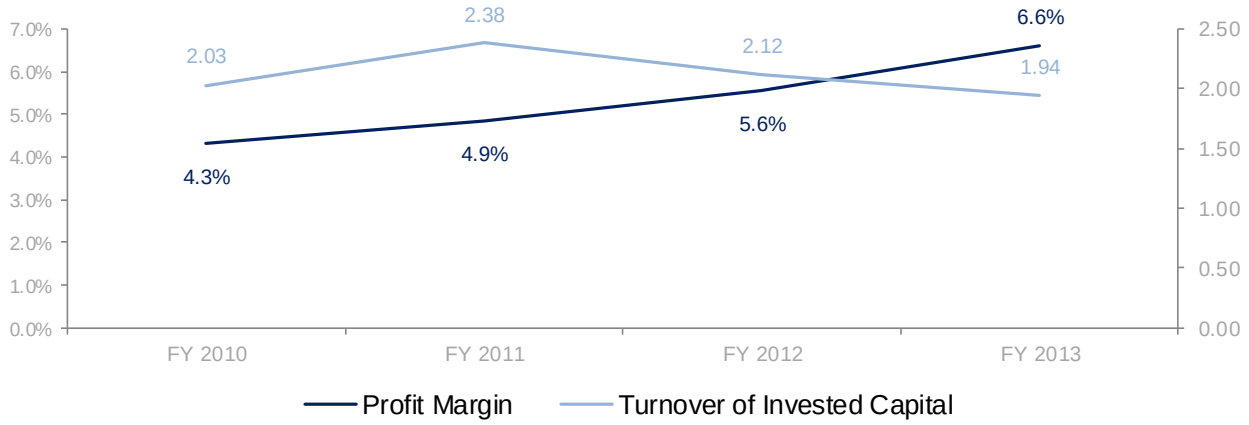
Summing up on Pirelli's financial development, Pirelli has experience a period of solid growth mainly coursed strong sales in the premium segment and from emerging markets. While growing, Pirelli has also managed to control their invested capital to such an extent that their ROIC has increased in all years besides 2013, where the decline was mainly coursed by unfavourable currency movements. This, combined with strong control of their net working capital, shows that Pirelli has been very successful at managing their operations.

4.2.3 Decomposing ROIC for Goodyear

We will now examine the development of the profit margin and turnover rate of the invested capital for Goodyear. The developments are shown in Figure 16.

As shown in this figure, Goodyear has experienced a steadily increasing profit margin from 4.3% to 6.6% over the period from 2010 to 2013. The turnover rate of the invested capital peaked in 2011, but has declined since. It is, however, interesting to compare these numbers to Michelin and Pirelli. Goodyear's highest profit margin of 6.6% is lower than the worst year for both Michelin (10.4%) and Pirelli (8.9%). Goodyear's lowest turnover rate of 1.94, on the other hand, is better than the best turnover rates achieved by Michelin (1.75) and close to the best of Pirelli (1.99). This implies that Goodyear's operations are run differently than its two European peers'. Goodyear is earning a smaller margin on their products sold, but by maintaining a high turnover of their invested capital, they still accomplish to deliver a competitive ROIC. We will now decompose the profit margin and the turnover rate of the invested capital to investigate how they achieve this.

Figure 16: Goodyear, Profit Margin (L) and Turnover of Inv. Cap. (R)



4.2.3.1 Trend Analysis of Goodyear's Analytical Income Statement

We have indexed Goodyear's analytical income statement with 2010 as the base year. This is shown in Table 7.

Table 7: Goodyear, Trend Analysis of Income Statement	FY 2010	FY 2011	FY 2012	FY 2013
Net Sales	**100.0**	**120.9**	**111.5**	**103.8**
Cost of Goods Sold, adjusted	100.0	122.3	111.3	99.3
Gross Income	**100.0**	**115.6**	**112.0**	**120.0**
Selling, Administrative and General Expense	100.0	107.3	103.3	104.9
Financing fees and financial instruments	100.0	(296.7)	(520.0)	(186.7)
Royalty income	100.0	(29.6)	(23.9)	(32.1)
General and product liability - discontinued products	100.0	(190.9)	(72.7)	(136.4)
Miscellaneous expense	100.0	42.9	82.9	22.9
EBITDA	**100.0**	**123.3**	**125.6**	**135.7**
Depreciation and Amortization	100.0	109.7	105.4	110.7
EBIT	**100.0**	**136.0**	**143.5**	**159.1**

Firstly, we see that net sales grew by 20.9% in 2011 but declined in both 2012 and 2013. In 2011, the increase was driven by an improved price/mix resulting in a 17.0% improvement of the revenue per tire.[238] Weak performances of revenues from Europe lead to a 7.8% decline in net sales in 2012[239] while 6.9% decline in sales in 2013 was driven by unfavourable currency movements in Latin America and Asia and a declining price/mix in North America and Europe.[240] However, despite the negative sales trend in 2012 and 2013, EBIT has been rising in all years. We will now identify the reasons for this development

In 2011, EBIT grew by 36.0% compared to a 20.9% increase in sales. This resulted in an improvement of the profit margin from 4.3% to 4.9%. Cost of goods sold (COGS) moved largely in line with sales that year. Selling, administrative and general expenses (SG&A), however, only grew by 7.3% and as it is the second largest expense item, this is the main contributor to the improved profit margin. According to Goodyear, the is owing to their cost savings plan enforcing low-cost country sourcing and lower SG&A expenses generally. This plan resulted in savings of estimated $281 million in 2011.[241] Lastly, depreciation and amortization grew 9.7%, thereby also contributing positively to the profit margin. Sales declined by 7.8% in 2012 but as COGS, SG&A and depreciation and amortization declined by 9.0%, 3.7%, and 3.9% respectively, the net effect was an improvement of the profit margin of 0.7 percentage points. The savings from the savings programme amounted to $346 million.[242] In 2013 the profit margin improved again, but this year it as almost solely due to a large

[238] Goodyear Annual Report 2011, page 5
[239] Goodyear Annual Report 2012, page 6
[240] Goodyear Annual Report 2013, page 6
[241] Goodyear Annual Report 2011, page 5
[242] Goodyear Annual Report 2012, page 6

improvement in COGS. COGS fell 10.8% as raw material costs decreased by 13.0% in 2013 compared to 2012.[243] We will not comment on the developments in the items financing fees and financial instruments, royalty income, general and product liability - discontinued products, and miscellaneous expenses, as these items are rather negligible in size but volatile over the period.

Summing up, it is evident that Goodyear has been successful at managing their expenses in a period of both inclining and declining sales. This can especially be contributed to their cost reduction programme as well as strict control of COGS. However, sales has been declining due to their large European exposure and worsening of the price/mix.

We will now dive into the analytical balance sheet.

4.2.3.2 Trend Analysis of Goodyear's Analytical Balance Sheet

In Table 8, we have presented the analytical balance sheet. We see that the invested capital has increased only modestly over the period by 8.3% from 2010 to 2013. In 2011, where sales rallied by 20.9%, the invested capital grew by 3.1%. This resulted in an improvement of the turnover rate of invested capital from 2.03 to 2.38 – the highest level we have seen from any of the companies. In 2012 and 2013, however, the turnover rate declined as sales decreased but the invested capital grew by 3.7% and 1.3%, respectively.

Looking at the main drivers behind the increase in invested capital, we see that property, plant and equipment and inventories have been the dominating drivers. PPE grew in line with the overall growth in invested capital in 2011, but by growing 6.2% in 2012 and 6.1% in 2013, it contributed to the decrease of the turnover rate. The reason for this growth in PPE was investments in machinery and equipment as well as new constructions, among other a new company headquarter.[244] [245] Inventories rose considerably in 2011 (26.1%) and also increased slightly in 2012 (4.0%) before declining 14.6% in 2013.

A number of items also contributed to a decrease of the turnover rate of the invested capital. Most significantly were accounts receivable, accounts payable-trade and other long term liabilities. Accounts receivable increased by in 2011 by 5.9% but declined in the following two years. Accounts payable-trade followed a pattern very similar to inventories, i.e. a sharp increase in 2011, a modest increase in 2012 after which it declined in 2013. Nevertheless, due to the relative size of the accounts payable to the total operational liabilities, this coursed a decrease in the invested capital. The same can be said for other long term liabilities that contributed in a very

[243] Goodyear Annual Report 2013, page 6
[244] Goodyear Annual Report 2012, note 12, page 65
[245] Goodyear Annual Report 2012, page 73

similar way. Lastly, both goodwill and intangible assets declined over the period thereby also lowering the invested capital. These have declined mainly due to amortization.[246]

Table 8: Goodyear, Trend Analysis of Invested Capital	FY 2010	FY 2011	FY 2012	FY 2013
Invested Capital				
Operational Assets				
Goodwill	100.0	96.3	94.9	95.9
Intangible Assets	100.0	97.8	91.4	85.5
Deferred Income Taxes	100.0	201.0	327.7	339.6
Other Assets	100.0	106.0	107.2	119.2
Property, Plant and Equipment	100.0	104.4	110.8	117.5
Accounts Receivable	100.0	105.9	102.6	94.7
Inventories	100.0	126.1	131.1	111.9
Prepaid Expenses and Other Current Assets	100.0	102.3	114.2	123.8
Total Operational Assets	100.0	108.7	112.9	111.7
Operational Liabilities				
Deferred and Other Noncurrent Income Taxes	100.0	101.9	106.5	109.0
Other Long Term Liabilities	100.0	115.2	124.8	120.2
Accounts Payable-Trade	100.0	125.8	128.0	117.4
Other Current Liabilities	100.0	111.1	119.9	121.6
Total Operational Liabilities	100.0	119.8	124.7	118.3
Invested Capital	**100.0**	**103.2**	**107.0**	**108.3**

As previously mentioned, Goodyear has a considerably better turnover rate of its invested capital than its European peers. Thus, we find it interesting to make a net working capital analysis similar to the one made for Pirelli to compare how they manage their liquidity. For this purpose we have prepared Table 9. As we see from this table, the total turnover in days of the NWC is actually worse than Pirelli's. Goodyear is doing marginally better than Pirelli on the turnover of the inventories but the opposite holds true for receivables. Nevertheless, the large difference lies in the payables. Goodyear's turnover of payables in days has increased from 52 to 59 days which is a positive development meaning that they on average get 7 days more credit at their suppliers. The similar number for Pirelli, however, is 75 days in their worst year. This means that Pirelli on average gets 16 days more worth of credit from their suppliers, which of course is attractive from a cash flow perspective.

[246] Goodyear Annual Report 2013, note 10, page 66

Table 9: Goodyear, Turnover of NWC	FY 2010	FY 2011	FY 2012	FY 2013
Turnover of Inventories	6.95	6.66	5.91	6.44
Turnover of Inventories, days	53	55	62	57
Turnover of accounts receivables	7.14	8.15	7.76	7.82
Turnover of accounts receivables, days	51	45	47	47
Turnover of trade payables	6.99	6.72	6.09	6.18
Turnover of trade payables, days	52	54	60	59
Total turnover of NWC in days	51	45	49	44

This analysis has showed us that even though Goodyear is first in class in terms of managing their invested capital, they are not as good as Pirelli at managing their working capital. This implies that it must be the remaining large balance sheet item they manage effectively, namely their PPE. We have thus made an analysis of the management of PPE from a turnover perspective, but this analysis is included in Section 4.2.5 in order to also include Bridgestone in this analysis.

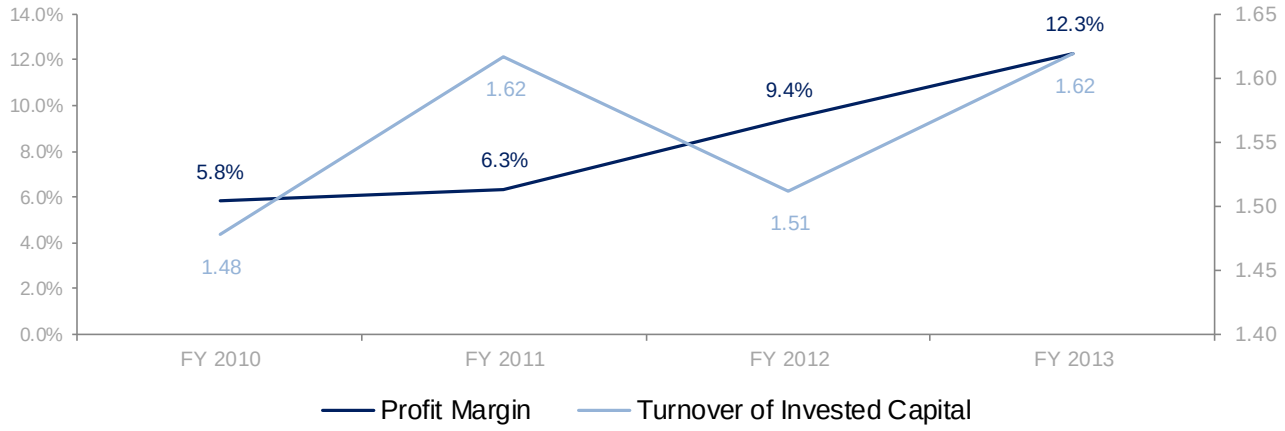
Concluding on Goodyear, we see some remarkable difference compared to its peers. Goodyear has a lower profit margin, but by maintaining a high turnover of their invested capital they deliver a ROIC in line with their peers. Furthermore, through a number of saving initiatives, they have managed to increase their profit margin even though sales have been declining. Additionally, they have kept their invested capital rather stable, but due to the negative trend in sales, the turnover rate has declined.

4.2.4 Decomposing ROIC for Bridgestone

Figure 13 showed that Bridgestone is the company that has experienced the largest changes over the period from 2010 to 2013. Over this period, ROIC increased from 8.6%, the lowest of the four companies, to 19.9%. To understand the drivers behind this, we have presented an overview of the development of the profit margin and the turnover rate of the invested capital in Figure 17.

Starting with the profit margin, we see that it has more than doubled over the period. This has taken them from being among the worst in class to among the best in class in terms of profit margin in four years. Looking at the turnover rate of the invested capital, we see that it has been rather volatile over the period, increasing in 2011 and 2013, and decreasing in 2012. The level of the turnover rate is approximately at par with Michelin and slightly worse than Pirelli in the first three years of the period. Furthermore, it is significantly lower than Goodyear in all years, again confirming again that Goodyear is better than managing their invested capital than its peers.

Figure 17: Bridgestone, Profit Margin (L) and Turnover of Inv. Cap. (R)



Lastly, it is worth noticing that Bridgestone is actually the only company of the four tire producers that has managed to improve their turnover rate in 2013.

We will now look into the developments in the analytical income statement and balance sheet to identify the drivers behind the above mentioned trends.

4.2.4.1 Trend Analysis of Bridgestone's Analytical Income Statement

We have presented the indexed analytical income statement in Table 10 with 2010 as the base year. We see that sales increased by 5.7% in 2011, were nearly flat in 2012 with a 0.5% increase, and then grew by 17.4% in 2013. The growth in 2011 was a result of both higher tire sales and higher sales in the diversified product segment.[247] In 2012, sales were up in the in tire segment but this effect was almost neutralized, mainly by an appreciation of the yen relative to the euro.[248] In 2013, the 17.4% increase in sales was mainly driven by a depreciation of the yen making Bridgestone's products more competitive internationally.[249]

[247] Bridgestone Annual Report 2011, page 1
[248] Bridgestone Annual Report 2012, page 1
[249] Bridgestone Annual Report 2013, page 1

Table 10: Bridgestone, Trend Analysis of Income Statement	FY 2010	FY 2011	FY 2012	FY 2013
Net Sales	**100.0**	**105.7**	**106.2**	**124.7**
Cost of Sales	100.0	108.0	104.2	117.1
Depreciation and amortization	100.0	93.6	90.9	103.2
Gross profit, adjusted	**100.0**	**99.7**	**107.4**	**134.7**
Selling, General and Administrative Expenses	100.0	97.7	97.1	113.6
EBITDA	**100.0**	**104.1**	**130.8**	**182.2**
Depreciation and amortization	100.0	93.6	90.9	103.2
EBIT	**100.0**	**114.9**	**171.8**	**263.2**

Looking at EBIT, we see the trend that has driven the large improvement of the profit margin, namely an improvement of 163.2% in four years. This can be divided into an increase of EBIT of 14.9%, 49.5%, and 53.2% in 2011, 2012, and 2013, respectively. We will now look at each year in detail. In 2011, cost of sales (COGS) grew by 8.0% as a result of higher raw material prices.[250] This had a negative effect on EBIT, but due to declines in selling, general and administrative expenses (SG&A) as well as depreciation and amortization, the profit margin increased. Bridgestone has a rather low level of detail in their annual reports making it more difficult to identify the reasons for these changes. We have, however, noticed that Bridgestone is disposing a considerable amount of assets and that these may influence the decline in depreciation and amortisation in both 2011 and 2012. In 2012, COGS, SG&A and depreciation and amortization declined, all influencing the profit margin positively. In 2013, COGS increased by 12.4%, SG&A by 17.1%, and depreciation and amortization by 13.6% but as this was less than the 17.4 increase sales, the profit margin improved again.

Generally, Bridgestone has been good at controlling cost. Cost of sales increase in 2011 and 2013 but at a lower rate than sales implying a more effective production of their tires. The same applies for selling, general and administrative expenses also meaning that Bridgestone's operations have become more effective.

4.2.4.2 Trend Analysis of Bridgestone's Analytical Balance Sheet

We have presented the indexed analytical balance sheet in Table 11. The invested capital declined by 3.4% in 2011 contributing to a higher turnover rate as sales increased this year, grew 7.5% in 2012 where sales were flat resulting in a lower turnover rate, and increased by 9.6% in 2013 but as sales increased by 17.4%, the net effect was a better turnover rate. We will now comment on the developments in the most influential items. Firstly, property, plant and equipment (PPE) declined in 2011, the recovered to 2010 level in 2012 after which it increased by 15.9% in 2013. This large increase in 2013 was mainly due to currency translations of foreign

[250] Bridgestone Annual Report 2011, page 1

assets after the depreciation of the yen.[251] Secondly, notes and accounts receivable were fairly stable over the period. This contributed positively to the turnover rate in all years but 2012. Thirdly, inventories increased more than sales in 2011 and 2012 which was unfavourable for the turnover rate. However, in 2013 the opposite was the case due to relatively larger increase in sales. Lastly, Notes and accounts payable had no major impact on the turnover rate.

Table 11: Pirelli, Trend Analysis of Invested Capital	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**
Invested Capital				
Operational Assets				
Property, Plant and Equipment	100.0	95.1	100.0	115.9
Investments in and advances to affiliated companies	100.0	89.1	91.2	107.6
Deferred tax assets	100.0	83.3	86.5	78.5
Other assets	100.0	95.8	99.3	115.8
Allowance for doubtful accounts	100.0	209.3	358.3	456.0
Notes and accounts receivable	100.0	95.0	97.0	106.8
Inventories	100.0	109.9	120.7	124.9
Deferred tax assets	100.0	113.8	128.7	150.5
Other current assets	100.0	102.2	117.7	140.1
Allowance for doubtful accounts	100.0	63.6	57.2	70.5
Total Operational Assets	100.0	97.9	103.7	115.6
Operational Liabilities				
Deferred tax liabilities	100.0	82.4	71.6	116.4
Provision for environmental remediation	100.0	106.8	97.5	83.7
Provision for recall of merchandise	100.0	100.0	0.0	0.0
Notes and accounts payable	100.0	107.1	105.7	107.8
Accrued expenses	100.0	97.4	105.0	130.4
Deferred tax liabilities	100.0	119.8	152.0	142.0
Provision for sales returns	100.0	201.3	188.5	169.5
Provision for loss related to US antitrust laws	N/A	N/A	N/A	100.0
Provision for recall	N/A	N/A	N/A	100.0
Provision for plant restructuring in Japan	N/A	N/A	N/A	100.0
Total Operational Liabilities	100.0	102.7	103.1	122.5
Invested Capital	**100.0**	**96.6**	**103.8**	**113.8**

Concluding on Bridgestone's results, we have seen that they have been able to improve their profit margin substantially. This is a result of more effective cost management as well as favourable currency movements. They have also been good at managing their invested capital, even though the results have been more mixed.

[251] Bridgestone Annual Report 2013, page 3

4.2.5 Comparison of the Turnover Rates of Property, Plant, and Equipment

As previously mentioned, we believe that it is interesting to compare how well the four companies manage their property, plant and equipment, as it is by far the largest balance sheet item for all companies. Furthermore, we have seen that Goodyear's profitability is to a larger extent driven by a higher turnover rate of the invested capital and lower profit margin, relative to its peers. This, combined with the fact that it apparently not manages is net working capital more efficiently, suggests that Goodyear's turnover rate should be higher than its competitor. We have presented the turnover rate of the property, plant, and equipment in Table 12.

Table 12: Comparison of Tunrover rates of PPE	FY 2010	FY 2011	FY 2012	FY 2013
Michelin, turnover rate of PPE	2.39	2.57	2.45	2.17
Michelin, turnover rate of PPE in days	153	142	149	168
Pirelli, turnover rate of PPE	2.38	2.42	2.39	2.35
Pirelli, turnover rate of PPE in days	153	151	153	155
Goodyear, turnover rate of PPE	2.73	3.16	2.74	2.41
Goodyear, turnover rate of PPE in days	134	116	133	152
Bridgestone, turnover rate of PPE	2.36	2.62	2.50	2.53
Bridgestone, turnover rate of PPE in days	155	139	146	144

The table shows that we were right in terms of Goodyear's PPE management. Goodyear has by a margin the best turnover rate of the companies, with the exception of Bridgestone which has a better rate in 2013. The interpretation of this is that Goodyear is better at managing their PPE, or put differently, they generate more sales for every dollar invested in PPE. However, we acknowledge that this conclusion may be disturbed to some extent by the age the companies' assets. If property, plant and equipment assets are older, the accumulated depreciation will be higher thereby lowering their book value. Unfortunately we do not have the necessary information available to analyse this more in debt. Lastly, it is also worth noticing from Table 12 that Pirelli is the worst performer in terms of PPE turnover despite in the last year. This is a bit surprising given that Pirelli generally has the highest ROIC and do well at managing their net working capital.

4.3 Leverage Ratio Analysis

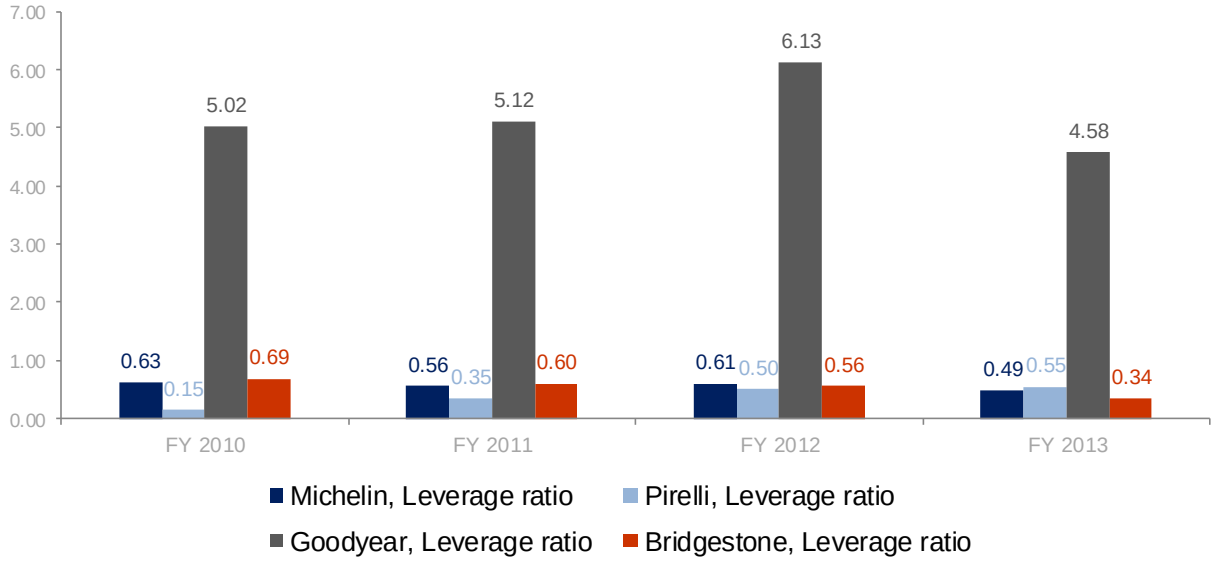
From our analysis so far we have been able to conclude that all four companies have been able to grow significantly in the period from 2009 to 2013. However, we are also interested in looking at how the companies have funded their operations. This is important as e.g. a highly levered company can have difficulties obtaining

extra financing for new projects and information of how levered the companies are is therefore important in terms of how we can expect the companies to perform in the future.

Figure 18 illustrates how the four companies' leverage ratios have developed historically. We have calculated these ratios as the companies' net interest bearing debt divided by their equity. One again we use both average NIBD and average equity from year to year to get a more appropriate picture of what the level of these items have been throughout the year.

As Michelin, Pirelli and Bridgestone lie closely together we will start by going through these before moving on to Goodyear. Michelin has managed to keep their debt relatively stable but in 2013 they have cut down their debt considerably as their free cash flow has allowed them to reduce their debt level.[252] Pirelli on the other hand, have been increasing their debt throughout the period. This comes mainly as a result of their expansions in emerging markets with investments in new plants in e.g. Brazil.[253] Their expansion efforts have brought their leverage ratio from the lowest of the peers to the 2nd highest in 2013.

Figure 18: Development in Leverage (NIBD/Equity) ratio



Bridgestone have opposed to Pirelli seen a decreasing leverage ratio. This is partially due to an increase in equity from increased retained earnings as well as unrealized gains in investments in securities. Furthermore, the

[252] Michelin Annual Report 2013, page 2
[253] Pirelli & C. S.p.A. Analysis, MarketLine, 2013 page 6

company has decreased their NIBD as a result of higher free cash flow like Michelin.[254] The outlier of the four companies is Goodyear that is operating on a completely different level of leverage compared to its peers. Goodyear has throughout the period had a leverage ratio above 4 and in 2012 it reached 6.13. The company has in the recent years invested heavily in expansions in emerging markets and much of this has been financed through debt. It can be discussed why the company has chosen such a high level of debt but it appears the company's cost of equity is relatively expensive compared its cost of debt. For the other three companies on the other hand, it appears that their cost of equity is low since their relatively low levels of debt. Lastly, it is worth mentioning that Goodyear as the only of the four companies is rated as non-investment grade, as their current credit rating by S&P is BB- and Moody's rate them as Ba3. Bridgestone has the highest credit rating, as they are rated A2 by Moody's.[255]

Summing up, Goodyear is considerably more levered than its peers who all have relatively low levels of debt. Goodyear's' high level of debt can potentially become problematic if cash flows do not rise as their high interest expenses forces the company generate high levels of free cash flow.

4.4 Conclusion to the Financial Analysis

In the financial analysis, we stated out with making a detailed financial statement analysis and analysis of the companies' reporting standards, in order to establish a comparable foundation for the further financial analysis. We have then calculated ROIC, and we have made an in depth analysis of the drivers behind the developments in ROIC for each company. Lastly, we have examined their leverage ratios. We have learned that Pirelli generally has been the most profitable company over the period. This is mainly owing to good control of their invested capital and net working capital as well as significant revenue growth. Bridgestone has experienced the largest change over the period, as they went from having the lowest ROIC to the highest. This was owing to good control of costs, as well as a huge rise in sales, mainly coursed by the depreciation of the yen. Michelin has been rather stable over the period. The profit margin increased slightly due to more effective marketing efforts, but the due the appreciation of the euro in 2013, ROIC declined. The last company, Goodyear, is in several ways different from its competitors. Relative to its peers it is highly levered and also has the best turnover rate of the invested capital but a low profit margin. The latter has, however, been improved over the period mainly due to an effective cost cutting program. This happened even though sales declined in both 2012 and 2013.

We now have in depth knowledge of the four companies, and by combining this with the strategic analysis; we are adequately equipped for making the forecasting and valuation of each company.

[254] Bridgestone Annual Report 2013, page 15
[255] Bloomberg data, collected June 9th, 2014

5.0 SWOT analysis

We have now completed both our strategic analysis and financial analysis. Combined, these have provided us with important knowledge of how the tire industry works and what drives it, as well as in depth knowledge of the four companies and their historical performance. As a final preparation before we move on to our budgeting of the companies' forecasted future performance, we will summarise our findings in a SWOT analysis. The SWOT analysis will allow us to identify the central strengths, weaknesses, opportunities, and threats of each company, which therefore also summarises how the companies compare to each other.

5.1 Michelin SWOT

Figure 19: Michelin SWOT

Strengths	Weaknesses
- Global presence and exposure to growth markets - The strongest brand portfolio in the tire industry - Specialty business supports tire business - Good control of operating costs	- Exposure to markets with weak growth - Less efficient management of invested capital
Opportunities	**Threats**
- Capture growth in the global tire market - Growth in Europe - Continued strong growth in Brazil and China	- Exposure to rising raw material costs - Intense competition for market share globally - New regulatory requirements in key markets

Strengths

Michelin has a strong global presence and is well positioned to take advantage of future growth in emerging markets. Besides this, the company has the strongest brand portfolio of the four companies positioning it to take advantage of growth opportunities no matter where they occur.

Michelin's specialty business diversifies the company and further supports the tire business as e.g. Via Michelin and the Michelin Guide strengthens the company's brand and premium segment.

Finally, the company has demonstrated good control of its operating costs and for example managed to decrease its marketing expenses without hurting sales.

Weaknesses

The company is highly exposed to the European market and this is problematic if the economy in Europe does not start to pick up.

Michelin has during recent years seen a falling turnover of invested capital, which indicates that the company manages its balance sheet less well than its peers.

Opportunities

As mentioned, the company is in a great position the capture growth globally and on regional levels. The company's exposure to Europe can turn into an opportunity if the European economy starts to pick up.

Threats

As for the entire industry, the company is currently reaping the benefits of low raw material prices. If these start to rise it could hurt profit margins.

The company is exposed to the new regulatory requirements in Europe as well as the threat of similar rules being imposed in key growth markets like Brazil and China.

5.2 Pirelli SWOT

Figure 20: Pirelli SWOT

Strengths	Weaknesses
- Dedication to the premium segment - Large exposure to emerging markets - Collaborations with leading luxury car manufacturers - Industry leading profit margin	- Lack of scale compared to its peers - Increased leverage ratio - Less diversified product portfolio
Opportunities	**Threats**
- Capture growth in the EM tire markets - Growth in Europe - Capture premium segment in Russia	- Increasing raw material prices - New regulatory requirements in key markets - Risks of operating in unstable markets

Strengths

Pirelli's focus on the premium market in especially Europe and emerging market sales puts the company in a position to secure both increasing sales from high growth markets as well as high margins in the premium

segment. Besides this, the company's collaborations with premium carmakers and its agreement to supply tires to Formula 1 ensures a strong position and strong brand name in the premium car segment. Finally, the company has as a result of its focus on higher margin products managed to have the highest profit margin in the industry.

Weaknesses

Pirelli is considerably smaller than its peers and this can potentially become a problem if key markets expand quickly as production will be challenged in keeping up. This is further problematized by Pirelli's relatively high leverage ratio. This means that obtaining funding for new opportunities potentially can become problematic or expensive, as the company's leverage ratio has increased considerably in recent years.

Opportunities

With its focus on emerging markets, the company is in a great position to take advantage of the expected high growth rates of emerging markets. Furthermore, the company's focus on Russia ensures a strong position the take advantage of the emerging market for premium tires here. Finally, the company is in a good position in Europe to capture sales in the premium segment when the economy starts expanding again.

Threats

As for the entire industry, the company is currently reaping the benefits of low raw material prices. If these start to rise it could hurt profit margins.

The company is exposed to the new regulatory requirements in Europe as well as the threat of similar rules being imposed in key growth markets like Brazil and China. These new laws would require considerable expenses and hurt profitability. Other than this, the fact that the company is exposed to emerging markets like Russia also poses a threat as these countries are e.g. seen as considerably more politically and economically unstable.

5.3 Goodyear SWOT

Figure 21: Goodyear SWOT

Strengths	Weaknesses
- Strong brand, especially in the home market - Broad product portfolio - Better utilization of production facilities than peers - Rights to the premium brand Dunlop in EU and US	- Exposure to markets with weak growth - Recovering but low profit margin - Highly levered compared to its peers
Opportunities	**Threats**
- Capture growth in the global tire market	- Increasing raw material prices - New regulatory requirements in key markets - Potentially missing out on growth opportunities

Strengths

Goodyear has a strong and broad product portfolio with the brands Goodyear, Dunlop Tires, Kelly Tires, Sava, and Fulda. Goodyear offers a broad range of tires and Dunlop is a strong premium for racing tires. Kelly Tires, Sava, and Fulda are all in the economy segment which positions Goodyear differently from its competitors. Furthermore, Goodyear is well known for their airships used for advertising. Goodyear is also considerably better at managing its invested capital than its peers, and especially its property, plant, and equipment investments are managed more efficiently. Lastly, Goodyear controls the rights to Dunlop in the United States and Europe, which gives the company a strong premium brand.

Weaknesses

Goodyear has 78.0% of its net sales in the United States and Europe, which potentially will offer limited growth opportunities, depending on the recovery of the world economy. Furthermore, as Goodyear has a stronger focus on the economy segment, their profit margin is lower than its peers even though it has increased significantly in recent years. Adding to this, Goodyear is highly levered compared to its peers and not rated as investment grade debt.

Opportunities

The global tire market is expected to grow as the economy fully recovers. Goodyear will most likely be able to capitalize on this trend.

Threats

As for the entire industry, the company is currently reaping the benefits of low raw material prices. If these start to rise it could hurt profit margins.

The company is exposed to the new regulatory requirements in Europe as well as the threat of similar rules being imposed in the United States. These new laws would require considerable expenses and hurt profitability. Lastly, Goodyear has a much lower presence in emerging markets than its competitors meaning that it could potentially lose global market share if these markets develops as anticipated.

5.4 Bridgestone SWOT

Figure 22: Bridgestone SWOT

Strengths	Weaknesses
- Global presence and exposure to growth markets - Strong brand and brand portfolio - Low debt - Scale advantages	- Exposure to markets with weak growth - Slow growth in Japan
Opportunities	**Threats**
- Capture growth in the global tire market - Continued weak yen - Strategic investments	- Increasing raw material prices - New regulatory requirements in key markets - Loss of competitiveness if the yen appreciates

Strengths

Bridgestone is the largest tire company in the world and is very diversified across the globe but with the United States as the main market. In all its markets, it offers a strong brand portfolio with the Bridgestone brand as premium tires and the Firestone brand as a mid-range option. Bridgestone has done remarkably well at improving their profit margin and ROIC over the resent years and has subsequently reduced their debt level considerably. They now have the lowest leverage ratio of the four companies. Moreover, as it is the largest company, they also have a scale advantage which to some extent shows in its margins.

Weaknesses

Like Goodyear, Bridgestone is highly exposed to markets with potentially continued weak growth. Despite

reforms, Bridgestone's home market Japan is still struggling creating growth and the company also has considerable exposure to Europe.

Opportunities

As the industry leading company and with truly global operations, Bridgestone is very well positioned for capturing future growth in the global tire industry. Furthermore, as the yen stays at is low level, Bridgestone will remain highly competitive compared to its peers. Bridgestone also has made a number of large strategic investments in markets that will potentially contribute considerably to the future growth of the company in the medium and long term.

Threats

As for the entire industry, the company is currently reaping the benefits of low raw material prices. If these start to rise it could hurt profit margins.

The company is exposed to the new regulatory requirements in Europe as well as the threat of similar rules being imposed in the United States and the Asia Pacific. These new laws would result in expenses and hurt profitability. Lastly, the yen is currently at a very low level and a potential appreciation of the currency would hurt the company both in terms of sales and profitability.

This concludes our SWOT analyses and we will now more on to budgeting.

6.0 Forecasting

We are now ready to begin our forecasting. We will start out by accounting for our way to forecast sales, followed by cost of goods sold and finally other costs. From there, we will comment on the expected development in ROIC of the four companies.

First of all, we will start out by discussing how to best determine future sales of the companies.

6.1 Drivers Affecting our Forecasts

There are many ways of building forecasts and determining value drivers, which means that we have had to decide on which approach to take. As we are dealing with a production industry dominated by large players, we believe that it makes sense to use a sales-driven forecasting approach.[256] In a production industry it is fair to assume that operating expenses and investments are dependent on the expected activity level, indicating that sales is a good overall driver on which to build the forecast

[256] Petersen & Plenborg, Financial Statement Analysis, page 175

We have determined ten general drivers for each company. Of these ten drivers, five relate directly to the income statement and five to the balance sheet. The drivers are:

- Growth in Net Sales: This is our main driver and hence the one we will put most effort into forecasting correctly. Furthermore, it will be influencing a number of the other drivers, which reiterates the importance of this driver.
- EBITDA-margin: We have mainly used our expectations of future commodity prices to forecast this item. This will be described in detail for each company later.
- Net borrowing rate: The net borrowing rate is the company's net financial expenses as a percentage of the total net interest bearing debt. In our analysis of the historical numbers, this ratio has been based on average NIBD for the year. This was done in order to give the most correct picture of the interest bearing debt over the course of the year. In our forecasting, we have generally used the average of the historical figures as our starting point. This rate we multiply by the NIBD at the beginning of the period to find the net financial expense.
- Effective tax rate: This is determined based on the corporate tax rates in the main areas where the company has income.
- Depreciation and amortization as a percentage of PPE and intangibles: We have chosen to forecast depreciation and amortization as a percentage of PPE and intangibles because we think they allow for the best description of dependency.
- Inventory, receivables, and operating liabilities, all as a percentage of Net Sales: These three items constitute the net working capital of the company (operating liabilities includes accounts/trade payables). We project these as a percentage of sales, with the intuitive reasoning that as it intuitively makes sense that if sales increases, then e.g. inventories are also expected to increase accordingly.
- NIBD as a percentage of Invested Capital: We estimate the development in the net interest bearing debt as a dependency of the invested capital. This implies that if for example the ratio is constant over the forecast period, the company will fund new operations with a constant share of debt.

Based on these drivers, we are able to forecast the income statement and balance sheet so that they articulate. Furthermore, in some cases the companies have had smaller balance sheet items not included in the above drivers. In these cases, we have realized the items in the cash flow statement in the first year of the forecast period, 2014, as they have historically been insignificant in size.

6.2 Forecasting of Future Economic Growth

As we have discussed in our strategic analysis, world economic growth is important to the future development of the global tire market. Before we start our forecasting we wish to interrogate how much the tire market is actually dependent on macroeconomic growth. To do that, we will start out by looking at how the two have developed for the past 10 years. If we can prove that there is a significant link between the two, we intent to use estimates of future macroeconomic growth to project future sales of the tire manufactures. Figure 23 illustrates the relationship between world economic growth and the growth in the global tire market based on IMF data.[257]

Figure 23: Wolrd GDP growth and Tire Market Growth

From the figure we can see that the historical growth in the tire market has been considerably larger than world economic growth from 2003 to 2008. Furthermore, we also see that when the financial crisis hit in 2008-2009, the tire market contracted by considerably more than the world economy did. Finally, when the world economy started growing again in 2010, the tire market did likewise until 2012 where growth in the tire market was relatively low, despite only a small decline in growth in the world economy. The data above indicates that a relationship between the two exists, and we have looked further into this by doing a regression analysis. Again we have used data for the past 10 years, and the results are shown in Table 13.[258] From the table we can see that the correlation coefficient (Multiple R) is 0.7803. From this we can conclude that there appears to be a clear relationship between world economic growth and tire market growth. Correlation is a value between -1 and 1 and the higher it is, the more closely the two are linked to each other. With a value of 0.7803 we can conclude that there appears to be a relatively strong correlation between tire sales and macroeconomic growth. Secondly,

[257] IMF, website, Data Mapper, 2014
[258] IMF, website, Data Mapper, 2014

we see that the R square figure is 0.6088. The R square measure by how much one variable is explained by the other, and in this case it informs us that movements in macroeconomic growth can explain 60% of the development in the tire market, which is also fairly high.

