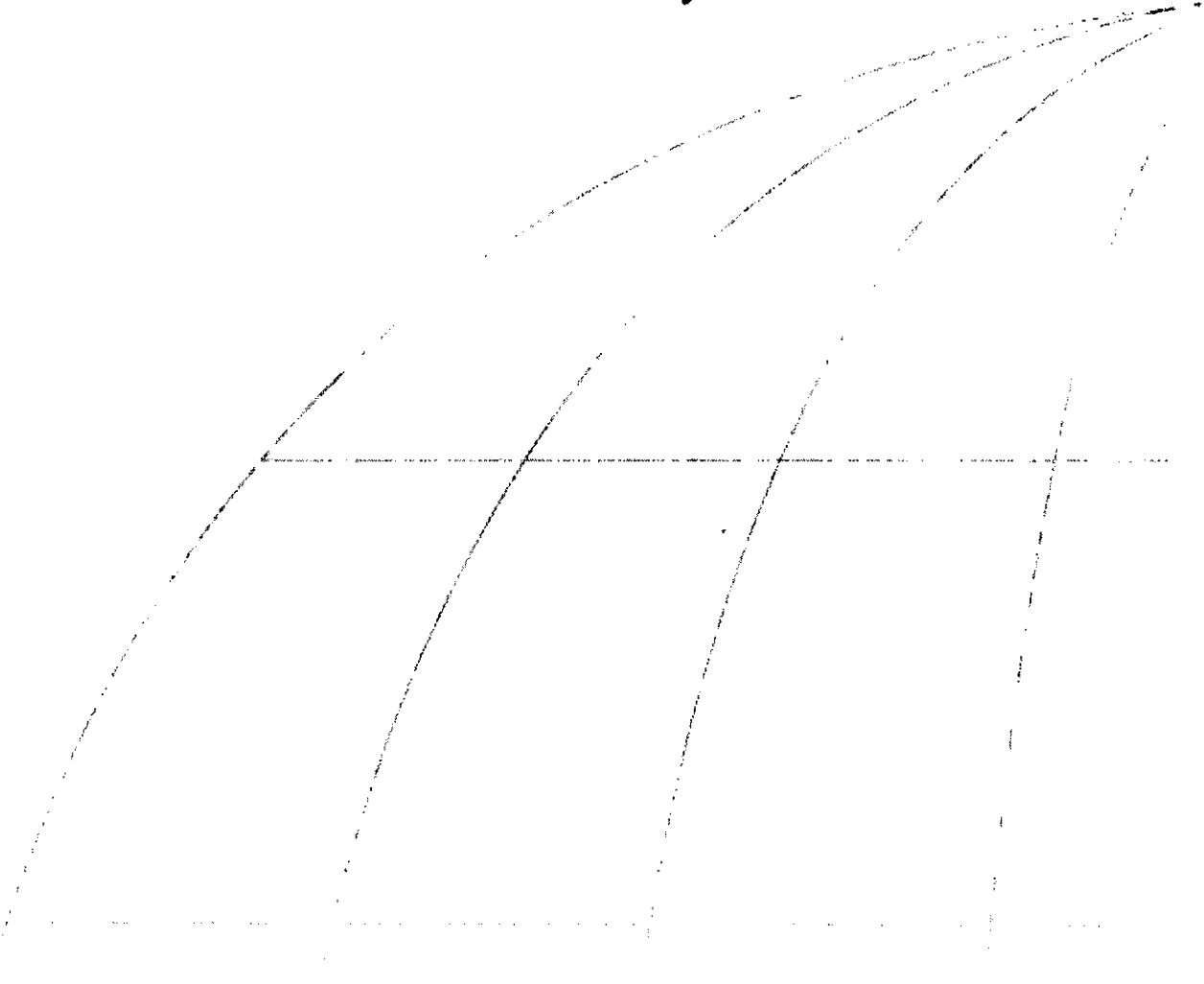


# INSEAD-CEDEP

## Michelin and the Global Tire Industry in 1999



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This case was written by Karel Cool, The BP Chaired Professor of European Competitiveness, and Francesca Gee, Research Associate, both at INSEAD. It is intended to be used as a basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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On September 8, 1999, Michelin, the world's leading maker of automotive tires, unveiled excellent first-half results: net profits had risen by 20% to FF2.1 billion. In the same breath, the company announced 7,500 job cuts across Europe, equivalent to 10% of its European workforce, in order to increase productivity by 20% over the next three years. "In this period of world-wide consolidation, it is imperative that we reinforce our leadership and our efficiency," it declared.

The announcement set off a storm of protest. "I do not believe that this decision is a given irreversible," commented the Socialist Prime Minister, Lionel Jospin. "We must all mobilise when this kind of decision is considered." Although Jospin acknowledged that the days when the State had to authorise redundancies were over, his remarks raised fears of a government-backed strike. Michelin shares rose by 12.6% but only a few days later, a court ordered Michelin to suspend a layoff procedure at one of its 24 plants in France.

While the announced cutbacks seemed inexplicable to many, the company's new head, Edouard Michelin, knew that the good half-year results were due to exceptional buoyancy in the car and truck markets and to sharp falls in raw material costs. He also knew that such favourable conditions might not last.

Edouard Michelin, aged 36 and the fourth generation Michelin to head the group, had succeeded his father François only three months earlier. The new plan was his first major strategic decision. In February 1999, archrival Goodyear had unveiled an alliance with Japanese tire maker Sumitomo Rubber that would relegate Michelin to second place worldwide. Tie-ups were being hatched across the industry and a new period of restructuring was looming. As the 20<sup>th</sup> century drew to an end, the tire industry looked set for another mega-battle. Wrote an industry expert: "If an entrepreneur developed a business plan which promised the returns that the tire industry has actually been making over the last decade, no venture capitalist would agree to finance it".<sup>1</sup> The scion of the House of Michelin faced a significant challenge.

## **The Tire Industry: A History**

While the concept of air-filled tires dates from 1846, the tire industry was born at the end of the 19<sup>th</sup> century when several firms started manufacturing bicycle tires in both Europe and the US. The most innovative companies would later become industry leaders: Britain's Dunlop invented the original rubber tire, with a carcass made of fabric layers. In the US Goodyear patented the first tubeless pneumatic tire in 1903. France's Michelin developed the removable tire and Germany's Continental was the first to develop tread patterns in 1904.

Quality improved dramatically during the first half of the 20<sup>th</sup> century. In the 1920s, carbon black was introduced. A tire's average lifespan under normal conditions increased from nine months in 1910 to three years by 1937. The development of synthetic rubber (butadiene) in the 1930s and 40s further improved the quality of raw materials while reducing their cost.

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<sup>1</sup> Neil Mullineux, *World Tire industry*, EIU, 1999.

### **Michelin's Radial Innovation**

Most innovations in tires had been incremental rather than revolutionary but there was one major exception: the radial tire launched by Michelin in 1946. The radial had two to three times the lifespan of a traditional 'bias' (or 'cross-ply') design and it reduced fuel consumption dramatically. It was also safer than the bias tire which was prone to blowouts. However, production required massive investment in new facilities and rivals, especially US giants Goodyear and Firestone, which had made huge investments to produce bias tires, did all they could to delay acceptance. In 1966, Armstrong Rubber Company launched a higher quality bias tire that incorporated a belt between the plies and the tread, and other US manufacturers rallied around this bias belted tire. Despite its obvious inferiority to the radial, the bias belted tire achieved rapid acceptance in the United States, equipping 82% of new cars by 1972.

The radial did eventually succeed. Initially, demand built up as Americans became familiar with radials mounted on imported cars. Prices also fell as Michelin gained production experience. In the early 1970s, the French company built two dedicated plants (in Canada in 1971 and in the US in 1975) to make radials. The 1973 oil shock made the radial's fuel savings even more attractive. Eventually, US manufacturers were forced to develop their own radials and invest massively in new plants. Goodyear for instance devoted an estimated US\$2 billion to convert to radial production in the early 1970s. It was now a race for survival, and major tire makers rushed to bring their own radials to market. The results in terms of product quality were often disastrous: abnormally high rates of tread reparations and blowouts forced Firestone to recall its first radial line, the 500 series, in 1978 at a cost of US\$147 million. In Europe, both Kléber (France) and Metzeler (Austria) had to recall their products.

### **A Painful Round of Consolidation**

Firestone's difficulties hurt its share price, attracting interest from 'corporate raiders'. In 1981, the Tisch brothers accumulated a large holding of Firestone shares, prompting the company to buy back its stock. The following year, Firestone suffered a new round of 'greenmail' from raider Carl Icahn and had to buy back yet more stock to remain independent. Icahn repeated his raiding strategy in 1983 on Goodrich which also defended itself by buying back its stock and by splitting its tire and chemical businesses. In 1985 Icahn continued, this time targeting Uniroyal, which subsequently went private in a leveraged buy-out.

The most spectacular shareholder action was against Goodyear in 1986 by British businessman Sir James Goldsmith. After three years of high earnings, Goodyear had gone on a spending spree, acquiring various oil and aerospace businesses. Goldsmith's line of attack was that Goodyear should re-focus on tire making. Goodyear fought back but eventually adopted the very course of action proposed by Goldsmith. The company sold its new businesses but had to spend US\$2.6 billion to buy back the shares accumulated by Goldsmith and friends. Goodyear's debt spiralled from US\$1.1 billion at the end of 1985 to US\$3.6 billion two years later.

The tire industry entered a painful round of consolidation as competitors fought over acquisitions. 1986 saw a merger between Goodrich and Uniroyal. While Uniroyal was strong in original equipment (OE) and the supply of private-label tires, Goodrich had a strong aftermarket brand, especially in high-performance tires. The two had few manufacturing

synergies, however, leaving little scope for rationalisation. After the merger, earnings continued to disappoint.

In Europe, Dunlop was left bankrupt after a failed merger with Pirelli and had to find a new partner. In 1984, it sold its European and North American interests to Sumitomo Rubber for US\$240 million. In 1987, as the US dollar continued its plunge against other currencies, Continental purchased General Tire of the US and announced a strategic partnership with two Japanese manufacturers, Yokohama and Toyo, to develop truck tire plants in the US. Pirelli bid US\$1.8 billion for Firestone but Bridgestone, which in 1983 had bought a Firestone plant in Tennessee, entered a counter-bid and won the day, forking out a hefty US\$2.6 billion. Pirelli consoled itself with the acquisition of the much smaller Armstrong tire.

By 1989, while a price war fed by overcapacity was raging, Michelin, then the world number two, overcame its long-standing reluctance to make acquisitions and purchased Uniroyal-Goodrich for US\$1.5 billion, thus becoming the world's largest tire maker. By then, Uniroyal-Goodrich had already sold its European operations and licensed the Uniroyal brand in Europe to Continental. Lastly, in 1991, Continental rebuffed a bid by Pirelli.

The restructuring of the industry then came to a halt. Goodyear, burdened by heavy debt, was the only major player who had not been able to afford a significant acquisition. Exhibit 1 shows changes in the industry's structure over the last 20 years.

### **The Tire Industry in the 1990s**

The price war had left the industry reeling and a painful period of restructuring and cost cutting followed. Overall industry productivity increased through changes such as the introduction of continuous shift working. By 1993, Michelin, Bridgestone and Goodyear together had 52% of the global market. The top ten firms had about 80% of world production. This would not change significantly until 1999 (See Exhibits 2 and 3).

After experiencing a lean period from 1990-93, the tire industry returned to profitability in 1994 as the market tightened (cuts in global capacity had produced a shortage) and natural rubber prices surged, enabling manufacturers to impose higher prices. Between 1994 and 1998 retail prices for tires rose every year. Goodyear led the way in North America with 3-5% increases in November 1994, quickly followed by Michelin (3%). By 1998, retail prices had increased by an aggregate 13.6% in Europe and 21.5% in North America. The big change however was in the original equipment market where the indexing of prices resulted in upward corrections of 20% or more. This enabled leaders Goodyear and Michelin not only to make up for the surge in raw material prices but also to improve margins.

At the same time, several tire makers formed alliances and joint ventures. In Europe, they started moving into the former Communist states to create a low-cost manufacturing base and establish themselves in growth markets. Sumitomo and Continental were the first to make acquisitions, followed by Goodyear and Michelin.

In 1997, a severe crisis hit most of Asia and other emerging markets around the world. Desperate for foreign currencies, tire makers in those countries reacted by increasing their exports, flooding developed countries with cheap tires. By 1999, Asia was well on its way to recovery. Meanwhile, major developed markets were enjoying strong growth: in North America, truck sales had grown by 9.3% in the first half of the year, while passenger car sales

increased by 6%; in Europe, the increases were 2.4% and 3.7% respectively. (Exhibit 4 gives sales growth data.) The tire industry had a turnover of US\$70 billion.

## **The Global Market for Tires**

### **Market Segments: Passenger Car Tires and Truck Tires**

Of the nearly one billion tires made in 1998, 700 million were for passenger cars and 250 million for trucks; the balance being made up of agricultural or other technical tires. Exhibit 5 gives tire production by type; Exhibit 6 shows market size in Asia, Europe and North America. Car owners, particularly in Europe, were increasingly demanding high performance tires, designed to provide more 'grip.' They were more expensive, produced higher margins and tended to wear down faster.

Truck tires were a specific segment. Because they made up as much as 5% of the total costs of running a commercial vehicle fleet, large truck fleets often bought tires in bulk from manufacturers. Differences in performance, such as durability and fuel economy, could prove critical. Retreading could considerably increase the lifespan of a truck tire, which could be driven up to 600,000 miles (970,000 km).

Demand for truck tires was driven by underlying economic conditions, much more so than demand for passenger car tires. In a recession, trucks drove fewer miles, reducing tire wear (especially since fleets used to swap tires when trucks lay idle). Demand picked up very quickly at the end of a downturn.

Although the truck tire segment differed significantly from the much larger passenger car tire segment, there were some major synergies: technological improvements on large tires were often used for smaller tires. Large retailers also preferred to buy from manufacturers that provided full lines of both passenger car and truck tires.

### **Market Segments: Original Equipment and Replacement**

Another dimension of market segmentation was between tires sold to original equipment (OE) manufacturers, to be fitted onto new vehicles, and those sold in the replacement market. About 30% of passenger car tires and 20% of truck tires were sold in the OE market (See Exhibit 7).

The OE market was smaller and far less profitable. Margins were low as a result of carmakers' buying power and because tire makers believed car owners would replace their tires with the brand originally fitted on their car.<sup>2</sup> (In the truck segment, virtually all fleets replaced worn-out tires with the original brand.) Most major tire manufacturers started making losses on OE sales during the price war of the late 1980s. Even after price rises in

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<sup>2</sup> *Tires: Wearing thin*, Dresdner Kleinwort Benson Securities, 20 July 1999. This was truer in Europe than in the US, where drivers easily changed brands.

1994-98, OE sales remained a low-margin business. Costly research and development work was mostly carried out for OE manufacturers that had a strong influence on product design. OE sales were also highly cyclical since they were linked to sales of new vehicles.

The replacement market was both bigger and more profitable. In the early 1980s, a tire sold as a replacement cost about 35% more than in the OE market and the gap widened to nearly 100% during the price war. For truck tires, the price differential was about 50%. As the battle for market share raged in the late 1980s, retail sales margins fell too. Replacement sales were also more stable. Customer needs were more varied: motorists, for instance, were demanding new products such as high-performance tires and winter tires; safety was increasingly a concern.

### **Regional Differences**

Geographically, the market was concentrated in North America, Western Europe and Japan that accounted for over three-quarters of passenger car tire sales and half of all truck tires sales. North America and Europe dominated the passenger car market, while Asia dominated the market for light and standard truck tires. There were other differences between regions. Japanese tire makers were relatively more dependent on their domestic auto industry, hence on OE sales, while in North America, OE accounted for only 12% of total sales. (The US had a larger replacement market because vehicles there drove longer distances and tire quality was generally poorer.) The US also had a more fragmented replacement market, with budget private brands and associate brands accounting for half of total sales. (See Exhibits 8 and 9 for a breakdown of car and truck tire sales in the OE and RE segments per region in 1998 as well as an estimate for 2005).

### **Making Tires**

#### **Raw Materials**

A tire was made up of about 100 components. Natural and synthetic rubbers accounted for about 50% of raw materials costs although the proportion of natural was falling steadily (to about 47% of total rubber weight). More synthetic rubber was used for passenger car tires and more natural rubber was used for utility tires. Carbon black, which gave the tire its rigidity, made up about one quarter of purchases. All in all, petroleum derivatives made up about 60% of purchases. Michelin had developed with Rhône-Poulenc a silica compound that replaced carbon black in low rolling resistance ("green") tires. Steel cord, used to make radial belts and the carcass of larger tires, was also a major component. Many tire manufacturers had a degree of vertical integration, owning hevea plantations and synthetic rubber production plants, but none was entirely self-sufficient.

Since 1979, natural rubber prices had been propped up by the INRO cartel, whose members were both producer countries and consumers. This had encouraged over-production and the perpetuation of nearly half-a-million small, inefficient rubber plantations. Prices soared in

1994 and 1995 as world demand surged. After mid-1998, they fell precipitously, spurred by the collapse of INRO in 1999.

Over three-quarters of world output of synthetic rubber was absorbed by the tire industry. The price of the main ingredients, styrene and butadiene (both petroleum derivatives), soared in 1994-95 due to saturated capacity in the chemicals industry. Afterwards it fell steadily in line with oil prices.

In the first half of 1999 alone, raw materials costs, which represented roughly 20% of sales, dropped by 7%, reflecting a 13% fall in natural rubber prices and lower crude oil prices. (This amounted to a 1.5% fall in total production costs.) About two thirds of purchases were either dollar-denominated or directly affected by dollar fluctuations.

### **Research and Development**

To be a full line tire provider required continued investment in R&D to meet the demands of OE manufacturers in an increasingly segmented end-market. The major players spent on average 2.8% of sales on R&D. (Exhibit 10)

Tire design was a compromise between various properties, with each market segment preferring a different set of characteristics. The main qualities sought were good tread wear, low rolling resistance and superior traction. Improving any of these usually meant compromising other qualities. For instance, it was not possible to reduce rolling resistance too much without affecting braking performance.

Major changes were in the making: carmakers were planning to start outsourcing tire-wheel assembly that would itself become part of a larger suspension system including brakes, springs and shock absorbers.<sup>3</sup> Computers played a growing role in simulating vehicle dynamics; they were used to optimise the strength, durability and vehicle dynamics behaviour of new systems before actual prototypes were built.

The most dramatic recent innovation was the run-flat tire. While it seemed the perfect answer to carmakers' desire to eliminate the cumbersome spare tire, it had a major drawback: few motorists were actually able to detect when a tire lost pressure. This meant that run-flats would have to be fitted with pressure monitoring systems. Goodyear had been the first in this new segment with the EMT, priced about 20% more than a radial tire. Since then, Michelin had introduced the more sophisticated PAX system, which could run longer while offering better fuel economy. Bridgestone's offering was the Firehawk SH30.

Another major area of development was the intelligent tire where a chip in the tire read out and kept records of exact tire pressures and temperatures. This promised to be particularly useful for truck fleets as it would obviate the need for manual inspections that were time-consuming and far less reliable.

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<sup>3</sup> 'Computer skills needed in Tires', *European Rubber Journal*, Global Tire Report, 1998.

## **Manufacturing**

Tire plants were very labour-intensive and only became profitable when running at very high capacity utilisation levels. In 1999, industry-wide overcapacity was estimated at nearly 30%. See Exhibit 11 for plant locations of the major players. Major manufacturers all developed their own machinery. Continuous work with three shifts, seven days a week was a major change introduced in the 1990s. The industry as a whole had probably doubled productivity since 1994, having already doubled it in the five previous years, and further gains were expected.

As carmakers increasingly moved towards global construction, they expected tire suppliers to produce for them locally, albeit to high international quality standards. In order to differentiate their models, many OEMs now requested tires to be designed specifically for a particular model, sometimes in a particular market. This forced tire manufacturers to produce smaller runs.

In 1999, the five biggest tire makers were developing new manufacturing processes that would, they hoped, dramatically reduce capital and labour costs. These processes were closely guarded secrets. Michelin had led the way with its C3M process. Goodyear's Impact process and Bridgestone's Tochigi – the latter believed to be completely automated – also claimed huge savings. “A paradigm shift is taking place”, wrote industry expert Neil Mullineux,<sup>4</sup> adding that the new processes would further widen the gap between the three leaders and the followers. However, implementation had not taken place quickly.

## **Marketing**

Customers for replacement car tires were commonly divided into three groups. While price was an important variable, only 20-25% of buyers sought the lowest prices, regardless of brand or retail outlet. Most fell into either the “brand conscious” or “store reliant” categories.

In the truck tire market, technical criteria mattered more than brand image. Truck fleets were getting bigger. In the US, the trucking industry was increasingly concentrated, with 3% of fleets operating 50% of the vehicles on the road. This was leading to greater standardisation of tire fitments. In Europe concentration was less advanced, although in the UK, 1% of fleets already operated 40% of trucks.<sup>5</sup>

The Big Three's goal was to cover all segments, with different brands, so dealers could offer a full range. This strategy, also known as “good, better, best”, had been implemented in the US by both Michelin (with the Michelin - BF Goodrich - Uniroyal brand trio) and Bridgestone, whose brand was complemented by Dayton and Firestone. Goodyear had lacked a middle-market brand, but would soon have Sumitomo's widely known Dunlop brand.