Table 13: Regression of World Growth and Tire Market Growth

Regression Statistics	
Multiple R	0.7803
R Square	0.6088
Adjusted R Square	0.5600
Standard Error	0.0622
Observations	10

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	-0.0531	0.0497	-1.0686	0.3164
World	4.1579	1.1783	3.5288	0.0077

As we saw from Figure 23, it is evident that growth in the tire market is higher than macroeconomic growth when the economy expands and more negative when the economy contracts. This indicates that the beta of tire market growth is larger than one as e.g. 1% growth in the world economy will cause more than 1% growth in the tire market. From our regression analysis, we can see that the beta of tire market growth is 4.16, meaning that 1% growth in the economy will translate to 4.16% growth in the tire market. This information is very useful, as we can use this historical relationship to provide information on how the tire market is expected to grow, provided we have good estimations of how the macroeconomic growth will be.

To sum up, we have confirmed that there appears to be a clear relationship between macroeconomic growth and growth in the tire industry. Furthermore, we see that the growth in the tire market has a beta of 4.16. However, these values need to be interpreted with caution. As described, we base this analysis on 10 years of data, which gives us 10 observations. This is a low number and thus we cannot be sure that our results are statically significant. Nonetheless, this is the best available information we have and we believe using this will aid us in assessing more precise estimates of future values.

6.3 Regional Regression Analysis

Following this analysis we will now look at each of the companies and their segmented sales data for different geographical regions. For each of these we will perform regression analyses to determine how well growth in a geographical region correlates with each of the companies' sales in that region. Provided that we find good correlations, we intent to use forecasted macroeconomic growth as our main driver for future sales of the

company in each specific region. This will provide a good approach for determination of what sales the companies can expect. We will further adjust these forecasts with our firm specific knowledge obtained in the strategic analysis in order to project sales as accurately as possible. We are aware that many other factors besides macroeconomic growth influence future sales, but with our previously shown R Square coefficient, we believe future macroeconomic growth will provide a good point of origin for our estimates.

As described in Section 1.3, the four tire manufacturers divide their sales into different geographical regions. To test their historical dependence on macroeconomic growth in these regions, we have used the International Monetary Fund's segmented GDP data and also used this as our source for future expected economic development.[259] However, the companies divide the world into different geographical segments and as a result we have had to modify some of these. In 2013, Pirelli divided their business into seven regions. These were Italy, Rest of Europe, Middle East & Africa, Russia & CIS, North America, Central & South America, and Asia Pacific. However, as e.g. the Middle East & Africa region is only reported from 2009, we have decided to regroup the regions in order to allow us to make regressions. Thus, we have created an EMEA region, which is comprised of Italy, Rest of Europe, Middle East & Africa, and Russia & CIS as well as the group Asia Pacific with the region called Rest of the World, the latter being reported from 2005 to 2009. As a result, we have used the regions EMEA, North America, Central & South America, and Rest of the World/Asia for our regressions. Table 14 summarizes our findings for the four companies. The calculations can be found in Appendix 2.

[259] IMF, website, Data Mapper, 2014

Table 14: Regional Regression Outputs

		Europe	North America	RoW
	Correlation	0.793	0.501	0.602
Michelin	R Square	0.628	0.251	0.362
	Beta	2.969	2.821	4.068

		EMEA[1]	North America	Central & South America	RoW/Asia
	Correlation	0.801	0.586	0.527	0.689
Pirelli	R Square	0.642	0.344	0.277	0.474
	Beta	7.176	-17.249	-5.881	11.195

Note 1: EMEA includes Italy, Rest of Europe, Middle East & Africa, and Russia and CIS. Against Europe GDP

		EMEA[2]	North America	Asia Pacific	Latin America
	Correlation	0.762	0.609	0.720	0.819
Goodyear	R Square	0.581	0.371	0.519	0.671
	Beta	3.971	3.817	4.139	4.584

Note 2: Goodyear reports EMEA as one segment. We have plottet it against Europe GDP

		Europe	The Americas	Japan	Rest of the World
	Correlation	0.767	0.793	0.906	0.686
Bridgestone	R Square	0.588	0.629	0.820	0.470
	Beta	4.953	5.337	2.811	4.877

Generally speaking we see rather high correlations coefficients across the board. The highest is Bridgestone's sales in Japan at 0.906 and the lowest is Michelin's sales in North America at 0.501, which is however still quite high. This additionally reveals the lowest R Square 0.251 indicating that GDP growth in North America explains a relatively low proportion of Michelin's growth in this region, compared to other companies and regions. We further see that once again Bridgestone in Japan has the highest R Square of 0.820. Overall, both correlations and R Square coefficients are remarkably high and this therefore gives us a good indication that it is valid to use future GDP growth to predict sales.

Moving on to betas, it is evident that we see a larger spread in these coefficients. Starting out with Michelin we see that the betas of Europe and North America lie slightly below 3 and Rest of the World is just above 4. This makes intuitively sense, as we expect growth in tire sales in emerging markets to be more volatile and e.g. higher in periods of GDP growth. For Pirelli the picture is quite different. First of all we see that the beta of EMEA is high at 7.176 but this can partially be justified by the fact that Pirelli sells mainly premium tires in Europe and the company is therefore more reliant on positive economic development to see sales growth. Furthermore, EMEA also includes growth markets like Russia, which is a key growth market for Pirelli. For the Americas however we see negative betas, which we believe we cannot use for our projections of future sales. The reasons for these negative betas can mainly be found in the years around the financial crisis where Pirelli managed e.g. to

grow significantly in 2009 in the United States despite a small overall contraction in the market. Such firm specific events are not explained by the regressions and we can therefore not use the found betas for projections of future sales. As a result, we will apply comparable betas of some of the other companies when projecting sales in the Americas for Pirelli, as we believe these will be more representative. Looking at Goodyear, we see that the results of the regressions generally look credible with betas between 3.8 and 4.6 in the geographical regions. It is interesting to see that the betas lie above those of Michelin in Europe and North America. This can partially be explained by the company's different strategies as described in our strategic analysis. Michelin has the most diversified product portfolio of tires meaning that the company should be more hedged towards changing markets as the company can cater most demands. Goodyear on the other hand being less diversified is likely to be more exposed to changing market conditions and therefore also have higher betas. For Bridgestone, the picture is fairly similar to that of Goodyear with betas between 2.8 and 5.4 in the Americas.

Summing up, we believe that we our regression analyses have revealed interesting and useful results. Nonetheless, we need to be cautious as our statistical analysis is based on relatively few observations and furthermore through a very volatile period. The effects of the financial crisis have been many and it is possible that rather extreme growth rates during the years of the crisis have caused some of our found betas to get higher. Furthermore, we must be aware that macroeconomic development only explains partially what causes the companies to grow. In doing our projections of future sales it is therefore essential that we apply our industry and firm specific knowledge to make the forecasting as accurate as possible.

With our regression analysis concluded, we are now ready to move on to our forecasting of sales for the four companies. We will as already described rely on IMF's projections of future GDP growth around the world to determine future sales by applying our company specific betas. From there we will adjust the found growth rates with our knowledge obtained in the strategic and financial analysis. As a benchmark for overall growth in the tire industry, MarketLine has projected that the total tire industry is expected to grow by 10.1 % in 2014, 4.9 % in 2015, 5.1 % in 2016 and 5.7 % in 2017.[260] We will keep this in mind to ensure our projected growth rates are in line with this. IMF's growth projections can be found in Appendix 3.

6.4 Sales Forecasting

We use projections for macroeconomic growth to estimate the future growth rates for the four companies, and these growth rates will be integrated into our sales forecasts. We will now introduce the step by step approach we have used.

[260] Global Tires & Rubber, MarketLine industry profile, 2013 page 11

- GDP Growth in Regions: Based on the regions the respective companies have divided their sales into, we have found the relevant GDP growth estimates from the IMF.
- Converging Betas: We have used the regression approach to estimate betas for each region for each company. Except for two of Pirelli's regions, the regressions have yielded useful results. We have chosen to let the betas converge against a beta of one, as the tire market in the long run must grow at the same pace as the overall economy. As a result, the beta values are reduced straight line over the period from 2013 to 2018. We believe that this is the fairest way to let the company growth rates assume realistic long term levels with an adequate level complication.
- Regression Implied Revenue Growth in Regions: We have found the regression implied growth rates by multiplying the projected GDP growth rates with the corresponding beta value of the specific year and region.
- Revenue Growth in Regions used in Model: In some instances, we believe that due to the knowledge we have obtained from the strategic analysis and the financial analysis, we are in a position to come up with a better estimate than suggested by our regressions. As a result, the growth estimates used in the models are in some instances based on our subjective opinion rather than the regression estimate. We will specific the following sections when this has been the case.
- Revenue Forecast in Regions: Based on the respective size of the regions in 2013, we have projected sales in each region with its individual growth rate. By summing up the size of each region, we have then found total sales, the total forecasted growth rate, and the relative sizes of the regions going forward.

We will now present our sales forecasts for each company, then our EBITDA-margin expectations for each company, and lastly we will go through the remaining eight drivers for each company individually.

6.4.1 Sales Forecast, Michelin

We have used the regression approach previously described to determine beta values for each of the regions Michelin operates in. Michelin has divided their sales into three regions, namely Europe, North America (including Mexico), and Rest of the World (called Other by Michelin). Our sales forecasts are presented in Table 15.

Table 15: Michelin Sales Forecast	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Revenue Growth in Regions used in Model						
Europe		3.5%	4.1%	3.6%	2.8%	2.0%
North America		5.0%	6.3%	5.4%	4.0%	2.7%
Rest of the World		8.0%	12.0%	10.0%	8.7%	5.4%
Revenue Forecast in Regions, EUR Millions						
Europe	8,098.8	8,382.3	8,729.7	9,041.8	9,293.9	9,479.8
North America	7,086.5	7,440.8	7,907.9	8,331.6	8,661.2	8,895.0
Rest of the World	5,061.8	5,466.7	6,122.7	6,735.0	7,321.8	7,717.2
Total	**20,247.0**	**21,289.7**	**22,760.3**	**24,108.4**	**25,276.9**	**26,092.0**
Michelin Forecasted Growth Rate		**5.2%**	**6.9%**	**5.9%**	**4.8%**	**3.2%**

The reasoning behind the model is as follows:

- Europe: We expect that Michelin will growth slightly more than the economy in the period due to a pick-up in replacement tire sales. Replacement tire sales have been low during the financial crisis as people generally wear down their tires more before they are replaced. However, as the economy is recovering, we expect tires sales to increase and this will affect sales in 2014 and mainly 2015. After this, we expect that sales will converge towards a long term growth rate of 2.0%.
- North America: As in Europe, we also expect the replacement tire market to help propel growth. Furthermore, as mentioned in the strategic analysis, Michelin completed a large new plant in South Carolina in late 2013 producing specialized mining equipment. We expect that as the plant ramps up in 2014 and 2015, this will contribute to increased growth in the region. Through 2018, we expect the growth to stabilize at 2.8%.
- Rest of the World: This region for Michelin contains significant growth markets like Brazil, China, and the rest of Asia we thus expect it to grow at a faster rate that Europe and North America. Michelin has invested heavily in plants in Brazil, India, and China and as production reaches capacity in these facilities, we expect sales to increase by 8.0% in 2014 and 12.0% in 2015. We believe that these high growth rates can be justified by the size of the three projects. The plant in Brazil is part of a strategy to double Michelin's market share South America over the coming years and the plant in China will be Michelin's largest plant globally.[261] Furthermore, the Indian market is also expected to growth substantially in the future. Lastly, it is also worth noticing that Michelin grew by 20.8% in 2010 and 15.8% in 2011 so our projections are not out of line with historic growth rates. We thus believe that the

[261] Datamark website, With unit in Rio, Michelin to double slice in South America, 2014

high growth rates are realistic and these will stabilise at a level of 5.4% in 2018 at which time the Rest of the World region will account of 29.6% of Michelin's global sales, up from 25.0% in 2013.

Overall, this results in a peak growth rate in 2015 of 6.9% and a long term growth rate of 3.2%. Based on our knowledge of Michelin, the world economy, and by sanity checking the relative sizes of the regions going forward, we believe that these numbers are realistic and obtainable for Michelin.

6.4.2 Sales Forecast, Pirelli

We have used the regions EMEA, North America, Central & South America, and Rest of the World/Asia for our regressions. The result can be seen in Table 16.

Table 16: Pirelli Sales Forecast	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Revenue Growth in Regions used in Model						
EMEA (Europe)		4.5%	5.5%	6.0%	4.5%	3.0%
North America		5.0%	6.3%	5.4%	4.0%	2.7%
Central & South America		6.0%	9.0%	8.0%	6.0%	3.5%
Rest of the World (Asia)		8.0%	9.0%	12.0%	9.0%	5.4%
Revenue Forecast in Regions, EUR Millions						
EMEA (Europe)	2,888.7	3,018.7	3,184.7	3,375.8	3,526.7	3,632.5
North America	737.5	774.4	823.0	867.1	901.4	925.8
Central & South America	2,089.7	2,215.1	2,414.4	2,608.3	2,765.1	2,861.9
Rest of the World (Asia)	430.2	464.6	506.5	567.2	618.3	651.7
Total	**6,146.2**	**6,472.8**	**6,928.6**	**7,418.5**	**7,811.5**	**8,071.8**
Pirelli Forecasted Growth Rate		**5.3%**	**7.0%**	**7.1%**	**5.3%**	**3.3%**

- EMEA: Pirelli is more specialized in the premium segment in Europe than Michelin and we believe that the premium segment will see even higher growth as the economy recovers than the general replacement tire market. Furthermore, with Pirellis new plant in Russia as well as their strategic alliance with Rosneft, we believe the Russian market will help fuel growth for Pirelli in EMEA. Thus, we estimate that Pirelli will grow by 4.5%, 5.5%, and 6.0% in 2014, 2015, and 2016 respectively. After this, the growth will stabilise at a level of 3.0%.
- North America: As mentioned, our regression for Pirelli's sales in North America did not yield a usable result. Consequently, we have used Michelin's beta to project sales as we believe that the companies are fundamentally similar in North America. Pirelli is more focused on the premium segment than Michelin which will propel growth, but we think that Michelin's investment in specialty tires for mining will drive growth in a similar way. Hence, we have chosen the same growth rates for the two companies in the region.

- Central and South America: In this region, we have used Goodyear's beta as the result from the Pirelli regression was not useful. We believe that Goodyear is similar to Pirelli in this region as they market similar products. 34.0% of Pirelli's sales in 2013 came from this region, making it the second largest market for Pirelli after EMEA. Looking at the economic forecast of the region, we see that the region projected to grow at a slower pace than North America in 2014 but will hereafter outgrow this region. Furthermore, Pirelli has five plants in Brazil underlining their strong presence. As a result, we believe that Pirelli will grow by 6.0% in 2014 and 9% in 2015. After this, the growth will stabilize at a long term level of 3.5%.
- Rest of the World/Asia: In this region, the Asia Pacific, we expect to see the highest growth for Pirelli. This is owing to fact that they in 2014 decided to make investments in China to double their Yanzhou plant, making it the largest Pirelli plant in the world. We thus expect to see increasing growth rates through 2016 where the full effects of the increased efforts will be seen. This corresponds to a growth rate of 12.0% in 2016 after which we expect to see a decline in growth towards 5.4%, the long term level.

Overall, this implies that Pirelli will grow faster than Michelin (as well as Goodyear and Bridgestone) in all years and have a slightly higher long term growth rate. Considering that Pirelli has a stronger focus on growth markets and is significantly smaller in size, we believe that this is a realistic forecast.

6.4.3 Sales Forecast, Goodyear

Goodyear reports its sales in four regions. These are EMEA, North America, Asia Pacific, and Latin America. From our previous analysis, we have discovered that Goodyear is fundamentally different from its peers in multiple aspects. For sales forecasting, the two important differences are that it is less exposed to emerging markets as 78.0% of sales came from EMEA and North America in 2013 and that Goodyear has invested less in PPE than its peers over the past years. We have seen that all three peers have used the recovery period in the tire market to expand production facilities in future growth markets, but this has not been the case for Goodyear. The reasons for this can mainly be attributed to low operating profitability, weaker cash flows, and already high debt levels as pointed out in the financial analysis section. We have learned that Goodyear plan to construct a plant in the Americas but it will take years before the facility is functional. Thus, we believe that Goodyear will miss out of some of the general uptake in the world economy which we have reflected in the sales growth rate, see Table 17.

Table 17: Goodyear Sales Forecast	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Revenue Growth in Regions used in Model						
EMEA		4.0%	5.0%	4.4%	3.2%	2.0%
North America		5.0%	6.5%	6.0%	4.2%	2.7%
Asia Pacific		6.0%	7.0%	7.5%	7.0%	5.4%
Latin America		5.0%	7.0%	6.0%	5.0%	3.5%
Revenue Forecast in Regions, USD Millions						
EMEA	6,565.4	6,828.1	7,135.3	7,447.6	7,685.1	7,838.8
North America	8,675.8	9,109.5	9,701.7	10,283.8	10,715.7	11,005.0
Asia Pacific	2,071.2	2,195.5	2,349.2	2,525.4	2,702.2	2,848.1
Latin America	2,227.6	2,338.9	2,502.7	2,652.8	2,785.5	2,883.0
Total	**19,540.0**	**20,472.1**	**21,688.9**	**22,909.6**	**23,888.4**	**24,574.8**
Goodyear Forecasted Growth Rate		**4.8%**	**5.9%**	**5.6%**	**4.3%**	**2.9%**

We justify our forecasts in the following way:

- EMEA: Goodyear is highly exposed to the European market through the Goodyear and the Dunlop brands and historically, this has resulted in the fact that Goodyear has a higher beta than Michelin in this region. This is owing to the fact that they are less diversified than Michelin but we believe that this will work to Goodyear's advantage resulting in higher growth rates than Michelin. However, Goodyear is not like Pirelli to the same extent exposed to for instance the Russian market. We consequently believe that Goodyear's growth rates will be somewhat in between those of Michelin and Pirelli. Goodyear therefore has a peak growth rate in EMEA of 5.0% in 2015 after which it will decline to 2.0% long term.
- North America: This is Goodyear's home market and we believe that Goodyear can capitalize on their strong market position and brand portfolio here. Subsequently, we believe that Goodyear will outgrow its European peers in the market due to its strong mid-range segment offerings in the Goodyear brand and premium offerings in the Dunlop brand. Therefore, we forecast that Goodyear will grow by 5.0% in 2014 and 6.5% in 2015, after which it will converge towards the long term growth rate of 2.7%.
- Asia Pacific: As mentioned, Goodyear has not invested in new production facilities like its peers. We believe that this will impose some capacity constraints for Goodyear, especially in growth markets like Asia Pacific and Latin America, bearing in mind that both Michelin and Pirelli are currently building their largest facilities in China. Furthermore, only 10.6% of Goodyear's turnover in 2013 came from Asia Pacific, illustrating that it does not seem to be an area of large focus. Thus, we have set the growth rate to 6.0% in 2014, after which it will increase to 7.5% in 2016 and lastly decline to 5.4% in 2018.
- Latin America: Also in Latin America, we believe that the capacity constraints will impose a disadvantage to Goodyear relative to its peers. Again, the region only represents s smaller part of the total turnover

(11.4%) and we have not seen any investments made in the region. Growth could potentially be boosted by the new plant planned by Goodyear, but this will not happen in the near future. We believe that growth in this region will peak at 7.0% in 2015 and then decline to 3.5% through 2018.

Concluding on Goodyear, we believe that it is the company with the lowest growth potential of the four companies. Total net sales growth will peak in 2015 at 5.9% and reach a long term level of 2.9%.

6.4.4 Sales Forecast, Bridgestone

Bridgestone is the largest of the four companies. It has divided its sales into four regions and these are Europe, The Americas, Japan, and Rest of the World. Of the four regions the Americas is by far the largest as it represented 46.0% of sales in 2013. Furthermore, Bridgestone is currently in a unique position as the yen has depreciated significantly over the past period, boosting sales to reach 17.4% growth in 2013. Combined, these factors imply that Bridgestone is in a special situation in terms of growth. We have presented our forecasts in Table 18.

Table 18: Bridgestone Sales Forecast	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Revenue Growth in Regions used in Model						
Europe		4.0%	3.5%	3.0%	2.5%	2.0%
The Americas		6.0%	7.0%	7.5%	5.6%	2.8%
Japan		3.0%	2.1%	1.2%	1.4%	1.0%
Rest of the World		8.0%	9.5%	10.5%	11.0%	6.0%
Revenue Forecast in Regions, JPY Billions						
Europe	428.2	445.3	460.9	474.7	486.6	496.3
The Americas	1,641.3	1,739.8	1,861.6	2,001.2	2,113.3	2,172.5
Japan	677.9	698.3	712.8	721.4	731.3	738.6
Rest of the World	820.7	886.3	970.5	1,072.4	1,190.4	1,261.8
Total	**3,568.1**	**3,769.7**	**4,005.8**	**4,269.8**	**4,521.5**	**4,669.2**
Bridgestone Forecasted Growth Rate		**5.7%**	**6.3%**	**6.6%**	**5.9%**	**3.3%**

Our reasoning is as follows:

- Europe: The European market is not central to Bridgestone. In 2013, it represented 12.0% of sales which is considerably less than its peers. As the European market is highly competitive, we do not see the region as a growth driver for Bridgestone. However, the weak yen will probably have a positive influence in 2014 and to some extent 2015 resulting in growth of 4.0% and 3.5% in these years respectively. Growth will then steadily decline to 2.0% long term.

- The Americas: In the Americas, the weak yen will also most likely influence sales positively in 2014 and 2015. Furthermore, Bridgestone has a very strong brand position here, and with the huge investment made in South Carolina to produce premium tires, we expect strong growth relative to its peers. We project that the company will grow by 6.0%, 7.0%, and 7.5% in the period from 2014 to 2016 and then stabilise at the long term growth rate of 2.8%.
- Japan: Bridgestone's position in its home market is also very strong and sales here represented 19.0% of global sales in 2013. Japan, however, is a country with very low growth. We believe that the current government initiatives to boost growth and inflation will contribute to a growth rate of 3.0% in 2014 but in the medium and long term sales growth will be slightly over one percent and converge to 1.0% in 2018.
- Rest of the World: As mentioned in the strategic analysis, Bridgestone is investing in new facilities in Russia, Turkey, Vietnam, and Thailand. These are all growth markets and we expect them to have a positive influence on sales when the plants go into operation. This, however, will not happen in the short term and only to some extend in the medium term. The Vietnam plant will become operational in 2014 but will only reach full capacity in 2017. The Russian plant will start production in 2016 and ramp up through 2018 while the same timeline for the Thailand plant is 2015 and 2019. The Turkish plant is even more long term. As a result, the large growth potential of this region lies in the medium and long term. We believe that Bridgestone's growth will increase 8.0% in 2014 to 11.0% in 2017 and finish at the long term rate of 6.0% which is higher than its peers.

Summing up, besides 2015, Bridgestone will be the fastest growing company of the four. This is propelled by the weak yen in the short term and by large expansion projects in emerging markets in the medium and long term. It will have a long term growth rate similar to that of Pirelli.

6.5 EBITDA-margin Forecasting

We will now move on to forecasting costs for the four companies.

As we have described in our strategic analysis, the profitability of tire manufacturers is highly dependent on rubber prices, which in turn are dependent on oil prices. However, as demand has been low in recent years both natural rubber and butadiene (synthetic rubber input) prices have been steadily declining as natural rubber production continues to rise. As a result, we believe that despite economic recovery around the world, tire manufacturers will still be able to benefit from low raw material prices in the short term.[262] Furthermore, we

[262] Bloomberg, website, Rubber Bear Market Boosts Bridgestone as Inventory Swells, 2014

know from Michelin that a lack exists of typically 6 months before changing rubber prices affects the industry.[263] Therefore we expect rubber prices to stay relatively unchanged in 2014 going into 2015.[264] However, as the world economy picks up pace, the natural rubber supplies will once again become insufficient and oil will return to being the main driver for both natural rubber and synthetic rubber prices. Table 19 illustrates 41 analyst's estimates of the development in oil price over the next years:[265]

Table 19: ICE Brent Analyst Forecasts, USD/bbl	Spot	EY 2014	EY 2015	EY 2016	EY 2017
Median	109.95	105.00	101.75	102.50	95.00
High	109.95	115.00	120.00	125.00	115.83
Low	109.95	90.00	90.00	90.00	88.00

Source: Bloomberg, Data as of 31-12-2013, Collected 09-06-2014

Based on our own analysis of the drivers of the future oil price, we argue that we are more bullish that the median estimates and therefore lean more towards the high estimate. Consequently, we believe that the oil price will stay at its current level and potentially rise in the coming years. Once this happens, we expect this to have a negative impact on the profitability of the tire manufactures ending a period of remarkably low raw material prices.

In relation to how this affects the tire manufacturers, Michelin is the company with the highest level of information regarding operating costs. Based on the company's information we know that approximately 60% of raw material use is rubber and that total raw material costs account for between 28% and 35% of sales. In our forecast of costs, we have tried model in oil price as a driver but this has not been possible due to lack of information of unit costs from the companies. Instead we have changed our approach and looked at how the companies' EBITDA-margin has developed historically and compared this to historical oil and rubber prices. As described, we see a scenario where the rubber price remains at current lows in the short term but starts rising in 2015 and 2016. From thereon, we expect the oil price to once again drive rubber prices and return to a level around USD 4 per kg as argued in the strategic analysis, Section 3.2.1. Consequently, we argue that it will be difficult for the companies to maintain their current EBITDA-margins as raw materials costs rise. Other than raw materials, the remaining part of COGS and SG&A is also included in the EBITDA-margin. Here we saw from our financial analysis that the companies generally have kept these costs under control with Pirelli seeing the largest increase for the period.

[263] Michelin Annual Report 2013, page 32
[264] Bloomberg, website, Rubber Bear Market Boosts Bridgestone as Inventory Swells, 2014
[265] Blomberg, ICE Brent, 2014

Table 20 summarises our projections of future EBITDA-margins:

Table 20: EBITDA-margins	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Michelin	13.9%	16.8%	15.2%	18.0%	17.8%	17.5%	17.2%	16.8%	16.5%	16.2%
Pirelli	12.7%	13.5%	14.8%	17.7%	17.8%	17.8%	17.5%	17.3%	17.0%	16.8%
Goodyear	5.0%	8.3%	8.4%	9.3%	10.8%	10.2%	9.8%	9.6%	9.5%	9.5%
Bridgestone	9.9%	11.8%	11.6%	14.5%	17.2%	17.0%	16.5%	16.0%	15.5%	15.5%

We can see that during 2015, raw material prices start to rise, which decreases the EBITDA-margins for the companies. We however believe that this is a realistic scenario based on our projections of future raw material prices and the fact that the EBITDA-margins return to a level still above 2011 levels where raw material prices were at a significantly higher level than they are now. We know from our strategic analysis that all companies have done major cost optimization efforts the past years and we account for this as well. Looking at Michelin, we see that the company's EBITDA-margin returns to a level slightly above what was seen in 2011 mainly due improved cost efficiency. Michelin expects to be able to improve production every year leading to EUR 30 million savings every year and we have included this.[266] Pirelli's future EBITDA-margin lies above what it did in 2010 and 2011 but we believe that this is realistic as the company's strategy with focus on high margin products allows them to stay just below a level seen in 2012 and 2013. Goodyear is the company that has undergone most changes and cost cutting programs, which we price in in future EBITDA-margins. Despite maintaining their long term EBITDA-margin at 2012 levels it is still the lowest of the four companies and we believe that this level is sustainable. Finally, Bridgestone also sees the impact of increasing raw material prices but we believe that the company's good cost control and continued benefit of a weak yen will aid the company in finding an EBITDA-margin level just above 2012 level.

6.6 Remaining Drivers

6.6.1 Remaining Drivers, Michelin

Bases on the approach presented in the introduction of the forecasting section, we have determined the remaining drivers for Michelin. These are presented in table 21.

[266] Michelin Annual Report 2013, page 17

Table 21: Forecasts for Michelin	Avg. Hist.	EY '14	EY '15	EY '16	EY '17	EY '18
Growth in Net Sales	8.6%	5.2%	6.9%	5.9%	4.8%	3.2%
EBITDA-margin	16.4%	17.5%	17.2%	16.8%	16.5%	16.2%
Net borrowing rate	4.6%	6.4%	6.4%	6.4%	6.4%	6.4%
Effective tax rate	34.4%	34.4%	34.4%	34.4%	34.4%	34.4%
Depreciation and amortization as a percentage of PPE and intangibles	10.7%	11.0%	11.0%	11.0%	11.0%	11.0%
Growth in total PPE and intangible assets	6.8%	9.5%	7.0%	6.0%	3.5%	3.2%
Inventory as a percentage of Net Sales	20.7%	20.2%	20.2%	20.2%	20.2%	20.2%
Trade receivables as a percentage of Net Sales	14.3%	13.0%	14.0%	14.5%	15.0%	15.0%
Operational liabilities as a percentage of Net Sales	25.9%	25.6%	25.6%	25.6%	25.6%	25.6%
NIBD as a percentage of Invested Capital	36.2%	24.0%	22.0%	20.0%	18.0%	16.0%

We will now highlight our reasoning for choosing each driver:

- Net borrowing rate: We have used the rate of 6.4%, which is the average of the borrowing rates in 2010, 2012, and 2013. We decided to exclude the rate from 2011 as it was extraordinarily low that year.
- Effective tax rate: As Michelin is a global company that operates under a large number of tax regimes, it is difficult to determine an appropriate rate based on national tax levels. As a result, we believe that our best estimate is an average of the historical tax rates.
- Depreciation and amortization as a percentage of PPE and intangibles: This rate has historically been between 10.1% and 11.8% and we have thus decided to keep it constant in the forecasting period at 11.0%.
- Growth in property, plant and equipment and intangible assets: As described in section 3.4.1 in the strategic analysis, Michelin has made large strategic investments in four new production facilities in the U.S.A., India, Brazil, and China. These facilities have either become operational in 2013 or will be in 2014. However, as we have seen with the other companies in the strategic analysis, it typically takes between one and three years for a new operational plant to reach full capacity, i.e. have all production lines running. As a result, we believe that Michelin will continue to have large capital expenditures related to these plants in 2014 and 2015, corresponding to the increased in PPE and intangibles in these years of 9.5% and 7.0% respectively. This corresponds to capital expenditures in 2014 and 2015 of around EUR 2 billion which is in line with Michelin's own guidance.[267]

  As also described in section 3.4.1 in the strategic analysis, these strategic investments all have huge capacities with the new China being Michelin's largest plant globally. As a result, we do not expect the same magnitude of PPE and intangibles investments in the medium and long term we expect that the growth in these items will stabilize at 3.2%, in line with sales growth.

[267] Michelin Annual Report 2013, page 3

- Inventory as a percentage of Net Sales: The average of the historical ratios is 20.7% and the ratio in 2013 was 19.7%. Inventory has each year been very close to 20% suggesting a strong correlation between sales and the inventory level and we do not have any information suggesting this picture would change. We have decided to keep this item at 20.2% in the forecast period as there has been a slight decreasing trend over the period and we thus keep it lower than the average rate.
- Trade receivables as a percentage of Net Sales: We see that trade receivables have been declining over the period where sales growth has also been declining. This suggests that in periods of high growth, the company increases the receivables level and vice versa. This is most likely due to increased competitions during growth periods coursing increased bargaining power from customers. As we expect an upturn in our forecasting period, we project an increase in the item from 13.0% to 15.0% over the period.
- Operational liabilities as a percentage of Net Sales: We have decided to keep the operational liabilities constant at the historical average level as this has been very stable over the period.
- NIBD as a percentage of Invested Capital: We expect this to decline over the period from its 2013 level of 27.7% to 16.0% in the terminal period. These debt reductions are in line with the management expectations, as they state that they wish to use free cash flows to decrease the debt of the company.[268]

6.6.2 Remaining Drivers, Pirelli

Pirelli's remaining drivers are presented in Table 22.

Motivation of the drivers:

Table 22: Forecasts for Pirelli	Avg. Hist.	EY '14	EY '15	EY '16	EY '17	EY '18
Growth in Net Sales	11.1%	5.3%	7.0%	7.1%	5.3%	3.3%
EBITDA-margin	15.3%	17.8%	17.5%	17.3%	17.0%	16.8%
Net borrowing rate	16.4%	11.1%	11.1%	11.1%	11.1%	11.1%
Effective tax rate	34.6%	34.6%	34.6%	34.6%	34.6%	34.6%
Depreciation and amortisation as a percentage of PPE and intangibles	7.6%	8.0%	8.0%	8.0%	8.0%	8.0%
Growth in total PPE and intangible assets	7.1%	4.0%	3.0%	2.0%	2.0%	3.3%
Inventory as a percentage of Net Sales	16.7%	16.7%	16.7%	16.7%	16.7%	16.7%
Trade receivables as a percentage of Net Sales	12.4%	11.0%	11.4%	11.8%	12.0%	12.0%
Operational liabilities as a percentage of Net Sales	36.7%	32.7%	32.7%	32.7%	32.7%	32.7%
NIBD as a percentage of Invested Capital	30.4%	34.1%	34.1%	34.1%	34.1%	34.1%

- Net borrowing rate: We use a rate of 11.1% which is the average of the historical average borrowing rate (16.4%) and the rate at which Pirelli states they can borrow long term funds (5.8%).[269]

[268] Michelin Annual Report, 2013, page 2
[269] Pirelli webpage, FAQ, 2014

- Effective tax rate: Similar to the argumentation used for Michelin, we use the average of the historical tax rates.
- Depreciation and amortization as a percentage of PPE and intangibles: This rate has historically been between 6.8% and 8.2%. We have thus decided to keep it constant in the forecasting period at 8.0% which is close to the 2013 level.
- Growth in property, plant and equipment and intangible assets: As previously stated in the strategic analysis, Pirelli states in their annual report that they expect to spend EUR 1.6 billion over the coming four years on capital expenditures. Our expectations are in line with this estimate and we believe the investments will be higher in the beginning of the forecasting period as the new plants in Russia and China are fully completed. Hence, we expect the growth in PPE to be 4.0% in 2014 and decline to 2.0% in 2017. In the terminal period, we project the growth to be similar to the long term sales growth rate, i.e. 3.3%.
- Inventory as a percentage of Net Sales: The average of the historical ratios is 16.7% and we do not have any information suggesting that this would change. Hence, we use this as the future level.
- Trade receivables as a percentage of Net Sales: Similar to Michelin, we believe in an increase over the period. We project an increase in the item from 11.0% to 12.0% over the period which is a smaller increase than Michelin owing to Pirelli's focus on premium products.
- Operational liabilities as a percentage of Net Sales: We have decided to keep the operational liabilities constant at 2013 level to reflect Pirelli's improvements in the area.
- NIBD as a percentage of Invested Capital: We keep the ratio constant at the 2013 level as we do not have any indications that Pirelli seeks to change their financing.

6.6.3 Remaining Drivers, Goodyear

The drivers for Goodyear are as follows (Table 23):

Table 23: Forecasts for Goodyear	Avg. Hist.	EY '14	EY '15	EY '16	EY '17	EY '18
Growth in Net Sales	5.4%	4.8%	5.9%	5.6%	4.3%	2.9%
EBITDA-margin	8.4%	10.2%	9.8%	9.6%	9.5%	9.5%
Net borrowing rate	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%
Effective tax rate	22.2%	22.2%	22.2%	22.2%	22.2%	22.2%
Depreciation and amortisation as a percentage of PPE and intangibles	8.2%	8.0%	8.0%	8.0%	8.0%	8.0%
Growth in total PPE and intangible assets	4.5%	4.0%	5.0%	4.0%	3.0%	2.9%
Inventory as a percentage of Net Sales	15.5%	15.5%	15.5%	15.5%	15.5%	15.5%
Accounts receivable as a percentage of Net Sales	13.5%	12.5%	12.7%	12.9%	13.0%	13.0%
Operational liabilities as a percentage of Net Sales	26.8%	26.8%	26.8%	26.8%	26.8%	26.8%
NIBD as a percentage of Invested Capital	82.9%	70.0%	68.0%	66.0%	64.0%	64.0%

Motivation of the drivers:

- Net borrowing rate: We use a rate of 5.6% which is the historical average value.
- Effective tax rate: Similar to the previous argumentation, we use the average of the historical tax rates.
- Depreciation and amortization as a percentage of PPE and intangibles: This rate has historically been very close to 8% have we have thus chosen to use 8.0% in the forecasting period.
- Growth in property, plant and equipment and intangible assets: Goodyear has announced that they will build a new plant in the Americas in the coming years, which reflect the growth rate of 5.0% in 2015. Other than this, Goodyear has been the company with the lowest PPE growth rates historically and we do not expect major changes in this picture.
- Inventory as a percentage of Net Sales: The average of the historical ratios is 15.5% and we have chosen to keep it at this level as we do not have information suggesting otherwise.
- Trade receivables as a percentage of Net Sales: Similar to previously, we project an increase in the item from 12.5% to 13.0% over the period.
- Operational liabilities as a percentage of Net Sales: We have decided to keep the operational liabilities constant at the historical average level as this item has been very stable historically.
- NIBD as a percentage of Invested Capital: We expect to see a slight decrease in Goodyear's debt ratio due to their very high level of debt relative to competitors.

6.6.4 Remaining Drivers, Bridgestone

The remaining drivers are as follows (Table 24):

Table 24: Forecasts for Goodyear	Avg. Hist.	EY '14	EY '15	EY '16	EY '17	EY '18
Growth in Net Sales	8.4%	5.7%	6.3%	6.6%	5.9%	3.3%
EBITDA-margin	13.0%	17.0%	16.5%	16.0%	15.5%	15.5%
Net borrowing rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Effective tax rate	42.2%	32.1%	32.1%	32.1%	32.1%	32.1%
Depreciation and amortisation as a percentage of PPE	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%
Growth in total PPE and intangible assets	5.5%	14.0%	10.0%	7.0%	5.0%	3.3%
Inventories as a percentage of Net Sales	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%
Notes and accounts receivable as a percentage of Net Sales	15.5%	15.0%	15.0%	15.2%	15.4%	15.4%
Operational liabilities as a percentage of Net Sales	18.6%	18.6%	18.6%	18.6%	18.6%	18.6%
NIBD as a percentage of Invested Capital	34.3%	18.9%	18.9%	18.9%	18.9%	18.9%

Motivation of the drivers:

- Net borrowing rate: We use a rate of 1.0%, which is the historical average value. This very low rate is caused by Bridgestone's low leverage, strong cash flows, and access to low-interest capital in Japan.

- Effective tax rate: Similar to the previous argumentation, we use the average of the historical tax rates, but we have removed the 2009 tax rate in the average computation as this was extraordinary high that year.
- Depreciation and amortization as a percentage of PPE and intangibles: This rate has historically been between 11.5% and 14.6% and we have chosen to use the average, 13.3% in the forecasting period.
- Growth in property, plant and equipment and intangible assets: Bridgestone is currently constructing six new very large facilities and we will hence see large increases in their PPE in the coming years as the plants are completed. PPE growth in 2013 was 18.7% and we expect it to be 14.0% in 2014. From here, we expect the growth to decline to a long term level of 3.3%.
- Inventory as a percentage of Net Sales: The average of the historical ratios is 16.3% and we have used this level for our projections.
- Trade receivables as a percentage of Net Sales: Again we expect a slight increase in this item. We project an increase from 15.0% to 15.4% over the period.
- Operational liabilities as a percentage of Net Sales: We have decided to keep the operational liabilities constant at the historical average level as this item has been very stable historically.
- NIBD as a percentage of Invested Capital: We expect Bridgestone to keep their 2013 debt level constant in the future.