Globally, each of the Big Three had some problems. Bridgestone, whose reputation in its home market was excellent, suffered from low recognition in Europe and North America, where Firestone was better known. Michelin was highly reputed worldwide, but its

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<sup>4</sup> Neil Mullineux, o.c., 1999.

<sup>5</sup> *Global Tire Report* 1997-98.



subsidiary brands were not: Goodrich was little known outside the US, Kléber was only strong in France, and Michelin had relinquished its mid-market Uniroyal brand in Europe to Continental. Goodyear was well positioned as a premium brand, but Kelly was not well known outside North America.

Private brand tires had captured a significant market share but were no longer seen as the major threat. They had grown vigorously in the 1970s and 1980s, especially in the US, but in the 1990s the majors fought back more aggressively with their own associate brands. In the US, private brands accounted for about 30% of the market; associate brands for 20%.

### **Distribution**

In distribution too, the major trend was consolidation, both at the wholesale and retail levels. Replacement tires had traditionally been sold through wholesalers or distributors, whose market share was steadily declining. As independent retailers consolidated, they increasingly purchased tires directly from the manufacturer. As a result, large US distributors were consolidating, and some were acquiring retail chains in order to protect their market share.

Distribution to end-consumers was dominated by independent dealers in all three major markets, as it had been since the early days. In fact, the share of independent dealers, large and small, had grown significantly in the 1980s, mainly at the expense of service stations. In the 1990s in North America, the 30 largest retail chains had about half of the market.<sup>6</sup> Smaller dealers rushed to join groups that provided volume buying and joint services such as advertising and training.<sup>7</sup> (Exhibit 12 shows retail market shares.)

In Europe, the top 25 independent dealers accounted for 25-30% of sales, and concentration was due to increase as British, German and other retail chains expanded beyond their home market. They often formed buying groups, pooling their buying and marketing functions to negotiate better terms. Kwik-Fit, a subsidiary of Ford Motor Company, was Europe's largest independent retailer with more than 1,600 shops under several brands: the flagship Kwik-Fit (in the UK, Ireland, Belgium, and Holland), Speedy (in France, Belgium, and Spain), Pitstop (in Germany), and a group of small chains that kept their local identities.<sup>8</sup> Multinational marketing cooperatives were also growing with networks such as Point S, Tecar and Vulcopneu attracting growing numbers of dealers in France, Germany, Italy and Spain with advantageous purchasing conditions and the prospect of regional marketing clout. They were a growing force behind the growth of private brands and leading outlets for cheaper tire imports, especially from Asia.<sup>9</sup>

In Japan, distribution was consolidating as the share of mass merchandisers such as Autobacs and Yellow Hat increased. (Exhibit 13 shows details.) There too, the growth of chains that negotiated large discounts or bulk orders threatened to erode the pricing power of manufacturers.

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<sup>6</sup> *Global Tire Report* 1998-99, p.21.

<sup>7</sup> *Modern Tire Dealer*, January 1997.

<sup>8</sup> Hoovers' Web site.

<sup>9</sup> *Global Tire Report*, 1996-97.

The tire makers needed the feedback provided by retail activities, and the marketing muscle afforded by a retail chain. They did not, however, aim at increasing their chains of company-owned outlets; franchising was seen as a better route as own stores were usually loss making or turning only a tiny profit. The situation was different in the truck segment where closer control was sought in order to better serve truck fleets, especially through services such as retreading.

### **Pricing**

In the OE market, prices were set through an auction process. Carmakers asked tire manufacturers to submit bids for a certain price and quantity. They then asked all bidders to match the lowest price. Supply contracts were typically for three years, with prices renegotiated every year. In replacement tires, the Big Three set prices in their domestic market.

Retail prices had fallen significantly. According to an industry expert, "tire prices... are below what they were five and 10 years ago. And the consumer is getting an unbelievably high quality, highly technical product for a very, very low price. However, when the consolidation moves (among dealers) are completed a higher price structure will result."<sup>10</sup>

## **Michelin's Competitors**

### **Goodyear Tire and Rubber**

Goodyear's origins dated back to 1898, when Frank and Charles Seiberling founded a tire and rubber company in Akron, Ohio, and named it after Charles Goodyear who had invented the vulcanisation process in 1839.<sup>11</sup> By 1916, when the pneumatic truck tire was introduced, Goodyear was the world's largest tire maker. In 1935 it acquired tire maker Kelly-Springfield, and two years later it began making tires from synthetic rubber. After the Second World War, Goodyear was a leader in new technologies such as polyester tire cord (1962).

It came under attack when Michelin's radial tires started making inroads in North America, and was forced to invest over US\$3 billion to develop its own radials in the late 1970s. Later, the company invested in oil and aerospace. After Goldsmith's 1986 hostile bid, the company was burdened by debt from buying back a large proportion of its shares and suffered greatly from the 80's recession, overcapacity and price-cutting.

Goodyear returned to profitability in 1991 after starting to supply private brands to Wal-Mart, Kmart and Sears and implementing drastic cost cutting through layoffs and plant closures. In 1996, chairman Samir Gibara had announced that its goal was to become the low cost

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<sup>10</sup> Saul Ludwig, in *Modern Tire Dealer*, January 1997.

<sup>11</sup> The heat treatment that binds the tire's many ingredients into a resilient structure and gives it its final size, shape and tread pattern.

producer among the majors, partly by building plants or acquiring companies in low-cost countries, but also by keeping US costs under tight control.

In 1999 Goodyear was poised to win back the global leadership position that it had held for much of its history, after unveiling in February a cleverly negotiated alliance with Sumitomo. Goodyear would receive Sumitomo's Dunlop brand in North America and Europe and a 10% stake in Sumitomo in exchange for its own operations in Japan, a 1.4% capital stake and US\$936 million in cash. The deal would enable Goodyear to rationalise the companies' production facilities, especially in Europe where it would become a strong number two. About

one-quarter of Goodyear's sales came from other rubber industrial and consumer products (belts, hoses, tank tracks) and from a wide range of synthetic rubber, resins, and organic chemicals. It owned more than 900 retail tire outlets in the US.

### **Bridgestone/Firestone**

Formed in 1931 by Shojiro Ishibashi (Ishibashi means "stone bridge" in Japanese), Bridgestone began making bicycles tires in 1946 and signed a technical assistance pact with Goodyear five years later. It experienced fast growth in the 1970s thanks to the expansion of the Japanese automotive industry.

The 1988 acquisition of Firestone was initially disastrous (General Motors immediately dropped Firestone as a supplier). Bridgestone only moved to cut production costs drastically in 1991. It imposed continuous shift working, alienating the United Rubber Workers (URW). For years, its US operations were plagued with labour disputes. However, continuous shifts did become the norm throughout the industry and in 1996 Bridgestone reached an agreement with the URW. (GM too returned, naming Bridgestone/Firestone 1995 Supplier of the Year.)

To improve its distribution, Bridgestone renamed in 1992 its 1,550 North American MasterCare auto service centres "Tire Zone at Firestone" and took the then unheard-of step of selling rival Michelin tires. Bridgestone's retail channels also included large US retailers such as Sears and Montgomery Ward and its own outlets in Japan.

Its new process technology, Tochigi, was believed to be revolutionary: a 5,060 sq. m. plant, opened at a cost of US\$22 million, could produce 2,500 passenger tires per day with only 18 people. Batch sizes could be as small as 30, and changes in size or type of model took only 30 seconds. It had 40 tire plants worldwide, and was boosting operations in emerging markets such as China, India and Russia. Aside from tires for heavy equipment (off-road mining vehicles) and aircraft, it made a variety of products: automotive belts and hoses, building materials, golf and tennis balls. Prior to the Goodyear-Sumitomo deal, its stated goal had been to win 20% of the world market by 2000 by becoming the clear number two in both Europe and the US.

### **Continental Gummi**

Well behind Michelin, Continental was the number two in Europe, its largest market by far. This position was now being challenged by the Goodyear-Sumitomo alliance. In 1998

Continental had taken the bold step of acquiring ITT's brake and chassis systems activities and was turning itself into a systems supplier with strong innovation capabilities. The synergies between tires and brake systems could give it a significant cost advantage in the growing area of vehicle control systems and in run-flat tires.

### **Sumitomo Rubber Industries**

Part of Sumitomo Group, one of the largest *keiretsu* in Japan, Sumitomo had gained a measure of internationalisation and widened its business portfolio thanks to its acquisition of Dunlop. More than half its sales were made in Japan; 24% came from non-tire businesses (sporting equipment and industrial components). Sumitomo had gone through a difficult patch in 1994 and 1995, with a long strike in the US and the earthquake in Kobe where its head office, main research centre and one plant were located. As a result it was highly indebted.

### **Pirelli**

Pirelli had recently been relaunched with two core businesses (tires and cables), and was pursuing a growth strategy in both. In tires, where it was a replacement market specialist, its global market share was weak, except in high-performance tires. Like Continental, its strategy was to develop technologically advanced tires, capable of commanding higher prices, while meeting demand for cheaper products from plants in Eastern Europe and other low-cost countries. Pirelli had a high market share in Latin America.

In cables, Pirelli had a much stronger position and was at the top of many high-tech fields. However synergies between the two businesses were few and the tire division had been seen as a possible acquisition target. Yet the company seemed determined to stick with tires for the time being, after announcing in February 1999 an agreement with Cooper that covered distribution, purchasing and marketing in North and Latin America.

### **The "Small Six"**

Several other players had a substantial tire production capacity, including three Japanese and two South Korean companies. Cooper Tire and Rubber had by far the best efficiency and profitability of all the major tire makers<sup>12</sup> despite its fast growth (50% in four years). A low-cost producer, it targeted budget replacement tires and private label production. Its strategy was to manufacture low-technology tires that required low investment and R&D spending. Its 1997 acquisition of UK company Avon, said to offer "enormous cost reductions and product enhancement opportunities", and the alliance with Pirelli reflected Cooper's desire to expand in Europe.

Hankook and Kumho, two South Korean companies that had grown together with their country's automotive industry, were low cost producers that could potentially threaten the majors. Their technology and products were catching up fast and they had significant market

<sup>12</sup> Coopers' net profit margin had slowed down slightly in 1998, but at 6.8% it was still well above the industry average. Goodyear's net profit margin was 5.4% and Michelin's 4.4%.

share in Europe (25% of the UK replacement market<sup>13</sup>). However, this dramatic rise, fuelled by years of heavy investment, had plunged them deeply into the red. They had been battered by the plunge of the Korean won in 1997 (they paid for purchases in dollars). Both remained strongly dependent on their home market which accounted for about 50% of sales. Kumho, the more diversified of the two, had such high gearing that it only survived with help from South Korea's banks.

Among Japanese players, Yokohama had less than 4% of the world market. Only 72% of total sales came from tires. Toyo, also highly diversified, had a noticeable presence in bus and heavy truck tires, and made three-quarters of its sales in Japan. A market follower, it struggled to improve its dismal financial performance. Ohtsu was 41%-controlled by Sumitomo Rubber, whose R&D department and sales and marketing staff it shared. It sold 75% of its output in Japan. See Exhibit 14 gives an overview of the profitability of the tire industry as a whole and the different groups of tire makers in specific. Exhibit 15 shows the market shares of the major competitors in Europe and North America. Exhibit 16 shows financial data on Goodyear, Bridgestone, Continental and Cooper.

### **Michelin et Cie: Company History**

Michelin, still controlled by the founding family, had revolutionised tire design with the invention of the radial tire and still enjoyed a formidable technical reputation. It was the least diversified of the Big Three, with 93% of its revenues from tires, but had a small (and profitable) sideline in maps and travel guides. Both the guides and the Michelin Man, Bibendum, had given it worldwide recognition.

The company began as an agricultural machinery business in Clermont-Ferrand in the Auvergne region of central France. In 1863 it started using rubber to make joints and seals. The Michelin brothers (André, 1853-1931, a successful businessman, and Edouard, 1854-1940, a Parisian artist) took over the company and in 1889 renamed it Compagnie Générale des Etablissements Michelin. That year a British cyclist touring the Auvergne punctured his Dunlop pneumatic tire and sought help from the brothers. After analysing the tire, Edouard found that filling them with air would make cycling more comfortable. Pneumatic tires were initially glued to the rims and required hours to change. In 1891 Edouard made a removable bicycle tire that could be changed in only 15 minutes.

The Michelins promoted their tires by persuading cyclists to use them in long-distance races. They made their first car tires for the 1895 Paris-Bordeaux-Paris motor race. In 1898 André realised that a stack of tires with arms resembled a man, and designed the now-famous Bibendum.<sup>14</sup> The Michelin Guide was launched in 1900 as a marketing tool; it was initially offered free of charge to motorists.

The company started its international expansion in 1905, when it opened an office in London, and soon built factories in Turin (1906) and New Jersey (1908). More plants were opened in

<sup>13</sup> *EIU*.

<sup>14</sup> It was shown holding a glass full of nails, with the Latin caption: "Nunc est bibendum" (Let's drink now), to underline the greater resistance to punctures of Michelin Tires.

the 1920s and 1930s in Germany, Argentina, Spain, Czechoslovakia and Belgium. Michelin's technological innovations included detachable rims and spare tires (1906), tubeless tires (1930), treads (1934), and modern low-profile tires (1937). During the 1930s depression Michelin accepted a majority stake in Citroën, later converted into a minority interest in Peugeot, in lieu of payment for tires.

Research conducted during the Second World War by Michelin produced substitutes for natural rubber and new tire designs. The radial, launched in 1946 as the X tire, was fitted on Citroëns in 1951. A second generation of radials (X-AS) was introduced in 1965, shortly before the patent on the X tire was due to expire. (The company believed that even without patent protection, its manufacturing know-how provided considerable competitive advantage.)

Once the radial had taken hold, it turned Michelin into a world leader. Although the company's expansion was largely confined to Europe in the 1950s, in the 1960s it grew worldwide. (Sears started selling Michelin radials in 1966.) Michelin was the world's 10<sup>th</sup> largest tire supplier in 1960, progressing to 6<sup>th</sup> by 1970 and 3<sup>rd</sup> in 1974. In 1978 it overtook Firestone to move into second place with 17% of the world market.

In 1971, Michelin exported over 40% of the output of its French plants; more than 75% of total sales were made outside France. The resulting transportation costs ate up most of its premium price margin. (Around that time, sales were growing by about 16% p.a. on an average operating margin of 13%.) The company decided to manufacture in North America and opened in 1971 a cluster of three radial plants (each plant was due to specialise in a specific stage of production) in Canada. This was followed by a similar cluster in South Carolina (1975). In both cases Michelin chose greenfield sites to avoid unionisation.

In 1975 Michelin introduced its third-generation radial, the TRX.<sup>15</sup> With performance levels far outrunning its rivals, it once more set world standards for engineering. But the TRX had a drawback: it was designed for smaller wheels and would only succeed if carmakers agreed to change wheel size. Michelin offered to share product specifications with other tire makers and to supply OEMs at a discount. The response was less than enthusiastic...

By the late 1970s, despite its investment in new radial plants, Michelin lagged in productivity as US rivals built increasingly efficient factories. Competitors could now claim that they made better tires. Pirelli's P6 and P7 ranges, which could be fitted on standard wheels, rivalled the TRX in looks and performance and the All Season tire developed by Goodyear was cutting into Michelin's US market share. The second oil crisis in 1980 plunged the company into the red. Between 1981 and 1984, Michelin lost nearly FF9 billion and in 1985 was forced to seek a FF4 billion distress credit; this was arranged at favourable interest rates – probably with help from the French government.

In 1983 Michelin embarked on the first of a long series of cost-cutting plans. This paternalistic employer was finding itself forced to cut capacity and reduce headcount. In 1985 favourable market conditions returned the company to profit (but only by FF1 billion). It finally dropped the TRX and replaced it with a new generation, the MX high performance tire. Profits hit a peak of FF2.6 billion in 1988. The cash flow helped reduce debt levels and interest charges (which fell from 8.2% of revenues in 1984 to 4.5% in 1986).

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<sup>15</sup> TR stands for "tension répartie", referring to the Tire's evenly distributed stress design.

Michelin was late in developing a strategy for Asia. In 1986 it set up a joint venture in South Korea with Woo-Pong that eventually failed. In 1987 the company built a plant in Thailand. Joint ventures in Japan (with Okamoto) and Malaysia followed in 1988 and 1989.

### **Uniroyal-Goodrich and Later Acquisitions**

By 1988 Michelin was not producing enough tires in North America and exports from France posed insoluble logistical problems, not to mention high costs. Its premium ranges had won market share in both OE and replacement in the US, but it lacked access to independent retail outlets. Meanwhile Uniroyal-Goodrich, which had an excellent distribution network, was looking for a buyer. In 1989 Michelin acquired the company for US\$1.52 billion (including US\$810 million in assumed debt). The acquisition turned Michelin into the world's largest tire manufacturer and the chief tire supplier to GM, whose needs it covered by more than 50%.

The acquisition was far from an unmitigated success. "Economies of scale really do matter in the tire business," wrote *The Economist*, "but Michelin seemed so obsessed with Uniroyal-Goodrich's market share in America that it paid far too high a price for a technologically backward company loaded with debt."<sup>16</sup> Uniroyal-Goodrich's entire production tool had to be restructured, at a cost of US\$4 billion. Michelin eventually decided to close down all of Uniroyal-Goodrich's bias tire plants - half the company's factories in the US. On top of the US\$4 billion capital investment, Michelin had to amortise US\$360 million in goodwill over 20 years. In one year, its debt doubled to FF44.7 billion. Michelin, which posted a FF5.2 billion loss for 1990, launched a drastic rationalisation program in the US, closing down aged plants, reducing the workforce and negotiating a new contract with the United Rubber Workers.

In 1991-92, Michelin implemented a new FF3 billion cost-cutting program, laying off 16,000 employees (including 4,900 in France) and putting an annual cap of FF3 billion on new investment. Another FF3.5 billion cost-reduction plan was unveiled in 1993, with 10,000 more staff laid off in Europe and North America (8% of the total workforce); European plants were also specialised and the Michelin and Uniroyal-Goodrich sales operations in North America merged. In 1995, Uniroyal-Goodrich was in working order at last.

Also in 1995, the company turned its efforts to a wide-ranging reorganisation effort under the aegis of young Edouard Michelin. Managers were asked to carry out cross-departmental audits over a six-month period. In February 1996, Edouard was ready to present the new organisation. The company's highly centralised regional structure was replaced with nine so-called 'tactical operational units' (TOUs), each covering a major product line. As profit centres, TOUs were accountable for their results. Each had its own product development, marketing, manufacturing and sales departments. International co-ordination was ensured by four regional executives, and 12 'group services' provided support to the TOUs. Only one area remained under central control: research and development. (The new structure is shown in Exhibit 17.) The company commented at the time: "The internationalisation of the car and tire markets calls for a consistent approach on all continents, while remaining close to the

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<sup>16</sup> June 30, 1990.

needs of each individual market.” Even more surprising to outsiders, for the first time Michelin unveiled an organisation chart in which key positions were filled by young executives.

After expanding in North America, Michelin turned to central Europe and to its perennial weak point, Asia. In 1995, it bought a majority interest in Polish tire manufacturer Stomil and the next year acquired 90% of Taurus, which made most of Hungary’s rubber. In 1996 it joined forces with Continental to make private-label tires for independent distributors and in 1997, it acquired 51% of German wheel maker Mannesmann Kronprinz. Total sales increased by 8% in 1996 and 12% in 1997. In China, where Michelin had opened a commercial office in Beijing in 1989, it created a joint venture in Shen Yang that made radials for the Chinese market. But it still lacked a presence in the large Indian market.

Later acquisitions included Colombian tire maker Icollantas, with factories in Bogota and Cali, in 1998. In 1999 the purchase of Tire Centers Inc, a distributor and retreader of truck tires, underlined Michelin’s determination to become a major player in US retreading.<sup>17</sup>

### **Michelin in 1999**

By 1999, Michelin had 82 manufacturing plants in 19 countries. It was unique among the Big Three in making nearly 90% of sales outside its home market (about 49% in Europe and 34% in North America). Michelin marketed a range of 28,000 products, with tires ranging from less than 200 grams to over five tons for all types of vehicles, “from bicycles to the space shuttle”. Every day it made more than 830,000 tires as well as over 76,000 inner tubes, 4 million kilometres of wires, 88,000 wheels and 70,000 tourist maps and guides. Passenger car tires were estimated to account for 47% of total sales, and truck tires for 37%. Replacement tires represented 70% of total tire sales.

A major recent innovation was the Energy<sup>18</sup> “green” tire, which reduced rolling resistance by 35%<sup>19</sup> and fuel consumption by 5% by adding silica to the rubber mix. (Rival offerings claimed no more than 3% fuel savings.) Michelin also had a highly successful 80,000-mile tire, the XH4 Long Life, for the US replacement market. The Classic range was aimed at the budget European market and Michelin had a new high performance range, the Pilot.