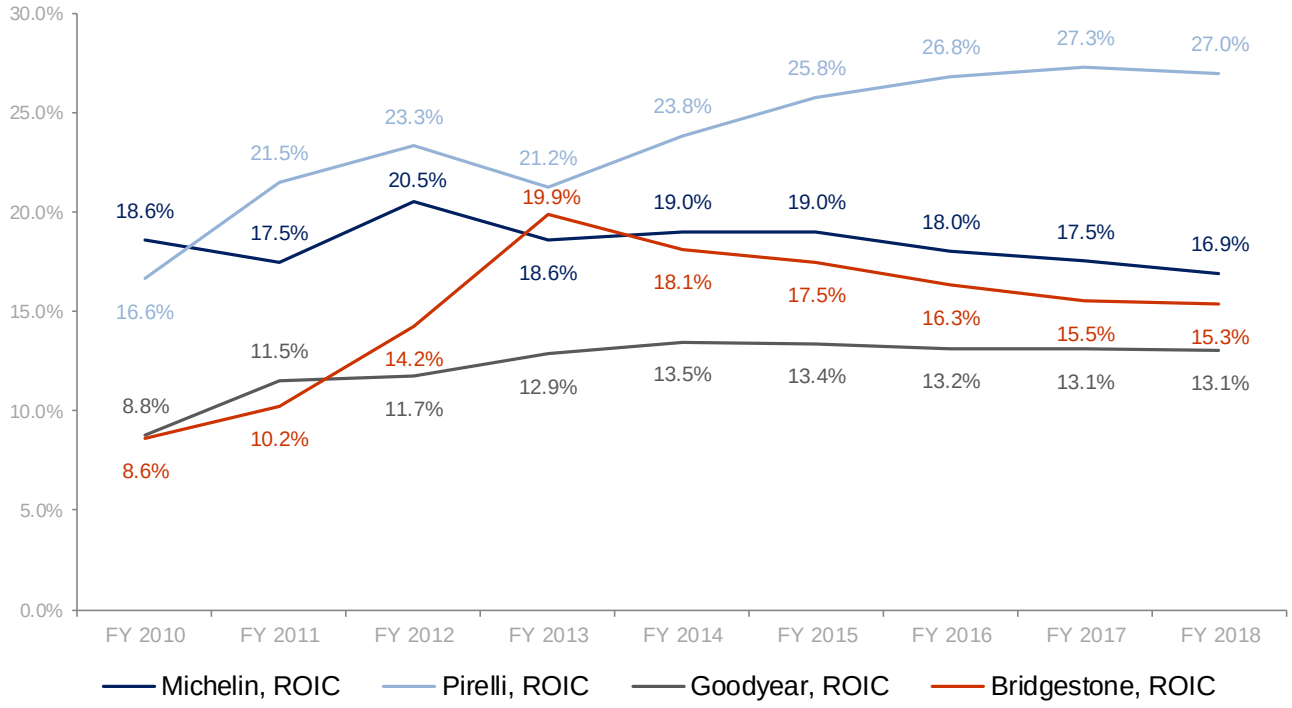
6.7 Conclusion to the Forecasting Section

We have now made the necessary projections for all four companies. Based on our expectations to the determined drivers, we have been able to project how the financial statements of the four companies will develop, which will allow us to value the companies.

We have presented the development in ROIC in the forecasting period in Figure 24.

As shown above, we expect Pirelli to outperform its peers in terms of ROIC over the coming years. All the companies will be affected by the increasing rubber prices in the future resulting in decreasing EBITDA-margins for all companies. Pirelli, however, will be able to improve their ROIC as they already have made a large portion of the necessary PPE investments to capture future growth. Furthermore, we expect Bridgestone to see the largest decline in ROIC compared to 2013 levels as they are also affected negatively when the benefits of the currently weak yen wears off. This concludes our forecasting section, and we are now able to make the valuations of the four companies.

Figure 24: Development in ROIC before tax



7.0 Estimating Cost of Capital

We will now determine the cost of capital for the four companies. To estimate the equity value of the companies using present value models we have to determine the appropriate discount factors to use. These are for each company known as the weighted average cost of capital, WACC. WACC is defined as:

$$WACC = \frac{NIBD}{(NIBD + E)} * r_d * (1 - T) + \frac{E}{(NIBD + E)} * r_e$$

We will now determine each factor for each company.

7.1 Return on Equity

To estimate the return required by equity owners we will make use of CAPM. This is given by:

$$r_e = r_f + \beta * (r_m - r_f)$$

The first element we have to determine for the four companies is their applicable risk free rates. As the companies have their operations and are domiciled in different countries, we have chosen to use different countries' government bonds as risk free rates. Optimally we would use 30-year government bonds, as these are the closest proxy to an infinite investment horizon but this is not the best choice, as these include a considerable liquidity premium.[270] As a result, we have chosen to use 10-year government bonds from countries that represent the companies' risk free interest rates. For Michelin and Pirelli we have chosen the German 10-year bond and for Goodyear and Bridgestone we have chosen the American 10-year bond using yields as of the 31st of December 2013. The reason for choosing the German bond for both Michelin and Pirelli is that we estimate that this is the European government bond that best represents a risk free interest rate. For Goodyear and Bridgestone we have chosen to use the American government bond for both companies as both companies have the largest share of their revenues from the States. On the 31st of December 2013 the German 10-year bond was at 1.9 % and the American 10-year bond at 3.0 %.

From here we will now determine the equity risk premium for the four companies. This is challenging, as all are multinational companies with exposure to many different countries with different risk profiles. As a result, we have chosen to do an average of a number of country risk premiums for each company that represents their geographical presence. We have chosen to make use of estimates developed by Professor Pablo Fernández from IESE Business School, University of Navarra.[271] The results are summarized below.

Table 25: Country Risk Premiums

Michelin		Pirelli		Goodyear		Bridgestone	
Country	Risk Premium	Country	Risk Premium	Country	Risk Premium	Country	Risk Premium
Germany	5.4%	Italy	5.5%	USA	5.5%	Japan	5.0%
USA	5.5%	Germany	5.4%	Germany	5.4%	USA	5.5%
Canada	5.9%	Brazil	7.7%	UK	5.3%	Brazil	7.7%
Brazil	7.7%	Argentina	9.9%	France	6.0%	Argentina	9.9%
China	9.4%	China	9.4%	Brazil	7.7%	Germany	5.4%
		Russia	7.5%			China	9.4%
Average	6.8%	Average	7.6%	Average	6.0%	Average	7.2%

We have chosen to include both developed countries and emerging market countries to properly match the risk premiums to where the companies are present. Unsurprisingly, we see that Goodyear has the lowest premium due the company's smaller exposure to emerging markets. On the other hand, Pirelli has the highest premium with 50% of the company's sales made in emerging markets.

[270] Petersen & Plenborg, Financial Statement Analysis, page 251
[271] Fernández, Market Risk Premium Used In 56 Countries In 2011, 2011

We can now move on to determining the systematic risk and how the different stocks move with market movements. We do this by determining the companies' betas. A beta is a stock's correlation with a market and we need to make sure we measure beta against the right market for each company. Based on data from Bloomberg we have tested each stock's correlation with different markets and adjusted these betas afterwards with the formula below.

$$Adjusted\ Beta = \frac{1}{3} + \frac{2}{3} * \beta_{raw}$$

We use this formula, as over time we will see all betas converge towards 1. This we factor in by calculating adjusted betas.

Table 26: Beta estimation using 5 year monthly data

Michelin		Pirelli		Goodyear		Bridgestone	
Index	Adj. Beta	Index	Adj. Beta	Index	Adj. Beta	Index	Adj. Beta
DOW Index	0.996	DOW Index	1.274	DOW Index	1.867	DOW Index	0.851
FTSEurofirst 300 Index	1.243	FTSEurofirst 300 Index	1.305	S&P 500 Index	1.829	S&P 500 Index	0.829
FTSE 100 Index	0.982	FTSE 100 Index	1.264			Nikkei 225 Index	0.851
Average	1.074	Average	1.281	Average	1.848	Average	0.844

Again we have taken the average of the different betas to get a value as accurate as possible. Generally, we see that the companies all have betas close to one with Bridgestone below 1 and Goodyear the highest above at 1.848. There are many markets we could have tested this against and we could also have chosen not to do an equally weighted average of the betas. With the information above in place

Table 27: Cost of Equity

	Cost of Equity
Michelin	9.21%
Pirelli	11.62%
Goodyear	14.08%
Bridgestone	9.06%

we are able to determine the required return on equity, which can be seen in Table 27. With this finished, we can now move on to determining the return required on debt.

7.2 Return on Debt

The other important factor when determining WACC is the rate at which a company can borrow or issue bonds. To determine these for the four companies we have looked at the companies' historical net borrowing rates. We believe that recent year's net borrowing rates for each company is a fair indicator of the costs at which the

companies can finance themselves via debt. Consequently we have averaged the historical net borrowing rates to arrive at a rate for each company. Furthermore, we use the historical average of tax rates for each company as well. This is in line with our budgeting of future tax rates as this is the same.

7.3 Capital Structure

Having found both the return on equity and return on debt, we need to determine the ratio of the two for each company. As we already know the companies' debt and equity levels we have the input we need. However, for some of the companies, we have chosen to adjust the NIBD/E ratio to represent a sustainable long-term level. For Michelin, we have chosen to use the Equity/EV and NIBD/EV levels of 2018 as the company is in the process of bringing down its debt. This we described in our forecast section and have chosen to use these levels as we find them most representable of future levels. For Pirelli, we do not expect to see any change in their current levels in the next years and as a result we use the 2014 ratios. As for Goodyear, we have also chosen to use their long-term ratios as we expect their debt to decrease considerably the next years. As described in our financial analysis the company, its leverage is considerably higher than its peers and it is expected to decrease over the next years. Finally, Bridgestone is operating at the lowest debt level of the four companies and in our forecast we expect this to continue in the future. Therefore, we use the 2014 ratios for Bridgestone.

7.4 Weighted Average Cost of Capital

We are now ready to determine the WACC for each company. Table 28 summarizes our findings and highlights the rates for the companies at which we will be discounting their cash flows.

Table 28: WACC

	WACC
Michelin	8.36%
Pirelli	10.13%
Goodyear	7.85%
Bridgestone	7.46%

Pirelli has the highest WACC at 10.1%, which is also expected given the company's high exposure to emerging markets. The other three companies lie relatively close to each other with WACCs between 7.46 and 8.36. This concludes our determination of WACC and we will now move on to the valuation of the four companies.

8.0 Valuation

We are now ready to value the four companies. As presented in the methodology section, we have decided to use three different valuation methods, namely the discounted cash flow model (DCF), the economic value added

model (EVA), and multiples. The DCF and the EVA models are both present value models and they will by definition return the same values. Thus, we only present our DCF results but we have used the EVA approach to make sure that we do not have any technical errors in our financial models. The EVA results can be found in Appendix 4-7 in the Valuation sheets. We will now present the DCF results from each model and then the multiples valuation.

8.1 Discounted Cash Flow Approach

Based on the value drivers previously presented, we have been able to forecast our expected developments in the income statement and balance sheet for the four companies. Based on this, we have built cash flow statements for each company and from these statements; we have found the free cash flows to the firm, i.e. the cash flow we want to value. By discounting the future free cash flows from future value terms to present value terms using the appropriate WACCs, we have determined the enterprise value of each company. We have been able to determine the equity value of each firm, by subtracting the net interest bearing debt. Lastly, by dividing the equity value by the number of shares outstanding we have found the estimated share price of each company.

8.1.1 DCF Value of Michelin

In Table 29 we present the DCF model for Michelin.

Table 29: DCF model for Michelin

EUR Million Group Michelin - Valuation	EY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Valuation date: 1/1-2014						
WACC		8.4%	8.4%	8.4%	8.4%	8.4%
Discounted Cash Flow						
FCFF		1,662.0	553.7	758.7	1,087.5	1,268.7
Growth in terminal period						3.2%
Discount factors		0.923	0.852	0.786	0.725	14.137
PV of free cash flows		1,533.8	471.6	596.4	788.9	
PV of free cash flows, forecast period	3,390.7					
PV of free cash flows, terminal period	17,936.4					
Enterprise Value	**21,327.2**					
Net interest bearing debt	3,607.2					
Equity Value	**17,720.0**					
Ordinary shares outstanding, millions	185.8					
Estimated share price, EUR	**95.39**					

From the above, we see that the free cash flow to the firm is the highest in 2014 after which it increases from EUR 555.7 million in 2015 to EUR 1,268.7 in the terminal period. The reason for the large cash flow in 2014 is mainly that we have chosen to realize Michelin's deferred tax asset rather than project it, which we think is fair.

The terminal growth rate applied is 3.2% and the WACC is 8.4% as presented earlier. This results in an enterprise value of EUR 21.3 billion. This number represents the value of the entire company and thus includes both the value of equity and debt holders. As we see, 84.1% of the enterprise value comes from the terminal period, which makes the model very sensitive to change in the drivers in the terminal period. This is, however, not surprising for a growth company like Michelin.

As we wish find the value of the equity, we subtract the net interest bearing debt from the enterprise value to arrive at the equity value. This results in an equity value of EUR 17.7 billion and with 185.8 million shares outstanding at the time of the valuation, this corresponds to a share price EUR 95.39.

As of the January 1st 2014, the Michelin shares traded on the NYSE Euronext stock exchange in Paris at a price of EUR 77.25. This implies that we believe that the share is undervalued and should trade 23.5% higher.

8.1.2 DCF Value of Pirelli

We have made the same exercise for Pirelli. The results are shown in Table 30.

Table 30: DCF model for Pirelli

EUR Million Pirelli & C. - Valuation	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Valuation date: 1/1-2014						
WACC		10.1%	10.1%	10.1%	10.1%	10.1%
Discounted Cash Flow						
Free cash flow		808.4	472.1	547.6	579.1	544.6
Growth in terminal period						3.3%
Discount factors		0.908	0.825	0.749	0.680	10.002
PV of free cash flows		734.1	389.3	410.0	393.7	
PV of free cash flows, forecast period	1,927.0					
PV of free cash flows, terminal period	5,447.2					
Enterprise Value	**7,374.2**					
Net interest bearing debt	1,259.0					
Equity Value	**6,115.2**					
Ordinary shares outstanding, millions	475.4					
Savings shares outstanding, millions	11.8					
Estimated share price, EUR	**12.55**					

We see again that 2014 is the year with the highest free cash flow. This is caused by realization of Pirelli's Deferred tax assets as well as Other Assets, which is mainly supplier advances. In 2015 the free cash flow is EUR 472.1 million after which is stabilizes at EUR 544.6 million in the terminal period. We have used a terminal growth rate of 3.3% and a WACC of 10.1%, both being higher than for Michelin. This implies an enterprise value of EUR 7.4 billion of which 73.9% comes from the terminal period. This is lower than for

Michelin, mainly due to the higher WACC applied. However, this still means that the model is sensitive to changes of the drivers in the terminal period but to a smaller extend than Michelin. By subtracting the net interest bearing debt, we have arrived at an equity value of EUR 6.1 billion and a corresponding share price of EUR 12.55.

Pirelli trades on Borsa Italiana in Milan and on January 1st the share price was 12.58. This means that we believe that the share is fairly priced at the current level.

8.1.3 DCF Value of Goodyear

We have used the same approach for Goodyear and presented the results in Table 31.

Table 31: DCF model for Goodyear

USD Million **The Goodyear Tire and Rubber Company - Valuation**	**FY 2013**	**EY 2014**	**EY 2015**	**EY 2016**	**EY 2017**	**EY 2018**
Valuation date: 1/1-2014						
WACC		7.9%	7.9%	7.9%	7.9%	7.9%
Discounted Cash Flow						
FCFF		1,431.6	506.6	609.9	755.8	819.6
Less Minority Shareholders' Net Income		(42.8)	(42.4)	(44.0)	(46.0)	(47.4)
Growth in terminal period						2.9%
Discount factors		0.927	0.860	0.797	0.739	14.838
PV of free cash flows		1,327.4	435.5	486.1	558.5	
PV of free cash flows, forecast period	2,807.5					
PV of free cash flows, terminal period	12,160.3					
Enterprise Value	**14,967.8**					
Net interest bearing debt	7,636.0					
Less PV of Minority Shareholders' Net Income	(848.1)					
Equity Value	**6,483.8**					
Ordinary shares outstanding, millions	248.0					
Estimated share price, USD	**26.14**					

For Goodyear, it is the realization of Other Assets and Prepaid expenses that cause the high free cash flow in 2014. After this, the free cash flow starts at USD 506.6 million in 2015 and ends at USD 819.6 million in the terminal period. The applied terminal growth rate is 2.9% and the WACC is 7.9% meaning that compared to Michelin and Pirelli is it a company with less growth potential but also less risk. We estimate the enterprise value of Goodyear to be USD 15.0 billion. In this case, 81.2% of the value comes from terminal period. We have then subtracted both the net interest bearing debt and minority shareholder's net income. As Goodyear has a number of consolidated companies with minority shareholders, we have subtracted the present value of their estimated claims from the enterprise value. In this way the company's forecasts include its consolidated

companies but we only value the part of the equity that can be attributed to Goodyear shareholders. Furthermore, it is worth noticing that as Goodyear's debt is much higher than for its two European competitors, the difference between the enterprise value and the equity value are much higher for Goodyear. We finally arrive at an equity value of USD 6.5 billion and a share price of USD 26.14. At the time of the valuation, Goodyear's shares traded on the NASDAQ stock market at USD 23.85 which means that the stock is undervalued by 9.6%. Thus, we consider this a small buy recommendation.

8.1.4 DCF value of Bridgestone

The DCF model for Bridgestone is presented below in Table 32.

Table 32: DCF model for Bridgestone

JPY Million **Bridgestone Corporation - Valuation**	**FY 2013**	**EY 2014**	**EY 2015**	**EY 2016**	**EY 2017**	**EY 2018**
Valuation date: 1/1-2014						
WACC		7.5%	7.5%	7.5%	7.5%	7.5%
Discounted Cash Flow						
Free cash flow		354,287.0	71,706.4	102,674.2	137,580.7	201,173.1
Less Minority interests' Net Income		(12,140.3)	(12,036.5)	(12,156.9)	(12,269.6)	(12,670.2)
Growth in terminal period						3.3%
Discount factors		0.931	0.866	0.806	0.750	17.870
PV of free cash flows		329,687.2	62,094.3	82,737.4	103,167.9	
PV of free cash flows, forecast period	577,686.7					
PV of free cash flows, terminal period	3,594,910.1					
Enterprise Value	**4,172,596.9**					
Net interest bearing debt	434,060.5					
Less PV of Minority interests' Net Income	(267,130.1)					
Equity Value	**3,471,406.2**					
Ordinary shares outstanding, millions	813.1					
Estimated share price, JPY	**4,269.34**					

The free cash flow in 2014 is high due to realizations of Bridgestone's Deferred tax assets and Other assets. In 2015, the free cash flow was JPY 71.7 billion and this increases to JPY 201.2 billion in the terminal period. The main reason for this large increase is mainly that Bridgestone has some large PPE investments in the early part of the period.

We have used a terminal growth rate of 3.3% in the terminal period and a WACC of 7.5%. This is the same growth rate as we expect for Pirelli and the lowest WACC of the four companies. Consequently, we have found the enterprise value to be JPY 4.2 trillion. Of this value, 86.2% comes from the terminal period, which is the highest of the four companies. This is caused by the high growth rate and the low WACC in the terminal period relative to the other companies.

Bridgestone has, like Goodyear, a number of minority interests and we have subtracted our expectations to these together with the net interest bearing debt to arrive at the equity value. We estimate the equity value to be JPY 3.5 trillion and the share price to be JPY 4,269.34.

Bridgestone trades on the Tokyo Stock Exchange and as of the time of the valuation, the share price was 3,980.00 which implied that the share is slightly undervalued with a 7.3% potential upside.

8.2 Multiple Analysis

The next part of our valuation relates to multiples. Even though a DCF analysis generally must be considered more accurate, we will use this as a supplement to our DCF valuation to assess the relative prices of the stocks.[272] We will start out by presenting the four multiples that have chosen to include.

- Price/Earnings: The P/E ratio is an equity-based multiple, which shows the relationship between the market value of the equity and the company's net income. For multiples to be useful, it is important that the firms under inspection are comparable. This means that they have similar long term growth potentials and return on invested capital.[273] Furthermore, for the P/E ratios to be fully comparable, also the capital structures of the companies must be similar as well as the way depreciation and amortization are handled. Thus, it does not provide an undisturbed picture of the operations as financing decisions and non-cash items can affect the multiple. We, however, find it useful as we have detailed knowledge of the four companies, making us aware of where differences may arise.
- EV/Sales: The EV/Sales multiple show how much value is generated for equity and debt holders per EUR/USD/JPY of revenues. In this way, the companies still need to be similar to make the analysis valid but the multiple is not affected by different accounting standards. However, we have assured comparable accounting standards so this is less of an issue in our case. Furthermore, sales in not necessary a good value driver due to differences in margins etc.
- EV/EBITDA: The EV/EBITDA multiple is one of the most commonly used multiples. It expresses how at many times the EBITDA a company is trading, i.e. how valuable a EUR/USD/JPY EBITDA is. This multiple is similar to EV/Sales, but as EBITDA is a better proxy for free cash flows, it is a more informative measure.
- EV/EBIT: Similar to EV/EBITDA but as this ratio is based on EBIT it gives a better picture of the operating result. However, it is sensitive to differences in depreciation and amortization policies.

[272] Koller et al., Valuation, page 313
[273] Koller et al., Valuation, page 315

We believe that our companies are very well suited for this type of analysis for two reasons. Firstly, we have assured that the companies use the same accounting standards and the results are thus comparable. Secondly, we chose exactly this industry because the players are all more or less fully engaged in tire production allowing for better comparability. This makes them the ideal peer group. Nevertheless, from our strategic and financial analysis, we are aware that there are differences between the companies that will affect their multiples and we will this make sure to keep this in mind when interpreting the results. The multiples can be found in Table 33.

Table 33: Multiples

Multiple	EV/Sales		EV/EBITDA		EV/EBIT		P/E	
Year	2014	2015	2014	2015	2014	2015	2014	2015
Michelin	1.00x	0.94x	5.72x	5.45x	8.62x	8.28x	12.04x	11.37x
Pirelli	1.14x	1.06x	6.40x	6.08x	8.67x	8.17x	13.14x	12.11x
Goodyear	0.73x	0.69x	7.17x	7.04x	11.23x	11.23x	8.74x	8.83x
Bridgestone	1.11x	1.04x	6.51x	6.31x	10.20x	10.28x	12.62x	12.73x
Average	0.99x	0.93x	6.45x	6.22x	9.68x	9.49x	11.64x	11.26x

We have chosen only to include forward looking multiples, as research suggests that these are more accurate projectors of value.[274] Thus, we use our projected results for 2014 and 2015 to calculate the multiples. The enterprise value and the equity values used are as of the valuation date.

From the average row in the table we see that the figures for 2015 are all lower than for 2014. This is because the denominator for all the multiples is higher in 2015 than in 2014 as the companies all grow. This also holds true for the rest of the table with the exception of Bridgestone where the EV/EBIT and P/E ratios increase. This is owing to the fact that Bridgestone's large PPE capital expenditures cause the depreciation of assets to increase significantly. The same is the case for Goodyear's P/E ratio but this is caused by a mix of increased depreciation and financial expenses.

From the EV/Sales multiple columns, we see that all multiples are fairly close to one with the exception of Goodyear. This means that one dollar of revenue from Goodyear is valued less than for its peers. This picture is different when looking at EV/EBITDA and EV/EBIT, as Goodyear here has the highest multiples meaning that is expensive relative to its peers. However, when interpreting these results, it is important to keep in mind that Goodyear's capital structure is very different from its peers as it has a much higher leverage ratio. A higher leverage ratio means that, all else equal, the enterprise value can be affected by a high net interest bearing debt. Goodyear's P/E ratio, on the other hand, is the lowest P/E ratio of the four companies. Goodyear has higher

[274] Koller et al., Valuation, page 321

financial expenses than its peers, leading to a lower net income, so this must be a consequence of a low share price, relative to its peers. We also know from the strategic and financial analysis that Goodyear's margins are lower than its peers, which also influences these multiples in a similar way. Thus, it is not surprising that we see Goodyear in this position.

Looking at Michelin, we see that they have the lowest EV/EBITDA in both years. This supports our results from the DCF model, as it shows that Michelin is cheap relative to its peers. This is also supported by the EV/EBIT and P/E ratios as Michelin also here has the lowest EV/EBIT and lowest P/E when Goodyear is not considered. Thus, even though we estimate that Michelin is 23.5% undervalued, it is still cheap relative to its peers.

Another interesting point is that whereas Pirelli and Bridgestone have similar EV/EBITDA ratios, their EV/EBIT ratios are quite different. We believe that this is caused by Bridgestone's high capital investments and the corresponding higher depreciation expense. This would result in similar EBITDA-margins but a lower EBIT-margin for Bridgestone, relative to the companies' enterprise values.

Summing up, we see that Michelin, Pirelli, and Bridgestone generally have similar multiples but that Goodyear's multiples are distorted by Goodyear's different capital structure and low margins. This is a good illustration of how multiples of apparently similar companies always mush be interpreted with caution. Furthermore, we see that Michelin generally has lower multiples than its peers meaning that it is cheap relative to its peers. This further supports our results from the DCF analysis that Michelin is the most attractive investment opportunity.

8.3 Sensitively Analysis

As the last part of the valuation, we will now look at how sensitive our DCF models are to changes in the key drivers. Common for the four financial models is that there are three key drivers that affect the value most. These are the growth rate in the terminal period, the EBITDA-margin in the terminal period, and the weighted average cost of capital. Consequently, we have examined how changes in these drivers affect the value. The results will be presented below.

8.3.1 Sensitivity Analysis of Michelin

The sensitivity analysis of Michelin is presented in Table 34.

Table 34: Sensitivity analysis for Michelin

Growth in terminal period	Share price	EBITDA-margin in terminal period	Share price	WACC	Share price
2.0%	87.49	14.4%	71.96	7.2%	131.06
2.4%	89.77	15.0%	79.77	7.6%	116.97
2.8%	92.38	15.6%	87.58	8.0%	105.26
3.2%	95.39	16.2%	95.39	8.4%	95.39
3.6%	98.92	16.8%	103.20	8.8%	86.95
4.0%	103.09	17.4%	111.01	9.2%	79.66
4.4%	108.12	18.0%	118.82	9.6%	73.29

At a 1% unfavorable movement

1% decrease	Share price	1% decrease	Share price	1% increase	Share price
3.2%	95.13	16.0%	93.28	8.4%	93.52
Effect:	-0.3%	Effect:	-2.2%	Effect:	-2.0%

From the first column of the table we see how the share price is affected by changes in the growth rate in the terminal period. As shown, if the long term growth potential of Michelin is only 2.0% opposed to 3.3%, the share price would be EUR 87.49. This is positive for our belief that Michelin is undervalued, as we here see that even if the growth potential is considerably lower, the share would still be undervalued. In terms of the EBITDA-margin, we see that the market share price of 77.25 roughly corresponds to an EBITDA-margin of 15.0%. We do not find it likely that the EBITDA-margin should be this low, which again confirms our belief in the upside the Michelin stock has to offer. Furthermore, we see that if the EBITDA-margin can stay at the level experienced in 2012 and 2013 (18.0% and 17.8% respectively), the share price should be in the hundred-and-tens. We do, however, not think this will be possible due to our expectations to increases commodity costs. The last sensitivity we have measured is to changes in the WACC. We see that if the WACC increases to a level around 9.2%, this would remove the upside on the share. This level is in our opinion too high for Michelin's risk profile and we do thus not think that this would be appropriate.

Lastly, we have shown the effect of a one percent unfavorable movement in all three drivers. From the results we see that the share price in most sensitive to changes in the EBITDA-margin, where a 1.0% drop would result in a 2.2% decrease in the share price. Concluding on Michelin's sensitivities, we see that even at relatively large changes in the most important drivers, Michelin would still be an attractive investment opportunity.

7.3.2 Sensitivity Analysis of Pirelli

The results are presented in Table 35:

Table 35: Sensitivity analysis for Pirelli

Growth in terminal period	Share price	EBITDA-margin in terminal period	Share price	WACC	Share price
2.1%	11.52	15.0%	10.60	8.7%	16.31
2.5%	11.83	15.6%	11.25	9.1%	15.05
2.9%	12.17	16.2%	11.90	9.5%	13.95
3.3%	12.55	16.8%	12.55	10.1%	12.55
3.7%	12.98	17.4%	13.20	10.5%	11.75
4.1%	13.47	18.0%	13.85	10.9%	11.02
4.5%	14.03	18.6%	14.50	11.3%	10.38

At a 1% unfavorable movement

1% decrease	Share price	1% decrease	Share price	1% increase	Share price
3.3%	12.52	16.6%	12.37	10.2%	12.34
Effect:	-0.3%	Effect:	-1.5%	Effect:	-1.7%

Starting with the sensitivities related to 1.0% changes, we see that the driver that Pirelli is most sensitive towards changes in is the WACC. A 1.0% increase in the WACC will result in a 1.7% decrease of the share price whereas a 1.0% decrease of the EBITDA-margin will result in a 1.5% decrease of the share price. Again, the model is less sensitive towards changes in the terminal growth.

Our DCF estimate of Pirelli's share price suggests that the stock is fair priced. It is therefore interesting to see what movements are required for the stock to become an attractive investment. We consider a share attractive when it is undervalued by at least 10.0%, meaning that it would have to be worth more than EUR 13.84 per share. In terms of growth rate, this would require a growth rate in perpetuity of around 4.3% which is not realistic. The EBITDA-margin would have to be around 18.0% which is also very high, especially as Pirelli already has the highest margin of its peer group. In terms of WACC, it would have to be around 9.6% opposed to the 10.1% we have estimated. Given Pirelli's large exposure to emerging markets, we do not consider it a realistic level either. Thus, we are of the opinion that Pirelli is a fairly priced stock.

8.3.3 Sensitivity Analysis of Goodyear

Please refer to Table 36:

Table 36: Sensitivity analysis for Goodyear

Growth in terminal period	Share price	EBITDA-margin in terminal period	Share price	WACC	Share price
1.7%	22.94	7.7%	6.74	6.7%	43.85
2.1%	23.86	8.3%	13.21	7.1%	36.82
2.5%	24.92	8.9%	19.68	7.5%	31.01
2.9%	26.14	9.5%	26.14	7.9%	26.14
3.3%	27.59	10.1%	32.61	8.3%	22.00
3.7%	29.30	10.7%	39.08	8.7%	18.43
4.1%	31.38	11.3%	45.54	9.1%	15.32

At a 1% unfavorable movement

1% decrease	Share price	1% decrease	Share price	1% increase	Share price
2.8%	26.05	9.4%	25.12	7.9%	25.28
Effect:	-0.4%	Effect:	-3.9%	Effect:	-3.3%

For Goodyear, we see that the stock is most sensitive towards changes in the EBITDA-margin, as a 1.0% decrease results in a 3.9% decrease in the share price. Furthermore, a 1.0% increase in the WACC results in a 3.3% decrease in the share price. This implies that Goodyear is more sensitive towards changes in the drivers than both of its European peers. The reason for this is that Goodyear's EBITDA-margin and WACC both are low meaning that a 1.0% change has a greater impact.

Goodyear traded at the time of the valuation at a share price of USD 23.85 meaning that we believe in a 9.6% upside. For this upside to be realized, a decrease in the EBITDA-margin to 9.3% or a WACC of 8.1% is all that is required. This would also happen at a terminal growth rate of 2.1%. Besides the growth rate, it is evidently very small changes that would erode this potential upside in the share price. We thus acknowledge that Goodyear's valuation is very sensitive to small changes in the EBITDA-margin and WACC.

8.3.4 Sensitivity Analysis of Bridgestone

The results can be found in Table 37:

Table 37: Sensitivity analysis for Bridgestone

Growth in terminal period	Share price	EBITDA-margin in terminal period	Share price	WACC	Share price
2.1%	3,855.83	13.7%	3,069.66	6.3%	6,209.28
2.5%	3,971.60	14.3%	3,469.55	6.7%	5,409.90
2.9%	4,107.51	14.9%	3,869.44	7.1%	4,779.34
3.3%	4,269.34	15.5%	4,269.34	7.5%	4,269.34
3.7%	4,465.26	16.1%	4,669.23	7.9%	3,848.39
4.1%	4,707.34	16.7%	5,069.12	8.3%	3,495.11
4.5%	5,014.04	17.3%	5,469.01	8.7%	3,194.44

At a 1% unfavorable movement

1% decrease	Share price	1% decrease	Share price	1% increase	Share price
3.2%	4,254.98	15.3%	4,166.03	7.5%	4,184.81
Effect:	-0.3%	Effect:	-2.4%	Effect:	-2.0%

Bridgestone is most sensitive towards changes in the EBITDA-margin, as a 1.0% decrease results in a 2.4% decrease in the share price. This figure is 2.0% in terms of share price decrease when the WACC moves unfavorable. This also confirms that Goodyear is the most sensitive company towards changes in the drivers. We have estimated that Bridgestone at the time of the valuation was undervalued by 7.3% as the spot price was JPY 3,980.00. This small upside can, however, quite easily disappear in case of unfavorable movements in the presented drivers. This would happen in case of an EBITDA-margin of 15.0% opposed to our estimate of 15.5% or at a WACC of 7.8% opposed to our estimate of 7.5%. In terms of sales growth, it corresponds to a decrease to 2.5% as the long term growth level. On the other hand, it would also require only quite small favorable movements for the upside to become greater.

9.0 Conclusion

In this thesis we have valued the four largest pure play manufactures in the tire industry in order to determine which company is most attractive from an investment perspective. Opposed to a traditional valuation paper where only one company is in focus, we wanted to reap the benefits of having in-depth knowledge of the closest rivals to the companies being valued. By using this approach, we strived to achieve a well-informed foundation to build the valuations on and thereby being able to determine the value more precisely.

The companies we have analyzed are Michelin, Pirelli, Goodyear, and Bridgestone. Through our strategic and financial analysis, we have discovered a number of significant differences between the companies that influence the valuations.

Michelin is the second largest tire manufacturer and the company with the widest product portfolio. One of the key characteristics of Michelin is that they are well positioned in all product segments and geographical regions, which allows the company to tap into growth almost anywhere it happens in the world.

Pirelli is the smallest of the four and focuses on premium tires and products for emerging markets, a strategy that has put the company in a position to achieve industry leading ROIC over the next years. This is driven by presence in growth markets and growth segments as well as the fact that they are not required to make additional significant capital investments in the short and medium term.

Goodyear has the largest focus on developed markets with large presence in the United States and Europe. The company has gone through major restructuring programs the past years, which has improved margins considerably but their continued focus on mid-market products leaves them with the lowest profit margin of the four going forward. Furthermore, the company is highly levered relative to its peers.

Bridgestone, the largest tire manufacturer in the world, offers a board portfolio of products similar to Michelin. The company has benefitted greatly from the depreciation of the yen and is currently investing heavily in emerging markets to reap the future benefits of growth in these markets.

We have chosen to use a sales-driven forecasting approach which means that we have put much effort into projecting sales for each company. We discovered that there generally is a good fit between macroeconomic growth and growth in the tire market and we have thus used IMF projections of GDP growth in selected regions to forecast sales for the companies. This regression approach yielded useful results in most cases. Furthermore, we have put effort into analyzing how the rubber and oil prices will develop going forward as these are key determinants of the companies' profitability. Our analysis suggests that these commodities will become

increasingly expensive as the world economy starts picking up, as this will fuel increased demand. This is further supported by the fact that rubber prices currently are at historical lows.

From our valuation, we have identified Michelin as the most attractive investment opportunity. Our estimates show that the stock is worth EUR 95.39. At the valuation date, the stock traded at EUR 77.25 implying a 23.5% upside to the share price. This result is further supported by our multiples analysis as Michelin here turns out to be least expensive share relative to its peers, despite our estimate of EUR 95.39. Lastly, when analyzing how sensitive the share price is to changes in the underlying assumptions, we also found that the share price estimate is solid. We have priced Goodyear at USD 26.14 per share with a 9.6% upside but we acknowledge that this price is very sensitive to unfavorable movements in the underlying assumptions. Bridgestone is estimated to have a share price of JPY 4,269.34 implying a 7.3% upside. Lastly, Pirelli is priced at EUR 12.55 per share which is at par with the market price at the time of the valuation. This suggests that our estimated high ROIC and good market position for Pirelli is already priced in by the market.

We clearly believe that it has been an advantage analyzing four companies when writing this thesis rather than focusing on a single company. This became clear to us when making the strategic and financial analysis, as the continuous comparison of the companies revealed a lot of interesting insights throughout the process. However, the approach proved itself to be most valuable when determining the drivers for the forecasting. We were able to continuously compare each driver to its peers and as we had solid knowledge and an opinion of each company, this has allowed us to better determine the drivers.

Summing up, we have used an alternative approach to the traditional valuation thesis and we believe that it has beneficial to do so. Furthermore, we have identified Michelin as being the most attractive investment opportunity.

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11.0 Appendix Overview

Appendix 1: Historical share price development for Michelin, Pirelli, Goodyear, and Bridgestone.

Appendix 2: Regression analysis for sales forecasting

Appendix 3: IMF growth projections

Appendix 4: Michelin financial model

Appendix 5: Pirelli financial model

Appendix 6: Goodyear financial model

Appendix 7: Bridgestone financial model

Appendix 1:

Michelin:

Pirelli:

Goodyear

Bridgestone:

Michelin sales, EUR mn	Europe	North America	Rest of the World	Total
2005	7,664.0	5,538.0	2,388.0	15,590.0
2006	8,017.0	5,738.0	2,629.0	16,384.0
2007	8,503.0	5,517.0	2,847.0	16,867.0
2008	8,158.0	5,157.0	3,093.0	16,408.0
2009	6,752.0	4,994.0	3,061.0	14,807.0
2010	7,682.0	6,148.0	4,061.0	17,891.0
2011	8,832.0	6,942.0	4,945.0	20,719.0
2012	8,499.0	7,745.0	5,230.0	21,474.0
2013	8,193.0	7,032.0	5,022.0	20,247.0

Michelin Growth	Europe	North America	Rest of the World	Europe GDP Growth	North America GDP Growth	Asia and Pacific GDP Growth
2006	4.6%	3.6%	10.1%	4.2%	2.9%	7.6%
2007	6.1%	-3.9%	8.3%	4.1%	1.9%	8.5%
2008	-4.1%	-6.5%	8.6%	1.3%	0.0%	4.7%
2009	-17.2%	-3.2%	-1.0%	-4.8%	-3.0%	3.8%
2010	13.8%	23.1%	32.7%	2.3%	2.8%	8.3%
2011	15.0%	12.9%	21.8%	2.1%	2.1%	6.0%
2012	-3.8%	11.6%	5.8%	0.3%	2.8%	5.2%
2013	-3.6%	-9.2%	-4.0%	0.4%	1.8%	5.2%

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.792749878
R Square	0.628452369
Adjusted R Square	0.566527763
Standard Error	0.070296928
Observations	8

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.050151256	0.050151256	10.14866976	0.018938983
Residual	6	0.029649949	0.004941658		
Total	7	0.079801205			

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	-0.023309821	0.02739994	-0.850725252	0.427561469
Europe GDP growth	2.96938073	0.932097462	3.185697688	0.018938983

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.501409783
R Square	0.25141177

Adjusted R Square	0.126647065
Standard Error	0.105879314
Observations	8

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.022589993	0.022589993	2.015087282	0.205547166
Residual	6	0.067262575	0.011210429		
Total	7	0.089852568			

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	-0.004272847	0.046788573	-0.091322446	0.93020896
North America GDP Growth	2.820881967	1.98718355	1.4195377	0.205547166

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.601771673
R Square	0.362129146
Adjusted R Square	0.255817337
Standard Error	0.102673794
Observations	8

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.035908825	0.035908825	3.406292765	0.114483875
Residual	6	0.063251448	0.010541908		
Total	7	0.099160273			

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	-0.147924605	0.140598092	-1.052109622	0.333264634
Asia and Pacific GDP Growth	4.068021498	2.204155618	1.845614468	0.114483875

Pirelli Sales, EUR mn	Pirelli, Italy	Pirelli, Rest of Europe	Pirelli, Middle East & Africa	Pirelli, Russia & CIS	Pirelli, North America	Pirelli, Central & South America	Pirelli, Asia Pacific	Pirelli, Rest of the World	Pirelli Total
2005	1,382.8	1,494.6			286.6	921.6		460.1	4,545.7
2006	1,331.9	1,586.9			318.8	1029.3		574.3	4,841.2
2007	1,258.3	3,077.9			329.5	1187.7		651.1	6,504.5
2008	2,438.1	1,170.7			142.7	788.84		518.84	5,059.1
2009	443.1	1,326.3	409.1		361.5	1296.29	231.24		4,067.5
2010	485.5	1,503.5	463.1		477.4	1632.04	286.92		4,848.4
2011	479.8	1,844.1	501.3		561.3	1915.47	352.82		5,654.8
2012	425.3	1,688.6	522.0	255.2	692.6	2067.53	420.4		6,071.5
2013	379.5	1,679.4	495.4	254.1	682.1	2174.24	481.49		6,146.2

Pirelli Growth	Europe	Central & South America	North America	RoW/Asia	Europe GDP Growth	Latin America GDP Growth	North America GDP Growth	Asia and Pacific GDP Growth
2006	1.4%	11.7%	11.2%	24.8%	4.2%	5.6%	2.9%	7.6%
2007	48.6%	15.4%	3.4%	13.4%	4.1%	5.8%	1.9%	8.5%
2008	-16.8%	-33.6%	-56.7%	-20.3%	1.3%	4.3%	0.0%	4.7%
2009	-39.6%	64.3%	153.3%	-55.4%	-4.8%	-1.3%	-3.0%	3.8%
2010	12.6%	25.9%	32.1%	24.1%	2.3%	6.0%	2.8%	8.3%
2011	15.2%	17.4%	17.6%	23.0%	2.1%	4.6%	2.1%	6.0%
2012	2.3%	7.9%	23.4%	19.2%	0.3%	3.1%	2.8%	5.2%
2013	-2.9%	5.2%	-1.5%	14.5%	0.4%	2.7%	1.8%	5.2%

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.801404319
R Square	0.642248883
Adjusted R Square	0.582623697
Standard Error	0.164910145
Observations	8

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.292933037	0.292933037	10.77143611	0.016780877
Residual	6	0.163172135	0.027195356		
Total	7	0.456105172			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.062760912	0.064277745	-0.976401885	0.366573689	-0.220042889	0.094521065	-0.220042889	0.094521065
Europe GDP Growth	7.17644161	2.18661514	3.28198661	0.016780877	1.825987111	12.52689611	1.825987111	12.52689611

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.526580818
R Square	0.277287358
Adjusted R Square	0.156835251
Standard Error	0.247160492
Observations	8

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.140628637	0.140628637	2.302054856	0.179995761
Residual	6	0.366529851	0.061088309		
Total	7	0.507158489			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.369155275	0.172932434	2.134679232	0.076711969	-0.053995147	0.792305697	-0.053995147	0.792305697
Latin America GDP Growth	-5.881027324	3.876103482	-1.517252403	0.179995761	-15.36551087	3.603456222	-15.36551087	3.603456222

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.586255313
R Square	0.343695292
Adjusted R Square	0.234311174
Standard Error	0.518470032
Observations	8

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.844630252	0.844630252	3.142095019	0.126668179
Residual	6	1.612867046	0.268811174		
Total	7	2.457497298			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.472071505	0.229114377	2.060418517	0.085007194	-0.08855118	1.03269419	-0.08855118	1.03269419
North America GDP Growth	-17.24885141	9.730844307	-1.77259556	0.126668179	-41.05936967	6.561666843	-41.05936967	6.561666843

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.688764505
R Square	0.474396544
Adjusted R Square	0.386795968
Standard Error	0.224090698
Observations	8

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.271945711	0.271945711	5.415450054	0.058872972
Residual	6	0.301299845	0.050216641		
Total	7	0.573245556			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.635914538	0.306862377	-2.072311841	0.083619523	-1.386779725	0.114950649	-1.386779725	0.114950649
Asia and Pacific GDP Growth	11.19499099	4.810680021	2.327111956	0.058872972	-0.576318964	22.96630095	-0.576318964	22.96630095

Goodyear Sales, USD mn	EMEA	North America	Asia Pacific	Latin America	Total
2005	6,113.0	9,091.0	1,423.0	1,466.0	18,093.0
2006	6,552.0	9,089.0	1,503.0	1,607.0	18,751.0
2007	7,217.0	8,862.0	1,693.0	1,872.0	19,644.0
2008	7,316.0	8,255.0	1,829.0	2,088.0	19,488.0
2009	5,801.0	6,977.0	1,709.0	1,814.0	16,301.0
2010	6,407.0	8,205.0	2,062.0	2,158.0	18,832.0
2011	8,040.0	9,859.0	2,396.0	2,472.0	22,767.0
2012	6,884.0	9,666.0	2,357.0	2,085.0	20,992.0
2013	6,567.0	8,684.0	2,226.0	2,063.0	19,540.0

Goodyear Growth	EMEA	North America	Asia Pacific	Latin America	Europe GDP Growth	North America GDP Growth	Asia and Pacific GDP Growth	Latin America GDP Growth
2006	7.2%	0.0%	5.6%	9.6%	4.2%	2.9%	7.6%	5.6%
2007	10.1%	-2.5%	12.6%	16.5%	4.1%	1.9%	8.5%	5.8%
2008	1.4%	-6.8%	8.0%	11.5%	1.3%	0.0%	4.7%	4.3%
2009	-20.7%	-15.5%	-6.6%	-13.1%	-4.8%	-3.0%	3.8%	-1.3%
2010	10.4%	17.6%	20.7%	19.0%	2.3%	2.8%	8.3%	6.0%
2011	25.5%	20.2%	16.2%	14.6%	2.1%	2.1%	6.0%	4.6%
2012	-14.4%	-2.0%	-1.6%	-15.7%	0.3%	2.8%	5.2%	3.1%
2013	-4.6%	-10.2%	-5.6%	-1.1%	0.4%	1.8%	5.2%	2.7%

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.762126825
R Square	0.580837298
Adjusted R Square	0.510976847
Standard Error	0.103859787
Observations	8

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.08968462	0.08968462	8.31425069	0.027931725
Residual	6	0.064721132	0.010786855		
Total	7	0.154405752			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.030456892	0.040481882	-0.752358592	0.480299693	-0.129512488	0.068598705	-0.129512488	0.068598705
Europe GDP Growth	3.970854411	1.377121969	2.883444241	0.027931725	0.601158344	7.340550477	0.601158344	7.340550477

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.608821568
R Square	0.370663701
Adjusted R Square	0.265774318

Standard Error	0.108189942
Observations	8

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.041363978	0.041363978	3.533853384	0.109177021
Residual	6	0.070230381	0.011705064		
Total	7	0.11159436			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.052927488	0.047809651	-1.107046118	0.310671294	-0.169913489	0.064058513	-0.169913489	0.064058513
North America GDP Growth	3.81713936	2.030550301	1.879854618	0.109177021	-1.151438236	8.785716957	-1.151438236	8.785716957

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.720356969
R Square	0.518914162
Adjusted R Square	0.438733189
Standard Error	0.075793404
Observations	8

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.037178086	0.037178086	6.471786797	0.043845514
Residual	6	0.03446784	0.00574464		
Total	7	0.071645926			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.193330148	0.103788976	-1.862723343	0.111800911	-0.447292624	0.060632327	-0.447292624	0.060632327
Asia and Pacific GDP Growth	4.13929286	1.627099282	2.543970675	0.043845514	0.157924343	8.120661376	0.157924343	8.120661376

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.819051278
R Square	0.670844996
Adjusted R Square	0.615985829
Standard Error	0.083594579
Observations	8

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.085453373	0.085453373	12.22849395	0.012874376
Residual	6	0.041928322	0.006988054		
Total	7	0.127381695			

Appendix 2

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.124838943	0.058489178	-2.134393857	0.076742209	-0.267956807	0.018278921	-0.267956807	0.018278921
Latin America GDP Growth	4.584383246	1.310975062	3.496926357	0.012874376	1.376542832	7.792223661	1.376542832	7.792223661

Bridgestone Sales, JPY bn	Europe	The Americas	Japan	Rest of the World	Total
2005	371.4	1,145.9	746.1	428.0	2,691.4
2006	424.4	1,321.1	777.4	468.4	2,991.3
2007	531.6	1,489.1	801.2	568.4	3,390.2
2008	489.7	1,386.3	786.1	572.3	3,234.4
2009	363.0	1,125.7	614.8	493.5	2,597.0
2010	388.0	1,212.9	671.9	588.9	2,861.6
2011	418.8	1,273.3	694.2	638.0	3,024.4
2012	348.2	1,321.3	696.2	674.1	3,039.7
2013	425.0	1,628.6	674.8	839.6	3,568.1

Bridgestone Growth	Europe	The Americas	Japan	Rest of the World	Europe GDP Growth	Western Hemisphere GDP Growth	Japan GDP Growth	Asia and Pacific GDP Growth
2006	14.3%	15.3%	4.2%	9.4%	4.2%	3.4%	1.7%	7.6%
2007	25.3%	12.7%	3.1%	21.3%	4.1%	2.9%	2.2%	8.5%
2008	-7.9%	-6.9%	-1.9%	0.7%	1.3%	1.0%	-1.0%	4.7%
2009	-25.9%	-18.8%	-21.8%	-13.8%	-4.8%	-2.4%	-5.5%	3.8%
2010	6.9%	7.8%	9.3%	19.3%	2.3%	3.6%	4.7%	8.3%
2011	7.9%	5.0%	3.3%	8.4%	2.1%	2.7%	-0.5%	6.0%
2012	-16.9%	3.8%	0.3%	5.7%	0.3%	2.8%	1.4%	5.2%
2013	22.1%	23.3%	-3.1%	24.6%	0.4%	2.1%	1.5%	5.2%

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.767087082
R Square	0.588422591
Adjusted R Square	0.519826357
Standard Error	0.127543822
Observations	8

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.139542956	0.139542956	8.57805962	0.026327016
Residual	6	0.09760456	0.016267427		
Total	7	0.237147516			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.029042243	0.049713311	-0.584194501	0.580374041	-0.150686334	0.092601848	-0.150686334	0.092601848
Europe GDP Growth	4.953120995	1.691158867	2.928832467	0.026327016	0.815004323	9.091237668	0.815004323	9.091237668

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.792826519
R Square	0.62857389
Adjusted R Square	0.566669538
Standard Error	0.086747632
Observations	8

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.076410038	0.076410038	10.15395318	0.018919152
Residual	6	0.04515091	0.007525152		
Total	7	0.121560949			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.05482835	0.045570447	-1.203155869	0.274231381	-0.166335216	0.056678515	-0.166335216	0.056678515
Western Hemisphere GDP Gro	5.33672703	1.674778632	3.186526822	0.018919152	1.238691348	9.434762712	1.238691348	9.434762712

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.905746276
R Square	0.820376316
Adjusted R Square	0.790439035
Standard Error	0.04261372
Observations	8

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.049762209	0.049762209	27.40316744	0.001948132
Residual	6	0.010895575	0.001815929		
Total	7	0.060657783			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.024048975	0.01536592	-1.565085239	0.168599787	-0.061648026	0.013550077	-0.061648026	0.013550077
Japan GDP Growth	2.810501742	0.536887727	5.234803477	0.001948132	1.496784799	4.124218685	1.496784799	4.124218685

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.685547439
R Square	0.469975291
Adjusted R Square	0.38163784
Standard Error	0.098499723
Observations	8

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*

Appendix 2

Regression	1	0.051617882	0.051617882	5.32022696	0.060553433
Residual	6	0.058213173	0.009702195		
Total	7	0.109831055			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.20607563	0.134882258	-1.52781866	0.177417709	-0.536120625	0.123969365	-0.536120625	0.123969365
Asia and Pacific GDP Growth	4.877336638	2.114548507	2.306561718	0.060553433	-0.296777164	10.05145044	-0.296777164	10.05145044

Appendix 3

IMF GDP, Historical Data and Projections

Real GDP growth (Annual percent change)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Brazil	-0.3%	7.5%	2.7%	1.0%	2.3%	1.8%	2.7%	3.0%	3.1%	3.3%	3.5%
China, People's Republic of	9.2%	10.4%	9.3%	7.7%	7.7%	7.5%	7.3%	7.0%	6.8%	6.6%	6.5%
Japan	-5.5%	4.7%	-0.5%	1.4%	1.5%	1.4%	1.0%	0.7%	1.0%	1.0%	1.1%
United States	-2.8%	2.5%	1.8%	2.8%	1.9%	2.8%	3.0%	3.0%	2.9%	2.6%	2.2%
Asia and Pacific	3.8%	8.3%	6.0%	5.2%	5.2%	5.3%	5.5%	5.4%	5.4%	5.4%	5.4%
Europe	-4.8%	2.3%	2.1%	0.3%	0.4%	1.6%	1.9%	2.0%	2.0%	2.0%	2.0%
North America	-3.0%	2.8%	2.1%	2.8%	1.8%	2.8%	3.0%	3.1%	2.9%	2.7%	2.4%
Western Europe	-4.4%	2.0%	1.5%	-0.4%	0.1%	1.5%	1.7%	1.7%	1.7%	1.7%	1.7%
Western Hemisphere (Region)	-2.4%	3.6%	2.7%	2.8%	2.1%	2.7%	2.9%	3.1%	3.0%	2.8%	2.6%
Latin America and the Caribbean	-1.3%	6.0%	4.6%	3.1%	2.7%	2.5%	3.0%	3.3%	3.5%	3.5%	3.6%
World	-0.4%	5.2%	3.9%	3.2%	3.0%	3.6%	3.9%	3.9%	3.9%	3.9%	3.9%

EUR Million Group Michelin	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Drivers						**EY 2014**	**EY 2015**	**EY 2016**	**EY 2017**	**EY 2018**
Growth in Net Sales		20.8%	15.8%	3.6%	-5.7%	5.2%	6.9%	5.9%	4.8%	3.2%
EBITDA-margin	13.9%	16.8%	15.2%	18.0%	17.8%	17.5%	17.2%	16.8%	16.5%	16.2%
Net borrowing rate		5.3%	-0.6%	7.0%	6.8%	6.4%	6.4%	6.4%	6.4%	6.4%
Effective tax rate	49.8%	30.1%	26.8%	31.8%	33.8%	34.4%	34.4%	34.4%	34.4%	34.4%
Depreciation and amortization as a percentage of PPE and intangibles	11.8%	11.4%	10.1%	10.3%	10.1%	11.0%	11.0%	11.0%	11.0%	11.0%
Growth in total PPE and intangible assets		5.9%	9.1%	7.5%	4.6%	9.5%	7.0%	6.0%	3.5%	3.2%
Inventory as a percentage of Net Sales	20.2%	21.1%	22.2%	20.6%	19.7%	20.2%	20.2%	20.2%	20.2%	20.2%
Trade receivables as a percentage of Net Sales	15.6%	15.5%	14.8%	13.0%	12.4%	13.0%	14.0%	14.5%	15.0%	15.0%
Operational liabilities as a percentage of Net Sales	28.9%	27.3%	24.3%	23.4%	25.6%	25.6%	25.6%	25.6%	25.6%	25.6%
NIBD as a percentage of Invested Capital	44.5%	33.3%	38.1%	37.5%	27.7%	24.0%	22.0%	20.0%	18.0%	16.0%
Net sales	14,807.0	17,891.0	20,719.0	21,474.0	20,247.0					
Goodwill	403.0	416.0	415.0	414.0	388.0					
Other intangible assets	321.0	360.0	390.0	403.0	451.0					
Property, plant and equipment (PP&E)	6,782.0	7,193.0	7,889.0	8,579.0	8,955.0					
Converted operating leases, book value	486.1	491.2	536.1	529.8	589.4					
Total PPE and Intangible assets	7,992.1	8,460.2	9,230.1	9,925.8	10,383.4					
EBITDA	2,065.0	3,011.0	3,150.0	3,865.0	3,607.0					
Effective tax rate	49.8%	30.1%	26.8%	31.8%	33.8%					
Depreciation, amortization and impairment	(940.0)	(965.0)	(933.0)	(1,022.0)	(1,051.0)					
Inventories	2,994.0	3,770.0	4,602.0	4,417.0	3,979.0					
Trade receivables	2,314.0	2,770.0	3,075.0	2,802.0	2,517.0					
Operational Liabilities										
Provisions and other non-current liabilities	1,105.0	938.0	804.0	855.0	1,184.0					
Trade payables	1,249.0	1,813.0	2,024.0	1,991.0	1,970.0					
Other current liabilities	1,927.0	2,136.0	2,216.0	2,172.0	2,031.0					
Total operational liabilities	4,281.0	4,887.0	5,044.0	5,018.0	5,185.0					
Invested Capital	10,067.1	11,413.2	13,350.1	13,881.8	13,027.4					
Net Interesting Bearing Debt	4,478.0	3,798.8	5,088.0	5,205.7	3,607.2					

EUR Million Group Michelin - Income Statement	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Reported Income Statement										
Net sales	**14,807.0**	**17,891.0**	**20,719.0**	**21,474.0**	**20,247.0**					
Cost of Sales	(10,527.0)	(12,387.0)	(14,821.0)	(14,764.0)	(13,841.0)					
Gross Income	**4,280.0**	**5,504.0**	**5,898.0**	**6,710.0**	**6,406.0**					
Sales and marketing expenses	(1,650.0)	(1,845.0)	(1,942.0)	(2,068.0)	(1,968.0)					
Research and development expenses	(506.0)	(542.0)	(592.0)	(622.0)	(643.0)					
General and administrative expenses	(1,113.0)	(1,235.0)	(1,385.0)	(1,468.0)	(1,517.0)					
Net restructuring costs	(22.0)	(11.0)	2.0	(15.0)	15.0					
(Charge)/reversal on impairment of intangible assets and PPE	(2.0)	(10.0)	11.0	(15.0)	(2.0)					
Retiree benefit costs	(104.0)	(65.0)	(24.0)	(28.0)	(9.0)					
Employee shareholder plan cost	0.0	0.0	0.0	0.0	(18.0)					
Share-based payments – cost of services rendered	(10.0)	(9.0)	(7.0)	(7.0)	(11.0)					
Other operating income/(expenses)	(31.0)	(41.0)	(30.0)	(9.0)	(19.0)					
Gain on disposal of intangible assets and PPE	20.0	5.0	14.0	0.0	0.0					
Operating income before non-recurring income and expenses	**862.0**	**1,751.0**	**1,945.0**	**2,478.0**	**2,234.0**					
Non-recurring income and expenses	(412.0)	0.0	0.0	46.0	(260.0)					
Operating income	**450.0**	**1,751.0**	**1,945.0**	**2,524.0**	**1,974.0**					
Cost of net debt	(262.0)	(236.0)	(206.0)	(155.0)	(94.0)					
Other financial income and expenses	10.0	10.0	236.0	(22.0)	(15.0)					
Net interest on employee benefit obligations	0.0	0.0	0.0	(175.0)	(162.0)					
Share of profit/(loss) from associates	9.0	29.0	21.0	15.0	(1.0)					
Income before taxes	**207.0**	**1,554.0**	**1,996.0**	**2,187.0**	**1,702.0**					
Income Tax	(103.0)	(468.0)	(534.0)	(696.0)	(575.0)					
Net income	**104.0**	**1,086.0**	**1,462.0**	**1,491.0**	**1,127.0**					
Analytical Income Statement										
Net sales	**14,807.0**	**17,891.0**	**20,719.0**	**21,474.0**	**20,247.0**	**21,289.7**	**22,760.3**	**24,108.4**	**25,276.9**	**26,092.0**
Cost of Sales	(10,527.0)	(12,387.0)	(14,821.0)	(14,764.0)	(13,841.0)					
Depreciation, amortization and impairment	940.0	965.0	933.0	1,022.0	1,051.0					
Adjusted Cost of Sales	(9,587.0)	(11,422.0)	(13,888.0)	(13,742.0)	(12,790.0)					
Adjusted Gross Income	**5,220.0**	**6,469.0**	**6,831.0**	**7,732.0**	**7,457.0**					
Sales and marketing expenses	(1,650.0)	(1,845.0)	(1,942.0)	(2,068.0)	(1,968.0)					
Research and development expenses	(506.0)	(542.0)	(592.0)	(622.0)	(643.0)					
General and administrative expenses	(1,113.0)	(1,235.0)	(1,385.0)	(1,468.0)	(1,517.0)					
Retiree benefit costs	(104.0)	(65.0)	(24.0)	(28.0)	(9.0)					
Employee shareholder plan cost	0.0	0.0	0.0	0.0	(18.0)					
Share-based payments – cost of services rendered	(10.0)	(9.0)	(7.0)	(7.0)	(11.0)					
Other operating income/(expenses)	(31.0)	(41.0)	(30.0)	(9.0)	(19.0)					
Add back operating lease expense	259.0	279.0	299.0	335.0	335.0					
EBITDA	**2,065.0**	**3,011.0**	**3,150.0**	**3,865.0**	**3,607.0**	**3,725.7**	**3,914.8**	**4,050.2**	**4,170.7**	**4,226.9**
Depreciation, amortization and impairment	(940.0)	(965.0)	(933.0)	(1,022.0)	(1,051.0)	(1,250.7)	(1,338.2)	(1,418.5)	(1,468.2)	(1,515.5)
Depreciation on lease adjustments	(48.6)	(49.1)	(53.6)	(53.0)	(58.9)					
EBIT	**1,076.4**	**1,996.9**	**2,163.4**	**2,790.0**	**2,497.1**	**2,475.0**	**2,576.5**	**2,631.7**	**2,702.5**	**2,711.4**

EUR Million Group Michelin - Income Statement	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Cost of net debt	(262.0)	(236.0)	(206.0)	(155.0)	(94.0)					
Other financial income and expenses	10.0	10.0	236.0	(22.0)	(15.0)					
Net interest on employee benefit obligations	0.0	0.0	0.0	(175.0)	(162.0)					
Share of profit/(loss) from associates	9.0	29.0	21.0	15.0	(1.0)					
Interest expense on adjusted leases	(23.1)	(23.4)	(25.5)	(25.2)	(28.0)					
Net financial expenses						(230.5)	(199.2)	(198.6)	(192.9)	(181.4)
EBT	**810.3**	**1,776.5**	**2,188.9**	**2,427.8**	**2,197.0**	**2,244.5**	**2,377.3**	**2,433.1**	**2,509.7**	**2,529.9**
Income Tax	(103.0)	(468.0)	(534.0)	(696.0)	(575.0)					
Effective tax rate	49.8%	30.1%	26.8%	31.8%	33.8%	34.4%	34.4%	34.4%	34.4%	34.4%
Tax on EBIT	(535.6)	(601.4)	(578.8)	(887.9)	(843.6)	(852.6)	(887.5)	(906.5)	(930.9)	(934.0)
NOPAT	**540.8**	**1,395.5**	**1,584.6**	**1,902.1**	**1,653.5**	**1,622.4**	**1,689.0**	**1,725.1**	**1,771.6**	**1,777.4**
Net financial expenses	(266.1)	(220.4)	25.5	(362.2)	(300.0)	(230.5)	(199.2)	(198.6)	(192.9)	(181.4)
Tax shield	132.4	66.4	(6.8)	115.3	101.4	79.4	68.6	68.4	66.4	62.5
Net Income	**407.1**	**1,241.5**	**1,603.3**	**1,655.2**	**1,454.8**	**1,471.3**	**1,558.4**	**1,595.0**	**1,645.2**	**1,658.5**
Net restructuring costs	(22.0)	(11.0)	2.0	(15.0)	15.0					
(Charge)/reversal on impairment of intangible assets and PPE	(2.0)	(10.0)	11.0	(15.0)	(2.0)					
Gain on disposal of intangible assets and PPE	20.0	5.0	14.0	0.0	0.0					
Non-recurring income and expenses	(412.0)	0.0	0.0	46.0	(260.0)					
Total non-recurring items	**(416.0)**	**(16.0)**	**27.0**	**16.0**	**(247.0)**					
Tax shield on non-recurring items	207.0	4.8	(7.2)	(5.1)	83.4					
Total Income	**198.1**	**1,230.3**	**1,623.1**	**1,666.1**	**1,291.2**	**1,471.3**	**1,558.4**	**1,595.0**	**1,645.2**	**1,658.5**
Dividends						**(1,020.8)**	**(413.2)**	**(539.4)**	**(782.4)**	**(915.7)**
Retained earnings						**450.5**	**1,145.3**	**1,055.6**	**862.7**	**742.7**

EUR Million Group Michelin - Balance Sheet	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Reported Balance Sheet										
Assets										
Goodwill	403.0	416.0	415.0	414.0	388.0					
Other intangible assets	321.0	360.0	390.0	403.0	451.0					
Property, plant and equipment (PP&E)	6,782.0	7,193.0	7,889.0	8,579.0	8,955.0					
Lease adjustment, operating leases addition to PPE	486.1	491.2	536.1	529.8	589.4					
Total PPE and Intangible assets						11,369.8	12,165.7	12,895.6	13,347.0	13,777.4
Non-current financial assets and other assets	712.0	677.0	404.0	298.0	309.0					
Investments in associates	71.0	93.0	120.0	204.0	195.0					
Deferred tax assets	942.0	1,175.0	1,352.0	1,530.0	1,054.0					
Non-current assets	**9,717.1**	**10,405.2**	**11,106.1**	**11,957.8**	**11,941.4**					
Inventories	2,994.0	3,770.0	4,602.0	4,417.0	3,979.0	4,300.5	4,597.6	4,869.9	5,105.9	5,270.6
Trade receivables	2,314.0	2,770.0	3,075.0	2,802.0	2,517.0	2,767.7	3,186.4	3,495.7	3,791.5	3,913.8
Current financial assets	165.0	882.0	366.0	371.0	564.0					
Other current assets, adjusted	508.0	576.0	588.0	598.0	580.0					
Supplier advances	75.0	77.0	94.0	108.0	127.0					
Cash and cash equivalents	1,231.0	1,590.0	1,593.0	1,858.0	1,563.0					
Current assets	**7,287.0**	**9,665.0**	**10,318.0**	**10,154.0**	**9,330.0**					
Total assets	**17,004.1**	**20,070.2**	**21,424.1**	**22,111.8**	**21,271.4**	**18,438.0**	**19,949.7**	**21,261.2**	**22,244.5**	**22,961.8**
Liabilities and equity										
Share capital	295.0	353.0	360.0	365.0	372.0					
Share premiums	1,987.0	3,215.0	3,396.0	3,508.0	3,641.0					
Reserves	3,210.0	3,899.0	4,343.0	4,626.0	5,237.0					
Non-controlling interests	3.0	3.0	2.0	2.0	6.0					
Lease adjustment on retained earnings, operating leases	94.1	144.3	161.1	175.1	164.2					
Equity	**5,589.1**	**7,614.3**	**8,262.1**	**8,676.1**	**9,420.2**	**9,870.8**	**11,016.0**	**12,071.6**	**12,934.3**	**13,677.1**
Non-current financial liabilities	3,568.0	3,251.0	2,478.0	2,023.0	1,447.0					
Lease adjustment, operating leases debt	392.0	346.8	375.0	354.7	425.2					
Employee benefit obligations	2,374.0	3,030.0	3,825.0	4,679.0	3,895.0					
Provisions and other non-current liabilities	1,105.0	938.0	804.0	855.0	1,184.0					
Deferred tax liabilities	40.0	45.0	79.0	87.0	43.0					
Non-current liabilities	**7,479.0**	**7,610.8**	**7,561.0**	**7,998.7**	**6,994.2**					
Current financial liabilities	760.0	896.0	1,361.0	1,274.0	856.0					
Trade payables	1,249.0	1,813.0	2,024.0	1,991.0	1,970.0					
Other current liabilities	1,927.0	2,136.0	2,216.0	2,172.0	2,031.0					
Current liabilities	**3,936.0**	**4,845.0**	**5,601.0**	**5,437.0**	**4,857.0**					
Total liabilities	**11,415.0**	**12,455.8**	**13,162.0**	**13,435.7**	**11,851.2**					
Total Operational Liabilities						**5,450.2**	**5,826.6**	**6,171.7**	**6,470.9**	**6,679.6**
Net Interesting Bearing Debt						**3,117.1**	**3,107.1**	**3,017.9**	**2,839.2**	**2,605.2**
Total liabilities and equity	**17,004.1**	**20,070.2**	**21,424.1**	**22,111.8**	**21,271.4**	**18,438.0**	**19,949.7**	**21,261.2**	**22,244.5**	**22,961.8**
Check										

EUR Million Group Michelin - Balance Sheet	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Analytical Balance Sheet										
Invested Capital										
Operational Assets										
Goodwill	403.0	416.0	415.0	414.0	388.0					
Other intangible assets	321.0	360.0	390.0	403.0	451.0					
Property, plant and equipment (PP&E)	6,782.0	7,193.0	7,889.0	8,579.0	8,955.0					
Investments in associates	71.0	93.0	120.0	204.0	195.0					
Deferred tax assets	942.0	1,175.0	1,352.0	1,530.0	1,054.0					
Inventories	2,994.0	3,770.0	4,602.0	4,417.0	3,979.0					
Trade receivables	2,314.0	2,770.0	3,075.0	2,802.0	2,517.0					
Supplier advances	75.0	77.0	94.0	108.0	127.0					
Lease adjustment, operating leases addition to PPE	486.1	491.2	536.1	529.8	589.4					
Operational Liabilities										
Provisions and other non-current liabilities	1,105.0	938.0	804.0	855.0	1,184.0					
Deferred tax liabilities	40.0	45.0	79.0	87.0	43.0					
Trade payables	1,249.0	1,813.0	2,024.0	1,991.0	1,970.0					
Other current liabilities	1,927.0	2,136.0	2,216.0	2,172.0	2,031.0					
Total Operational Liabilities	4,321.0	4,932.0	5,123.0	5,105.0	5,228.0	**5,450.2**	**5,826.6**	**6,171.7**	**6,470.9**	**6,679.6**
Invested Capital	**10,067.1**	**11,413.2**	**13,350.1**	**13,881.8**	**13,027.4**	**12,987.8**	**14,123.1**	**15,089.5**	**15,773.6**	**16,282.2**
Invested Capital (NIBD + E)										
NIBD										
Financial Liabilities										
Non-current financial liabilities	3,568.0	3,251.0	2,478.0	2,023.0	1,447.0					
Employee benefit obligations	2,374.0	3,030.0	3,825.0	4,679.0	3,895.0					
Current financial liabilities	760.0	896.0	1,361.0	1,274.0	856.0					
Lease adjustment, operating leases debt	392.0	346.8	375.0	354.7	425.2					
Financial Assets										
Non-current financial assets and other assets	712.0	677.0	404.0	298.0	309.0					
Current financial assets	165.0	882.0	366.0	371.0	564.0					
Other current assets, adjusted	508.0	576.0	588.0	598.0	580.0					
Cash and cash equivalents	1,231.0	1,590.0	1,593.0	1,858.0	1,563.0					
Net Interesting Bearing Debt	**4,478.0**	**3,798.8**	**5,088.0**	**5,205.7**	**3,607.2**	**3,117.1**	**3,107.1**	**3,017.9**	**2,839.2**	**2,605.2**
Equity	**5,589.1**	**7,614.3**	**8,262.1**	**8,676.1**	**9,420.2**	**9,870.8**	**11,016.0**	**12,071.6**	**12,934.3**	**13,677.1**
Invested Capital (NIBD + E)	**10,067.1**	**11,413.2**	**13,350.1**	**13,881.8**	**13,027.4**	**12,987.8**	**14,123.1**	**15,089.5**	**15,773.6**	**16,282.2**
Check										

EUR Million Group Michelin - Cash Flow Statement	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Net income	**104.0**	**1,086.0**	**1,462.0**	**1,491.0**	**1,127.0**					
NOPAT						**1,622.4**	**1,689.0**	**1,725.1**	**1,771.6**	**1,777.4**
Adjustments										
Cost of net debt	262.0	236.0	206.0	155.0	94.0					
Other financial income and expenses	(10.0)	(10.0)	(236.0)	22.0	15.0					
Income tax	103.0	468.0	534.0	696.0	575.0					
Net interest on benefits	0.0	0.0	0.0	175.0	162.0					
Amortization, depreciation and impairment, intangible assets and PP&E	940.0	965.0	933.0	1,022.0	1,051.0	1,250.7	1,338.2	1,418.5	1,468.2	1,515.5
Non-recurring income and expenses	412.0	0.0	0.0	(46.0)	260.0					
Share of loss/(profit) from associates	(9.0)	(29.0)	(21.0)	(15.0)	1.0					
EBITDA before non-recurring income and expenses	**1,802.0**	**2,716.0**	**2,878.0**	**3,500.0**	**3,285.0**					
Other non-cash income and expenses	(28.0)	(14.0)	(24.0)	4.0	(14.0)					
Change in provisions, including employee benefit obligations	(372.0)	(479.0)	(132.0)	(272.0)	(322.0)					
Cost of net debt and other financial income and expenses paid	(207.0)	(177.0)	(189.0)	(146.0)	(70.0)					
Income tax paid	(19.0)	(297.0)	(443.0)	(703.0)	(516.0)					
Change in working capital, net of impairments	947.0	(427.0)	(894.0)	543.0	726.0					
Change in inventories						(321.5)	(297.1)	(272.3)	(236.0)	(164.7)
Change in trade receivables						(250.7)	(418.8)	(309.3)	(295.8)	(122.3)
Change in operational liabilities						265.2	376.5	345.1	299.1	208.7
Change in supplier advances						127.0	0.0	0.0	0.0	0.0
Change in deferred tax assets						1,054.0	0.0	0.0	0.0	0.0
Change in deferred tax liabilities						(43.0)	0.0	0.0	0.0	0.0
Cash flows from operating activities	**2,123.0**	**1,322.0**	**1,196.0**	**2,926.0**	**3,089.0**	**3,704.1**	**2,687.9**	**2,907.2**	**3,007.0**	**3,214.7**
Purchases of intangible assets and PP&E	(707.0)	(964.0)	(1,668.0)	(1,920.0)	(1,966.0)					
Proceeds from sale of intangible assets and PP&E	47.0	61.0	49.0	149.0	53.0					
Changes in total PPE and Intangible assets						(986.4)	(795.9)	(729.9)	(451.3)	(430.4)
Equity investments in consolidated companies, net of cash acquired	(1.0)	(4.0)	(11.0)	(88.0)	1.0	195.0	0.0	0.0	0.0	0.0
Disposals of equity investments in consolidated companies, net of cash sold	10.0	0.0	9.0	0.0	0.0					
Purchases of available-for-sale financial assets	(5.0)	(14.0)	(3.0)	(5.0)	(20.0)					
Proceeds from sale of available-for-sale financial assets	29.0	1.0	405.0	3.0	1.0					
Cash flows from other financial assets	(109.0)	(743.0)	506.0	72.0	(176.0)					
Amortization, depreciation and impairment						(1,250.7)	(1,338.2)	(1,418.5)	(1,468.2)	(1,515.5)
Cash flows from investing activities	**(736.0)**	**(1,663.0)**	**(713.0)**	**(1,789.0)**	**(2,107.0)**	**(2,042.1)**	**(2,134.1)**	**(2,148.5)**	**(1,919.5)**	**(1,945.9)**
FCFF	**1,387.0**	**(341.0)**	**483.0**	**1,137.0**	**982.0**	**1,662.0**	**553.7**	**758.7**	**1,087.5**	**1,268.7**
Proceeds from issuances of shares	2.0	1,204.0	12.0	28.0	27.0					
Reduction in capital	0.0	0.0	0.0	0.0	(136.0)					
Dividends paid to the shareholders of the Company	(65.0)	(65.0)	(138.0)	(289.0)	(189.0)					
Cash flows from financial liabilities	(667.0)	(437.0)	(343.0)	(587.0)	(921.0)					
Other cash flows from financing activities	(20.0)	(39.0)	(15.0)	(20.0)	(43.0)					
Changes in NIBD						(490.1)	(10.0)	(89.2)	(178.7)	(234.1)
Net financial expenses						(230.5)	(199.2)	(198.6)	(192.9)	(181.4)
Tax shield						79.4	68.6	68.4	66.4	62.5
Cash flows from financing activities	**(750.0)**	**663.0**	**(484.0)**	**(868.0)**	**(1,262.0)**	**(641.2)**	**(140.6)**	**(219.3)**	**(305.1)**	**(353.0)**
Effect of changes in exchange rates	2.0	37.0	4.0	(4.0)	(15.0)					

EUR Million Group Michelin - Cash Flow Statement	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Increase of cash and cash equivalents	**639.0**	**359.0**	**3.0**	**265.0**	**(295.0)**					
Cash and cash equivalents at January 1	592.0	1,231.0	1,590.0	1,593.0	1,858.0					
Cash and cash equivalents at December 31	**1,231.0**	**1,590.0**	**1,593.0**	**1,858.0**	**1,563.0**					
Free cash flows to equity (FCFE)						**1,020.8**	**413.2**	**539.4**	**782.4**	**915.7**
Dividends						(1,020.8)	(413.2)	(539.4)	(782.4)	(915.7)
Free reserves						0.0	0.0	0.0	0.0	0.0

EUR Million Group Michelin - Sales Forecast	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Net sales, historical	14,807.0	17,891.0	20,719.0	21,474.0	20,247.0					
GDP Growth in Regions										
Europe	-4.8%	2.3%	2.1%	0.3%	0.4%	1.6%	1.9%	2.0%	2.0%	2.0%
North America	-3.0%	2.8%	2.1%	2.8%	1.8%	2.8%	3.0%	3.1%	2.9%	2.7%
Rest of the World (Asia and Pacific)	3.8%	8.3%	6.0%	5.2%	5.2%	5.3%	5.5%	5.4%	5.4%	5.4%
Converging Betas										
Europe					2.969	2.576	2.182	1.788	1.394	1.000
North America					2.821	2.457	2.093	1.728	1.364	1.000
Rest of the World					4.068	3.454	2.841	2.227	1.614	1.000
Regression Implied Revenue Growth in Regions										
Europe						4.1%	4.1%	3.6%	2.8%	2.0%
North America						6.9%	6.3%	5.4%	4.0%	2.7%
Rest of the World						18.3%	15.6%	12.0%	8.7%	5.4%
Revenue Growth in Regions used in Model										
Europe						3.5%	4.1%	3.6%	2.8%	2.0%
North America						5.0%	6.3%	5.4%	4.0%	2.7%
Rest of the World						8.0%	12.0%	10.0%	8.7%	5.4%
Share of Revenue, 2013										
Europe					40.0%					
North America					35.0%					
Rest of the World					25.0%					
Total					100.0%					
Revenue Forecast in Regions, EUR Millions										
Europe					8,098.8	8,382.3	8,729.7	9,041.8	9,293.9	9,479.8
North America					7,086.5	7,440.8	7,907.9	8,331.6	8,661.2	8,895.0
Rest of the World					5,061.8	5,466.7	6,122.7	6,735.0	7,321.8	7,717.2
Total					**20,247.0**	**21,289.7**	**22,760.3**	**24,108.4**	**25,276.9**	**26,092.0**
Michelin Forecasted Growth Rate						**5.2%**	**6.9%**	**5.9%**	**4.8%**	**3.2%**
Revenue Forecast in Regions, share of total Revenue										
Europe					40.0%	39.4%	38.4%	37.5%	36.8%	36.3%
North America					35.0%	35.0%	34.7%	34.6%	34.3%	34.1%
Rest of the World					25.0%	25.7%	26.9%	27.9%	29.0%	29.6%
Total					100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Regression Betas for Regions	Adj. Beta	Model Beta
Europe	2.969	2.969
North America	2.821	2.821
Rest of the World	4.068	4.068