In 1997 the company had introduced its PAX run-flat that could travel 200km after a puncture. While the PAX out-performed competing products, owing to carmakers’ distaste for single sourcing, Michelin had to license the technology to its rivals to gain widespread acceptance. In February 1999, it concluded a deal with Pirelli. By then the PAX was available on a few models, such as the Renault Twingo and the Cherokee Jeep.<sup>20</sup>

<sup>17</sup> *Modern Tire Dealer*, January 1998.

<sup>18</sup> XFE - Xtra Fuel Economy – in the US.

<sup>19</sup> The original X radial reduced rolling resistance over bias designs by 34%. Between its launch – 1947 – and 1990, manufacturers had managed to reduce rolling resistance only by a further 10%.

<sup>20</sup> Reuters, March 9, 1999.



## **Production**

Michelin had by far the largest workforce in the industry. It employed over 127,000 in 1998, compared with 96,000 for both Goodyear and Bridgestone. It had built eight small plants to implement the C3M process.<sup>21</sup> C3M was believed to require about half of the capital costs of an equivalent conventional plant and only one-tenth of the labour. Manufacturing was radically different: a flow-line process made components in their final form (all rubber parts were built directly onto the drum), eliminating the conventional batch production of sub-components.

Michelin grew 25,000 hectares of rubber in Nigeria and Brazil to experiment with ways to improve quality and boost production. Company policy was “to maintain its independence in the technological and procurement aspects”. There was one area where it tried to keep everything in-house: it designed and manufactured most of its tire-making machinery.

## **Retailing**

Like other tire makers, Michelin relied on independent retailers for most of its sales, but in the 1980s it had started increasing its ownership of retail outlets. European retailing operations had been consolidated under the Euromaster brand with about 1,300 outlets in nine countries (including 550 in the UK and 300 in France). The outlets also sold tires from other manufacturers, and offered a variety of services: exhaust, shock absorbers, batteries, brakes. In the US, Michelin used a multitude of distribution channels, including thousands of independent dealers and mass merchandiser points of sale (such as Sears, Walmart, Western Auto Group), as well as major membership clubs. Michelin also serviced over 50,000 US truck fleets, including UPS.

## **Research and Development**

Michelin spent 5% of sales on R&D, far more than any of its rivals. The company strongly believed that its success was due to its commitment to R&D and innovation. Investment in process technology, which Michelin saw as its strength, remained a priority; it had spent several decades developing C3M and unveiled it in 1992. New tire concepts were developed at company Technology Centres in Europe, the US and Japan that were equipped with large-scale computing facilities to carry out sophisticated simulations. Prototypes were checked out at four testing sites (in France, Spain, the US and Japan) recreating the various conditions in which tires were used.

Despite its leadership, Michelin had sometimes been slow to implement its own innovations. Improvements in radial design had remained under test in Clermont-Ferrand while rivals introduced better products in the late 1970s and 1980s. More recently, competitors had been able to catch up in process technology as Michelin delayed the introduction of C3M. Michelin had sometimes snubbed competitors' innovations. For instance, it had lost market share for ignoring Goodyear's all season tire, explaining that the radial had always been “all

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<sup>21</sup> *Les Echos*, June 1999.

season". In 1999, Michelin had been caught unprepared by a sudden surge in demand for high performance tires.<sup>22</sup>

### **Ownership and Legal Structure**

Even after Michelin had become a global manufacturer, the family had remained strongly in control. More than 500 Michelin family members<sup>23</sup> owned a substantial but undisclosed share – variously estimated at 10-40% - of the holding company, Compagnie Générale des Etablissements Michelin. Control was exerted through an unusual legal status of ‘Société en commandite par actions’, retained by Michelin since it was first founded. Patents and other intellectual property were held by the holding company, which received royalties from the operating company.

The group was headed by three managing partners (“gérants”) who enjoyed extensive powers in exchange for unlimited liability for the company’s losses. They received no salary, but were paid a substantial share of the profits. It was almost impossible for non-family shareholders to dismiss a gérant. A nine-member executive committee had been created recently to assist and advise the gérants.

The commandite, a legal form dating back to the 18<sup>th</sup> century (when seafaring captains used it to raise finance for voyages of bounty), was ferociously criticised by outside investors. Other French companies (most family-owned businesses) had long since adopted the limited liability (société anonyme) structure. The benefits of the commandite were thus described by François Michelin, in 1992: “It allows us to move much faster, to be protected from outside pressure when taking decisions ... Do you know that Japan is nothing more than a huge commandite, through its banking system? It lets us take a long term view.” Seven years later, his son Edouard was equally adamant: “I don’t feel ashamed of being a commandite. I am convinced there is an innovative and modern way to be a commandite.”<sup>24</sup>

### **The Michelin Dynasty**

Ever since its founding in 1898, Michelin had been run by a family member. The only exception had been the 15 sombre years following the death in 1940 of founder Edouard Michelin, whose two sons had been killed in a car crash. The elder Edouard had then asked his son-in-law to act as caretaker until the orphaned François (young Edouard’s father) was able to take over. François’s reign lasted nearly 45 years.

Secret, enigmatic and unpredictable, François Michelin was a boss unlike any other. A fellow industrialist described him as “a disconcerting yet engaging man, who provokes admiration and fear”.<sup>25</sup> A devout Roman Catholic, dedicated to his family, in times of

<sup>22</sup> See *Tire Business*, October 25, 1999.

<sup>23</sup> *Financial Times*, December 20, 1999.

<sup>24</sup> “Edouard Michelin: The new head of Michelin”, *The Financial Times*, December 20, 1999.

<sup>25</sup> *L'Usine nouvelle*, September 21, 1989.

trouble he was as likely to seek help from God than from his managers, and religion tainted the sense of fairness with which he ran his business.

Ignoring charges of parochialism, “Monsieur François” preferred to stay in the Auvergne, away from power-broking in Paris, and his top managers had to live there too. The local people (Auvergnats) were known for their conservative, sober, thrifty – some said stingy – habits, which François Michelin readily adopted. He dressed modestly, and for years drove a small Citroën 2CV.

### **Corporate Culture and Management**

Because of the family ownership structure, Michelin had long been extremely centralised and secretive. “The smallest leak would be suicide,” said François Michelin. Until the 1990s there was no formal organisational chart, and the company did not use formal titles (except for the financial director and plant managers). Managers simply introduced themselves as Mr So-and-so from Michelin. (Insiders could guess someone’s role from his place in the internal directory.) Departments were known by a one- or two-letter code: SG for Accounting, K for legal, and F for Research. Top management, the “gérance”, was known as Service S. François Michelin, who liked to quote the Chinese saying: “You are a prisoner of your next word”, shunned the media and public pronouncements. Speeches were factual, reflecting the company’s belief in hard facts.

Instead of graduates from the ‘grandes écoles’ and MBAs, Michelin recruiters preferred to hire local young engineers who would develop with the company, which offered them a life-long career.<sup>26</sup> François Michelin himself spent nearly five years learning basic manufacturing and sales skills before taking on the company’s leadership. His credo, often preached to his workforce, went as follows: “All those who work for Michelin have a common goal: to make the best possible product for the customer.”<sup>27</sup>

As a family-dominated company Michelin had always been able to take a long term view and used this to full effect with its strategic planning. It also felt a particular responsibility for the welfare of employees, even though it had started laying off staff in the 1980s. (In Clermont-Ferrand itself, the workforce had fallen to 15,000 from 30,000.) In its early years the company had invested in housing, schools, hospitals nurseries, and shops, creating a veritable “Michelinville” that it only gradually sold or handed over to local authorities. François Michelin had taken a dim view of trade unions, which he tolerated only as a necessary evil.

While operations reflected his own thriftiness, with modestly equipped premises and ceaseless efforts to save on “unnecessary” expenses, there was one area where nothing seemed too expensive: research and development, often described as “the boss’s mistress”. François Michelin valued engineering excellence above all else – certainly marketing or finance. Inventories were allowed to swell far beyond expected orders in order to accommodate

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<sup>26</sup> In 1999, they had started to recruit MBA’s at INSEAD, however.

<sup>27</sup> Freydet and Pingaud, *Les patrons face à la gauche*, 1982, Paris: Ramsay.

powerful plant managers (75 stock days in June 1999, against the industry average of 54). The company's best marketing tool, François Michelin believed, were its products.

### **“Young Edouard”**

In April, 1999, Michelin shareholders received a letter from the company: “Your managing partners feel that Mr Edouard Michelin, who has been playing a major role in the group's strategy and operational management, should henceforward officially speak for your company...” At the shareholders' meeting in June, Edouard was named head of the group, although his father would remain a ‘gérant’ for a further three years.

Little was known about Edouard, who cultivated the discretion becoming to a Michelin. Born in 1963, François's youngest son had been carefully groomed for leadership. His upbringing in Clermont-Ferrand had been provincial and deeply religious. (Two of his five siblings had taken holy orders.) During the holidays, he sometimes worked in a Michelin workshop or as a company messenger. He graduated in engineering from one of France's prestigious ‘grandes écoles’, the Ecole Centrale and served as a submarine officer for two years. Bright, but quiet and unprepossessing, with a penchant for humour, he was married with five children and particularly enjoyed mountain hiking, theology, and Gregorian plainchant.

Edouard had joined Michelin in 1989, spending three months in training with other cadres taken on that year, followed by four months as a worker at two company plants. He moved up to supervisor, and then became production manager at the Puy-en-Velay plant making giant earthmover tires. In 1991 he was made a ‘gérant’ and posted to the US. Working with Carlos Ghosn, the Brazilian executive later known as ‘le Cost Cutter’ at Renault and Nissan, Edouard earned his spurs as president and chief operating officer for Michelin North America. He ran the group's eight North American production plants, Michelin's most modern. He later described the experience as seminal: “The North American market is hyper competitive. All the tire makers are there, as well as all the OE manufacturers. And distribution plays a huge role: half the market is dominated by private distributor brands.”<sup>28</sup> He also said: “In North America we are a younger organisation, our teams are smaller and more reactive to the market”.<sup>29</sup>

In 1993 “young Edouard”, as he was known, returned to Clermont-Ferrand and took on greater responsibilities, soon sharing decision-making with his father. A convert to methods such as removing managers to empower employees, he started overruling the old guard and urging new ideas. Asked about his role, he once described it as “speeding up project management and innovation... fine-tuning rather than revolutionising”.<sup>30</sup> Before the major reorganisation in 1996, he was credited with engineering a FF3.5 billion cost cutting effort launched in April 1993, as well as the 1994 decision to hike OE prices, although he was characteristically modest about his own contribution to the latter: “Let's say that my father paved the way through two years of consistent efforts, and that I acted as a catalyst in a decision that was vital for our House.” In 1995 Edouard, described by his father as an

<sup>28</sup> “Les héritiers: Edouard Michelin”, by Pascal Galinier, *Le Nouvel Economiste*, July 13, 1995.