EUR Million Group Michelin - Operating Lease Adjustments	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Operating lease commitments, not discounted										
Within one year	139.0	143.0	191.0	174.0	202.0					
Between one and five years	330.0	338.0	367.0	364.0	384.0					
More than five years	105.0	97.0	60.0	78.0	101.0					
Total future mimimum payments	**574.0**	**578.0**	**618.0**	**616.0**	**687.0**					
Total operating lease rents recognized in the income statement	**259.0**	**279.0**	**299.0**	**335.0**	**335.0**					
Discount rate applied	4.8%	4.8%	4.8%	4.8%	4.8%					
Years of depreciation, straight-line	10.0	10.0	10.0	10.0	10.0					
Assumed lease payments, not discounted										
Within 1 year	139.0	143.0	191.0	174.0	202.0					
2 years	82.5	84.5	91.8	91.0	96.0					
3 years	82.5	84.5	91.8	91.0	96.0					
4 years	82.5	84.5	91.8	91.0	96.0					
5 years	82.5	84.5	91.8	91.0	96.0					
6 years	21.0	19.4	12.0	15.6	20.2					
7 years	21.0	19.4	12.0	15.6	20.2					
8 years	21.0	19.4	12.0	15.6	20.2					
9 years	21.0	19.4	12.0	15.6	20.2					
10 years	21.0	19.4	12.0	15.6	20.2					
PV of lease payments										
Within 1 year	132.7	136.5	182.3	166.1	192.8					
2 years	75.2	77.0	83.6	82.9	87.5					
3 years	71.8	73.5	79.8	79.2	83.5					
4 years	68.5	70.2	76.2	75.6	79.7					
5 years	65.4	67.0	72.7	72.1	76.1					
6 years	15.9	14.7	9.1	11.8	15.3					
7 years	15.2	14.0	8.7	11.3	14.6					
8 years	14.5	13.4	8.3	10.8	13.9					
9 years	13.8	12.8	7.9	10.3	13.3					
10 years	13.2	12.2	7.5	9.8	12.7					
Total PV of lease payments	**486.1**	**491.2**	**536.1**	**529.8**	**589.4**					
Depreciation expense	48.6	49.1	53.6	53.0	58.9					
Interest expense	23.1	23.4	25.5	25.2	28.0					
Total effect on Earnings	**187.3**	**206.5**	**219.9**	**256.8**	**248.0**					

EUR Million

Group Michelin - WACC	**FY 2009**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**	**EY 2014**	**EY 2015**	**EY 2016**	**EY 2017**	**EY 2018**
Cost of equity estimation										
Beta										
5 year, monthly data	Raw Beta	Adj. Beta								
Dow Jones Industrial Average Index	0.994	0.996								
FTSEurofirst 300 Index	1.364	1.243								
FTSE 100 Index	0.974	0.982								
Average		**1.074**								
Risk free rate	Yield									
Germany 10 year governement bond yield	1.9%									
Market risk premium										
Germany	5.4%									
USA	5.5%									
Canada	5.9%									
Brazil	7.7%									
China	9.4%									
Average	**6.8%**									
Cost of Equity	**9.21%**									
Cost of debt estimation										
Average net financial expenses	6.4%									
We use the average net fianncial expenses	**6.4%**									
Tax rate estimation										
Average historical tax rate	34.4%									
Capital Structure										
Equity	5,589.1	7,614.3	8,262.1	8,676.1	9,420.2	9,870.8	11,016.0	12,071.6	12,934.3	13,677.1
Net Interesting Bearing Debt	4,478.0	3,798.8	5,088.0	5,205.7	3,607.2	3,117.1	3,107.1	3,017.9	2,839.2	2,605.2
Equity/EV		0.61	0.64	0.62	0.67	0.74	0.77	0.79	0.81	0.83
Debt/EV		0.39	0.36	0.38	0.33	0.26	0.23	0.21	0.19	0.17
WACC estimate	**8.36%**									

EUR Million Group Michelin - Valuation	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Valuation date: 1/1-2014										
WACC						8.4%	8.4%	8.4%	8.4%	8.4%
Discounted Cash Flow										
FCFF						1,662.0	553.7	758.7	1,087.5	1,268.7
Growth in terminal period										3.2%
Discount factors						0.923	0.852	0.786	0.725	14.137
PV of free cash flows						1,533.8	471.6	596.4	788.9	
PV of free cash flows, forecast period					3,390.7					
PV of free cash flows, terminal period					17,936.4					
Enterprise Value					**21,327.2**					
Net interest bearing debt					3,607.2					
Equity Value					**17,720.0**					
Ordinary shares outstanding, millions					185.8					
Estimated share price, EUR					**95.39**					
Economic Value Added										
Invested Capital	10,067.1	11,413.2	13,350.1	13,881.8	13,027.4	12,987.8	14,123.1	15,089.5	15,773.6	16,282.2
NOPAT	540.8	1,395.5	1,584.6	1,902.1	1,653.5	1,622.4	1,689.0	1,725.1	1,771.6	1,777.4
EVA						533.9	603.7	545.0	510.7	459.4
Growth in terminal period										3.2%
Discount factors						0.923	0.852	0.786	0.725	14.137
PV of EVA						492.7	514.2	428.4	370.5	
PV of EVA, forecast period					1,805.8					
PV of EVA, terminal period					6,494.0					
Invested Capital, t0					13,027.4					
Enterprise Value					**21,327.2**					
Net interest bearing debt					3,607.2					
Equity Value					**17,720.0**					
Ordinary shares outstanding, millions					185.8					
Estimated share price, EUR					**95.39**					
Multiples										
EV/Sales										
Enterprise Value					21,327.2					
Sales, 2014					21,289.7					
Sales, 2015					22,760.3					
EV/Sales, 2014					1.00x					

EUR Million Group Michelin - Valuation	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
EV/Sales, 2015					0.94x					
EV/EBITDA										
Enterprise Value					21,327.2					
EBITDA, 2014					3,725.7					
EBITDA, 2015					3,914.8					
EV/EBITDA, 2014					5.72x					
EV/EBITDA, 2015					5.45x					
EV/EBIT										
Enterprise Value					21,327.2					
EBIT, 2014					2,475.0					
EBIT, 2015					2,576.5					
EV/EBIT, 2014					8.62x					
EV/EBIT, 2015					8.28x					
P/E										
Equity Value					17,720.0					
Total Income, 2014					1,471.3					
Total Income, 2015					1,558.4					
P/E, 2014					12.04x					
P/E, 2015					11.37x					

EUR Million Group Michelin - Ratios	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Invested Capital	10,067.1	11,413.2	13,350.1	13,881.8	13,027.4	12,987.8	14,123.1	15,089.5	15,773.6	16,282.2
Net sales	14,807.0	17,891.0	20,719.0	21,474.0	20,247.0	21,289.7	22,760.3	24,108.4	25,276.9	26,092.0
EBIT	1,076.4	1,996.9	2,163.4	2,790.0	2,497.1	2,475.0	2,576.5	2,631.7	2,702.5	2,711.4
EBT	810.3	1,776.5	2,188.9	2,427.8	2,197.0	2,244.5	2,377.3	2,433.1	2,509.7	2,529.9
NOPAT	540.8	1,395.5	1,584.6	1,902.1	1,653.5	1,622.4	1,689.0	1,725.1	1,771.6	1,777.4
Net Interesting Bearing Debt	4,478.0	3,798.8	5,088.0	5,205.7	3,607.2	3,117.1	3,107.1	3,017.9	2,839.2	2,605.2
Net financial expenses	(266.1)	(220.4)	25.5	(362.2)	(300.0)	(230.5)	(199.2)	(198.6)	(192.9)	(181.4)
Equity	5,589.1	7,614.3	8,262.1	8,676.1	9,420.2	9,870.8	11,016.0	12,071.6	12,934.3	13,677.1
Total Income	198.1	1,230.3	1,623.1	1,666.1	1,291.2	1,471.3	1,558.4	1,595.0	1,645.2	1,658.5
Tax shield	132.4	66.4	(6.8)	115.3	101.4	79.4	68.6	68.4	66.4	62.5
Total non-recurring items	(416.0)	(16.0)	27.0	16.0	(247.0)	0.0	0.0	0.0	0.0	0.0
Tax shield on non-recurring items	207.0	4.8	(7.2)	(5.1)	83.4	0.0	0.0	0.0	0.0	0.0
Days in a year	365.0									
Ratios, before tax										
ROIC										
Invested Capital	10,067.1	11,413.2	13,350.1	13,881.8	13,027.4	12,987.8	14,123.1	15,089.5	15,773.6	16,282.2
EBIT	1,076.4	1,996.9	2,163.4	2,790.0	2,497.1	2,475.0	2,576.5	2,631.7	2,702.5	2,711.4
ROIC		18.6%	17.5%	20.5%	18.6%	19.0%	19.0%	18.0%	17.5%	16.9%
Profit Margin										
Net sales	14,807.0	17,891.0	20,719.0	21,474.0	20,247.0	21,289.7	22,760.3	24,108.4	25,276.9	26,092.0
EBIT	1,076.4	1,996.9	2,163.4	2,790.0	2,497.1	2,475.0	2,576.5	2,631.7	2,702.5	2,711.4
Profit Margin		11.2%	10.4%	13.0%	12.3%	11.6%	11.3%	10.9%	10.7%	10.4%
Turnover of Invested Capital										
Invested Capital	10,067.1	11,413.2	13,350.1	13,881.8	13,027.4	12,987.8	14,123.1	15,089.5	15,773.6	16,282.2
Net sales	14,807.0	17,891.0	20,719.0	21,474.0	20,247.0	21,289.7	22,760.3	24,108.4	25,276.9	26,092.0
Turnover of Invested Capital		1.67	1.67	1.58	1.50	1.64	1.68	1.65	1.64	1.63
Turnover of Invested Capital, days		219.1	218.1	231.4	242.6	223.0	217.4	221.1	222.8	224.2
ROIC, check										
Profit Margin		11.2%	10.4%	13.0%	12.3%	11.6%	11.3%	10.9%	10.7%	10.4%
Turnover of Invested Capital		1.67	1.67	1.58	1.50	1.64	1.68	1.65	1.64	1.63
ROIC		18.6%	17.5%	20.5%	18.6%	19.0%	19.0%	18.0%	17.5%	16.9%
Net borrowing cost										
Net Interesting Bearing Debt	4,478.0	3,798.8	5,088.0	5,205.7	3,607.2	3,117.1	3,107.1	3,017.9	2,839.2	2,605.2
Net financial expenses	(266.1)	(220.4)	25.5	(362.2)	(300.0)	(230.5)	(199.2)	(198.6)	(192.9)	(181.4)
Net borrowing cost		5.3%	-0.6%	7.0%	6.8%	6.9%	6.4%	6.5%	6.6%	6.7%
Spread										

EUR Million Group Michelin - Ratios	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
ROIC		18.6%	17.5%	20.5%	18.6%	19.0%	19.0%	18.0%	17.5%	16.9%
Net borrowing cost		5.3%	-0.6%	7.0%	6.8%	6.9%	6.4%	6.5%	6.6%	6.7%
Spread		13.3%	18.0%	13.5%	11.7%	12.2%	12.6%	11.5%	10.9%	10.3%
Leverage										
Net Interesting Bearing Debt	4,478.0	3,798.8	5,088.0	5,205.7	3,607.2	3,117.1	3,107.1	3,017.9	2,839.2	2,605.2
Equity	5,589.1	7,614.3	8,262.1	8,676.1	9,420.2	9,870.8	11,016.0	12,071.6	12,934.3	13,677.1
Leverage		0.63	0.56	0.61	0.49	0.35	0.30	0.27	0.23	0.20
ROE										
Equity	5,589.1	7,614.3	8,262.1	8,676.1	9,420.2	9,870.8	11,016.0	12,071.6	12,934.3	13,677.1
EBT	810.3	1,776.5	2,188.9	2,427.8	2,197.0	2,244.5	2,377.3	2,433.1	2,509.7	2,529.9
ROE		26.9%	27.6%	28.7%	24.3%	23.3%	22.8%	21.1%	20.1%	19.0%
ROE check		26.9%	27.6%	28.7%	24.3%	23.3%	22.8%	21.1%	20.1%	19.0%
Ratios, after tax										
ROIC										
Invested Capital	10,067.1	11,413.2	13,350.1	13,881.8	13,027.4	12,987.8	14,123.1	15,089.5	15,773.6	16,282.2
NOPAT	540.8	1,395.5	1,584.6	1,902.1	1,653.5	1,622.4	1,689.0	1,725.1	1,771.6	1,777.4
ROIC		13.0%	12.8%	14.0%	12.3%	12.5%	12.5%	11.8%	11.5%	11.1%
Profit Margin										
Net sales	14,807.0	17,891.0	20,719.0	21,474.0	20,247.0	21,289.7	22,760.3	24,108.4	25,276.9	26,092.0
NOPAT	540.8	1,395.5	1,584.6	1,902.1	1,653.5	1,622.4	1,689.0	1,725.1	1,771.6	1,777.4
Profit Margin	3.7%	7.8%	7.6%	8.9%	8.2%	7.6%	7.4%	7.2%	7.0%	6.8%
Turnover of Invested Capital										
Invested Capital	10,067.1	11,413.2	13,350.1	13,881.8	13,027.4	12,987.8	14,123.1	15,089.5	15,773.6	16,282.2
Net sales	14,807.0	17,891.0	20,719.0	21,474.0	20,247.0	21,289.7	22,760.3	24,108.4	25,276.9	26,092.0
Turnover of Invested Capital		1.67	1.67	1.58	1.50	1.64	1.68	1.65	1.64	1.63
Turnover of Invested Capital, days		219.1	218.1	231.4	242.6	223.0	217.4	221.1	222.8	224.2
ROIC, check										
Profit Margin	3.7%	7.8%	7.6%	8.9%	8.2%	7.6%	7.4%	7.2%	7.0%	6.8%
Turnover of Invested Capital		1.67	1.67	1.58	1.50	1.64	1.68	1.65	1.64	1.63
ROIC, check		13.0%	12.8%	14.0%	12.3%	12.5%	12.5%	11.8%	11.5%	11.1%
Net borrowing cost										
Net Interesting Bearing Debt	4,478.0	3,798.8	5,088.0	5,205.7	3,607.2	3,117.1	3,107.1	3,017.9	2,839.2	2,605.2
Net financial expenses	(266.1)	(220.4)	25.5	(362.2)	(300.0)	(230.5)	(199.2)	(198.6)	(192.9)	(181.4)
Tax shield	132.4	66.4	(6.8)	115.3	101.4	79.4	68.6	68.4	66.4	62.5

EUR Million Group Michelin - Ratios	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Net borrowing cost		3.7%	-0.4%	4.8%	4.5%	4.5%	4.2%	4.3%	4.3%	4.4%
Cost of non-recurring items										
Net Interesting Bearing Debt	4,478.0	3,798.8	5,088.0	5,205.7	3,607.2					
Total non-recurring items	(416.0)	(16.0)	27.0	16.0	(247.0)					
Tax shield on non-recurring items	207.0	4.8	(7.2)	(5.1)	83.4					
Cost of non-recurring items		0.3%	-0.4%	-0.2%	3.7%					
Spread										
ROIC		13.0%	12.8%	14.0%	12.3%	12.5%	12.5%	11.8%	11.5%	11.1%
Net borrowing cost		3.7%	-0.4%	4.8%	4.5%	4.5%	4.2%	4.3%	4.3%	4.4%
Cost of non-recurring items		0.3%	-0.4%	-0.2%	3.7%	0.0%	0.0%	0.0%	0.0%	0.0%
Spread		9.0%	13.7%	9.4%	4.1%	8.0%	8.3%	7.6%	7.2%	6.7%
Leverage										
Net Interesting Bearing Debt	4,478.0	3,798.8	5,088.0	5,205.7	3,607.2	3,117.1	3,107.1	3,017.9	2,839.2	2,605.2
Equity	5,589.1	7,614.3	8,262.1	8,676.1	9,420.2	9,870.8	11,016.0	12,071.6	12,934.3	13,677.1
Leverage		0.63	0.56	0.61	0.49	0.35	0.30	0.27	0.23	0.20
ROE										
Equity	5,589.1	7,614.3	8,262.1	8,676.1	9,420.2	9,870.8	11,016.0	12,071.6	12,934.3	13,677.1
Total Income	198.1	1,230.3	1,623.1	1,666.1	1,291.2	1,471.3	1,558.4	1,595.0	1,645.2	1,658.5
ROE		18.6%	20.4%	19.7%	14.3%	15.3%	14.9%	13.8%	13.2%	12.5%
ROE, check		18.6%	20.4%	19.7%	14.3%	15.3%	14.9%	13.8%	13.2%	12.5%

EUR Million Pirelli & C.	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Drivers						**EY 2014**	**EY 2015**	**EY 2016**	**EY 2017**	**EY 2018**
Growth in Net Sales		19.2%	16.6%	7.4%	1.2%	5.3%	7.0%	7.1%	5.3%	3.3%
EBITDA-margin	12.7%	13.5%	14.8%	17.7%	17.8%	17.8%	17.5%	17.3%	17.0%	16.8%
Net borrowing rate		12.5%	14.7%	17.6%	20.6%	11.1%	11.1%	11.1%	11.1%	11.1%
Effective tax rate	53.8%	37.6%	7.3%	33.6%	40.7%	34.6%	34.6%	34.6%	34.6%	34.6%
Depreciation and amortisation as a percentage of PPE and intangibles	7.6%	7.9%	6.8%	7.5%	8.2%	8.0%	8.0%	8.0%	8.0%	8.0%
Growth in total PPE and intangible assets		1.8%	17.1%	10.2%	-0.6%	4.0%	3.0%	2.0%	2.0%	3.3%
Inventory as a percentage of Net Sales		14.3%	18.3%	18.2%	16.1%	16.7%	16.7%	16.7%	16.7%	16.7%
Trade receivables as a percentage of Net Sales		14.0%	13.2%	11.6%	10.8%	11.0%	11.4%	11.8%	12.0%	12.0%
Operational liabilities as a percentage of Net Sales		37.7%	42.2%	34.0%	32.7%	32.7%	32.7%	32.7%	32.7%	32.7%
NIBD as a percentage of Invested Capital		21.6%	29.0%	36.9%	34.1%	34.1%	34.1%	34.1%	34.1%	34.1%
Net Sales	4,067.5	4,848.4	5,654.8	6,071.5	6,146.2					
Property, plant and equipment	1,727.4	1,977.1	2,400.7	2,623.4	2,608.4					
Intangible assets	1,047.5	848.8	908.5	1,022.5	1,014.0					
Total PPE and Intangible assets	2,774.9	2,825.9	3,309.2	3,645.9	3,622.4					
EBITDA	516.3	654.6	835.7	1,073.9	1,091.3					
Effective tax rate	53.8%	37.6%	7.3%	33.6%	40.7%					
Adjusted Amortisation, depreciation and impairment	211.3	222.1	226.1	272.0	296.5					
Inventories	679.0	692.3	1,036.7	1,102.6	987.3					
Trade receivables	735.8	676.7	745.2	704.6	666.4					
Operational Liabilities										
Provisions for liabilities and charges	167.8	165.7	156.9	142.2	116.7					
Provisions for deferred tax liabilities	44.0	33.7	35.2	56.1	50.0					
Trade payable	987.9	1,066.4	1,382.8	1,268.7	1,244.5					
Provisions for liabilities and charges	130.8	116.0	124.7	110.8	90.1					
Other payables	34.0	41.7	54.0	70.6	76.9					
Other payables	491.0	403.4	631.2	417.6	434.2					
Total operational liabilities	1,855.5	1,826.8	2,384.8	2,066.0	2,012.3					
Invested Capital	2,611.2	2,587.8	3,088.9	3,789.6	3,695.6					
Net Interesting Bearing Debt	116.5	559.8	897.3	1,400.2	1,259.0					

EUR Million Pirelli & C. - Income Statement	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Reported Income Statement										
Revenues from sales and services	**4,067.5**	**4,848.4**	**5,654.8**	**6,071.5**	**6,146.2**					
Other income	**147.1**	**154.3**	**140.4**	**241.6**	**252.3**					
of which non-recurring events	5.9	0.0	0.0	29.6	44.3					
Change in inventories of work in progress, semifinished and finished prod.	**(109.1)**	**34.4**	**160.0**	**73.1**	**7.8**					
Raw materials and consumables (net of change in inventories)	**(1,372.7)**	**(1,905.0)**	**(2,448.9)**	**(2,330.1)**	**(2,283.0)**					
Personal expenses	**(949.2)**	**(1,063.6)**	**(1,123.5)**	**(1,193.9)**	**(1,211.8)**					
of which non-recurring events	(52.1)	(18.2)	(16.1)	(28.8)	(45.4)					
Amortisation, depreciation and impairment	**(219.3)**	**(228.6)**	**(230.9)**	**(282.2)**	**(296.5)**					
of which non-recurring events	(8.0)	(6.5)	(4.9)	(10.3)	0.0					
Other costs	**(1,317.2)**	**(1,443.1)**	**(1,574.0)**	**(1,791.7)**	**(1,827.6)**					
of which non-recurring events	(1.0)	0.0	(6.9)	0.0	(2.7)					
Additions to property, plant and equipment for internal work	**2.7**	**10.9**	**4.1**	**4.2**	**3.5**					
Operating Income	**249.7**	**407.8**	**581.9**	**792.5**	**791.0**					
Share of net income from associates	0.2	0.3	2.9	(21.3)	(25.8)					
Gains on equity investments	17.9	23.8	3.8	0.5	9.6					
Losses on equity investments	(36.6)	(6.5)	(28.3)	(33.4)	(63.3)					
Dividends	6.9	5.8	4.2	1.9	1.3					
Net income (loss) from equity investments	(11.6)	23.5	(17.3)	(52.2)	(78.3)					
Financial income	344.8	33.8	56.7	43.0	64.8					
Financial expenses	(414.9)	(99.6)	(146.1)	(193.5)	(260.6)					
Net income (loss) before income tax	**168.0**	**365.4**	**475.1**	**589.8**	**516.884**					
Income tax	(90.4)	(137.4)	(34.5)	(198.2)	(210.4)					
Net income (loss) from continuing operations	**77.6**	**228.1**	**440.7**	**391.6**	**306.5**					
Net income (loss) from discontinued operations	(100.2)	(223.8)	0.0	0.0	**0.0**					
Net income	**(22.6)**	**4.2**	**440.7**	**391.6**	**306.5**					
Analytical Income Statement										
Net Sales	**4,067.5**	**4,848.4**	**5,654.8**	**6,071.5**	**6,146.2**	**6,472.8**	**6,928.6**	**7,418.5**	**7,811.5**	**8,071.8**
Change in inventories of work in progress, semifinished and finished prod.	(109.1)	34.4	160.0	73.1	7.8					
Raw materials and consumables (net of change in inventories)	(1,372.7)	(1,905.0)	(2,448.9)	(2,330.1)	(2,283.0)					
Wages and salaries	(708.1)	(790.3)	(841.5)	(898.1)	(937.6)					
Management remuneration	8.8	8.8	9.2	8.5	10.5					
Adjusted Gross Income	**1,886.3**	**2,196.4**	**2,533.6**	**2,924.9**	**2,943.9**					
Other income	147.1	154.3	140.4	241.6	252.3					
Less non-recurring other income	(5.9)	0.0	0.0	(29.6)	(44.3)					
Additions to property, plant and equipment for internal work	2.7	10.9	4.1	4.2	3.5					
Other costs (SG&A)	(1,317.2)	(1,443.1)	(1,574.0)	(1,791.7)	(1,827.6)					
Less non-recurring other costs (SG&A)	1.0	0.0	6.9	0.0	2.7					
Other Personal expenses	(241.1)	(273.4)	(282.0)	(295.9)	(274.2)					
Management remuneration	(8.8)	(8.8)	(9.2)	(8.5)	(10.5)					
Less non-recurring personal expenses	52.1	18.2	16.1	28.8	45.4					
EBITDA	**516.3**	**654.6**	**835.7**	**1,073.9**	**1,091.3**	**1,152.2**	**1,212.5**	**1,283.4**	**1,328.0**	**1,356.1**

EUR Million Pirelli & C. - Income Statement	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Amortisation, depreciation and impairment	(219.3)	(228.6)	(230.9)	(282.2)	(296.5)	(301.4)	(310.4)	(316.6)	(323.0)	(333.7)
Less non-recurring Amortisation, depreciation and impairment	8.0	6.5	4.9	10.3	0.0					
EBIT	**304.9**	**432.5**	**609.6**	**801.9**	**794.8**	**850.8**	**902.1**	**966.8**	**1,005.0**	**1,022.3**
Net income (loss) from equity investments	(11.6)	23.5	(17.3)	(52.2)	(78.3)					
Financial income	344.8	33.8	56.7	43.0	64.8					
Financial expenses	(414.9)	(99.6)	(146.1)	(193.5)	(260.6)					
Net financial expenses						(139.4)	(130.0)	(134.5)	(137.7)	(140.7)
EBT	**223.2**	**390.1**	**502.9**	**599.2**	**520.7**	**711.3**	**772.0**	**832.3**	**867.3**	**881.7**
Income tax	(90.4)	(137.4)	(34.5)	(198.2)	(210.4)					
Effective tax rate	53.8%	37.6%	7.3%	33.6%	40.7%	34.6%	34.6%	34.6%	34.6%	34.6%
Tax on EBIT	(164.0)	(162.6)	(44.2)	(269.5)	(323.5)	(294.3)	(312.0)	(334.4)	(347.6)	(353.6)
NOPAT	**140.9**	**269.9**	**565.4**	**532.4**	**471.3**	**556.5**	**590.1**	**632.4**	**657.4**	**668.7**
Net financial expenses	(81.7)	(42.3)	(106.8)	(202.7)	(274.1)	(139.4)	(130.0)	(134.5)	(137.7)	(140.7)
Tax shield	44.0	15.9	7.7	68.1	111.6	48.2	45.0	46.5	47.6	48.7
Net Income	**103.1**	**243.5**	**466.4**	**397.8**	**308.7**	**465.3**	**505.0**	**544.4**	**567.3**	**576.7**
Less non-recurring other income	5.9	0.0	0.0	29.6	44.3					
Less non-recurring personal expenses	(52.1)	(18.2)	(16.1)	(28.8)	(45.4)					
Less non-recurring other costs (SG&A)	(1.0)	0.0	(6.9)	0.0	(2.7)					
Less non-recurring Amortisation, depreciation and impairment	(8.0)	(6.5)	(4.9)	(10.3)	0.0					
Total non-recurring items	**(55.2)**	**(24.7)**	**(27.8)**	**(9.4)**	**(3.8)**					
Tax shield on non-recurring items	29.7	9.3	2.0	3.2	1.5					
Net income (loss) from discontinued operations	(100.2)	(223.8)	0.0	0.0	0.0					
Total Income	**(22.6)**	**4.2**	**440.7**	**391.6**	**306.5**	**465.3**	**505.0**	**544.4**	**567.3**	**576.7**
Dividends						**(632.5)**	**(427.3)**	**(488.5)**	**(515.7)**	**(494.9)**
Retained earnings						**(167.2)**	**77.7**	**55.8**	**51.6**	**81.8**

EUR Million Pirelli & C. - Balance Sheet	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Reported Balance Sheet										
Assets										
Property, plant and equipment	1,727.4	1,977.1	2,400.7	2,623.4	2,608.4					
Intangible assets	1,047.5	848.8	908.5	1,022.5	1,014.0					
Total PPE and Intangable assets						3,767.3	3,880.3	3,958.0	4,037.1	4,171.6
Investments in associates	593.2	152.9	140.1	113.2	111.5					
Investments in associates, PT Evoluzione Tires	0.0	0.0	0.0	0.0	19.9					
Other financial assets	228.1	185.3	127.0	118.1	289.1					
Deferred tax assets	91.2	69.6	198.7	207.1	210.2					
Other receivables, adjusted	507.6	233.8	261.4	270.4	69.6					
Accured income and prepaid expenses	4.9	0.3	0.3	0.5	0.6					
Other receivables (supplier advances and lawsuits)	44.7	81.4	86.2	99.3	99.3					
Tax receivables	9.6	10.8	10.2	9.3	7.9					
Non-current assets	**4,254.2**	**3,560.0**	**4,133.2**	**4,463.8**	**4,430.5**					
Inventories	679.0	692.3	1,036.7	1,102.6	987.3	1,081.0	1,157.1	1,238.9	1,304.5	1,348.0
Trade receivables	735.8	676.7	745.2	704.6	666.4	712.0	789.9	875.4	937.4	968.6
Other receivables, adjusted	60.9	106.6	184.5	245.8	165.8					
Accured income and prepaid expenses	19.2	10.7	12.2	25.3	16.6					
Other receivables (supplier advances and lawsuits)	117.0	57.7	85.0	70.3	85.1					
Securities held for trading	161.0	209.8	160.5	224.7	48.1					
Cash and cash equivalents	632.1	244.7	557.0	679.8	879.9					
Tax receivables	41.5	25.2	29.5	28.2	55.6					
Derivative financial instruments	26.6	35.2	70.3	47.7	24.8					
Current assets	**2,473.1**	**2,058.8**	**2,881.0**	**3,129.0**	**2,929.7**					
Total Assets	**6,727.3**	**5,618.8**	**7,014.1**	**7,592.8**	**7,360.2**	**5,560.3**	**5,827.3**	**6,072.2**	**6,279.0**	**6,488.3**
Liabilities and equity										
Share capital	1,554.3	1,375.7	1,343.3	1,343.3	1,343.3					
Reserves	598.0	593.3	351.2	607.0	729.2					
Net income (loss)	22.7	21.8	451.6	387.1	303.6					
Equity attibutable to owners of the Parent	**2,175.0**	**1,990.8**	**2,146.1**	**2,337.4**	**2,376.1**					
Reserves	365.0	54.7	56.4	47.6	57.6					
Net income (loss)	(45.3)	(17.5)	(11.0)	4.5	2.9					
Equity attributable to non-controlling interests:	**319.6**	**37.2**	**45.5**	**52.0**	**60.5**					
Equity	**2,494.7**	**2,028.0**	**2,191.6**	**2,389.4**	**2,436.6**	**2,269.4**	**2,347.1**	**2,403.0**	**2,454.5**	**2,536.3**
Borrowing from bank and other financial institutions	1,505.8	894.7	1,402.5	1,995.8	2,014.4					
Other payables	34.0	41.7	54.0	70.6	76.9					
Provisions for liabilities and charges	167.8	165.7	156.9	142.2	116.7					
Provisions for deferred tax liabilities	44.0	33.7	35.2	56.1	50.0					
Employee benefit obligations	451.9	481.7	481.7	523.0	439.5					
Tax payable	10.0	5.5	4.8	4.2	3.5					
Non-current liabilities	**2,213.5**	**1,623.1**	**2,135.1**	**2,791.8**	**2,700.9**					
Borrowing from bank and other financial institutions	289.3	247.5	369.5	440.5	316.7					
Trade payable	987.9	1,066.4	1,382.8	1,268.7	1,244.5					
Other payables	491.0	403.4	631.2	417.6	434.2					
Provisions for liabilities and charges	130.8	116.0	124.7	110.8	90.1					

EUR Million Pirelli & C. - Balance Sheet	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Tax payables	43.9	64.6	75.4	77.6	80.3					
Derivative financial instruments	76.2	69.9	103.9	96.3	57.0					
Current liabilities	**2,019.1**	**1,967.7**	**2,687.4**	**2,411.6**	**2,222.7**					
Total liabilities	**4,232.6**	**3,590.8**	**4,822.6**	**5,203.4**	**4,923.6**					
Total Operational Liabilities						**2,116.6**	**2,265.7**	**2,425.9**	**2,554.4**	**2,639.5**
Net Interesting Bearing Debt						**1,174.3**	**1,214.5**	**1,243.4**	**1,270.1**	**1,312.4**
Total liabilities and equity	**6,727.3**	**5,618.8**	**7,014.1**	**7,592.8**	**7,360.2**	**5,560.3**	**5,827.3**	**6,072.2**	**6,279.0**	**6,488.3**
Check										
Analytical Balance Sheet										
Invested Capital										
Operational Assets										
Property, plant and equipment	1,727.4	1,977.1	2,400.7	2,623.4	2,608.4					
Intangible assets	1,047.5	848.8	908.5	1,022.5	1,014.0					
Investments in associates, PT Evoluzione Tires	0.0	0.0	0.0	0.0	19.9					
Deferred tax assets	91.2	69.6	198.7	207.1	210.2					
Accured income and prepaid expenses	4.9	0.3	0.3	0.5	0.6					
Other receivables (supplier advances and lawsuits)	44.7	81.4	86.2	99.3	99.3					
Inventories	679.0	692.3	1,036.7	1,102.6	987.3					
Trade receivables	735.8	676.7	745.2	704.6	666.4					
Accured income and prepaid expenses	19.2	10.7	12.2	25.3	16.6					
Other receivables (supplier advances and lawsuits)	117.0	57.7	85.0	70.3	85.1					
Operational Liabilities										
Provisions for liabilities and charges	167.8	165.7	156.9	142.2	116.7					
Provisions for deferred tax liabilities	44.0	33.7	35.2	56.1	50.0					
Trade payable	987.9	1,066.4	1,382.8	1,268.7	1,244.5					
Provisions for liabilities and charges	130.8	116.0	124.7	110.8	90.1					
Other payables	34.0	41.7	54.0	70.6	76.9					
Other payables	491.0	403.4	631.2	417.6	434.2					
Total Operational Liabilities	1,855.5	1,826.8	2,384.8	2,066.0	2,012.3	**2,116.6**	**2,265.7**	**2,425.9**	**2,554.4**	**2,639.5**
Invested Capital	**2,611.2**	**2,587.8**	**3,088.9**	**3,789.6**	**3,695.6**	**3,443.7**	**3,561.6**	**3,646.4**	**3,724.6**	**3,848.8**
Invested Capital (NIBD + E)										
NIBD										
Financial Liabilities										
Borrowing from bank and other financial institutions	1,505.8	894.7	1,402.5	1,995.8	2,014.4					
Employee benefit obligations	451.9	481.7	481.7	523.0	439.5					
Tax payable	10.0	5.5	4.8	4.2	3.5					
Borrowing from bank and other financial institutions	289.3	247.5	369.5	440.5	316.7					
Tax payables	43.9	64.6	75.4	77.6	80.3					
Derivative financial instruments	76.2	69.9	103.9	96.3	57.0					
Financial Assets										
Investments in associates	593.2	152.9	140.1	113.2	111.5					
Other financial assets	228.1	185.3	127.0	118.1	289.1					

EUR Million Pirelli & C. - Balance Sheet	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Other receivables, adjusted	507.6	233.8	261.4	270.4	69.6					
Tax receivables	9.6	10.8	10.2	9.3	7.9					
Other receivables, adjusted	60.9	106.6	184.5	245.8	165.8					
Securities held for trading	161.0	209.8	160.5	224.7	48.1					
Cash and cash equivalents	632.1	244.7	557.0	679.8	879.9					
Tax receivables	41.5	25.2	29.5	28.2	55.6					
Derivative financial instruments	26.6	35.2	70.3	47.7	24.8					
Net Interesting Bearing Debt	**116.5**	**559.8**	**897.3**	**1,400.2**	**1,259.0**	**1,174.3**	**1,214.5**	**1,243.4**	**1,270.1**	**1,312.4**
Equity	**2,494.7**	**2,028.0**	**2,191.6**	**2,389.4**	**2,436.6**	**2,269.4**	**2,347.1**	**2,403.0**	**2,454.5**	**2,536.3**
Invested Capital (NIBD + E)	**2,611.2**	**2,587.8**	**3,088.9**	**3,789.6**	**3,695.6**	**3,443.7**	**3,561.6**	**3,646.4**	**3,724.6**	**3,848.8**
Check										

EUR Million Pirelli & C. - Cash Flow Statement	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Net income (loss) from continuing operations before taxes	**168.0**	**365.4**	**475.1**	**589.8**	**516.9**					
NOPAT						**556.5**	**590.1**	**632.4**	**657.4**	**668.7**
Amortisation, depreciation, impairment losses and reversals of impaired PPE	219.3	228.6	230.9	282.2	296.5	301.4	310.4	316.6	323.0	333.7
Reversal of financial expenses	414.9	99.6	146.1	193.5	260.6					
Reversal of financial income	(344.8)	(33.8)	(56.7)	(43.0)	(64.8)					
Reversal of dividends	(6.9)	(5.8)	(4.2)	(1.9)	(1.3)					
Reversal of gains/(losses) on equity investments	18.7	(17.4)	24.5	32.8	53.8					
Reversal of share of net income from associates and joint ventures	(0.2)	(0.3)	(2.9)	21.3	25.8					
Income taxes	(90.4)	(137.4)	(162.5)	(198.2)	(210.4)					
Change in inventories	245.4	(109.9)	(350.8)	(74.0)	3.9	(93.6)	(76.1)	(81.8)	(65.6)	(43.5)
Change in trade receivables	0.0	49.5	(83.0)	29.9	(31.1)	(45.6)	(77.9)	(85.5)	(62.0)	(31.2)
Change in trade payables	0.0	78.5	326.8	(97.9)	98.9					
Change in trade receivables/payables	(101.6)	0.0	0.0	0.0	0.0					
Change in other receivables/payables	5.6	51.0	125.9	(168.3)	(0.1)					
Change in provisions for employee benefits and other provisions	67.9	41.9	(85.8)	(14.4)	(58.4)					
Other changes	(64.0)	18.1	4.6	(16.9)	(22.1)					
Change in operational liabilities						104.3	149.1	160.2	128.5	85.1
Change in deferred tax assets						210.2	0.0	0.0	0.0	0.0
Change in Investments in associates, PT Evoluzione Tires						19.9	0.0	0.0	0.0	0.0
Change in Accured income and prepaid expenses, non-current						0.6	0.0	0.0	0.0	0.0
Change in Other receivables (supplier advances and lawsuits), non-current						99.3	0.0	0.0	0.0	0.0
Change in Accured income and prepaid expenses, current						16.6	0.0	0.0	0.0	0.0
Change in Other receivables (supplier advances and lawsuits), current						85.1	0.0	0.0	0.0	0.0
Cash flows from operating activities	**532.0**	**628.1**	**588.0**	**534.9**	**868.3**	**1,254.7**	**895.6**	**941.9**	**981.2**	**1,012.9**
Purchase of property, plant and equipment	(223.2)	(433.1)	(617.8)	(455.5)	(402.3)	(144.9)	(113.0)	(77.6)	(79.2)	(134.5)
Disposal of property, plant and equipment	37.3	18.0	6.0	19.9	23.1					
Purchase of intangible assets	(4.6)	(4.8)	(8.4)	(15.4)	(10.8)					
Disposal of intangible assets	10.1	2.8	0.1	0.1	0.0					
Acquisitions of equity investments in subsidiaries - Russia net of cash acquired	0.0	0.0	(55.0)	(168.9)	0.0					
Acquisitions of equity investments in subsidiaries - retail	0.0	0.0	0.0	(93.0)	(11.2)					
Acquisitions of equity investments in subsidiaries	(4.2)	0.0	(35.0)	0.0	0.0					
Disposals (Acquisition) of equity investments in associates and joint ventures	(13.8)	(16.9)	(4.0)	0.0	(55.4)					
Disposals (Acquisition) of avaible-for-sale financial assets	222.3	(23.5)	7.4	3.6	(9.9)					
Dividends received	6.9	5.8	4.2	1.9	1.3					
Adjusted Amortisation, depreciation and impairment						(301.4)	(310.4)	(316.6)	(323.0)	(333.7)
Cash flows from investing activities	**30.9**	**(451.7)**	**(702.4)**	**(707.3)**	**(465.2)**	**(446.3)**	**(423.4)**	**(394.2)**	**(402.1)**	**(468.3)**
FCFF	**562.9**	**176.4**	**(114.4)**	**(172.4)**	**403.1**	**808.4**	**472.1**	**547.6**	**579.1**	**544.6**
Increase (reduction) in Equity	0.0	4.8	9.9	5.487	0.0					
Change in financial payables	(95.8)	(186.4)	631.1	705.293	(36.4)					
Change in financial receivables	(6.1)	(235.4)	(37.3)	(107.196)	169.1					
Financial income (expenses)	(70.1)	(65.8)	(89.4)	(150.440)	(195.8)					
Dividends paid	(2.3)	(85.1)	(83.5)	(135.286)	(159.8)					
Changes in NIBD						(84.7)	40.2	28.9	26.7	42.3
Net financial expenses						(139.4)	(130.0)	(134.5)	(137.7)	(140.7)
Tax shield						48.2	45.0	46.5	47.6	48.7
Cash flows from financing activities	**(174.3)**	**(567.9)**	**430.6**	**317.858**	**(222.9)**	**(175.9)**	**(44.8)**	**(59.1)**	**(63.4)**	**(49.7)**

EUR Million Pirelli & C. - Cash Flow Statement	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Net cash flows provided by (used in) discontinued operations	**(2.5)**	**2.2**	**0.0**	**0.0**	**0.0**					
Exchange differences on translation of cash and cash equivalents	(2.4)	5.3	(0.5)	(8.7)	(52.4)					
Increase of cash and cash equivalents	**383.7**	**(384.0)**	**315.7**	**136.7**	**127.7**					
Cash and cash equivalents at January 1	227.1	610.8	226.8	542.4	679.2					
Cash and cash equivalents at December 31	610.8	226.8	542.4	679.2	806.9					
Free cash flows to equity (FCFE)						**632.5**	**427.3**	**488.5**	**515.7**	**494.9**
Dividends						(632.5)	(427.3)	(488.5)	(515.7)	(494.9)
Free reserves						0.0	0.0	0.0	0.0	0.0

EUR Million Pirelli & C. - Sales Forecast	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Net sales, historical	4,067.5	4,848.4	5,654.8	6,071.5	6,146.2					
GDP Growth in Regions										
EMEA (Europe)	-4.8%	2.3%	2.1%	0.3%	0.4%	1.6%	1.9%	2.0%	2.0%	2.0%
North America	-3.0%	2.8%	2.1%	2.8%	1.8%	2.8%	3.0%	3.1%	2.9%	2.7%
Central & South America	-1.3%	6.0%	4.6%	3.1%	2.7%	2.5%	3.0%	3.3%	3.5%	3.5%
Rest of the World (Asia)	3.8%	8.3%	6.0%	5.2%	5.2%	5.3%	5.5%	5.4%	5.4%	5.4%
Converging Betas										
EMEA (Europe)					7.176	5.941	4.706	3.471	2.235	1.000
North America					2.821	2.457	2.093	1.728	1.364	1.000
Central & South America					4.584	3.868	3.151	2.434	1.717	1.000
Rest of the World (Asia)					11.195	9.156	7.117	5.078	3.039	1.000
Regression Implied Revenue Growth in Regions										
EMEA (Europe)						9.5%	8.9%	6.9%	4.5%	2.0%
North America						6.9%	6.3%	5.4%	4.0%	2.7%
Central & South America						9.7%	9.5%	8.0%	6.0%	3.5%
Rest of the World (Asia)						48.5%	39.1%	27.4%	16.4%	5.4%
Revenue Growth in Regions used in Model										
EMEA (Europe)						4.5%	5.5%	6.0%	4.5%	3.0%
North America						5.0%	6.3%	5.4%	4.0%	2.7%
Central & South America						6.0%	9.0%	8.0%	6.0%	3.5%
Rest of the World (Asia)						8.0%	9.0%	12.0%	9.0%	5.4%
Share of Revenue, 2013										
EMEA (Europe)					47.0%					
North America					12.0%					
Central & South America					34.0%					
Rest of the World (Asia)					7.0%					
Total					100.0%					
Revenue Forecast in Regions, EUR Millions										
EMEA (Europe)					2,888.7	3,018.7	3,184.7	3,375.8	3,526.7	3,632.5
North America					737.5	774.4	823.0	867.1	901.4	925.8
Central & South America					2,089.7	2,215.1	2,414.4	2,608.3	2,765.1	2,861.9
Rest of the World (Asia)					430.2	464.6	506.5	567.2	618.3	651.7
Total					**6,146.2**	**6,472.8**	**6,928.6**	**7,418.5**	**7,811.5**	**8,071.8**
Pirelli Forecasted Growth Rate						**5.3%**	**7.0%**	**7.1%**	**5.3%**	**3.3%**
Revenue Forecast in Regions, share of total Revenue										
EMEA (Europe)					47.0%	46.6%	46.0%	45.5%	45.1%	45.0%
North America					12.0%	12.0%	11.9%	11.7%	11.5%	11.5%
Central & South America					34.0%	34.2%	34.8%	35.2%	35.4%	35.5%
Rest of the World (Asia)					7.0%	7.2%	7.3%	7.6%	7.9%	8.1%
Total					100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

EUR Million Pirelli & C. - Sales Forecast	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018

Regression Betas for Regions	Adj. Beta	Model Beta
EMEA	7.176	7.176
North America	2.821	-17.249
Central & South America	4.584	-5.881
Rest of the World (Asia)	11.195	11.195

EUR Million

Pirelli & C. - WACC	**FY 2009**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**	**EY 2014**	**EY 2015**	**EY 2016**	**EY 2017**	**EY 2018**
Cost of equity estimation										
Beta										
5 year, monthly data	Raw Beta	Adj. Beta								
Dow Jones Industrial Average Index	1.411	1.274								
FTSEurofirst 300 Index	1.457	1.305								
FTSE 100 Index	1.396	1.264								
Average		**1.281**								
Risk free rate	Yield									
German 10 year governement bond yield	1.9%									
Market risk premium										
Italy	5.5%									
Germany	5.4%									
Brazil	7.7%									
Argentina	9.9%									
China	9.4%									
Russia	7.5%									
Average	**7.6%**									
Cost of Equity	**11.62%**									
Cost of debt estimation										
Cost of debt, Pirelli's own estimate	5.8%									
Average net financial expenses	16.4%									
Average	11.1%									
Tax rate estimation										
Average historical tax rate	34.6%									
Capital Structure										
Equity	2,494.7	2,028.0	2,191.6	2,389.4	2,436.6	2,269.4	2,347.1	2,403.0	2,454.5	2,536.3
Net Interesting Bearing Debt	116.5	559.8	897.3	1,400.2	1,259.0	1,174.3	1,214.5	1,243.4	1,270.1	1,312.4
Equity/EV		0.87	0.74	0.67	0.64	0.66	0.66	0.66	0.66	0.66
Debt/EV		0.13	0.26	0.33	0.36	0.34	0.34	0.34	0.34	0.34
WACC estimate	**10.13%**									

EUR Million Pirelli & C. - Valuation	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Valuation date: 1/1-2014										
WACC						10.1%	10.1%	10.1%	10.1%	10.1%
Discounted Cash Flow										
Free cash flow						808.4	472.1	547.6	579.1	544.6
Growth in terminal period										3.3%
Discount factors						0.908	0.825	0.749	0.680	10.002
PV of free cash flows						734.1	389.3	410.0	393.7	
PV of free cash flows, forecast period					1,927.0					
PV of free cash flows, terminal period					5,447.2					
Enterprise Value					**7,374.2**					
Net interest bearing debt					1,259.0					
Equity Value					**6,115.2**					
Ordinary shares outstanding, millions					475.4					
Savings shares outstanding, millions					11.8					
Estimated share price, EUR					**12.55**					
Economic Value Added										
Invested Capital	2,611.2	2,587.8	3,088.9	3,789.6	3,695.6	3,443.7	3,561.6	3,646.4	3,724.6	3,848.8
NOPAT	140.9	269.9	565.4	532.4	471.3	556.5	590.1	632.4	657.4	668.7
EVA						182.2	241.3	271.6	288.0	291.4
Growth in terminal period										3.3%
Discount factors						0.908	0.825	0.749	0.680	10.002
PV of EVA						165.4	198.9	203.4	195.8	
PV of EVA, forecast period					763.5					
PV of EVA, terminal period					2,915.1					
Invested Capital, t0					3,695.6					
Enterprise Value					**7,374.2**					
Net interest bearing debt					1,259.0					
Equity Value					**6,115.2**					
Ordinary shares outstanding, millions					475.4					
Savings shares outstanding, millions					11.8					
Estimated share price, EUR					**12.55**					
Multiples										
EV/Sales										
Enterprise Value					7,374.2					
Sales, 2014					6,472.8					
Sales, 2015					6,928.6					

EUR Million Pirelli & C. - Valuation	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
EV/Sales, 2014					1.14x					
EV/Sales, 2015					1.06x					
EV/EBITDA										
Enterprise Value					7,374.2					
EBITDA, 2014					1,152.2					
EBITDA, 2015					1,212.5					
EV/EBITDA, 2014					6.40x					
EV/EBITDA, 2015					6.08x					
EV/EBIT										
Enterprise Value					7,374.2					
EBIT, 2014					850.8					
EBIT, 2015					902.1					
EV/EBIT, 2014					8.67x					
EV/EBIT, 2015					8.17x					
P/E										
Equity Value					6,115.2					
Total Income, 2014					465.3					
Total Income, 2015					505.0					
P/E, 2014					13.14x					
P/E, 2015					12.11x					

EUR Million Pirelli & C. - Ratios	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Invested Capital	2,611.2	2,587.8	3,088.9	3,789.6	3,695.6	3,443.7	3,561.6	3,646.4	3,724.6	3,848.8
Net Sales	4,067.5	4,848.4	5,654.8	6,071.5	6,146.2	6,472.8	6,928.6	7,418.5	7,811.5	8,071.8
EBIT	304.9	432.5	609.6	801.9	794.8	850.8	902.1	966.8	1,005.0	1,022.3
EBT	223.2	390.1	502.9	599.2	520.7	711.3	772.0	832.3	867.3	881.7
NOPAT	140.9	269.9	565.4	532.4	471.3	556.5	590.1	632.4	657.4	668.7
Net Interesting Bearing Debt	116.5	559.8	897.3	1,400.2	1,259.0	1,174.3	1,214.5	1,243.4	1,270.1	1,312.4
Net financial expenses	(81.7)	(42.3)	(106.8)	(202.7)	(274.1)	(139.4)	(130.0)	(134.5)	(137.7)	(140.7)
Equity	2,494.7	2,028.0	2,191.6	2,389.4	2,436.6	2,269.4	2,347.1	2,403.0	2,454.5	2,536.3
Total Income	(22.6)	4.2	440.7	391.6	306.5	465.3	505.0	544.4	567.3	576.7
Tax shield	44.0	15.9	7.7	68.1	111.6	48.2	45.0	46.5	47.6	48.7
Total non-recurring items	(55.2)	(24.7)	(27.8)	(9.4)	(3.8)	0.0	0.0	0.0	0.0	0.0
Tax shield on non-recurring items	29.7	9.3	2.0	3.2	1.5	0.0	0.0	0.0	0.0	0.0
Net income (loss) from discontinued operations	(100.2)	(223.8)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Days in a year	365.0									
Ratios, before tax										
ROIC										
Invested Capital	2,611.2	2,587.8	3,088.9	3,789.6	3,695.6	3,443.7	3,561.6	3,646.4	3,724.6	3,848.8
EBIT	304.9	432.5	609.6	801.9	794.8	850.8	902.1	966.8	1,005.0	1,022.3
ROIC		16.6%	21.5%	23.3%	21.2%	23.8%	25.8%	26.8%	27.3%	27.0%
Profit Margin										
Net Sales	4,067.5	4,848.4	5,654.8	6,071.5	6,146.2	6,472.8	6,928.6	7,418.5	7,811.5	8,071.8
EBIT	304.9	432.5	609.6	801.9	794.8	850.8	902.1	966.8	1,005.0	1,022.3
Profit Margin		8.9%	10.8%	13.2%	12.9%	13.1%	13.0%	13.0%	12.9%	12.7%
Turnover of Invested Capital										
Invested Capital	2,611.2	2,587.8	3,088.9	3,789.6	3,695.6	3,443.7	3,561.6	3,646.4	3,724.6	3,848.8
Net Sales	4,067.5	4,848.4	5,654.8	6,071.5	6,146.2	6,472.8	6,928.6	7,418.5	7,811.5	8,071.8
Turnover of Invested Capital		1.87	1.99	1.77	1.64	1.81	1.98	2.06	2.12	2.13
Turnover of Invested Capital, days		195.7	183.2	206.8	222.3	201.3	184.5	177.3	172.2	171.2
ROIC, check										
Profit Margin		8.9%	10.8%	13.2%	12.9%	13.1%	13.0%	13.0%	12.9%	12.7%
Turnover of Invested Capital		1.87	1.99	1.77	1.64	1.81	1.98	2.06	2.12	2.13
ROIC		16.6%	21.5%	23.3%	21.2%	23.8%	25.8%	26.8%	27.3%	27.0%
Net borrowing cost										
Net Interesting Bearing Debt	116.5	559.8	897.3	1,400.2	1,259.0	1,174.3	1,214.5	1,243.4	1,270.1	1,312.4
Net financial expenses	(81.7)	(42.3)	(106.8)	(202.7)	(274.1)	(139.4)	(130.0)	(134.5)	(137.7)	(140.7)
Net borrowing cost		12.5%	14.7%	17.6%	20.6%	11.5%	10.9%	10.9%	11.0%	10.9%
Spread										

EUR Million Pirelli & C. - Ratios	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
ROIC		16.6%	21.5%	23.3%	21.2%	23.8%	25.8%	26.8%	27.3%	27.0%
Net borrowing cost		12.5%	14.7%	17.6%	20.6%	11.5%	10.9%	10.9%	11.0%	10.9%
Spread		4.1%	6.8%	5.7%	0.6%	12.4%	14.9%	15.9%	16.3%	16.1%
Leverage										
Net Interesting Bearing Debt	116.5	559.8	897.3	1,400.2	1,259.0	1,174.3	1,214.5	1,243.4	1,270.1	1,312.4
Equity	2,494.7	2,028.0	2,191.6	2,389.4	2,436.6	2,269.4	2,347.1	2,403.0	2,454.5	2,536.3
Leverage		0.15	0.35	0.50	0.55	0.52	0.52	0.52	0.52	0.52
ROE										
Equity	2,494.7	2,028.0	2,191.6	2,389.4	2,436.6	2,269.4	2,347.1	2,403.0	2,454.5	2,536.3
EBT	223.2	390.1	502.9	599.2	520.7	711.3	772.0	832.3	867.3	881.7
ROE		17.3%	23.8%	26.2%	21.6%	30.2%	33.4%	35.0%	35.7%	35.3%
ROE check		17.3%	23.8%	26.2%	21.6%	30.2%	33.4%	35.0%	35.7%	35.3%
Ratios, after tax										
ROIC										
Invested Capital	2,611.2	2,587.8	3,088.9	3,789.6	3,695.6	3,443.7	3,561.6	3,646.4	3,724.6	3,848.8
NOPAT	140.9	269.9	565.4	532.4	471.3	556.5	590.1	632.4	657.4	668.7
ROIC		10.4%	19.9%	15.5%	12.6%	15.6%	16.8%	17.5%	17.8%	17.7%
Profit Margin										
Net Sales	4,067.5	4,848.4	5,654.8	6,071.5	6,146.2	6,472.8	6,928.6	7,418.5	7,811.5	8,071.8
NOPAT	140.9	269.9	565.4	532.4	471.3	556.5	590.1	632.4	657.4	668.7
Profit Margin	3.5%	5.6%	10.0%	8.8%	7.7%	8.6%	8.5%	8.5%	8.4%	8.3%
Turnover of Invested Capital										
Invested Capital	2,611.2	2,587.8	3,088.9	3,789.6	3,695.6	3,443.7	3,561.6	3,646.4	3,724.6	3,848.8
Net Sales	4,067.5	4,848.4	5,654.8	6,071.5	6,146.2	6,472.8	6,928.6	7,418.5	7,811.5	8,071.8
Turnover of Invested Capital		1.87	1.99	1.77	1.64	1.81	1.98	2.06	2.12	2.13
Turnover of Invested Capital, days		195.7	183.2	206.8	222.3	201.3	184.5	177.3	172.2	171.2
ROIC, check										
Profit Margin	3.5%	5.6%	10.0%	8.8%	7.7%	8.6%	8.5%	8.5%	8.4%	8.3%
Turnover of Invested Capital		1.87	1.99	1.77	1.64	1.81	1.98	2.06	2.12	2.13
ROIC, check		10.4%	19.9%	15.5%	12.6%	15.6%	16.8%	17.5%	17.8%	17.7%
Net borrowing cost										
Net Interesting Bearing Debt	116.5	559.8	897.3	1,400.2	1,259.0	1,174.3	1,214.5	1,243.4	1,270.1	1,312.4
Net financial expenses	(81.7)	(42.3)	(106.8)	(202.7)	(274.1)	(139.4)	(130.0)	(134.5)	(137.7)	(140.7)
Tax shield	44.0	15.9	7.7	68.1	111.6	48.2	45.0	46.5	47.6	48.7

EUR Million Pirelli & C. - Ratios	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Net borrowing cost		7.8%	13.6%	11.7%	12.2%	7.5%	7.1%	7.2%	7.2%	7.1%
Cost of non-recurring items and discontinued operations										
Net Interesting Bearing Debt	116.5	559.8	897.3	1,400.2	1,259.0					
Total non-recurring items	(55.2)	(24.7)	(27.8)	(9.4)	(3.8)					
Tax shield on non-recurring items	29.7	9.3	2.0	3.2	1.5					
Net income (loss) from discontinued operations	(100.2)	(223.8)	0.0	0.0	0.0					
Cost of non-recurring items and discontinued operations		70.8%	3.5%	0.5%	0.2%					
Spread										
ROIC		10.4%	19.9%	15.5%	12.6%	15.6%	16.8%	17.5%	17.8%	17.7%
Net borrowing cost		7.8%	13.6%	11.7%	12.2%	7.5%	7.1%	7.2%	7.2%	7.1%
Cost of non-recurring items and discontinued operations		70.8%	3.5%	0.5%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Spread		-68.2%	2.8%	3.2%	0.2%	8.1%	9.7%	10.4%	10.7%	10.5%
Leverage										
Net Interesting Bearing Debt	116.5	559.8	897.3	1,400.2	1,259.0	1,174.3	1,214.5	1,243.4	1,270.1	1,312.4
Equity	2,494.7	2,028.0	2,191.6	2,389.4	2,436.6	2,269.4	2,347.1	2,403.0	2,454.5	2,536.3
Leverage		0.15	0.35	0.50	0.55	0.52	0.52	0.52	0.52	0.52
ROE										
Equity	2,494.7	2,028.0	2,191.6	2,389.4	2,436.6	2,269.4	2,347.1	2,403.0	2,454.5	2,536.3
Total Income	(22.6)	4.2	440.7	391.6	306.5	465.3	505.0	544.4	567.3	576.7
ROE		0.2%	20.9%	17.1%	12.7%	19.8%	21.9%	22.9%	23.4%	23.1%
ROE, check		0.2%	20.9%	17.1%	12.7%	19.8%	21.9%	22.9%	23.4%	23.1%

USD Million

The Goodyear Tire and Rubber Company - Drivers	**FY 2009**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**	**EY 2014**	**EY 2015**	**EY 2016**	**EY 2017**	**EY 2018**
Drivers						**EY 2014**	**EY 2015**	**EY 2016**	**EY 2017**	**EY 2018**
Growth in Net Sales		15.5%	20.9%	-7.8%	-6.9%	4.8%	5.9%	5.6%	4.3%	2.9%
EBITDA-margin	5.0%	8.3%	8.4%	9.3%	10.8%	10.2%	9.8%	9.6%	9.5%	9.5%
Net borrowing rate	0.0%	5.9%	5.3%	5.2%	6.1%	5.6%	5.6%	5.6%	5.6%	5.6%
Effective tax rate	-2.5%	45.3%	26.3%	28.3%	13.7%	22.2%	22.2%	22.2%	22.2%	22.2%
Depreciation and amortisation as a percentage of PPE and intangibles	8.4%	8.2%	8.8%	7.8%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Growth in total PPE and intangible assets		4.0%	3.1%	7.4%	3.6%	4.0%	5.0%	4.0%	3.0%	2.9%
Inventory as a percentage of Net Sales	15.0%	15.8%	16.9%	15.5%	14.4%	15.5%	15.5%	15.5%	15.5%	15.5%
Accounts receivable as a percentage of Net Sales	15.6%	14.5%	12.5%	12.2%	12.5%	12.5%	12.7%	12.9%	13.0%	13.0%
Operational liabilities as a percentage of Net Sales	25.5%	27.7%	26.4%	27.0%	27.6%	26.8%	26.8%	26.8%	26.8%	26.8%
NIBD as a percentage of Invested Capital	82.9%	83.9%	83.5%	88.4%	75.7%	70.0%	68.0%	66.0%	64.0%	64.0%
Net Sales	16,301.0	18,832.0	22,767.0	20,992.0	19,540.0					
Goodwill	706.0	683.0	654.0	664.0	668.0					
Intangible Assets	164.0	161.0	157.0	140.0	138.0					
Property, Plant and Equipment	5,843.0	6,165.0	6,375.0	6,956.0	7,320.0					
Lease adjustment, operating lease addition to PPE	898.0	903.0	971.0	1,000.0	952.0					
Total PPE and Intangible assets	7,611.0	7,912.0	8,157.0	8,760.0	9,078.0					
EBITDA	819.0	1,555.0	1,917.0	1,953.0	2,110.0					
Effective tax rate	-2.5%	45.3%	26.3%	28.3%	13.7%					
Depreciation and Amortization	(636.0)	(652.0)	(715.0)	(687.0)	(722.0)					
Inventories	2,443.0	2,977.0	3,856.0	3,250.0	2,816.0					
Accounts Receivable	2,540.0	2,736.0	2,849.0	2,563.0	2,435.0					
Operational Liabilities										
Deferred and Other Noncurrent Income Taxes	235.0	242.0	244.0	264.0	256.0					
Other Long Term Liabilities	793.0	842.0	1,041.0	1,000.0	966.0					
Accounts Payable-Trade	2,278.0	3,107.0	3,668.0	3,223.0	3,097.0					
Other Current Liabilities	844.0	1,018.0	1,050.0	1,182.0	1,083.0					
Total operational liabilities	4,150.0	5,209.0	6,003.0	5,669.0	5,402.0					
Invested Capital	9,236.0	9,319.0	9,825.0	10,023.0	10,081.0					
Net Interesting Bearing Debt	7,657.0	7,814.0	8,201.0	8,864.0	7,636.0					

USD Million The Goodyear Tire and Rubber Company - Income Statement	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Reported Income Statement										
Net Sales	**16,301.0**	**18,832.0**	**22,767.0**	**20,992.0**	**19,540.0**					
Cost of Goods Sold	(13,676.0)	(15,452.0)	(18,821.0)	(17,163.0)	(15,422.0)					
Selling, Administrative and General Expense	(2,404.0)	(2,630.0)	(2,822.0)	(2,718.0)	(2,758.0)					
Rationalizations	(227.0)	(240.0)	(103.0)	(175.0)	(58.0)					
Interest Expense	(311.0)	(316.0)	(330.0)	(357.0)	(392.0)					
Net foreign currency exchange losses	39.0	95.0	27.0	26.0	118.0					
Financing fees and financial instruments	(28.0)	(30.0)	89.0	156.0	56.0					
Royalty income	7.0	159.0	(47.0)	(38.0)	(51.0)					
Interest income	9.0	(73.0)	(16.0)	(17.0)	(41.0)					
General and product liability - discontinued products	(17.0)	(11.0)	21.0	8.0	15.0					
Net gains on asset sales	30.0	11.0	(16.0)	(25.0)	(8.0)					
Miscellaneous expense	0.0	35.0	15.0	29.0	8.0					
Income before Income Taxes	**(277.0)**	**380.0**	**764.0**	**718.0**	**1,007.0**					
United States and Foreign Taxes	(7.0)	(172.0)	(201.0)	(203.0)	(138.0)					
Net Income	**(284.0)**	**208.0**	**563.0**	**515.0**	**869.0**					
Less: Minority Shareholders' Net Income	(11.0)	(52.0)	(74.0)	(25.0)	(46.0)					
Goodyear Net Income	**(295.0)**	**156.0**	**489.0**	**490.0**	**823.0**					
Analytical Income Statement										
Net Sales	**16,301.0**	**18,832.0**	**22,767.0**	**20,992.0**	**19,540.0**	**20,472.1**	**21,688.9**	**22,909.6**	**23,888.4**	**24,574.8**
Cost of Goods Sold	(13,676.0)	(15,452.0)	(18,821.0)	(17,163.0)	(15,422.0)					
Depreciation and Amortization	636.0	652.0	715.0	687.0	722.0					
Gross Income	**3,261.0**	**4,032.0**	**4,661.0**	**4,516.0**	**4,840.0**					
Selling, Administrative and General Expense	(2,404.0)	(2,630.0)	(2,822.0)	(2,718.0)	(2,758.0)					
Financing fees and financial instruments	(28.0)	(30.0)	89.0	156.0	56.0					
Royalty income	7.0	159.0	(47.0)	(38.0)	(51.0)					
General and product liability - discontinued products	(17.0)	(11.0)	21.0	8.0	15.0					
Miscellaneous expense	0.0	35.0	15.0	29.0	8.0					
EBITDA	**819.0**	**1,555.0**	**1,917.0**	**1,953.0**	**2,110.0**	**2,088.1**	**2,125.5**	**2,199.3**	**2,269.4**	**2,334.6**
Depreciation and Amortization	(636.0)	(652.0)	(715.0)	(687.0)	(722.0)	(755.3)	(793.1)	(824.8)	(849.5)	(873.9)
Depreciation on lease adjustments	(89.8)	(90.3)	(97.1)	(100.0)	(95.2)					
EBIT	**93.2**	**812.7**	**1,104.9**	**1,166.0**	**1,292.8**	**1,332.9**	**1,332.5**	**1,374.5**	**1,419.9**	**1,460.7**
Interest Expense	(311.0)	(316.0)	(330.0)	(357.0)	(392.0)					
Interest income	9.0	(73.0)	(16.0)	(17.0)	(41.0)					
Interest expense on adjusted leases	(77.4)	(65.3)	(74.7)	(68.1)	(68.0)					
Net financial expenses						(379.4)	(388.7)	(394.2)	(394.8)	(406.1)
EBT	**(286.2)**	**358.4**	**684.2**	**723.9**	**791.8**	**953.5**	**943.8**	**980.3**	**1,025.1**	**1,054.6**
United States and Foreign Taxes	(7.0)	(172.0)	(201.0)	(203.0)	(138.0)					
Effective tax rate	-2.5%	45.3%	26.3%	28.3%	13.7%	22.2%	22.2%	22.2%	22.2%	22.2%
Tax on EBIT	2.4	(367.9)	(290.7)	(329.7)	(177.2)	(296.0)	(295.9)	(305.2)	(315.3)	(324.3)
NOPAT	**95.6**	**444.8**	**814.2**	**836.3**	**1,115.6**	**1,036.9**	**1,036.6**	**1,069.3**	**1,104.6**	**1,136.3**

USD Million The Goodyear Tire and Rubber Company - Income Statement	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Net financial expenses	(379.4)	(454.3)	(420.7)	(442.1)	(501.0)	(379.4)	(388.7)	(394.2)	(394.8)	(406.1)
Tax shield	(9.6)	205.6	110.7	125.0	68.7	84.2	86.3	87.5	87.7	90.2
Net Income before minority interest	**(293.5)**	**196.2**	**504.2**	**519.3**	**683.3**	**741.8**	**734.2**	**762.7**	**797.5**	**820.4**
Minority Shareholders' Net Income	(11.0)	(52.0)	(74.0)	(25.0)	(46.0)					
Net income	**(304.5)**	**144.2**	**430.2**	**494.3**	**637.3**	**741.8**	**734.2**	**762.7**	**797.5**	**820.4**
Rationalizations	(227.0)	(240.0)	(103.0)	(175.0)	(58.0)					
Net foreign currency exchange losses	39.0	95.0	27.0	26.0	118.0					
Net gains on asset sales	30.0	11.0	(16.0)	(25.0)	(8.0)					
Total non-recurring items and other	**(158.0)**	**(134.0)**	**(92.0)**	**(174.0)**	**52.0**					
Tax shield on non-recurring items	(4.0)	60.7	24.2	49.2	(7.1)					
Total Income	**(466.5)**	**70.8**	**362.4**	**369.5**	**682.2**	**741.8**	**734.2**	**762.7**	**797.5**	**820.4**
Dividends						**(280.9)**	**(370.9)**	**(402.1)**	**(458.4)**	**(706.4)**
Retained earnings						**460.9**	**363.3**	**360.5**	**339.1**	**114.0**
Minority Shareholders' Net Income, % of Net Income before minority interest	-3.7%	26.5%	14.7%	4.8%	6.7%					
Minority Shareholders' Net Income, for Valuation						(42.8)	(42.4)	(44.0)	(46.0)	(47.4)

USD Million The Goodyear Tire and Rubber Company - Balance Sheet	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Reported Balance Sheet										
Assets										
Goodwill	706.0	683.0	654.0	664.0	668.0					
Intangible Assets	164.0	161.0	157.0	140.0	138.0					
Deferred Income Taxes	43.0	58.0	145.0	186.0	157.0					
Other Assets	429.0	518.0	486.0	529.0	600.0					
Property, Plant and Equipment	5,843.0	6,165.0	6,375.0	6,956.0	7,320.0					
Lease adjustment, operating lease addition to PPE	898.0	903.0	971.0	1,000.0	952.0					
Total PPE and Intangible assets						9,441.1	9,913.2	10,309.7	10,619.0	10,924.1
Non-current assets	**8,083.0**	**8,488.0**	**8,788.0**	**9,475.0**	**9,835.0**					
Cash and Cash Equivalents	1,922.0	2,005.0	2,772.0	2,281.0	2,996.0					
Accounts Receivable	2,540.0	2,736.0	2,849.0	2,563.0	2,435.0	2,559.0	2,754.5	2,955.3	3,105.5	3,194.7
Inventories	2,443.0	2,977.0	3,856.0	3,250.0	2,816.0	3,178.3	3,367.2	3,556.7	3,708.7	3,815.3
Prepaid Expenses and Other Current Assets	320.0	327.0	335.0	404.0	397.0					
Current assets	**7,225.0**	**8,045.0**	**9,812.0**	**8,498.0**	**8,644.0**					
Total assets	**15,308.0**	**16,533.0**	**18,600.0**	**17,973.0**	**18,479.0**	**15,178.4**	**16,034.9**	**16,821.8**	**17,433.2**	**17,934.1**
Liabilities and equity										
Preferred Stock	0.0	0.0	500.0	500.0	500.0					
Common Stock	242.0	243.0	245.0	245.0	248.0					
Capital Surplus	2,783.0	2,805.0	2,808.0	2,815.0	2,847.0					
Retained Earnings	1,082.0	866.0	1,187.0	1,370.0	1,958.0					
Accumulated Other Comprehensive Loss	(3,372.0)	(3,270.0)	(3,991.0)	(4,560.0)	(3,947.0)					
Minority Shareholders' Equity, Nonredeemable	251.0	277.0	268.0	255.0	262.0					
Minority Shareholders' Equity	**593.0**	**584.0**	**607.0**	**534.0**	**577.0**					
Equity	**1,579.0**	**1,505.0**	**1,624.0**	**1,159.0**	**2,445.0**	**2,905.9**	**3,269.2**	**3,629.7**	**3,968.8**	**4,082.9**
					2,445.0	2,951.7	3,306.8	3,655.8	3,988.6	4,103.2
Long Term Debt and Capital Leases	4,182.0	4,319.0	4,789.0	4,888.0	6,162.0					
Compensation and Benefits	3,526.0	3,415.0	4,002.0	4,340.0	2,673.0					
Deferred and Other Noncurrent Income Taxes	235.0	242.0	244.0	264.0	256.0					
Other Long Term Liabilities	793.0	842.0	1,041.0	1,000.0	966.0					
Lease adjustment, operating leases debt	898.0	903.0	971.0	1,000.0	952.0					
Non-current liabilities	**9,634.0**	**9,721.0**	**11,047.0**	**11,492.0**	**11,009.0**					
Accounts Payable-Trade	2,278.0	3,107.0	3,668.0	3,223.0	3,097.0					
Compensation and Benefits	635.0	756.0	799.0	719.0	758.0					
Other Current Liabilities	844.0	1,018.0	1,050.0	1,182.0	1,083.0					
Notes Payable and Overdrafts	224.0	238.0	256.0	102.0	14.0					
Long Term Debt and Capital Leases due Within One Year	114.0	188.0	156.0	96.0	73.0					
Current liabilities	**4,095.0**	**5,307.0**	**5,929.0**	**5,322.0**	**5,025.0**					
Total liabilities	**13,729.0**	**15,028.0**	**16,976.0**	**16,814.0**	**16,034.0**					
Total Operational Liabilities						**5,492.1**	**5,818.6**	**6,146.1**	**6,408.7**	**6,592.8**
Net Interesting Bearing Debt						**6,780.4**	**6,947.1**	**7,046.0**	**7,055.7**	**7,258.4**
Total liabilities and equity	**15,308.0**	**16,533.0**	**18,600.0**	**17,973.0**	**18,479.0**	**15,178.4**	**16,034.9**	**16,821.8**	**17,433.2**	**17,934.1**

USD Million The Goodyear Tire and Rubber Company - Balance Sheet	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Check										
Analytical Balance Sheet										
Invested Capital										
Operational Assets										
Goodwill	706.0	683.0	654.0	664.0	668.0					
Intangible Assets	164.0	161.0	157.0	140.0	138.0					
Deferred Income Taxes	43.0	58.0	145.0	186.0	157.0					
Other Assets	429.0	518.0	486.0	529.0	600.0					
Property, Plant and Equipment	5,843.0	6,165.0	6,375.0	6,956.0	7,320.0					
Accounts Receivable	2,540.0	2,736.0	2,849.0	2,563.0	2,435.0					
Inventories	2,443.0	2,977.0	3,856.0	3,250.0	2,816.0					
Prepaid Expenses and Other Current Assets	320.0	327.0	335.0	404.0	397.0					
Lease adjustment, operating lease addition to PPE	898.0	903.0	971.0	1,000.0	952.0					
Operational Liabilities										
Deferred and Other Noncurrent Income Taxes	235.0	242.0	244.0	264.0	256.0					
Other Long Term Liabilities	793.0	842.0	1,041.0	1,000.0	966.0					
Accounts Payable-Trade	2,278.0	3,107.0	3,668.0	3,223.0	3,097.0					
Other Current Liabilities	844.0	1,018.0	1,050.0	1,182.0	1,083.0					
Total Operational Liabilities	4,150.0	5,209.0	6,003.0	5,669.0	5,402.0	**5,492.1**	**5,818.6**	**6,146.1**	**6,408.7**	**6,592.8**
Invested Capital	**9,236.0**	**9,319.0**	**9,825.0**	**10,023.0**	**10,081.0**	**9,686.3**	**10,216.3**	**10,675.7**	**11,024.5**	**11,341.3**
Invested Capital (NIBD + E)										
NIBD										
Financial Liabilities										
Long Term Debt and Capital Leases	4,182.0	4,319.0	4,789.0	4,888.0	6,162.0					
Compensation and Benefits	3,526.0	3,415.0	4,002.0	4,340.0	2,673.0					
Compensation and Benefits	635.0	756.0	799.0	719.0	758.0					
Notes Payable and Overdrafts	224.0	238.0	256.0	102.0	14.0					
Long Term Debt and Capital Leases due Within One Year	114.0	188.0	156.0	96.0	73.0					
Lease adjustment, operating leases debt	898.0	903.0	971.0	1,000.0	952.0					
Financial Assets										
Cash and Cash Equivalents	1,922.0	2,005.0	2,772.0	2,281.0	2,996.0					
Net Interesting Bearing Debt	**7,657.0**	**7,814.0**	**8,201.0**	**8,864.0**	**7,636.0**	**6,780.4**	**6,947.1**	**7,046.0**	**7,055.7**	**7,258.4**
Equity	**1,579.0**	**1,505.0**	**1,624.0**	**1,159.0**	**2,445.0**	**2,905.9**	**3,269.2**	**3,629.7**	**3,968.8**	**4,082.9**
Invested Capital (NIBD + E)	**9,236.0**	**9,319.0**	**9,825.0**	**10,023.0**	**10,081.0**	**9,686.3**	**10,216.3**	**10,675.7**	**11,024.5**	**11,341.3**
Check										