<sup>29</sup> *Le Nouvel Economiste*, July 13, 1995.

<sup>30</sup> *Le Nouvel Economiste*, July 13, 1995.

'iconoclast' ("I took it as an invitation to be myself"), broke with tradition by putting 4,000 managers through training sessions that stressed the importance of marketing, service and profitability. He also set up an incentive pay scheme linked to corporate and personal performance for managers.

## **The Challenge for Bibendum**

In recent years, especially since the acquisition of Uniroyal-Goodrich, Michelin had become more responsive to the outside world, for instance allowing journalists to visit some of its factories, "once almost as tough to enter as the no man's land between the two Koreas".<sup>31</sup> Yet the continued secretiveness and family control, not to mention the commandite structure, still infuriated investors and analysts. The company's share price had not always performed well, as shown in Exhibit 18. Exhibit 19 gives Michelin financial data.

While the announced layoffs were welcomed by the financial markets, they enraged the company's larger constituency, from workers and trade unions all the way up to the French government, and Michelin had to scale down its job-reduction plan within days. Analysts meanwhile were blaming the slow roll-out of the C3M technology on a desire to avoid labour unrest and a political backlash. Michelin's slow progress in Asia was another weakness.

In his first speech as head of the group, to the June 1999 shareholders meeting, Edouard Michelin said he intended to focus on five key areas: product performance, globalisation, productivity gains, management efficiency, and lastly, "reliable, reactive control of the group so as to increase its robustness". In a later interview, he emphasised delegation, empowerment and accountability so as to make time for more important activities: new countries and strategic opportunities, and promised to focus more on customer demand. For instance, customers would soon be able to order tires via the Internet and, in some cases, plan their own tire designs from a range of primary colours. About his father he said: "I think in terms of vision of the industry . . . we are very close. In terms of method, we are very different. That's normal: I represent a new generation."<sup>32</sup>

The task facing Edouard Michelin was huge: he had to usher into the 21<sup>st</sup> century a firm that came, from many points of view, straight out of the 19<sup>th</sup>. "His heritage is a vast empire, powerful yet archaic, domineering yet indebted, an embattled world leader...", a French journalist wrote.<sup>33</sup> For the first time in 40 years, a new man was at the controls. Would he be enough of an iconoclast to ensure Michelin's continued pre-eminence?

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<sup>31</sup> *Financial Times*, December 20, 1999.

<sup>32</sup> *Financial Times*, December 20, 1999.

<sup>33</sup> *Le Nouvel Economiste*, July 13, 1995.

**Exhibit 1**  
*The Changing Structure of the World Tire Industry, 1978 and 1998*

<i>Rank</i>	<i>1978</i>	<i>1998</i>
<b>1</b>	Goodyear (US)	Bridgestone (Japan)
<b>2</b>	Michelin (France)	Michelin (France)
<b>3</b>	Firestone (US) <sup>a</sup>	Goodyear (US)
<b>4</b>	Bridgestone (Japan)	Continental (Germany)
<b>5</b>	Dunlop (UK) <sup>b</sup>	Sumitomo (Japan) <sup>c</sup>
<b>6</b>	Uniroyal (US) <sup>d</sup>	Pirelli (Italy)
<b>7</b>	Uniroyal (US) <sup>e</sup>	Yokohama (Japan)
<b>8</b>	Pirelli (Italy)	Cooper (US)
<b>9</b>	General Tire (US) <sup>e</sup>	Toyo (Japan)
<b>10</b>	Yokohama (Japan)	Kumho (South Korea)

<sup>a</sup> Acquired by Bridgestone.

<sup>b</sup> Acquired by Sumitomo.

<sup>c</sup> In the process of forming a series of joint ventures with Goodyear.

<sup>d</sup> Acquired by Michelin.

<sup>e</sup> Acquired by Michelin.

<sup>e</sup> Acquired by Continental.

**Exhibit 2**  
*Global Tire Company Rankings*  
 (in millions of dollars, translated at average annual currency exchange rates)

No	Co./Headquarters	1998		1997		1996	
		Tire Sales	% of total corp. sales	Tire Sales	% of total corp. sales	Tire Sales	% of total corp. sales
1	Michelin et Cie Clermont-Ferrand, France	\$*12,916.3	*93%	\$*12,718	*94%	\$*13,100	94%
2	Bridgestone Corp. # Tokyo	*12,634	*74%	*12,920	*72%	*12,900	72%
3	Goodyear Tire & Rubber Co. # 1,2 Akron, Ohio	11,311.0	85%	*11,850	*85%	*11,705	*84%
4	Continental A.G. # Hanover, Germany	*4,334.0	*58%	*4,355	*68%	*4,866	*70%
5	Sumitomo Rubber Industries Ltd # 2 Kobe, Japan	*3,750.0	*75%	*3,800	*75%	*4,000	*75%
6	Pirelli S.p.A. # Milan, Italy	3,005.8	49%	*3,020	*46%	*3,000	*45%
7	Yokohama Rubber Co. Ltd. † Tokyo, Japan	2,193.5	70%	*2,343	*70%	*2,600	*70%
8	Cooper Tire & Rubber Co. Findlay, Ohio	1,447.4	77%	*1,449	80%	*1,372	*85%
9	Toyo Tire & Rubber Co. Ltd. † Osaka, Japan	1,120.2	60%	1,283	59%	1,378	57%
10	Kumho & Co. Seoul, South Korea	965.5	*91%	1,241	89%	1,355	89%
11	Hankook Tire Manufacturing Co. Ltd. Seoul, South Korea	*905.0	*94%	*1,095	*94%	1,135	93%
12	Ohtsu Tire & Rubber Co. Ltd. Osaka, Japan	616.1	83%	668	84%	897	95%
13	MRF Ltd. † Chennai, India	537.7	98%	534	92%	551	96%
14	Cheng Shin Rubber Co. Yuanlin, Taiwan	497.5	100%	410	100%	375	99%
15	Shanghai Tire & Rubber Co. Ltd. Shanghai, China	461.7	99%	518	99%	423	90%
16	J.K. Industries Ltd. † New Delhi, India	357.7	91%	409	92%	255	83%
17	Apollo Tires Ltd. † Kerala, India	*346.3	100%	375	100%	353	100%
18	Shandong Triangle Group Co. Ltd. Shandong, China	330.9	100%	255	100%	214	N.A.
19	Co. Industria de Llantas (Euzkadi) 3 Mexico City, Mexico	328.0	100%	312	95%	286	95%
20	Shandong Chengshan Rubber Co. Ltd. Chengshan, China	326.2	N.A.	236	97%	227	N.A.

Source: <http://www.tirebusiness.com/subscriber/global99.phtml>.

\* = Estimated

# = Non-tire portion of company-owned retail activities factored out

† = fiscal year ends other than Dec. 31

N.A. = not available; N.R. = not ranked

**Exhibit 3**  
*The World's Leading Tire Manufacturers, 1998*

	<i>Country</i>	<i>Total sales (US\$ m)</i>	<i>Tire Sales (US\$ m)</i>	<i>% of sales</i>	<i>Market share (%)</i>	
1	Bridgestone	Japan	17,944	12,920	72	18.6
2	Michelin	France	13,675	12,718	93	18.3
3	Goodyear	US	13,941	11,850	85	17.1
4	Continental	Germany	6,404	4,355	68	6.3
5	Sumitomo	Japan	5,067	3,800	75	5.5
6	Pirelli	Italy	6,565	3,020	46	4.4
7	Yokohama	Japan	3,347	2,343	70	3.4
8	Cooper	US	1,811	1,449	80	2.1
9	Toyo	Japan	2,175	1,283	59	1.8
10	Kumho	South Korea	1,394	1,241	89	1.8
11	Hankook	South Korea	1,165	1,095	94	1.6
12	Ohtsu	Japan	795	668	84	1.0
13	MRF	India	580	534	92	0.8
14	Shanghai	China	523	518	99	0.7
15	Chen Shin	Taiwan	410	410	100	0.6

*Source: Crain Communications.*



**Exhibit 4**

*World Growth Rates for Passenger Car Tires and Truck Tires Sales, 1992-1998  
(Average annual % growth)*

	<i>Passenger car tires</i>	<i>Truck tires</i>
Western Europe	1.8	2.9
Eastern Europe	6.1	-0.9
North America	2.3	3.4
South America	3.7	2.3
Asia	3.5	5.6
Other	3.0	6.4
<b>World</b>	<b>2.6</b>	<b>3.8</b>

*Source: EIU.*

**Exhibit 5**

*World Tire Production by Type, 1998*

<i>Production</i>	<i>m units</i>
Passenger tires	700
Truck tires	249
Agricultural tires	16
<b>Total</b>	<b>965</b>

*Source: EIU World Tire Industry 1998.*

**Exhibit 6**  
*The Market for Tires in Asia, Europe and North America, 1992-98*

<i>(m units)</i>	1992	1993	1994	1995	1996	1997	1998
<b>Asia</b>							
Car tires	101.2	106.5	111.2	118.6	125.2	131.3	123.4
<i>% change</i>	-	5.2	4.4	6.7	5.6	4.9	-6.0
Truck tires	73.6	77.2	79.9	84.7	95.1	103.4	101.5
<i>% change</i>	-	4.9	3.5	6.0	12.3	8.7	-1.8
<b>Total</b>	<b>174.8</b>	<b>183.7</b>	<b>191.1</b>	<b>203.3</b>	<b>220.3</b>	<b>234.7</b>	<b>224.9</b>
<b>Europe</b>							
Car tires	213.1	210.8	219.0	232.1	236.6	241.9	246.1
<i>% change</i>	-	-1.1	3.9	6.0	1.9	2.2	1.7
Truck tires	46.8	45.3	45.0	46.6	48.3	50.2	50.0
<i>% change</i>	-	-3.2	-0.7	3.6	3.6	3.9	-0.4
<b>Total</b>	<b>259.9</b>	<b>256.1</b>	<b>264.0</b>	<b>278.7</b>	<b>284.9</b>	<b>291.1</b>	<b>296.1</b>
<b>North America</b>							
Car tires	233.4	241.8	249.6	254.9	255.0	260.2	267.7
<i>% change</i>	-	3.6	3.2	2.1	0.0	2.0	2.9
Truck tires	47.8	48.6	50.0	53.4	54.4	57.3	58.4
<i>% change</i>	-	1.7	2.9	6.8	1.9	5.3	1.9
<b>Total</b>	<b>281.2</b>	<b>290.4</b>	<b>299.6</b>	<b>308.3</b>	<b>309.4</b>	<b>317.5</b>	<b>326.1</b>

**Exhibit 7**  
*World Tire Sales by Market, 1998*

<i>(m units)</i>	<i>Passenger car</i>	<i>% of total</i>	<i>Truck</i>	<i>% of total</i>
OE	217.7	31	50.6	20
Replacement	482.4	69	198.2	80
<b>Total</b>	<b>700.1</b>	<b>100</b>	<b>248.8</b>	<b>100</b>

Source: EIU.