USD Million The Goodyear Tire and Rubber Company - Cash Flow Statement	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Net Income	**(284.0)**	**208.0**	**563.0**	**515.0**	**869.0**					
NOPAT						**1,036.9**	**1,036.6**	**1,069.3**	**1,104.6**	**1,136.3**
Depreciation and Amortization	636.0	652.0	715.0	687.0	722.0	755.3	793.1	824.8	849.5	873.9
Amortization and Write-Off of Debt Issuance Costs	20.0	27.0	34.0	67.0	18.0					
Net Rationalization Charges	227.0	240.0	103.0	175.0	58.0					
Rationalization Payments	30.0	(73.0)	(142.0)	(106.0)	(72.0)					
Net Gains on Asset Sales	(430.0)	(405.0)	(16.0)	(25.0)	(8.0)					
Pension Contributions and Direct Payments	(200.0)	(57.0)	(294.0)	(684.0)	(1,162.0)					
Venezuela Currency Devaluation	0.0	134.0	0.0	0.0	115.0					
Customer Prepayments and Government Grants	14.0	6.0	212.0	131.0	44.0					
Insurance Proceeds	0.0	0.0	0.0	50.0	17.0					
Change in Accounts Receivable	139.0	(181.0)	(337.0)	291.0	79.0	(124.0)	(195.5)	(200.9)	(150.2)	(89.2)
Change in Inventories	1,265.0	(536.0)	(1,009.0)	619.0	366.0	(362.3)	(188.9)	(189.5)	(152.0)	(106.6)
Change in Accounts Payable — Trade	(323.0)	769.0	696.0	(453.0)	(30.0)					
Change in Compensation and Benefits	287.0	428.0	384.0	260.0	243.0					
Change in Other Current Liabilities	24.0	103.0	89.0	(24.0)	(28.0)					
Change in Other Assets and Liabilities	(28.0)	(19.0)	(79.0)	(187.0)	(99.0)					
Change in Operational liabilities						90.1	326.4	327.5	262.6	184.2
Deferred Income Taxes						157.0	0.0	0.0	0.0	0.0
Other Assets						600.0	0.0	0.0	0.0	0.0
Prepaid Expenses and Other Current Assets						397.0	0.0	0.0	0.0	0.0
Cash flows from operating activities	**1,377.0**	**1,296.0**	**919.0**	**1,316.0**	**1,132.0**	**2,550.0**	**1,771.7**	**1,831.2**	**1,914.6**	**1,998.6**
Capital Expenditures	(746.0)	(944.0)	(1,043.0)	(1,127.0)	(1,168.0)	(363.1)	(472.1)	(396.5)	(309.3)	(305.1)
Asset Dispositions	43.0	70.0	76.0	16.0	25.0					
Government Grants Received	0.0	0.0	95.0	2.0	9.0					
Decrease (Increase) in Restricted Cash	(3.0)	(11.0)	(25.0)	11.0	14.0					
Short Term Securities Acquired	0.0	0.0	(4.0)	(57.0)	(105.0)					
Short Term Securities Redeemed	0.0	0.0	0.0	28.0	89.0					
Other Transactions	43.0	26.0	(1.0)	4.0	0.0					
Depreciation and Amortization						(755.3)	(793.1)	(824.8)	(849.5)	(873.9)
Cash flows from investing activities	**(663.0)**	**(859.0)**	**(902.0)**	**(1,123.0)**	**(1,136.0)**	**(1,118.4)**	**(1,265.1)**	**(1,221.3)**	**(1,158.8)**	**(1,179.1)**
FCFF	**714.0**	**437.0**	**17.0**	**193.0**	**(4.0)**	**1,431.6**	**506.6**	**609.9**	**755.8**	**819.6**
Short Term Debt and Overdrafts Incurred	85.0	85.0	179.0	77.0	31.0					
Short Term Debt and Overdrafts Paid	(186.0)	(68.0)	(138.0)	(156.0)	(120.0)					
Long Term Debt Incurred	2,026.0	1,750.0	3,171.0	3,531.0	1,913.0					
Long Term Debt Paid	(2,544.0)	(1,555.0)	(2,650.0)	(3,717.0)	(681.0)					
Proceeds from Issuance of Preferred Stock	0.0	0.0	484.0	0.0	0.0					
Preferred Stock Dividends Paid	0.0	0.0	(15.0)	(29.0)	(29.0)					
Common Stock Issued	2.0	1.0	8.0	3.0	22.0					
Common Stock Dividends Paid	0.0	0.0	0.0	0.0	(12.0)					
Transactions with Minority Interests in Subsidiaries	(15.0)	(13.0)	(24.0)	(71.0)	(26.0)					
Debt Related Costs and Other Transactions	(22.0)	(21.0)	(21.0)	(64.0)	(16.0)					
Changes in NIBD						(855.6)	166.7	98.9	9.7	202.7
Net financial expenses						(379.4)	(388.7)	(394.2)	(394.8)	(406.1)
Tax shield						84.2	86.3	87.5	87.7	90.2
Cash flows from financing activities	**(654.0)**	**179.0**	**994.0**	**(426.0)**	**1,082.0**	**(1,150.7)**	**(135.7)**	**(207.8)**	**(297.4)**	**(113.2)**

USD Million The Goodyear Tire and Rubber Company - Cash Flow Statement	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Effect of changes in exchange rates	48.0	(161.0)	(98.0)	20.0	(169.0)					
Increase of cash and cash equivalents	**108.0**	**455.0**	**913.0**	**(213.0)**	**909.0**					
Cash and cash equivalents at January 1	1,894.0	2,002.0	2,457.0	3,370.0	3,157.0					
Cash and cash equivalents at December 31	2,002.0	2,457.0	3,370.0	3,157.0	4,066.0					
Free cash flows to equity (FCFE)						**280.9**	**370.9**	**402.1**	**458.4**	**706.4**
Dividends						(280.9)	(370.9)	(402.1)	(458.4)	(706.4)
Free reserves						0.0	0.0	0.0	0.0	0.0

USD Million The Goodyear Tire and Rubber Company - Sales Forecast	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Net sales, historical	16,301.0	18,832.0	22,767.0	20,992.0	19,540.0					
GDP Growth in Regions										
EMEA	-4.8%	2.3%	2.1%	0.3%	0.4%	1.6%	1.9%	2.0%	2.0%	2.0%
North America	-3.0%	2.8%	2.1%	2.8%	1.8%	2.8%	3.0%	3.1%	2.9%	2.7%
Asia Pacific	3.8%	8.3%	6.0%	5.2%	5.2%	5.3%	5.5%	5.4%	5.4%	5.4%
Latin America	-1.3%	6.0%	4.6%	3.1%	2.7%	2.5%	3.0%	3.3%	3.5%	3.5%
Converging Betas										
EMEA					3.971	3.377	2.783	2.188	1.594	1.000
North America					3.817	3.254	2.690	2.127	1.563	1.000
Asia Pacific					4.139	3.511	2.884	2.256	1.628	1.000
Latin America					4.584	3.868	3.151	2.434	1.717	1.000
Regression Implied Revenue Growth in Regions										
EMEA						5.4%	5.3%	4.4%	3.2%	2.0%
North America						9.1%	8.1%	6.6%	4.5%	2.7%
Asia Pacific						18.6%	15.9%	12.2%	8.8%	5.4%
Latin America						9.7%	9.5%	8.0%	6.0%	3.5%
Revenue Growth in Regions used in Model										
EMEA						4.0%	4.5%	4.4%	3.2%	2.0%
North America						5.0%	6.5%	6.0%	4.2%	2.7%
Asia Pacific						6.0%	7.0%	7.5%	7.0%	5.4%
Latin America						5.0%	7.0%	6.0%	5.0%	3.5%
Share of Revenue, 2013										
EMEA					33.6%					
North America					44.4%					
Asia Pacific					10.6%					
Latin America					11.4%					
Total					100.0%					
Revenue Forecast in Regions, USD Millions										
EMEA					6,565.4	6,828.1	7,135.3	7,447.6	7,685.1	7,838.8
North America					8,675.8	9,109.5	9,701.7	10,283.8	10,715.7	11,005.0
Asia Pacific					2,071.2	2,195.5	2,349.2	2,525.4	2,702.2	2,848.1
Latin America					2,227.6	2,338.9	2,502.7	2,652.8	2,785.5	2,883.0
Total					**19,540.0**	**20,472.1**	**21,688.9**	**22,909.6**	**23,888.4**	**24,574.8**
Goodyear Forecasted Growth Rate						**4.8%**	**5.9%**	**5.6%**	**4.3%**	**2.9%**
Revenue Forecast in Regions, share of total Revenue										
EMEA					33.6%	33.4%	32.9%	32.5%	32.2%	31.9%
North America					44.4%	44.5%	44.7%	44.9%	44.9%	44.8%
Asia Pacific					10.6%	10.7%	10.8%	11.0%	11.3%	11.6%
Latin America					11.4%	11.4%	11.5%	11.6%	11.7%	11.7%
Total					100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

USD Million

The Goodyear Tire and Rubber Company - Sales Forecast	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018

Regional Betas	Adj. Beta	Model Beta
EMEA	3.971	3.971
North America	3.817	3.817
Asia Pacific	4.139	4.139
Latin America	4.584	4.584

USD Million

The Goodyear Tire and Rubber Company - Operating Lease Adjustments	**FY 2009**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**	**EY 2014**	**EY 2015**	**EY 2016**	**EY 2017**	**EY 2018**
Operating lease commitments, not discounted										
Within 1 year	259.0	264.0	278.0	280.0	281.0					
2 years	221.0	212.0	246.0	216.0	224.0					
3 years	173.0	166.0	186.0	172.0	176.0					
4 years	134.0	125.0	142.0	138.0	130.0					
5 years	99.0	97.0	111.0	108.0	98.0					
More than five years	338.0	304.0	305.0	377.0	317.0					
Total future mimimum payments	**1,224.0**	**1,168.0**	**1,268.0**	**1,291.0**	**1,226.0**					
Discount rate, implied in Annual Report	8.6%	7.2%	7.7%	6.8%	7.1%					
Years of depreciation, straight-line	10.0	10.0	10.0	10.0	10.0					
Assumed lease payments, not discounted										
Within 1 year	259.0	264.0	278.0	280.0	281.0					
2 years	221.0	212.0	246.0	216.0	224.0					
3 years	173.0	166.0	186.0	172.0	176.0					
4 years	134.0	125.0	142.0	138.0	130.0					
5 years	99.0	97.0	111.0	108.0	98.0					
6 years	67.6	60.8	61.0	75.4	63.4					
7 years	67.6	60.8	61.0	75.4	63.4					
8 years	67.6	60.8	61.0	75.4	63.4					
9 years	67.6	60.8	61.0	75.4	63.4					
10 years	67.6	60.8	61.0	75.4	63.4					
PV of lease payments										
Within 1 year	238.4	246.2	258.2	262.2	262.3					
2 years	187.3	184.4	212.1	189.3	195.1					
3 years	135.0	134.6	148.9	141.2	143.1					
4 years	96.2	94.6	105.6	106.0	98.7					
5 years	65.5	68.4	76.6	77.7	69.4					
6 years	41.2	40.0	39.1	50.8	41.9					
7 years	37.9	37.3	36.3	47.6	39.1					
8 years	34.9	34.8	33.7	44.5	36.5					
9 years	32.1	32.4	31.3	41.7	34.1					
10 years	29.6	30.3	29.1	39.0	31.8					
Total PV of lease payments	**898.0**	**903.0**	**971.0**	**1,000.0**	**952.0**					
Depreciation expense	89.8	90.3	97.1	100.0	95.2					
Interest expense	77.4	65.3	74.7	68.1	68.0					
Total effect on Earnings	**(167.2)**	**(155.6)**	**(171.8)**	**(168.1)**	**(163.2)**					

USD Million

The Goodyear Tire and Rubber Company - WACC	**FY 2009**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**	**EY 2014**	**EY 2015**	**EY 2016**	**EY 2017**	**EY 2018**
Cost of equity estimation										
Beta										
5 year, monthly data	Raw Beta	Adj. Beta								
Dow Jones Industrial Average Index	2.300	1.867								
S&P 500 Index	2.243	1.829								
Average		**1.848**								
Risk free rate	Yield									
US 10 year governement bond yield	3.0%									
Market risk premium										
USA	5.5%									
Germany	5.4%									
UK	5.3%									
France	6.0%									
Brazil	7.7%									
Average	**6.0%**									
Cost of Equity	**14.08%**									
Cost of debt estimation										
Average net financial expenses	5.6%									
Average	5.6%									
Tax rate estimation										
Average historical tax rate	22.2%									
Capital Structure										
Equity	1,579.0	1,505.0	1,624.0	1,159.0	2,445.0	2,905.9	3,269.2	3,629.7	3,968.8	4,082.9
Net Interesting Bearing Debt	7,657.0	7,814.0	8,201.0	8,864.0	7,636.0	6,780.4	6,947.1	7,046.0	7,055.7	7,258.4
Equity/EV		0.17	0.16	0.14	0.18	0.27	0.31	0.33	0.35	0.36
Debt/EV		0.83	0.84	0.86	0.82	0.73	0.69	0.67	0.65	0.64
WACC estimate	**7.85%**									

USD Million The Goodyear Tire and Rubber Company - Valuation	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Valuation date: 1/1-2014										
WACC						7.9%	7.9%	7.9%	7.9%	7.9%
Discounted Cash Flow										
FCFF						1,431.6	506.6	609.9	755.8	819.6
Less Minority Shareholders' Net Income						(42.8)	(42.4)	(44.0)	(46.0)	(47.4)
Growth in terminal period										2.9%
Discount factors						0.927	0.860	0.797	0.739	14.838
PV of free cash flows						1,327.4	435.5	486.1	558.5	
PV of free cash flows, forecast period					2,807.5					
PV of free cash flows, terminal period					12,160.3					
Enterprise Value					**14,967.8**					
Net interest bearing debt					7,636.0					
Less PV of Minority Shareholders' Net Income					(848.1)					
Equity Value					**6,483.8**					
Ordinary shares outstanding, millions					248.0					
Estimated share price, USD					**26.14**					
Economic Value Added										
Invested Capital	9,236.0	9,319.0	9,825.0	10,023.0	10,081.0	9,686.3	10,216.3	10,675.7	11,024.5	11,341.3
NOPAT	95.6	444.8	814.2	836.3	1,115.6	1,036.9	1,036.6	1,069.3	1,104.6	1,136.3
Less Minority Shareholders' Net Income						(42.8)	(42.4)	(44.0)	(46.0)	(47.4)
EVA						202.3	233.4	222.9	220.1	223.1
Growth in terminal period										2.9%
Discount factors						0.927	0.860	0.797	0.739	14.838
PV of EVA						187.6	200.7	177.7	162.6	
PV of EVA, forecast period					728.5					
PV of EVA, terminal period					3,310.2					
Invested Capital, t0					10,081.0					
Enterprise Value					**14,119.8**					
Net interest bearing debt					7,636.0					
Equity Value					**6,483.8**					
Ordinary shares outstanding, millions					248.0					
Estimated share price, USD					**26.14**					
Multiples										
EV/Sales										
Enterprise Value					14,967.8					
Sales, 2014					20,472.1					

USD Million The Goodyear Tire and Rubber Company - Valuation	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Sales, 2015					21,688.9					
EV/Sales, 2014					0.73x					
EV/Sales, 2015					0.69x					
EV/EBITDA										
Enterprise Value					14,967.8					
EBITDA, 2014					2,088.1					
EBITDA, 2015					2,125.5					
EV/EBITDA, 2014					7.17x					
EV/EBITDA, 2015					7.04x					
EV/EBIT										
Enterprise Value					14,967.8					
EBIT, 2014					1,332.9					
EBIT, 2015					1,332.5					
EV/EBIT, 2014					11.23x					
EV/EBIT, 2015					11.23x					
P/E										
Equity Value					6,483.8					
Total Income, 2014					741.8					
Total Income, 2015					734.2					
P/E, 2014					8.74x					
P/E, 2015					8.83x					

USD Million The Goodyear Tire and Rubber Company - Ratios	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Invested Capital	9,236.0	9,319.0	9,825.0	10,023.0	10,081.0	9,686.3	10,216.3	10,675.7	11,024.5	11,341.3
Net Sales	16,301.0	18,832.0	22,767.0	20,992.0	19,540.0	20,472.1	21,688.9	22,909.6	23,888.4	24,574.8
EBIT	93.2	812.7	1,104.9	1,166.0	1,292.8	1,332.9	1,332.5	1,374.5	1,419.9	1,460.7
EBT	(286.2)	358.4	684.2	723.9	791.8	953.5	943.8	980.3	1,025.1	1,054.6
NOPAT	95.6	444.8	814.2	836.3	1,115.6	1,036.9	1,036.6	1,069.3	1,104.6	1,136.3
Net Interesting Bearing Debt	7,657.0	7,814.0	8,201.0	8,864.0	7,636.0	6,780.4	6,947.1	7,046.0	7,055.7	7,258.4
Net financial expenses	(379.4)	(454.3)	(420.7)	(442.1)	(501.0)	(379.4)	(388.7)	(394.2)	(394.8)	(406.1)
Equity	1,579.0	1,505.0	1,624.0	1,159.0	2,445.0	2,905.9	3,269.2	3,629.7	3,968.8	4,082.9
Total Income	(466.5)	70.8	362.4	369.5	682.2	741.8	734.2	762.7	797.5	820.4
Tax shield	(9.6)	205.6	110.7	125.0	68.7	84.2	86.3	87.5	87.7	90.2
Total non-recurring items and other	(158.0)	(134.0)	(92.0)	(174.0)	52.0	0.0	0.0	0.0	0.0	0.0
Tax shield on non-recurring items	(4.0)	60.7	24.2	49.2	(7.1)	0.0	0.0	0.0	0.0	0.0
Minority Shareholders' Net Income	(11.0)	(52.0)	(74.0)	(25.0)	(46.0)	(42.8)	(42.4)	(44.0)	(46.0)	(47.4)
Days in a year	365.0									
Ratios, before tax										
ROIC										
Invested Capital	9,236.0	9,319.0	9,825.0	10,023.0	10,081.0	9,686.3	10,216.3	10,675.7	11,024.5	11,341.3
EBIT	93.2	812.7	1,104.9	1,166.0	1,292.8	1,332.9	1,332.5	1,374.5	1,419.9	1,460.7
ROIC		8.8%	11.5%	11.7%	12.9%	13.5%	13.4%	13.2%	13.1%	13.1%
Profit Margin										
Net Sales	16,301.0	18,832.0	22,767.0	20,992.0	19,540.0	20,472.1	21,688.9	22,909.6	23,888.4	24,574.8
EBIT	93.2	812.7	1,104.9	1,166.0	1,292.8	1,332.9	1,332.5	1,374.5	1,419.9	1,460.7
Profit Margin		4.3%	4.9%	5.6%	6.6%	6.5%	6.1%	6.0%	5.9%	5.9%
Turnover of Invested Capital										
Invested Capital	9,236.0	9,319.0	9,825.0	10,023.0	10,081.0	9,686.3	10,216.3	10,675.7	11,024.5	11,341.3
Net Sales	16,301.0	18,832.0	22,767.0	20,992.0	19,540.0	20,472.1	21,688.9	22,909.6	23,888.4	24,574.8
Turnover of Invested Capital		2.03	2.38	2.12	1.94	2.07	2.18	2.19	2.20	2.20
Turnover of Invested Capital, days		179.8	153.5	172.6	187.8	176.2	167.5	166.4	165.8	166.1
ROIC, check										
Profit Margin		4.3%	4.9%	5.6%	6.6%	6.5%	6.1%	6.0%	5.9%	5.9%
Turnover of Invested Capital		2.03	2.38	2.12	1.94	2.07	2.18	2.19	2.20	2.20
ROIC		8.8%	11.5%	11.7%	12.9%	13.5%	13.4%	13.2%	13.1%	13.1%
Net borrowing cost										
Net Interesting Bearing Debt	7,657.0	7,814.0	8,201.0	8,864.0	7,636.0	6,780.4	6,947.1	7,046.0	7,055.7	7,258.4
Net financial expenses	(379.4)	(454.3)	(420.7)	(442.1)	(501.0)	(379.4)	(388.7)	(394.2)	(394.8)	(406.1)
Net borrowing cost		5.9%	5.3%	5.2%	6.1%	5.3%	5.7%	5.6%	5.6%	5.7%
Spread										

USD Million The Goodyear Tire and Rubber Company - Ratios	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
ROIC		8.8%	11.5%	11.7%	12.9%	13.5%	13.4%	13.2%	13.1%	13.1%
Net borrowing cost		5.9%	5.3%	5.2%	6.1%	5.3%	5.7%	5.6%	5.6%	5.7%
Spread		2.9%	6.3%	6.6%	6.8%	8.2%	7.7%	7.5%	7.5%	7.4%
Leverage										
Net Interesting Bearing Debt	7,657.0	7,814.0	8,201.0	8,864.0	7,636.0	6,780.4	6,947.1	7,046.0	7,055.7	7,258.4
Equity	1,579.0	1,505.0	1,624.0	1,159.0	2,445.0	2,905.9	3,269.2	3,629.7	3,968.8	4,082.9
Leverage		5.02	5.12	6.13	4.58	2.69	2.22	2.03	1.86	1.78
ROE										
Equity	1,579.0	1,505.0	1,624.0	1,159.0	2,445.0	2,905.9	3,269.2	3,629.7	3,968.8	4,082.9
EBT	(286.2)	358.4	684.2	723.9	791.8	953.5	943.8	980.3	1,025.1	1,054.6
ROE		23.2%	43.7%	52.0%	43.9%	35.6%	30.6%	28.4%	27.0%	26.2%
ROE check		23.2%	43.7%	52.0%	43.9%	35.6%	30.6%	28.4%	27.0%	26.2%
Ratios, after tax										
ROIC										
Invested Capital	9,236.0	9,319.0	9,825.0	10,023.0	10,081.0	9,686.3	10,216.3	10,675.7	11,024.5	11,341.3
NOPAT	95.6	444.8	814.2	836.3	1,115.6	1,036.9	1,036.6	1,069.3	1,104.6	1,136.3
ROIC		4.8%	8.5%	8.4%	11.1%	10.5%	10.4%	10.2%	10.2%	10.2%
Profit Margin										
Net Sales	16,301.0	18,832.0	22,767.0	20,992.0	19,540.0	20,472.1	21,688.9	22,909.6	23,888.4	24,574.8
NOPAT	95.6	444.8	814.2	836.3	1,115.6	1,036.9	1,036.6	1,069.3	1,104.6	1,136.3
Profit Margin	0.6%	2.4%	3.6%	4.0%	5.7%	5.1%	4.8%	4.7%	4.6%	4.6%
Turnover of Invested Capital										
Invested Capital	9,236.0	9,319.0	9,825.0	10,023.0	10,081.0	9,686.3	10,216.3	10,675.7	11,024.5	11,341.3
Net Sales	16,301.0	18,832.0	22,767.0	20,992.0	19,540.0	20,472.1	21,688.9	22,909.6	23,888.4	24,574.8
Turnover of Invested Capital		2.03	2.38	2.12	1.94	2.07	2.18	2.19	2.20	2.20
Turnover of Invested Capital, days		179.8	153.5	172.6	187.8	176.2	167.5	166.4	165.8	166.1
ROIC, check										
Profit Margin	0.6%	2.4%	3.6%	4.0%	5.7%	5.1%	4.8%	4.7%	4.6%	4.6%
Turnover of Invested Capital		2.03	2.38	2.12	1.94	2.07	2.18	2.19	2.20	2.20
ROIC, check		4.8%	8.5%	8.4%	11.1%	10.5%	10.4%	10.2%	10.2%	10.2%
Net borrowing cost										
Net Interesting Bearing Debt	7,657.0	7,814.0	8,201.0	8,864.0	7,636.0	6,780.4	6,947.1	7,046.0	7,055.7	7,258.4
Net financial expenses	(379.4)	(454.3)	(420.7)	(442.1)	(501.0)	(379.4)	(388.7)	(394.2)	(394.8)	(406.1)
Tax shield	(9.6)	205.6	110.7	125.0	68.7	84.2	86.3	87.5	87.7	90.2

USD Million The Goodyear Tire and Rubber Company - Ratios	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Net borrowing cost		3.2%	3.9%	3.7%	5.2%	4.1%	4.4%	4.4%	4.4%	4.4%
Cost of non-recurring items and minority interest										
Net Interesting Bearing Debt	7,657.0	7,814.0	8,201.0	8,864.0	7,636.0					
Total non-recurring items and other	(158.0)	(134.0)	(92.0)	(174.0)	52.0					
Tax shield on non-recurring items	(4.0)	60.7	24.2	49.2	(7.1)					
Minority Shareholders' Net Income	(11.0)	(52.0)	(74.0)	(25.0)	(46.0)					
Cost of non-recurring items and minority interest		1.6%	1.8%	1.8%	0.0%					
Spread										
ROIC		4.8%	8.5%	8.4%	11.1%	10.5%	10.4%	10.2%	10.2%	10.2%
Net borrowing cost		3.2%	3.9%	3.7%	5.2%	4.1%	4.4%	4.4%	4.4%	4.4%
Cost of non-recurring items and minority interest		1.6%	1.8%	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Spread		0.0%	2.9%	3.0%	5.8%	6.4%	6.0%	5.9%	5.8%	5.7%
Leverage										
Net Interesting Bearing Debt	7,657.0	7,814.0	8,201.0	8,864.0	7,636.0	6,780.4	6,947.1	7,046.0	7,055.7	7,258.4
Equity	1,579.0	1,505.0	1,624.0	1,159.0	2,445.0	2,905.9	3,269.2	3,629.7	3,968.8	4,082.9
Leverage		5.02	5.12	6.13	4.58	2.69	2.22	2.03	1.86	1.78
ROE										
Equity	1,579.0	1,505.0	1,624.0	1,159.0	2,445.0	2,905.9	3,269.2	3,629.7	3,968.8	4,082.9
Total Income	(466.5)	70.8	362.4	369.5	682.2	741.8	734.2	762.7	797.5	820.4
ROE		4.6%	23.2%	26.6%	37.9%	27.7%	23.8%	22.1%	21.0%	20.4%
ROE, check		4.6%	23.2%	26.6%	37.9%	27.7%	23.8%	22.1%	21.0%	20.4%

JPY Million Group Bridgestone	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Drivers						**EY 2014**	**EY 2015**	**EY 2016**	**EY 2017**	**EY 2018**
Growth in Net Sales		10.2%	5.7%	0.5%	17.4%	5.7%	6.3%	6.6%	5.9%	3.3%
EBITDA-margin	9.9%	11.8%	11.6%	14.5%	17.2%	17.0%	16.5%	16.0%	15.5%	15.5%
Net borrowing rate		1.5%	1.2%	1.1%	0.4%	1.0%	1.0%	1.0%	1.0%	1.0%
Effective tax rate	82.6%	25.8%	32.2%	33.1%	37.1%	32.1%	32.1%	32.1%	32.1%	32.1%
Depreciation and amortisation as a percentage of PPE	14.3%	14.6%	14.0%	12.0%	11.5%	13.3%	13.3%	13.3%	13.3%	13.3%
Growth in total PPE and intangible assets		-7.3%	-2.4%	12.8%	18.7%	14.0%	10.0%	7.0%	5.0%	3.3%
Inventories as a percentage of Net Sales	16.8%	14.9%	17.2%	17.1%	15.6%	16.3%	16.3%	16.3%	16.3%	16.3%
Notes and accounts receivable as a percentage of Net Sales	18.6%	14.9%	14.5%	14.6%	14.8%	15.0%	15.0%	15.2%	15.4%	15.4%
Operational liabilities as a percentage of Net Sales	19.4%	18.4%	17.5%	17.5%	20.4%	18.6%	18.6%	18.6%	18.6%	18.6%
NIBD as a percentage of Invested Capital	45.1%	35.8%	39.0%	32.8%	18.9%	18.9%	18.9%	18.9%	18.9%	18.9%
Net Sales	2,597,002.0	2,861,615.0	3,024,356.0	3,039,738.0	3,568,091.0					
Property, Plant and Equipment	1,076,602.0	1,006,625.0	981,331.0	1,118,936.0	1,335,060.0					
Lease adjustment, operating leases addition to PPE	183,550.5	162,049.0	159,465.0	168,280.2	193,330.5					
Total PPE	1,260,152.5	1,168,674.0	1,140,796.0	1,287,216.2	1,528,390.5					
EBITDA	256,259.0	337,113.0	350,988.0	441,061.0	614,312.0					
Effective tax rate	82.6%	25.8%	32.2%	33.1%	37.1%					
Depreciation and amortization	(180,547.0)	(170,663.0)	(159,666.0)	(155,066.0)	(176,180.0)					
Inventories	435,284.0	427,586.0	520,481.0	520,726.0	557,104.0					
Notes and accounts receivable	483,961.0	426,935.0	438,764.0	444,670.0	528,466.0					
Operational Liabilities										
Notes and accounts payable	299,968.0	326,493.0	344,693.0	317,346.0	358,128.0					
Accrued expenses	160,226.0	150,372.0	152,088.0	174,138.0	230,888.0					
Deferred tax liabilities	1,198.0	903.0	1,613.0	1,580.0	1,403.0					
Provision for sales returns	0.0	3,693.0	3,740.0	3,223.0	3,036.0					
Provision for loss related to US antitrust laws	0.0	0.0	0.0	0.0	44,791.0					
Provision for recall	0.0	0.0	0.0	0.0	21,132.0					
Provision for plant restructuring in Japan	0.0	0.0	0.0	0.0	8,582.0					
Deferred tax liabilities	37,335.0	39,000.0	23,882.0	30,769.0	58,048.0					
Provision for environmental remediation	3,921.0	4,780.0	4,516.0	3,969.0	3,310.0					
Provision for recall of merchandise	0.0	1,367.0	0.0	0.0	0.0					
Total operational liabilities	502,648.0	526,608.0	530,532.0	531,025.0	729,318.0					
Invested Capital	2,042,028.5	1,830,864.0	1,910,998.0	2,109,642.2	2,297,024.5					
Net Interesting Bearing Debt	921,231.5	654,717.0	745,326.0	692,294.2	434,060.5					

JPY Million Bridgestone Corporation - Income Statement	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Reported Income Statement										
Net Sales	**2,597,002.0**	**2,861,615.0**	**3,024,356.0**	**3,039,738.0**	**3,568,091**					
Cost of Sales	(1,766,950.0)	(1,936,309.0)	(2,091,719.0)	(2,017,238.0)	-2,267,663					
Gross profit	**830,052.0**	**925,306.0**	**932,637.0**	**1,022,500.0**	**1,300,428.0**					
Selling, General and Administrative Expenses	(754,340.0)	(758,856.0)	(741,315.0)	(736,505.0)	-862,296					
Operating income	**75,712.0**	**166,450.0**	**191,322.0**	**285,995.0**	**438,132.0**					
Other income										
Interest and dividend income	6,117.0	6,922.0	8,425.0	8,891.0	12,510.0					
Interest expense	(26,065.0)	(18,765.0)	(16,710.0)	(16,462.0)	(14,826.0)					
Foreign currency exchange loss	(3,286.0)	(4,596.0)	(2,146.0)	722.0	(4,111.0)					
Gain on sales of property, plant and equipment	4,056.0	2,955.0	7,295.0	3,011.0	5,031.0					
Impairment loss	0.0	0.0	(13,086.0)	(14,025.0)	(11,300.0)					
Loss on disposals of property, plant and equipment	(5,483.0)	(4,011.0)	(4,213.0)	(3,011.0)	(4,063.0)					
Losses from a natural disaster	0.0	0.0	(2,427.0)	0.0	0.0					
Loss on valuation of investments in securities	(3,767.0)	0.0	(3,486.0)	0.0	0.0					
Loss on adj. for changes of accounting standard for asset retirement obligations	0.0	0.0	(2,471.0)	0.0	0.0					
Loss related to US antitrust law and US Foreign Corrupt Practices Act	0.0	0.0	(2,150.0)	0.0	(44,791.0)					
Loss on recall of merchandise	0.0	(2,217.0)	0.0	0.0	(22,504.0)					
Loss on provision for environmental remediation	(3,279.0)	0.0	0.0	0.0	0.0					
Loss on business withdrawal	0.0	0.0	0.0	(2,903.0)	0.0					
Plant restructuring costs	(10,618.0)	0.0	0.0	0.0	(13,697.0)					
Gain on sales of investment securities	1,986.0	237.0	1,231.0	4,055.0	2,048.0					
Dismantlement expenses	0.0	0.0	(2,630.0)	(4,118.0)	(3,370.0)					
Other—net	(7.0)	(5,298.0)	(175.0)	5,897.0	1,039.0					
Income before Income Taxes and Minority Interests	**35,366.0**	**141,677.0**	**158,779.0**	**268,052.0**	**340,098.0**					
Income tax	(29,218.0)	(36,554.0)	(51,063.0)	(88,736.0)	(126,311.0)					
Income before minority interests	**6,148.0**	**105,123.0**	**107,716.0**	**179,316.0**	**213,787.0**					
Minority Interests	(5,104.0)	(6,209.0)	(4,746.0)	(7,710.0)	(11,733.0)					
Net Income	**1,044.0**	**98,914.0**	**102,970.0**	**171,606.0**	**202,054.0**					
Analytical Income Statement										
Net Sales	**2,597,002.0**	**2,861,615.0**	**3,024,356.0**	**3,039,738.0**	**3,568,091.0**	**3,769,688.1**	**4,005,827.6**	**4,269,780.6**	**4,521,549.5**	**4,669,189.6**
Cost of Sales	(1,766,950.0)	(1,936,309.0)	(2,091,719.0)	(2,017,238.0)	(2,267,663.0)					
Depreciation and amortization	180,547.0	170,663.0	159,666.0	155,066.0	176,180.0					
Gross profit, adjusted	**1,010,599.0**	**1,095,969.0**	**1,092,303.0**	**1,177,566.0**	**1,476,608.0**					
Selling, General and Administrative Expenses	(754,340.0)	(758,856.0)	(741,315.0)	(736,505.0)	(862,296.0)					
EBITDA	**256,259.0**	**337,113.0**	**350,988.0**	**441,061.0**	**614,312.0**	**640,847.0**	**660,961.6**	**683,164.9**	**700,840.2**	**723,724.4**
Depreciation and amortization	(180,547.0)	(170,663.0)	(159,666.0)	(155,066.0)	(176,180.0)	(231,735.7)	(254,909.2)	(272,752.9)	(286,390.5)	(295,741.9)
EBIT	**75,712.0**	**166,450.0**	**191,322.0**	**285,995.0**	**438,132.0**	**409,111.3**	**406,052.3**	**410,412.0**	**414,449.6**	**427,982.5**
Interest and dividend income	6,117.0	6,922.0	8,425.0	8,891.0	12,510.0					
Interest expense	(26,065.0)	(18,765.0)	(16,710.0)	(16,462.0)	(14,826.0)					
Net financial expenses						(4,355.6)	(4,756.1)	(5,101.7)	(5,384.2)	(5,560.0)
EBT	**55,764.0**	**154,607.0**	**183,037.0**	**278,424.0**	**435,816.0**	**404,755.7**	**401,296.2**	**405,310.3**	**409,065.4**	**422,422.4**
Income tax	(29,218.0)	(36,554.0)	(51,063.0)	(88,736.0)	(126,311.0)					
Effective tax rate	82.6%	25.8%	32.2%	33.1%	37.1%	32.1%	32.1%	32.1%	32.1%	32.1%
Tax on EBIT	(62,550.3)	(42,945.7)	(61,528.8)	(94,675.9)	(162,720.4)	(131,124.6)	(130,144.2)	(131,541.5)	(132,835.6)	(137,173.0)

JPY Million Bridgestone Corporation - Income Statement	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Reported Income Statement										
NOPAT	**13,161.7**	**123,504.3**	**129,793.2**	**191,319.1**	**275,411.6**	**277,986.7**	**275,908.1**	**278,870.5**	**281,614.0**	**290,809.4**
Net financial expenses	(19,948.0)	(11,843.0)	(8,285.0)	(7,571.0)	(2,316.0)	(4,355.6)	(4,756.1)	(5,101.7)	(5,384.2)	(5,560.0)
Tax shield	16,480.3	3,055.6	2,664.4	2,506.3	860.2	1,396.0	1,524.4	1,635.2	1,725.7	1,782.0
Net Income before minority interest	**9,694.0**	**114,716.9**	**124,172.7**	**186,254.5**	**273,955.7**	**275,027.1**	**272,676.4**	**275,403.9**	**277,955.5**	**287,031.5**
Minority Interests	(5,104.0)	(6,209.0)	(4,746.0)	(7,710.0)	(11,733.0)					
Net Income	**4,590.0**	**108,507.9**	**119,426.7**	**178,544.5**	**262,222.7**	**275,027.1**	**272,676.4**	**275,403.9**	**277,955.5**	**287,031.5**
Foreign currency exchange loss	(3,286.0)	(4,596.0)	(2,146.0)	722.0	(4,111.0)					
Gain on sales of property, plant and equipment	4,056.0	2,955.0	7,295.0	3,011.0	5,031.0					
Impairment loss	0.0	0.0	(13,086.0)	(14,025.0)	(11,300.0)					
Loss on disposals of property, plant and equipment	(5,483.0)	(4,011.0)	(4,213.0)	(3,011.0)	(4,063.0)					
Losses from a natural disaster	0.0	0.0	(2,427.0)	0.0	0.0					
Loss on valuation of investments in securities	(3,767.0)	0.0	(3,486.0)	0.0	0.0					
Loss on adj. for changes of accounting standard for asset retirement obligations	0.0	0.0	(2,471.0)	0.0	0.0					
Loss related to US antitrust law and US Foreign Corrupt Practices Act	0.0	0.0	(2,150.0)	0.0	(44,791.0)					
Loss on recall of merchandise	0.0	(2,217.0)	0.0	0.0	(22,504.0)					
Loss on provision for environmental remediation	(3,279.0)	0.0	0.0	0.0	0.0					
Loss on business withdrawal	0.0	0.0	0.0	(2,903.0)	0.0					
Plant restructuring costs	(10,618.0)	0.0	0.0	0.0	(13,697.0)					
Gain on sales of investment securities	1,986.0	237.0	1,231.0	4,055.0	2,048.0					
Dismantlement expenses	0.0	0.0	(2,630.0)	(4,118.0)	(3,370.0)					
Other—net	(7.0)	(5,298.0)	(175.0)	5,897.0	1,039.0					
Total non-recurring items	**(20,398.0)**	**(12,930.0)**	**(24,258.0)**	**(10,372.0)**	**(95,718.0)**					
Tax shield on non-recurring items	16,852.0	3,336.1	7,801.3	3,433.5	35,549.3					
Total Income	**1,044.0**	**98,914.0**	**102,970.0**	**171,606.0**	**202,054.0**	**275,027.1**	**272,676.4**	**275,403.9**	**277,955.5**	**287,031.5**
Dividends						**(336,983.8)**	**(107,068.8)**	**(132,508.7)**	**(161,144.5)**	**(214,336.4)**
Retained earnings						**(61,956.7)**	**165,607.6**	**142,895.2**	**116,811.0**	**72,695.1**
Minority interests, % of Net Income before minority interest	52.7%	5.4%	3.8%	4.1%	4.3%					
Minority interests' Net Income, for Valuation						(12,140.3)	(12,036.5)	(12,156.9)	(12,269.6)	(12,670.2)

JPY Million Bridgestone Corporation - Balance Sheet	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Reported Balance Sheet										
Assets										
Lease adjustment, operating leases addition to PPE	183,550.5	162,049.0	159,465.0	168,280.2	193,330.5					
Property, Plant and Equipment	1,076,602.0	1,006,625.0	981,331.0	1,118,936.0	1,335,060.0	1,742,365.2	1,916,601.7	2,050,763.8	2,153,302.0	2,223,612.8
Investments in securities	198,857.0	202,978.0	170,252.0	213,398.0	303,764.0					
Investments in and advances to affiliated companies	15,966.0	14,731.0	12,634.0	15,349.0	17,686.0					
Long-term loans receivable	8,670.0	6,385.0	6,053.0	6,072.0	8,630.0					
Deferred tax assets	134,307.0	103,201.0	94,641.0	110,822.0	75,525.0					
Other assets	100,327.0	97,339.0	92,016.0	104,276.0	124,575.0					
Allowance for doubtful accounts	(747.0)	(1,588.0)	(3,299.0)	(5,068.0)	(5,579.0)					
Non-current assets	**1,717,532**	**1,591,720**	**1,513,093**	**1,732,065**	**2,052,992**					
Cash and cash equivalents	236,270.0	216,925.0	128,840.0	269,416.0	324,596.0					
Marketable securities	3,516.0	84,929.0	90,134.0	78,526.0	107,043.0					
Notes and accounts receivable	483,961.0	426,935.0	438,764.0	444,670.0	528,466.0	565,453.2	600,874.1	649,006.7	696,318.6	719,055.2
Inventories	435,284.0	427,586.0	520,481.0	520,726.0	557,104.0	615,642.2	654,207.0	697,314.2	738,431.5	762,543.2
Deferred tax assets	58,558.0	61,487.0	75,157.0	79,333.0	101,370.0					
Other current assets	75,287.0	68,991.0	78,449.0	91,418.0	110,676.0					
Allowance for doubtful accounts	(18,419.0)	(9,884.0)	(8,109.0)	(8,075.0)	(11,871.0)					
Current assets	**1,274,457**	**1,276,969**	**1,323,716**	**1,476,014**	**1,717,384**					
Total assets	**2,991,989**	**2,868,689**	**2,836,809**	**3,208,079**	**3,770,376**	**2,923,461**	**3,171,683**	**3,397,085**	**3,588,052**	**3,705,211**
Liabilities and equity										
Common stock	126,354.0	126,354.0	126,354.0	126,354.0	126,354.0					
Capital surplus	122,647.0	122,630.0	122,630.0	122,630.0	122,866.0					
Stock acquisition rights	337.0	515.0	771.0	1,099.0	1,621.0					
Retained earnings	1,006,859.0	1,111,589.0	1,279,978.0	1,428,747.0	1,597,140.0					
Treasury stock	(54,847.0)	(57,246.0)	(57,249.0)	(57,247.0)	(56,645.0)					
Accumulated other comprehensive income										
Net unrealized gain (loss) on available-for-sale securities	100,697.0	112,064.0	97,751.0	133,440.0	200,704.0					
Deferred gain (loss) on derivative instruments	(845.0)	(236.0)	(891.0)	(948.0)	(1,093.0)					
Foreign currency translation adjustments	(214,264.0)	(274,026.0)	(331,784.0)	(246,190.0)	(86,177.0)					
Post retirement liability adjustments for foreign consolidated companies	0.0	0.0	(106,212.0)	(133,764.0)	(97,864.0)					
Minority interests	33,859.0	34,503.0	34,324.0	43,227.0	56,058.0					
Equity	**1,120,797**	**1,176,147**	**1,165,672**	**1,417,348**	**1,862,964**	**1,801,007.3**	**1,966,614.9**	**2,109,510.1**	**2,226,321.1**	**2,299,016.2**
		10.4%	15.1%	11.6%	11.8%					
Long-term debt	543,950.0	323,237.0	371,615.0	334,999.0	282,726.0					
Accrued pension and liability for retirement benefits	284,758.0	237,194.0	257,631.0	302,794.0	236,747.0					
Deferred tax liabilities	37,335.0	39,000.0	23,882.0	30,769.0	58,048.0					
Provision for environmental remediation	3,921.0	4,780.0	4,516.0	3,969.0	3,310.0					
Provision for recall of merchandise	0.0	1,367.0	0.0	0.0	0.0					
Other liabilities	54,981.0	47,863.0	56,297.0	59,815.0	73,964.0					
Lease adjustment, operating leases debt	183,550.5	162,049.0	159,465.0	168,280.2	193,330.5					
Non-current liabilities	**1,108,495.5**	**815,490.0**	**873,406.0**	**900,626.2**	**848,125.5**					
Short-term debt	140,586.0	132,564.0	186,315.0	164,739.0	111,753.0					
Current portion of long-term debt	101,790.0	207,365.0	44,665.0	120,356.0	169,795.0					
Notes and accounts payable	299,968.0	326,493.0	344,693.0	317,346.0	358,128.0					
Income taxes payable	11,290.0	15,113.0	22,855.0	55,827.0	54,572.0					
Accrued expenses	160,226.0	150,372.0	152,088.0	174,138.0	230,888.0					
Deferred tax liabilities	1,198.0	903.0	1,613.0	1,580.0	1,403.0					
Provision for sales returns	0.0	3,693.0	3,740.0	3,223.0	3,036.0					
Provision for loss related to US antitrust laws	0.0	0.0	0.0	0.0	44,791.0					

JPY Million Bridgestone Corporation - Balance Sheet	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Provision for recall	0.0	0.0	0.0	0.0	21,132.0					
Provision for plant restructuring in Japan	0.0	0.0	0.0	0.0	8,582.0					
Other current liabilities	47,639.0	40,549.0	41,762.0	52,896.0	55,206.0					
Current liabilities	**762,697.0**	**877,052.0**	**797,731.0**	**890,105.0**	**1,059,286.0**					
Total liabilities	**1,871,192.5**	**1,692,542.0**	**1,671,137.0**	**1,790,731.2**	**1,907,411.5**					
Total Operational Liabilities						**702,736.4**	**746,757.0**	**795,962.5**	**842,896.7**	**870,419.4**
Net Interesting Bearing Debt						**419,716.9**	**458,311.0**	**491,612.1**	**518,834.4**	**535,775.7**
Total liabilities and equity	**2,991,989.5**	**2,868,689.0**	**2,836,809.0**	**3,208,079.2**	**3,770,375.5**	**2,923,460.6**	**3,171,682.9**	**3,397,084.7**	**3,588,052.2**	**3,705,211.2**
Check										
Analytical Balance Sheet										
Invested Capital										
Operational Assets										
Lease adjustment, operating leases addition to PPE	183,550.5	162,049.0	159,465.0	168,280.2	193,330.5					
Property, Plant and Equipment	1,076,602.0	1,006,625.0	981,331.0	1,118,936.0	1,335,060.0					
Investments in and advances to affiliated companies	15,966.0	14,731.0	12,634.0	15,349.0	17,686.0					
Deferred tax assets	134,307.0	103,201.0	94,641.0	110,822.0	75,525.0					
Other assets	100,327.0	97,339.0	92,016.0	104,276.0	124,575.0					
Allowance for doubtful accounts	(747.0)	(1,588.0)	(3,299.0)	(5,068.0)	(5,579.0)					
Notes and accounts receivable	483,961.0	426,935.0	438,764.0	444,670.0	528,466.0					
Inventories	435,284.0	427,586.0	520,481.0	520,726.0	557,104.0					
Deferred tax assets	58,558.0	61,487.0	75,157.0	79,333.0	101,370.0					
Other current assets	75,287.0	68,991.0	78,449.0	91,418.0	110,676.0					
Allowance for doubtful accounts	(18,419.0)	(9,884.0)	(8,109.0)	(8,075.0)	(11,871.0)					
Operational Liabilities										
Deferred tax liabilities	37,335.0	39,000.0	23,882.0	30,769.0	58,048.0					
Provision for environmental remediation	3,921.0	4,780.0	4,516.0	3,969.0	3,310.0					
Provision for recall of merchandise	0.0	1,367.0	0.0	0.0	0.0					
Notes and accounts payable	299,968.0	326,493.0	344,693.0	317,346.0	358,128.0					
Accrued expenses	160,226.0	150,372.0	152,088.0	174,138.0	230,888.0					
Deferred tax liabilities	1,198.0	903.0	1,613.0	1,580.0	1,403.0					
Provision for sales returns	0.0	3,693.0	3,740.0	3,223.0	3,036.0					
Provision for loss related to US antitrust laws	0.0	0.0	0.0	0.0	44,791.0					
Provision for recall	0.0	0.0	0.0	0.0	21,132.0					
Provision for plant restructuring in Japan	0.0	0.0	0.0	0.0	8,582.0					
Total Operational Liabilities	**502,648.0**	**526,608.0**	**530,532.0**	**531,025.0**	**729,318.0**	**702,736.4**	**746,757.0**	**795,962.5**	**842,896.7**	**870,419.4**
Invested Capital	**2,042,028.5**	**1,830,864.0**	**1,910,998.0**	**2,109,642.2**	**2,297,024.5**	**2,220,724.2**	**2,424,925.9**	**2,601,122.2**	**2,745,155.5**	**2,834,791.8**
Invested Capital (NIBD + E)										
NIBD										
Financial Liabilities										
Long-term debt	543,950.0	323,237.0	371,615.0	334,999.0	282,726.0					
Accrued pension and liability for retirement benefits	284,758.0	237,194.0	257,631.0	302,794.0	236,747.0					
Other liabilities	54,981.0	47,863.0	56,297.0	59,815.0	73,964.0					
Short-term debt	140,586.0	132,564.0	186,315.0	164,739.0	111,753.0					
Current portion of long-term debt	101,790.0	207,365.0	44,665.0	120,356.0	169,795.0					
Income taxes payable	11,290.0	15,113.0	22,855.0	55,827.0	54,572.0					
Other current liabilities	47,639.0	40,549.0	41,762.0	52,896.0	55,206.0					
Lease adjustment, operating leases debt	183,550.5	162,049.0	159,465.0	168,280.2	193,330.5					

JPY Million Bridgestone Corporation - Balance Sheet	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Financial Assets										
Investments in securities	198,857.0	202,978.0	170,252.0	213,398.0	303,764.0					
Long-term loans receivable	8,670.0	6,385.0	6,053.0	6,072.0	8,630.0					
Cash and cash equivalents	236,270.0	216,925.0	128,840.0	269,416.0	324,596.0					
Marketable securities	3,516.0	84,929.0	90,134.0	78,526.0	107,043.0					
Net Interesting Bearing Debt	**921,231.5**	**654,717.0**	**745,326.0**	**692,294.2**	**434,060.5**	**419,716.9**	**458,311.0**	**491,612.1**	**518,834.4**	**535,775.7**
Equity	**1,120,797.0**	**1,176,147.0**	**1,165,672.0**	**1,417,348.0**	**1,862,964.0**	**1,801,007.3**	**1,966,614.9**	**2,109,510.1**	**2,226,321.1**	**2,299,016.2**
Invested Capital (NIBD + E)	**2,042,028.5**	**1,830,864.0**	**1,910,998.0**	**2,109,642.2**	**2,297,024.5**	**2,220,724.2**	**2,424,925.9**	**2,601,122.2**	**2,745,155.5**	**2,834,791.8**
Check										

JPY Million Bridgestone Corporation - Cash Flow Statement	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Income before income taxes and minority interests	**35,366.0**	**141,677.0**	**158,779.0**	**268,052.0**	**340,098.0**					
NOPAT						**277,986.7**	**275,908.1**	**278,870.5**	**281,614.0**	**290,809.4**
Depreciation and amortization	180,547.0	170,663.0	159,666.0	155,066.0	176,180.0	231,735.7	254,909.2	272,752.9	286,390.5	295,741.9
Increase (decrease) in allowance for doubtful accounts	1,214.0	(4,952.0)	0.0	959.0	2,557.0					
Increase (decrease) in accrued pension and liability for retirement benefits	(3,593.0)	(3,291.0)	(17,949.0)	(3,796.0)	(12,446.0)					
Increase (decrease) in provision for sales returns	0.0	3,693.0	0.0	0.0	0.0					
Interest and dividend income	(6,117.0)	(6,922.0)	(8,425.0)	(8,891.0)	(12,510.0)					
Interest expense	26,065.0	18,765.0	16,710.0	16,462.0	14,826.0					
Foreign exchange loss and gain	0.0	0.0	4,818.0	(186.0)	(2,245.0)					
Gain on sales of property, plant and equipment	(4,056.0)	(2,955.0)	(7,295.0)	(3,011.0)	(5,031.0)					
Impairment loss	0.0	0.0	13,086.0	14,025.0	11,300.0					
Loss on disposals of property, plant and equipment	5,483.0	4,011.0	4,213.0	3,011.0	4,063.0					
Loss on business withdrawal	0.0	0.0	0.0	2,903.0	0.0					
Losses from a natural disaster	0.0	0.0	2,427.0	0.0	0.0					
Loss on valuation of investments in securities	3,767.0	0.0	3,486.0	0.0	0.0					
Loss on adj. for changes of accounting standard for asset retirement obligations	0.0	0.0	2,471.0	0.0	0.0					
Loss related to US antitrust law and US Foreign Corrupt Practices Act	0.0	0.0	2,150.0	0.0	44,791.0					
Loss on recall of merchandise	0.0	2,217.0	0.0	0.0	22,504.0					
Loss on provision for environmental remediation	3,279.0	0.0	0.0	0.0	0.0					
Plant restructuring costs	10,618.0	0.0	0.0	0.0	13,697.0					
Decrease (increase) in notes and accounts receivable	7,021.0	(62,457.0)	(35,282.0)	43,792.0	(48,420.0)	(36,987.2)	(35,420.9)	(48,132.5)	(47,312.0)	(22,736.6)
Decrease (increase) in inventories	163,668.0	(32,665.0)	(122,890.0)	47,596.0	43,916.0	(58,538.2)	(38,564.8)	(43,107.2)	(41,117.3)	(24,111.7)
Increase (decrease) in notes and accounts payable	(54,163.0)	42,562.0	20,912.0	(42,986.0)	14,050.0					
Gain on sales of investments in securities	0.0	0.0	0.0	(4,055.0)	(2,048.0)					
Dismantlement expenses	0.0	0.0	0.0	4,118.0	3,370.0					
Other	15,915.0	12,418.0	(2,179.0)	(24,879.0)	(16,867.0)					
Change in operating liabilities						(26,581.6)	44,020.6	49,205.5	46,934.2	27,522.7
Change in Investments in and advances to affiliated companies						17,686.0				
Change in Deferred tax assets						75,525.0				
Change in Other assets						124,575.0				
Change in Allowance for doubtful accounts						(5,579.0)				
Change in Deferred tax assets, current						101,370.0				
Change in Other current assets						110,676.0				
Change in Allowance for doubtful accounts, current						(11,871.0)				
Subtotal	**385,014.0**	**282,764.0**	**194,698.0**	**468,180.0**	**591,785.0**	**799,997.4**	**500,852.2**	**509,589.2**	**526,509.4**	**567,225.8**
Interest and dividends received	6,162.0	6,844.0	8,541.0	8,944.0	12,479.0					
Interest paid	(25,366.0)	(19,461.0)	(17,359.0)	(16,701.0)	(14,826.0)					
Payments related to US antitrust law and US Foreign Corrupt Practices Act	0.0	0.0	(2,150.0)	0.0	0.0					
Payments related to EU competition law case	(7,421.0)	0.0	0.0	0.0	0.0					
Income taxes paid	(19,707.0)	(22,411.0)	(31,573.0)	(55,956.0)	(117,667.0)					
Cash flows from operating activities	**338,682.0**	**247,736.0**	**152,157.0**	**404,467.0**	**471,771.0**	**799,997.4**	**500,852.2**	**509,589.2**	**526,509.4**	**567,225.8**
Payments for purchase of property, plant and equipment	(191,241.0)	(177,972.0)	(187,854.0)	(240,145.0)	(267,033.0)	(213,974.7)	(174,236.5)	(134,162.1)	(102,538.2)	(70,310.8)
Proceeds from sales of property, plant and equipment	6,793.0	4,491.0	12,239.0	11,178.0	10,087.0					
Payments for investments in securities, subsidiaries and affiliated companies	(8,064.0)	(2,003.0)	0.0	0.0	0.0					
Proceeds from sales of investments in securities	4,138.0	5,922.0	3,023.0	4,823	3,660					
Proceeds from redemption of investments in securities	3,000.0	0.0	0.0	0.0	0.0					
Purchase of intangible assets	0.0	0.0	(858.0)	(4,845.0)	(7,534.0)					
Payments of loans receivable	0.0	0.0	(519.0)	(1,271.0)	(3,067.0)					
Proceeds from collection of loans receivable	0.0	0.0	1,514.0	1,071.0	1,247.0					
Other	(2,883.0)	(995.0)	(4,625.0)	(8,739.0)	(2,590.0)					
Depreciation and amortization						(231,735.7)	(254,909.2)	(272,752.9)	(286,390.5)	(295,741.9)
Cash flows from investing activities	**(188,257.0)**	**(170,557.0)**	**(177,080.0)**	**(237,928.0)**	**(265,230.0)**	**(445,710.3)**	**(429,145.8)**	**(406,915.0)**	**(388,928.7)**	**(366,052.7)**

JPY Million Bridgestone Corporation - Cash Flow Statement	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
FCFF	**150,425.0**	**77,179.0**	**(24,923.0)**	**166,539.0**	**206,541.0**	**354,287.0**	**71,706.4**	**102,674.2**	**137,580.7**	**201,173.1**
Net increase (decrease) in short-term debt	(195,730.0)	(39,844.0)	71,987.0	(38,019.0)	(81,077.0)					
Proceeds from long-term debt	231,873.0	22,015.0	84,051.0	68,786.0	12,833.0					
Repayments of long-term debt	(52,768.0)	(44,861.0)	(186,529.0)	(61,250.0)	(79,420.0)					
Cash dividends paid	(14,905.0)	(14,120.0)	(15,657.0)	(21,912.0)	(33,655.0)					
Payments for purchase of treasury stock	0.0	(2,476.0)	0.0	0.0	0.0					
Cash dividends paid to minority	0.0	0.0	(2,383.0)	(2,117.0)	(4,269.0)					
Other	(2,080.0)	(3,242.0)	(1,544.0)	(839.0)	(68.0)					
Proceeds from minority interests for additional shares	0.0	0.0	0.0	0.0	1,933.0					
Changes in NIBD						(14,343.7)	38,594.1	33,301.1	27,222.3	16,941.3
Net financial expenses						(4,355.6)	(4,756.1)	(5,101.7)	(5,384.2)	(5,560.0)
Tax shield						1,396.0	1,524.4	1,635.2	1,725.7	1,782.0
Cash flows from financing activities	**(33,610.0)**	**(82,528.0)**	**(50,075.0)**	**(55,351.0)**	**(183,723.0)**	**(17,303.3)**	**35,362.4**	**29,834.5**	**23,563.8**	**13,163.3**
Effect of Exchange Rate Changes on Cash and Cash Equivalents	5,380.0	(13,996.0)	(13,087.0)	29,388.0	32,362.0					
Increase of cash and cash equivalents	**122,195.0**	**(19,345.0)**	**(88,085.0)**	**140,576.0**	**55,180.0**					
Cash and cash equivalents at January 1	114,075.0	236,270.0	216,925.0	128,840.0	269,416.0					
Cash and cash equivalents at December 31	236,270.0	216,925.0	128,840.0	269,416.0	324,596.0					
Free cash flows to equity (FCFE)						**336,983.8**	**107,068.8**	**132,508.7**	**161,144.5**	**214,336.4**
Dividends						(336,983.8)	(107,068.8)	(132,508.7)	(161,144.5)	(214,336.4)
Free reserves						0.0	0.0	0.0	0.0	0.0

JPY Million Bridgestone Corporation - Sales Forecast	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Net sales, historical	2,597,002.0	2,861,615.0	3,024,356.0	3,039,738.0	3,568,091.0					
GDP Growth in Regions										
Europe	-4.8%	2.3%	2.1%	0.3%	0.4%	1.6%	1.9%	2.0%	2.0%	2.0%
The Americas (Western Hemisphere)	-2.4%	3.6%	2.7%	2.8%	2.1%	2.7%	2.9%	3.1%	3.0%	2.8%
Japan	-5.5%	4.7%	-0.5%	1.4%	1.5%	1.4%	1.0%	0.7%	1.0%	1.0%
Rest of the World (Asia)	3.8%	8.3%	6.0%	5.2%	5.2%	5.3%	5.5%	5.4%	5.4%	5.4%
Converging Betas										
Europe					4.953	4.162	3.372	2.581	1.791	1.000
The Americas					5.337	4.469	3.602	2.735	1.867	1.000
Japan					2.811	2.448	2.086	1.724	1.362	1.000
Rest of the World					4.877	4.102	3.326	2.551	1.775	1.000
Regression Implied Revenue Growth in Regions										
Europe						6.7%	6.4%	5.2%	3.6%	2.0%
The Americas						12.1%	10.4%	8.5%	5.6%	2.8%
Japan						3.4%	2.1%	1.2%	1.4%	1.0%
Rest of the World						21.7%	18.3%	13.8%	9.6%	5.4%
Revenue Growth in Regions used in Model										
Europe						4.0%	3.5%	3.0%	2.5%	2.0%
The Americas						6.0%	7.0%	7.5%	5.6%	2.8%
Japan						3.0%	2.1%	1.2%	1.4%	1.0%
Rest of the World						8.0%	9.5%	10.5%	11.0%	6.0%
Share of Revenue, 2013										
Europe					12.0%					
The Americas					46.0%					
Japan					19.0%					
Rest of the World					23.0%					
Total					100.0%					
Revenue Forecast in Regions, JPY Millions										
Europe					428,170.9	445,297.8	460,883.2	474,709.7	486,577.4	496,309.0
The Americas					1,641,321.9	1,739,801.2	1,861,587.3	2,001,206.3	2,113,314.6	2,172,487.4
Japan					677,937.3	698,275.4	712,843.5	721,447.1	731,274.0	738,586.7
Rest of the World					820,660.9	886,313.8	970,513.6	1,072,417.5	1,190,383.5	1,261,806.5
Total					**3,568,091.0**	**3,769,688.1**	**4,005,827.6**	**4,269,780.6**	**4,521,549.5**	**4,669,189.6**
Bridgestone Forecasted Growth Rate						**5.7%**	**6.3%**	**6.6%**	**5.9%**	**3.3%**
Revenue Forecast in Regions, share of total Revenue										
Europe					12.0%	11.8%	11.5%	11.1%	10.8%	10.6%
The Americas					46.0%	46.2%	46.5%	46.9%	46.7%	46.5%
Japan					19.0%	18.5%	17.8%	16.9%	16.2%	15.8%
Rest of the World					23.0%	23.5%	24.2%	25.1%	26.3%	27.0%
Total					100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Regional Betas	Adj. Beta	Model Beta
Europe	4.953	4.953
The Americas	5.337	5.337

JPY Million

Bridgestone Corporation - Sales Forecast	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Japan	2.811	2.811								
Rest of the World	4.877	4.877								

JPY Million Bridgestone Corporation - Operating Lease Adjustments	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Operating lease commitments, not discounted										
Within one year	32,324.0	30,405.0	29,622.0	33,217.0	38,690.0					
More than one year	164,343.0	143,095.0	141,132.0	146,841.0	168,135.0					
Total future mimimum payments	**196,667.0**	**173,500.0**	**170,754.0**	**180,058.0**	**206,825.0**					
Discount rate applied	1.4%	1.4%	1.4%	1.4%	1.4%					
Years of depreciation, straight-line	10.0	10.0	10.0	10.0	10.0					
Assumed lease payments, not discounted										
Within 1 year	32,324.0	30,405.0	29,622.0	33,217.0	38,690.0					
2 years	18,260.3	15,899.4	15,681.3	16,315.7	18,681.7					
3 years	18,260.3	15,899.4	15,681.3	16,315.7	18,681.7					
4 years	18,260.3	15,899.4	15,681.3	16,315.7	18,681.7					
5 years	18,260.3	15,899.4	15,681.3	16,315.7	18,681.7					
6 years	18,260.3	15,899.4	15,681.3	16,315.7	18,681.7					
7 years	18,260.3	15,899.4	15,681.3	16,315.7	18,681.7					
8 years	18,260.3	15,899.4	15,681.3	16,315.7	18,681.7					
9 years	18,260.3	15,899.4	15,681.3	16,315.7	18,681.7					
10 years	18,260.3	15,899.4	15,681.3	16,315.7	18,681.7					
PV of lease payments										
Within 1 year	31,891.0	29,997.7	29,225.2	32,772.0	38,171.7					
2 years	17,774.4	15,476.3	15,264.0	15,881.4	18,184.5					
3 years	17,536.2	15,269.0	15,059.5	15,668.7	17,940.9					
4 years	17,301.3	15,064.4	14,857.8	15,458.8	17,700.5					
5 years	17,069.5	14,862.6	14,658.7	15,251.7	17,463.4					
6 years	16,840.8	14,663.5	14,462.3	15,047.3	17,229.4					
7 years	16,615.2	14,467.0	14,268.6	14,845.8	16,998.6					
8 years	16,392.6	14,273.2	14,077.4	14,646.9	16,770.9					
9 years	16,173.0	14,082.0	13,888.8	14,450.7	16,546.2					
10 years	15,956.4	13,893.4	13,702.8	14,257.1	16,324.5					
Total PV of lease payments	**183,550.5**	**162,049.0**	**159,465.0**	**168,280.2**	**193,330.5**					
Depreciation expense	18,355.0	16,204.9	15,946.5	16,828.0	19,333.1					
Interest expense	2,492.4	2,200.4	2,165.3	2,285.0	2,625.2					
Total effect on Earnings	**(20,847.4)**	**(18,405.3)**	**(18,111.8)**	**(19,113.1)**	**(21,958.2)**					

JPY Million Group Bridgestone - WACC	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Cost of equity estimation										
Beta										
5 year, monthly data	Raw Beta	Adj. Beta								
Dow Jones Industrial Average Index	0.776	0.851								
S&P 500 Index	0.743	0.829								
Nikkei 225 Index	0.776	0.851								
Average		**0.844**								
Risk free rate	Yield									
US 10 year governement bond yield	3.0%									
Market risk premium										
Japan	5.0%									
USA	5.5%									
Brazil	7.7%									
Argentina	9.9%									
Germany	5.4%									
China	9.4%									
Average	**7.2%**									
Cost of Equity	**9.06%**									
Cost of debt estimation										
Average net financial expenses	1.0%									
We use the average net fianncial expenses	**1.0%**									
Tax rate estimation										
Average historical tax rate	42.2%									
Capital Structure										
Equity	1,120,797.0	1,176,147.0	1,165,672.0	1,417,348.0	1,862,964.0	1,801,007.3	1,966,614.9	2,109,510.1	2,226,321.1	2,299,016.2
Net Interesting Bearing Debt	921,231.5	654,717.0	745,326.0	692,294.2	434,060.5	419,716.9	458,311.0	491,612.1	518,834.4	535,775.7
Equity/EV		0.59	0.63	0.64	0.74	0.81	0.81	0.81	0.81	0.81
Debt/EV		0.41	0.37	0.36	0.26	0.19	0.19	0.19	0.19	0.19
WACC estimate	**7.46%**									

JPY Million Bridgestone Corporation - Valuation	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Valuation date: 1/1-2014										
WACC						7.5%	7.5%	7.5%	7.5%	7.5%
Discounted Cash Flow										
Free cash flow						354,287.0	71,706.4	102,674.2	137,580.7	201,173.1
Less Minority interests' Net Income						(12,140.3)	(12,036.5)	(12,156.9)	(12,269.6)	(12,670.2)
Growth in terminal period										3.3%
Discount factors						0.931	0.866	0.806	0.750	17.870
PV of free cash flows						329,687.2	62,094.3	82,737.4	103,167.9	
PV of free cash flows, forecast period					577,686.7					
PV of free cash flows, terminal period					3,594,910.1					
Enterprise Value					**4,172,596.9**					
Net interest bearing debt					434,060.5					
Less PV of Minority interests' Net Income					(267,130.1)					
Equity Value					**3,471,406.2**					
Ordinary shares outstanding, millions					813.1					
Estimated share price, JPY					**4,269.34**					
Economic Value Added										
Invested Capital	2,042,028.5	1,830,864.0	1,910,998.0	2,109,642.2	2,297,024.5	2,220,724.2	2,424,925.9	2,601,122.2	2,745,155.5	2,834,791.8
NOPAT	13,161.7	123,504.3	129,793.2	191,319.1	275,411.6	277,986.7	275,908.1	278,870.5	281,614.0	290,809.4
Less Minority interests' Net Income						(12,140.3)	(12,036.5)	(12,156.9)	(12,269.6)	(12,670.2)
EVA						94,452.1	98,170.5	85,775.8	75,259.7	73,307.3
Growth in terminal period										3.3%
Discount factors						0.931	0.866	0.806	0.750	17.870
PV of EVA						87,893.8	85,010.9	69,120.2	56,435.1	
PV of EVA, forecast period					298,460.1					
PV of EVA, terminal period					1,309,982.1					
Invested Capital, t0					2,297,024.5					
Enterprise Value					**3,905,466.8**					
Net interest bearing debt					434,060.5					
Equity Value					**3,471,406.2**					
Ordinary shares outstanding, millions					813.1					
Estimated share price, JPY					**4,269.34**					
Multiples										
EV/Sales										
Enterprise Value					4,172,596.9					
Sales, 2014					3,769,688.1					
Sales, 2015					4,005,827.6					
EV/Sales, 2014					1.11x					
EV/Sales, 2015					1.04x					

JPY Million Bridgestone Corporation - Valuation	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
EV/EBITDA										
Enterprise Value					4,172,596.9					
EBITDA, 2014					640,847.0					
EBITDA, 2015					660,961.6					
EV/EBITDA, 2014					6.51x					
EV/EBITDA, 2015					6.31x					
EV/EBIT										
Enterprise Value					4,172,596.9					
EBIT, 2014					409,111.3					
EBIT, 2015					406,052.3					
EV/EBIT, 2014					10.20x					
EV/EBIT, 2015					10.28x					
P/E										
Equity Value					3,471,406.2					
Total Income, 2014					275,027.1					
Total Income, 2015					272,676.4					
P/E, 2014					12.62x					
P/E, 2015					12.73x					

JPY Million

Bridgestone Corporation - Ratios	**FY 2009**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**	**EY 2014**	**EY 2015**	**EY 2016**	**EY 2017**	**EY 2018**
Invested Capital	2,042,028.5	1,830,864.0	1,910,998.0	2,109,642.2	2,297,024.5	2,220,724.2	2,424,925.9	2,601,122.2	2,745,155.5	2,834,791.8
Net Sales	2,597,002.0	2,861,615.0	3,024,356.0	3,039,738.0	3,568,091.0	3,769,688.1	4,005,827.6	4,269,780.6	4,521,549.5	4,669,189.6
EBIT	75,712.0	166,450.0	191,322.0	285,995.0	438,132.0	409,111.3	406,052.3	410,412.0	414,449.6	427,982.5
EBT	55,764.0	154,607.0	183,037.0	278,424.0	435,816.0	404,755.7	401,296.2	405,310.3	409,065.4	422,422.4
NOPAT	13,161.7	123,504.3	129,793.2	191,319.1	275,411.6	277,986.7	275,908.1	278,870.5	281,614.0	290,809.4
Net Interesting Bearing Debt	921,231.5	654,717.0	745,326.0	692,294.2	434,060.5	419,716.9	458,311.0	491,612.1	518,834.4	535,775.7
Net financial expenses	(19,948.0)	(11,843.0)	(8,285.0)	(7,571.0)	(2,316.0)	(4,355.6)	(4,756.1)	(5,101.7)	(5,384.2)	(5,560.0)
Equity	1,120,797.0	1,176,147.0	1,165,672.0	1,417,348.0	1,862,964.0	1,801,007.3	1,966,614.9	2,109,510.1	2,226,321.1	2,299,016.2
Total Income	1,044.0	98,914.0	102,970.0	171,606.0	202,054.0	275,027.1	272,676.4	275,403.9	277,955.5	287,031.5
Tax shield	16,480.3	3,055.6	2,664.4	2,506.3	860.2	1,396.0	1,524.4	1,635.2	1,725.7	1,782.0
Total non-recurring items	(20,398.0)	(12,930.0)	(24,258.0)	(10,372.0)	(95,718.0)	0.0	0.0	0.0	0.0	0.0
Tax shield on non-recurring items	16,852.0	3,336.1	7,801.3	3,433.5	35,549.3	0.0	0.0	0.0	0.0	0.0
Minority Interests	(5,104.0)	(6,209.0)	(4,746.0)	(7,710.0)	(11,733.0)	0.0	0.0	0.0	0.0	0.0
Days in a year	365.0									
Ratios, before tax										
ROIC										
Invested Capital	2,042,028.5	1,830,864.0	1,910,998.0	2,109,642.2	2,297,024.5	2,220,724.2	2,424,925.9	2,601,122.2	2,745,155.5	2,834,791.8
EBIT	75,712.0	166,450.0	191,322.0	285,995.0	438,132.0	409,111.3	406,052.3	410,412.0	414,449.6	427,982.5
ROIC		8.6%	10.2%	14.2%	19.9%	18.1%	17.5%	16.3%	15.5%	15.3%
Profit Margin										
Net Sales	2,597,002.0	2,861,615.0	3,024,356.0	3,039,738.0	3,568,091.0	3,769,688.1	4,005,827.6	4,269,780.6	4,521,549.5	4,669,189.6
EBIT	75,712.0	166,450.0	191,322.0	285,995.0	438,132.0	409,111.3	406,052.3	410,412.0	414,449.6	427,982.5
Profit Margin		5.8%	6.3%	9.4%	12.3%	10.9%	10.1%	9.6%	9.2%	9.2%
Turnover of Invested Capital										
Invested Capital	2,042,028.5	1,830,864.0	1,910,998.0	2,109,642.2	2,297,024.5	2,220,724.2	2,424,925.9	2,601,122.2	2,745,155.5	2,834,791.8
Net Sales	2,597,002.0	2,861,615.0	3,024,356.0	3,039,738.0	3,568,091.0	3,769,688.1	4,005,827.6	4,269,780.6	4,521,549.5	4,669,189.6
Turnover of Invested Capital		1.48	1.62	1.51	1.62	1.67	1.72	1.70	1.69	1.67
Turnover of Invested Capital, days		247.0	225.8	241.4	225.4	218.7	211.6	214.8	215.8	218.1
ROIC, check										
Profit Margin		5.8%	6.3%	9.4%	12.3%	10.9%	10.1%	9.6%	9.2%	9.2%
Turnover of Invested Capital		1.48	1.62	1.51	1.62	1.67	1.72	1.70	1.69	1.67
ROIC		8.6%	10.2%	14.2%	19.9%	18.1%	17.5%	16.3%	15.5%	15.3%
Net borrowing cost										
Net Interesting Bearing Debt	921,231.5	654,717.0	745,326.0	692,294.2	434,060.5	419,716.9	458,311.0	491,612.1	518,834.4	535,775.7
Net financial expenses	(19,948.0)	(11,843.0)	(8,285.0)	(7,571.0)	(2,316.0)	(4,355.6)	(4,756.1)	(5,101.7)	(5,384.2)	(5,560.0)
Net borrowing cost		1.5%	1.2%	1.1%	0.4%	1.0%	1.1%	1.1%	1.1%	1.1%
Spread										
ROIC		8.6%	10.2%	14.2%	19.9%	18.1%	17.5%	16.3%	15.5%	15.3%
Net borrowing cost		1.5%	1.2%	1.1%	0.4%	1.0%	1.1%	1.1%	1.1%	1.1%
Spread		7.1%	9.0%	13.2%	19.5%	17.1%	16.4%	15.3%	14.4%	14.3%

JPY Million Bridgestone Corporation - Ratios	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Leverage										
Net Interesting Bearing Debt	921,231.5	654,717.0	745,326.0	692,294.2	434,060.5	419,716.9	458,311.0	491,612.1	518,834.4	535,775.7
Equity	1,120,797.0	1,176,147.0	1,165,672.0	1,417,348.0	1,862,964.0	1,801,007.3	1,966,614.9	2,109,510.1	2,226,321.1	2,299,016.2
Leverage		0.69	0.60	0.56	0.34	0.23	0.23	0.23	0.23	0.23
ROE										
Equity	1,120,797.0	1,176,147.0	1,165,672.0	1,417,348.0	1,862,964.0	1,801,007.3	1,966,614.9	2,109,510.1	2,226,321.1	2,299,016.2
EBT	55,764.0	154,607.0	183,037.0	278,424.0	435,816.0	404,755.7	401,296.2	405,310.3	409,065.4	422,422.4
ROE		13.5%	15.6%	21.6%	26.6%	22.1%	21.3%	19.9%	18.9%	18.7%
ROE check		13.5%	15.6%	21.6%	26.6%	22.1%	21.3%	19.9%	18.9%	18.7%
Ratios, after tax										
ROIC										
Invested Capital	2,042,028.5	1,830,864.0	1,910,998.0	2,109,642.2	2,297,024.5	2,220,724.2	2,424,925.9	2,601,122.2	2,745,155.5	2,834,791.8
NOPAT	13,161.7	123,504.3	129,793.2	191,319.1	275,411.6	277,986.7	275,908.1	278,870.5	281,614.0	290,809.4
ROIC		6.4%	6.9%	9.5%	12.5%	12.3%	11.9%	11.1%	10.5%	10.4%
Profit Margin										
Net Sales	2,597,002.0	2,861,615.0	3,024,356.0	3,039,738.0	3,568,091.0	3,769,688.1	4,005,827.6	4,269,780.6	4,521,549.5	4,669,189.6
NOPAT	13,161.7	123,504.3	129,793.2	191,319.1	275,411.6	277,986.7	275,908.1	278,870.5	281,614.0	290,809.4
Profit Margin	0.5%	4.3%	4.3%	6.3%	7.7%	7.4%	6.9%	6.5%	6.2%	6.2%
Turnover of Invested Capital										
Invested Capital	2,042,028.5	1,830,864.0	1,910,998.0	2,109,642.2	2,297,024.5	2,220,724.2	2,424,925.9	2,601,122.2	2,745,155.5	2,834,791.8
Net Sales	2,597,002.0	2,861,615.0	3,024,356.0	3,039,738.0	3,568,091.0	3,769,688.1	4,005,827.6	4,269,780.6	4,521,549.5	4,669,189.6
Turnover of Invested Capital		1.48	1.62	1.51	1.62	1.67	1.72	1.70	1.69	1.67
Turnover of Invested Capital, days		247.0	225.8	241.4	225.4	218.7	211.6	214.8	215.8	218.1
ROIC, check										
Profit Margin	0.5%	4.3%	4.3%	6.3%	7.7%	7.4%	6.9%	6.5%	6.2%	6.2%
Turnover of Invested Capital		1.48	1.62	1.51	1.62	1.67	1.72	1.70	1.69	1.67
ROIC, check		6.4%	6.9%	9.5%	12.5%	12.3%	11.9%	11.1%	10.5%	10.4%
Net borrowing cost										
Net Interesting Bearing Debt	921,231.5	654,717.0	745,326.0	692,294.2	434,060.5	419,716.9	458,311.0	491,612.1	518,834.4	535,775.7
Net financial expenses	(19,948.0)	(11,843.0)	(8,285.0)	(7,571.0)	(2,316.0)	(4,355.6)	(4,756.1)	(5,101.7)	(5,384.2)	(5,560.0)
Tax shield	16,480.3	3,055.6	2,664.4	2,506.3	860.2	1,396.0	1,524.4	1,635.2	1,725.7	1,782.0
Net borrowing cost		1.1%	0.8%	0.7%	0.3%	0.7%	0.7%	0.7%	0.7%	0.7%
Cost of non-recurring items and minority interest										
Net Interesting Bearing Debt	921,231.5	654,717.0	745,326.0	692,294.2	434,060.5					
Total non-recurring items	(20,398.0)	(12,930.0)	(24,258.0)	(10,372.0)	(95,718.0)					
Tax shield on non-recurring items	16,852.0	3,336.1	7,801.3	3,433.5	35,549.3					
Minority Interests	(5,104.0)	(6,209.0)	(4,746.0)	(7,710.0)	(11,733.0)					
Cost of non-recurring items and minority interest		2.0%	3.0%	2.0%	12.8%					

JPY Million Bridgestone Corporation - Ratios	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	EY 2014	EY 2015	EY 2016	EY 2017	EY 2018
Spread										
ROIC		6.4%	6.9%	9.5%	12.5%	12.3%	11.9%	11.1%	10.5%	10.4%
Net borrowing cost		1.1%	0.8%	0.7%	0.3%	0.7%	0.7%	0.7%	0.7%	0.7%
Cost of non-recurring items and minority interest		2.0%	3.0%	2.0%	12.8%	0.0%	0.0%	0.0%	0.0%	0.0%
Spread		3.3%	3.1%	6.8%	-0.5%	11.6%	11.1%	10.4%	9.8%	9.7%
Leverage										
Net Interesting Bearing Debt	921,231.5	654,717.0	745,326.0	692,294.2	434,060.5	419,716.9	458,311.0	491,612.1	518,834.4	535,775.7
Equity	1,120,797.0	1,176,147.0	1,165,672.0	1,417,348.0	1,862,964.0	1,801,007.3	1,966,614.9	2,109,510.1	2,226,321.1	2,299,016.2
Leverage		0.69	0.60	0.56	0.34	0.23	0.23	0.23	0.23	0.23
ROE										
Equity	1,120,797.0	1,176,147.0	1,165,672.0	1,417,348.0	1,862,964.0	1,801,007.3	1,966,614.9	2,109,510.1	2,226,321.1	2,299,016.2
Total Income	1,044.0	98,914.0	102,970.0	171,606.0	202,054.0	275,027.1	272,676.4	275,403.9	277,955.5	287,031.5
ROE		8.6%	8.8%	13.3%	12.3%	15.0%	14.5%	13.5%	12.8%	12.7%
ROE, check		8.6%	8.8%	13.3%	12.3%	15.0%	14.5%	13.5%	12.8%	12.7%