**Exhibit 8**  
*Tire Sales in 1998 (m Units)*

	Car tires		Truck tires	
	OE	RE	OE	RE
<b>W. Europe</b>	69.6	131.9	7.6	22.2
<b>E. Europe and Russia</b>	11.3	33.3	5.1	15.1
<b>N. America</b>	66.1	201.6	9.3	49.1
<b>S. America</b>	8.0	29.0	2.5	18.1
<b>Asia</b>	58.9	64.5	21.8	79.7
<b>Others</b>	3.8	22.1	4.3	14.0
<b>Total</b>	217.7	482.4	50.6	198.2

Source: World Tire Industry, EIU, 1999.

**Exhibit 9**  
*Tire Sales Forecast for 2005 (m Units)*

	Car tires		Truck tires	
	OE	RE	OE	RE
<b>W. Europe</b>	67.2	140.8	8.0	24.8
<b>E. Europe and Russia</b>	14.6	40.2	5.9	17.9
<b>N. America</b>	69.4	211.9	9.2	52.0
<b>S. America</b>	9.0	40.0	2.8	24.4
<b>Asia</b>	67.8	81.2	24.6	89.4
<b>Others</b>	14.2	23.6	4.8	17.6
<b>Total</b>	242.2	537.6	55.3	226.1

Source: World Tire Industry, EIU, 1999.

**Exhibit 10***R&D Expenditure in the Tire Industry, 1998*

<i>Company</i>	<i>Sales (US\$m)</i>	<i>R&amp;D expenditure</i>	<i>% of sales</i>
Michelin	13,645.9	680.0 <sup>34</sup>	5.0
Goodyear	13,155.2	384.1	2.9
Bridgestone	17,940.5	317.5	1.8
Continental	6,447.2	260.0	4.0
Pirelli	6,611.7	208.4	3.2
Sumitomo	5,071.1	150.0	3.0
Yokohama	3,422.1	114.0	3.3
Toyo	2,159.0	50.0	2.3
Cooper	1,813.0	21.7	1.2
Kumho	1,314.7	40.0	3.0
Hankook	1,218.1	37.8	3.1
Others	13,326.0	133.0	1.0
<b>Total</b>	<b>86,125.0</b>	<b>2,397.0</b>	<b>2.8</b>

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<sup>34</sup> Estimated.

**Exhibit 11***The Market Leaders' Plant in Europe, North America and Asia*

Includes plants making tires for passenger cars, light trucks, trucks and buses, agricultural, motorcycles, earthmovers, industrial, aircraft and racing.

Joint ventures are not included in the total; they are mentioned in footnotes.

**Europe**

	1990		1993		1996		1998	
	Plants	Employees	Plants	Plants	Employees	Plants	Employees	
Michelin	31	70,813	30	32	50,057	31	62,980 <sup>35</sup>	
Bridgestone/Firestone	6	7,160	5	5	6,715	6	5,930	
Goodyear	6	8,975	7	7	15,300	6	12,357	
Continental	9	8,803	12	12	18,000	10 <sup>36</sup>	11,941	
Sumitomo/Dunlop	6	70	65	8	6,665	8	6,401	
Pirelli	10	11,700	9	8	7,215	8	7,210	
Yokohama	0	0	0	0	0	0	0	
Toyo	0	0	0	0	0	0	0	
Cooper	0	0	0	0	0	1	750	
Kumho	0	0	0	0	0	0	0	

**North America\***

	1990		1993		1996		1998	
	Plants	Employees	Plants	Plants	Employees	Plants	Employees	
Michelin	15	21,382	13	13	17,450	15	17,400	
Bridgestone/Firestone	7	10,855	7	9	11,355	10	12,777 <sup>37</sup>	
Goodyear	13	19,908	13	12	20,680	12	20,680	
Continental	5	6,335	4	4 <sup>38</sup>	5,609	4 <sup>39</sup>	4,509	
Sumitomo/Dunlop	3	3,103	NA	2	2,700	2	2,640	
Pirelli	3	2,450	3	2	1,255	1	630	
Yokohama	1	500	1	1 <sup>40</sup>	831	1 <sup>41</sup>	831	
Toyo	0	0	0	0 <sup>42</sup>	0	0 <sup>43</sup>	0	
Cooper	3	3,150	4	4	4,200	4	4,250	
Kumho	0	0	0	0	0	0	0	

\* North America includes Canada and the United States

<sup>35</sup> N/A for Aranda del Duero and Valladolid plants.

<sup>36</sup> Also has a joint-venture in Bulgaria with Barum, employing 3,700.

<sup>37</sup> The number of employees for the Aiken, South Carolina plant is not available.

<sup>38</sup> Continental also has a joint venture with Yokohama and Toyo, employing 431.

<sup>39</sup> Id.

<sup>40</sup> Yokohama also has a joint venture with Continental and Toyo, employing 431.

<sup>41</sup> Id.

<sup>42</sup> Toyo has a joint venture with Continental and Yokohama, employing 431.

<sup>43</sup> Id.

**Exhibit 11 - (Cont'd)***The Market Leaders' Plant in Europe, North America and Asia***Asia**

	1990		1993		1996		1998	
	Plants	Employees	Plants	Plants	Employees	Plants	Employees	
Michelin	3	NA	3	2 <sup>44</sup>	450 <sup>45</sup>	2 <sup>46</sup>	1,300	
Bridgestone	12	12,719	13	13	12,455	15	12,674	
Goodyear	5	3,885	6 <sup>47</sup>	9	4,273 <sup>48</sup>	8 <sup>49</sup>	4,973	
Continental	1	1,000	1	1	1,000	0	0	
Sumitomo <sup>50</sup>	3	3,250	NA	4	2,430	5	4,330	
Yokohama	6	5,676	6	7	6,758	6 <sup>51</sup>	6,130	
Toyo	2	1,900	3.5	3	2,170	2	1,750	
Cooper	0	0	0	0	0	0	0	
Kumho	1	1,300	2	2 <sup>52</sup>	2,860	2	2,860	
Hankook				3	4,590 <sup>53</sup>	3	4,310	

Source: European Rubber Journal.

The main countries included under Asia are China, India, Indonesia, Japan, Malaysia, Nepal, Pakistan, Philippines, South Korea, Sri Lanka, Taiwan, Thailand and Vietnam.

Michelin is present in Japan, Thailand; Goodyear in India, Indonesia, Malaysia, Philippines, Taiwan, Thailand; Bridgestone in Japan, Indonesia, Taiwan, Thailand; Continental in Pakistan (until 1996); Sumitomo and Toyo in Japan; Yokohama in Japan (and in South Korea through a joint venture); Kumho in South Korea.

<sup>44</sup> Michelin also has two joint ventures in Thailand with Siam Tire, employing a total of 1 755.

<sup>45</sup> The number of employees for Michelin's Shen Yang joint venture is not available.

<sup>46</sup> Michelin also has three joint ventures in Thailand with Siam Tire, employing a total of 2 601.

<sup>47</sup> Goodyear also has a joint venture with Toyo in Japan

<sup>48</sup> Goodyear also has a joint venture with CEAT in India, for which the number of employees is not available, and a joint venture with Toyo in Japan employing 260.

<sup>49</sup> Goodyear also has several joint ventures: with CEAT in India (number of employees not available), with Dalian Rubber in China (300 employees) and with Toyo in Japan (255 employees).

<sup>50</sup> Includes Ohtsu.

<sup>51</sup> Yokohama also has a joint venture in Vietnam with Mitsubishi and Southern Rubber (number of employees not available).

<sup>52</sup> Kumho also had two joint ventures in China (number of employees not available).

<sup>53</sup> The total does not include employees in the Kumsan plant, whose number is not available.

**Exhibit 12***US Replacement Passenger Tire Sales by Outlet, 1972, 1986 and 1998 (% share)*

	1972	1986	1998
Small independents	31.6	44.8	31.2
Large regional independents	2.5	10.3	23.4
Mass merchandisers	25.4	16.7	16.9
Manufacturer outlets	11.4	11.5	9.1
Warehouse clubs	0.0	2.6	6.5
Service stations	22.8	7.7	9.0
Other <sup>54</sup>	6.3	6.4	9.0
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

**Exhibit 13***Tire Distribution Outlets in Japan, 1988 and 1998 (%)*

	1988	1998
Car dealers	30	27
Auto speciality stores	22	30
Service stations	16	18
Tire shops		
Company	6	6
independent	7	8
Discount/DIY	7	9
Other	12	3
<b>Total</b>	<b>100</b>	<b>100</b>

*Source: EIU.*


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<sup>54</sup> Other comprises car dealers, auto parts stores and garages.

**Exhibit 14**  
*Profitability (Return on Sales, Return on Assets) of the Tire Industry*

	1994		1995		1996		1997	
	ROS	ROA	ROS	ROA	ROS	ROA	ROS	ROA
<b>Industry</b>	6.7	6.9	7.0	7.4	7.8	8.4	7.9	8.7
<b>Big three</b>	8.2	8.5	8.5	9.1	9.3	10.3	9.3	10.6
<b>Next three</b>	3.7	3.8	4.7	5.1	5.2	5.4	5.8	5.7
<b>Small six</b>	5.5	5.1	5.2	4.8	6.1	5.6	5.4	5.1

Source: World Tire Industry, EIU, 1999.

**Exhibit 15a**  
*Tire Manufacturers Market Share in Europe, 1993 and 1998*

	1993	1998
<b>Michelin</b>	31.9	27.5
<b>Continental</b>	13.9	18.8
<b>Goodyear</b>	13.1	13.7
<b>Pirelli</b>	9.2	9.5
<b>Bridgestone</b>	9.3	9.2
<b>Sumitomo</b>	9.3	8.1
<b>Others</b>	13.3	13.2
<b>Total</b>	100	100

Source: World Tire Industry, EIU, 1999.



**Exhibit 15b***Tire Manufacturers Market Share in North America, 1996 and 1998*

	<b>1996</b>	<b>1998</b>
<b>Goodyear</b>	36.4	36.1
<b>Michelin</b>	21.7	21.6
<b>Bridgestone / Firestone</b>	16.2	18.6
<b>Continental General</b>	7.1	6.4
<b>Cooper</b>	6.1	6.3
<b>Dunlop</b>	4.1	3.8
<b>Yokohama</b>	2.3	1.8
<b>Pirelli</b>	1.8	1.6
<b>Toyo</b>	1.3	1.0
<b>Total</b>	100	100

Source: World Tire Industry, EIU, 1999.

**Exhibit 16**  
*Financial Data on Michelin's Major Competitors*

	<u>Goodyear</u>		<u>Continental</u>		<u>Cooper</u>		<u>Bridgestone</u>	
	31-Dec-98 Mil USD	31-Dec-97 Mil USD	31-Dec-98 Mil DEM	31-Dec-97 Mil DEM	31-Dec-98 Mil USD	31-Dec-97 Mil USD	31-Dec-98 Mil JPY	31-Dec-97 Mil JPY
<b>Assets</b>								
Cash & S.T. Investments	239	259	731	889	42	53	63,805	52,337
Receivables (Net)	1,771	1,734	1,736	1,171	320	292	410,826	428,870
Total Inventories	2,165	1,835	1,936	1,420	186	192	305,444	318,685
Current Assets - Total	4,529	4,164	5,028	4,015	569	555	861,252	891,290
Long Term Receivables	174	190	2	1	n.a.	n.a.	23,861	15,119
Invest. in Uncons. Subsidiaries	111	125	116	100	n.a.	n.a.	18,335	15,390
Property Plant & Equip - Net	4,359	4,150	4,522	2,966	885	860	764,445	713,486
Property Plant & Equip - Gross	9,753	9,234	11,907	9,001	1,509	1,399	1,800,398	1,700,368
Other Assets	1,417	1,289	3,115	526	87	81	46,445	51,091
Total Assets	10,589	9,917	12,829	7,649	1,541	1,496	1,755,302	1,727,094
<b>Liabilities &amp; Shareholders' Equity</b>								
Accounts Payable	1,132	1,178	1,270	769	95	100	169,428	183,437
ST Debt & Curr Portion LT Debt	789	507	583	401	8	11	222,184	254,260
Other Current Liabilities	352	422	562	387	54	42	308,118	330,795
Current Liabilities - Total	3,277	3,251	2,431	1,671	193	200	699,730	768,492
Long Term Debt	1,187	845	3,805	1,038	205	206	161,363	119,934
Provs For Risks & Charges	1,946	1,946	3,560	2,184	152	145	168,382	169,117
Other Liabilities	176	225	28	40	49	38	38,463	39,999
Total Liabilities	6,585	6,266	9,855	4,946	673	662	1,003,421	1,033,635
Minority Interest	259	256	341	292	0	0	54,456	52,077
Common Equity	3,746	3,396	2,632	2,410	868	834	697,424	641,382
Total Liab & Shareholders' Equity	10,589	9,917	12,829	7,649	1,541	1,496	1,755,302	1,727,094
Number of Employees	96,950	95,472	62,357	44,797	10,766	10,456	97,767	96,204
<b>Income Statement</b>								
Net Sales or Revenues	12,626	13,155	13,189	11,186	1,876	1,813	2,236,698	2,170,802
Cost of Goods Sold (Excl Dep)	9,185	9,577	8,988	7,439	1,444	1,404	1,301,920	1,182,477
Depreciation, Depletion & Amort	488	469	711	602	102	94	107,473	200,830
Gross Income	2,953	3,109	3,489	3,146	331	315	827,305	787,495
Selling, Gen & Adm Expenses	1,881	1,890	2,517	2,383	121	106	594,194	580,037
Other Operating Expenses	0	0	373	278	0	0	0	0
Operating Expenses - Total	11,554	11,935	12,588	10,701	1,666	1,604	2,003,587	1,963,344
Operating Income	1,072	1,220	600	485	210	209	233,111	207,457
Extraordinary Credit - Pretax	30	0	0	0	0	0	0	0
Extraordinary Charge - Pretax	16	265	0	0	0	0	4,624	112,787
Non-Operating Interest Income	13	23	44	36	0	0	4,633	4,555
Other Income/Expense Net	83	-13	190	128	4	1	-30,903	-11,889
Earnings Bef Int & Taxes (EBIT)	1,182	964	839	661	213	210	202,217	87,336
Interest Expense on Debt	154	126	228	202	15	17	18,416	19,779
Pretax Income	1,034	845	611	459	198	195	183,801	67,557
Income Taxes	286	241	198	137	71	72	77,888	24,263
Net Income Before Pref Div	682	559	376	277	127	122	104,626	39,158

Source: Worldscope Disclosure Database, March 2000.

**Exhibit 17**  
*Michelin Organization*

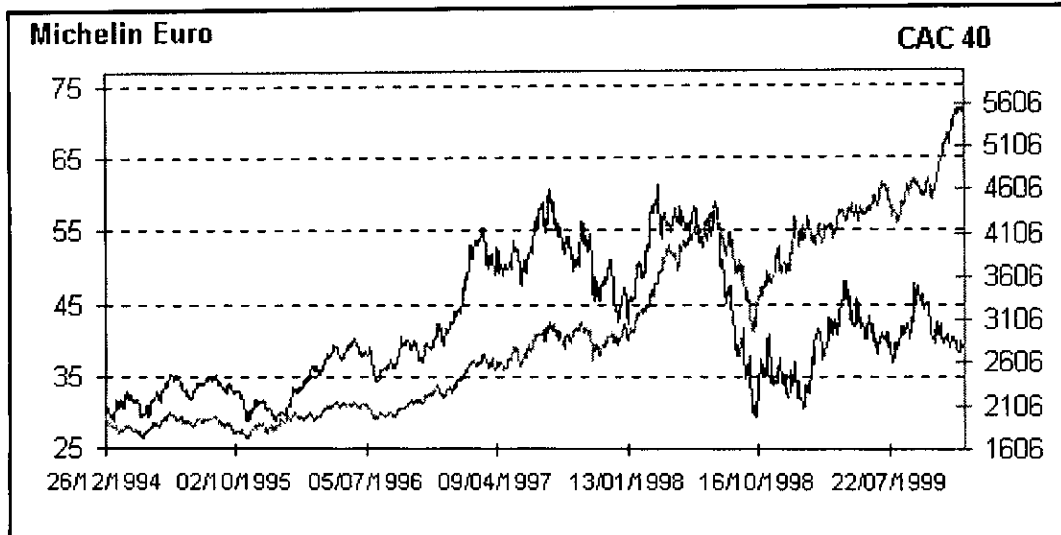
**Michelin's nine product lines**

- Passenger Car & Light Truck Tires
- Truck Tires
- Earthmover Tires
- Agricultural Tires
- Aircraft Tires
- Two-wheel Tires
- Components (rubber and elastomers, reinforcement materials, etc.)
- Suspension Systems (wheels, anti-vibration equipment, assemblages)
- Tourism Services

**12 Group Services provide support to the different divisions:**

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- Finance
- Information Services
- Legal
- Logistics
- Personnel
- Plans and Results
- Quality, General Organisation, Information Systems
- Security
- Public Relations

**Exhibit 18**  
*Share Price*



**Exhibit 19**  
*Financial Data on Compagnie Générale des Etablissements Michelin*

	12/31/1998	12/31/1997	12/31/1996	12/31/1995	12/31/1994	12/31/1993
	Mil FRF	Mil FRF	Mil FRF	Mil FRF	Mil FRF	Mil FRF
<b>Assets</b>						
Cash & S.T. Investments	7,368	7,407	6,909	5,239	3,817	2,212
Receivables (Net)	15,738	15,653	15,271	14,837	15,290	15,945
Total Inventories	17,845	16,177	15,981	14,577	13,655	15,541
Current Assets - Total	40,951	39,236	38,162	34,653	32,761	33,698
Long Term Receivables	110	117	106	129	142	206
Invest. in Uncons. Subsidiaries	89	253	211	317	324	322
Other Investments	2,485	2,363	1,919	1,910	2,697	2,772
Property Plant & Equip - Net	32,392	30,889	28,061	26,000	26,890	29,582
Property Plant & Equip - Gross	80,411	78,315	72,157	66,576	66,449	67,436
Other Assets	8,167	8,860	7,743	7,419	7,424	8,108
Total Assets	84,193	81,718	76,202	70,429	70,238	74,689
<b>Liabilities &amp; Shareholders' Equity</b>						
Accounts Payable	8,612	6,976	5,693	6,071	5,316	4,970
ST Debt & Curr Portion LT Debt	11,654	8,973	13,112	8,043	7,969	10,474
Other Current Liabilities	9,028	9,448	9,116	9,481	9,540	9,298
Current Liabilities - Total	29,294	25,397	27,921	23,596	22,825	24,742
Long Term Debt	13,601	15,105	16,502	22,676	23,928	26,754
Provs For Risks & Charges	12,067	13,635	12,778	10,119	12,598	14,020
Deferred Income	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Deferred Taxes	358	346	416	318	349	363
Other Liabilities	1,273	1,294	1,165	770	1,099	838
Total Liabilities	56,593	55,776	58,782	57,478	60,800	66,718
Minority Interest	2,003	1,902	1,399	1,126	734	695
Common Equity	25,597	24,040	16,021	11,825	8,704	7,275
Total Liab & Shareholders' Equity	84,193	81,718	76,202	70,429	70,238	74,689
Number of Employees	127,241	123,254	119,780	114,397	117,776	124,575
<b>Income Statement</b>						
Net Sales or Revenues	81,900	79,692	71,246	66,110	67,221	63,298
Cost of Goods Sold (Excl Dep)	55,441	55,274	50,068	46,773	48,752	47,585
Depreciation, Depletion & Amort	4,911	4,608	5,654	5,449	5,818	6,277
Gross Income	21,548	19,810	15,523	13,888	12,651	9,436
Selling, Gen & Adm Expenses	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Other Operating Expenses	17,528	15,181	10,961	9,809	9,412	9,139
Operating Expenses - Total	77,880	75,063	66,684	62,031	63,982	63,001
Operating Income	4,021	4,629	4,562	4,080	3,239	297
Extraordinary Credit - Pretax	2,093	1,842	1,375	3,483	2,679	2,295
Extraordinary Charge - Pretax	2,102	1,945	3,184	3,831	3,418	5,199
Non-Operating Interest Income	1,269	1,303	1,233	1,291	1,664	1,446
Other Income/Expense Net	3,220	2,636	3,295	1,743	1,580	1,576
Earnings Bef Int & Taxes (EBIT)	8,500	8,466	7,281	6,765	5,745	416
Interest Expense on Debt	2,732	2,788	2,723	2,819	3,443	4,113
Pretax Income	5,768	5,677	4,559	3,946	2,302	-3,697
Income Taxes	2,018	1,570	1,355	984	940	280
Net Income Before Pref Div	3,513	3,883	2,891	2,796	1,291	-3,670

Source: Worldscope Disclosure Database, March 2000.

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