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The History of the U.S. Tire Industry
in the Prewar Period

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Introduction

This paper examines the history of the U.S. tire industry, focusing on the interfirm relations in the prewar period when the industry was fully formed and the U.S. tire companies had overwhelmingly established their positions as the world leaders.

Driven by the development of the automobile industry, which was one of the leading industries in the 20th century, the U.S. tire industry grew into the largest individual automotive parts industry. Major U.S. tire manufacturers occupied the top rankings among U.S. manufacturing companies during the 20th century. For instance, by asset value, in 1948, Goodyear ranked 32nd, U.S. Rubber Company 37th, Firestone 39th, and Goodrich 62nd in the country. Similarly, by the number of employees, in 1957, Goodyear ranked 11th and Firestone 16th. Meanwhile, in 1977, Goodyear ranked 10th and Firestone 18th among all U.S. industrial companies.¹

Moreover, from the 1920s, the U.S. tire industry surpassed European tire industries, including those in Britain and Germany, to become the world leader in competitiveness. For example, in the mid-1920s, labor productivity in the British and German tire industries amounted to only 40% of

¹ Chandler (1956), p. 114; “Fortune 500 list”, *Fortune*, June 1958 and May 1978.

that of U.S. companies. For instance, the annual tire production per person in the factories of U.S. tire companies in Akron was 799 in 1930, while that in tire factories in Britain averaged only 259.

An extensive literature has examined the history of the U.S. tire industry. For example, several excellent studies provide an overview of the industry as well as analyses of industrial relations, product innovation, and firm organizations. Some studies have also examined the unique features of management philosophy and practices in certain U.S. tire companies, the industry's industrial organization, and government intervention. Nevertheless, no study has analyzed interfirm relationships in this industry.

Generally, interfirm relationships, including competition among rivals, exist in diverse corporate activities, and are of utmost importance for the growth and decline of firms. User companies have relationships with the suppliers. Distribution companies often intervene in selling manufacturers' products so that they have relationships with distribution companies. When purchasing parts and raw materials, many companies forge relationships with companies for the necessary part and raw material companies. Competition among companies in the same industry reflects the process of the industry's growth and decline. Therefore, one may say that an industry's history can also be the history of relationships woven by various companies that are directly or indirectly involved in the business. Based on this perspective, this paper examines the history of the U.S. tire industry before World War II, focusing on interfirm relationships, and can provide some significant implications in the historical research of the industry.

1. Industrial organization of the U.S. tire Industry in the prewar period

1.1 Entry to the industry

Companies engaged in tire manufacturing began emerging in the 1880s; subsequently, the number of companies undertaking tire manufacturing operations increased. Particularly in the early 20th century, along with the beginning of the mass production of automobiles in the U.S. and the explosive increase in automobile tire demand, companies began entering the business of manufacturing tires for automobiles.

The earliest companies to commence tire production for automobile in America were Goodrich and Diamond Rubber, which was merged into Goodrich in 1912. Benjamin Franklin Goodrich, with the support of local Akron residents who provided \$1.36 million, established the first rubber products factory in the west of the Appalachian Mountains in 1870. Initially, the company primarily produced general rubber products such as rubber hoses and belts. However, Goodrich ventured into manufacturing tires for automobiles in 1896, marking the emergence of the first American automobile tire manufacturer.² Diamond Rubber, founded in 1894, began tire

² Buenstorf and Klepper (2010), p. 1563; O'Reilly (1983), p. 12; Love and Giffels (1999), pp. 14-15.

production in 1896. At the beginning of the 20th century, Goodrich and Diamond Rubber were the only two companies supplying tires to U.S. automobile manufacturers³.

Goodyear Tire and Rubber (hereafter, Goodyear) began tire production at the end of the 19th century. Frank A. Seiberling founded Goodyear in Akron in 1898. Initially, during the bicycle tire market boom, Goodyear focused on manufacturing bicycle tires. However, the company started producing automobile tires in 1901 as the bicycle tire market slowed down and the automobile market began growing rapidly in the early 1900s.⁴

Rubber Goods Manufacturing Company (hereafter, RGM) acquired several companies manufacturing general rubber products, such as belts, in 1898 and later ventured into tire manufacturing. RGM was acquired by the United States Rubber Co. (hereafter, U.S. Rubber) in 1905 to commence the production of automobile tires.⁵ U.S. Rubber was established in Connecticut in 1892 through the merger of several small shoe manufacturing companies and initially focused on producing general rubber products. However, it diversified its product line through acquisitions, with automobile tire production being a part of this diversification.⁶ In 1898, Noice Fisk acquired Spaulding and Pepper Co., and established Fisk Rubber to commence tire manufacturing. Pennsylvania Rubber, founded in 1899, also entered the automobile tire market.

Firestone Tire and Rubber Company (hereafter, Firestone), founded in 1900 by Harvey S. Firestone, ventured into tire manufacturing by establishing factories in Akron. Initially, Firestone purchased semi-finished rubber tires and tire components from Goodrich, and sold finished tires made from them. However, in January 1903, Firestone established a new tire factory and began manufacturing automobile tires.⁷ Morgan and Wright Tire Company moved from Chicago to Detroit to start its tire business. Furthermore, some shoe manufacturing companies, such as Converse Rubber Shoe Company and Hood Rubber, also entered the tire market in 1908 and 1912, respectively.⁸

The active new entries to the industry continued until the early 1920s. Between 1915 and 1916, at least 23 newly founded companies entered the market. This number was comparable to the total number of tire manufacturers established over the previous seven years. Additionally, there was a “boom” of new entries from 1917 onwards and until 1922. During these five years, 1917-1922, an average of approximately 42 companies per year, totaling 249 companies, entered the market.

³ French (1991), p. 13.

⁴ Blackford and Kerr (1996), p. 33; Rodengen (1997), p. 13; Love and Giffels (1999), pp. 17-18.

⁵ Blackford and Kerr (1996), pp. 32-33.

⁶ Gaffey (1950), pp. 157-158; Chandler (1979), pp. 614, 747.

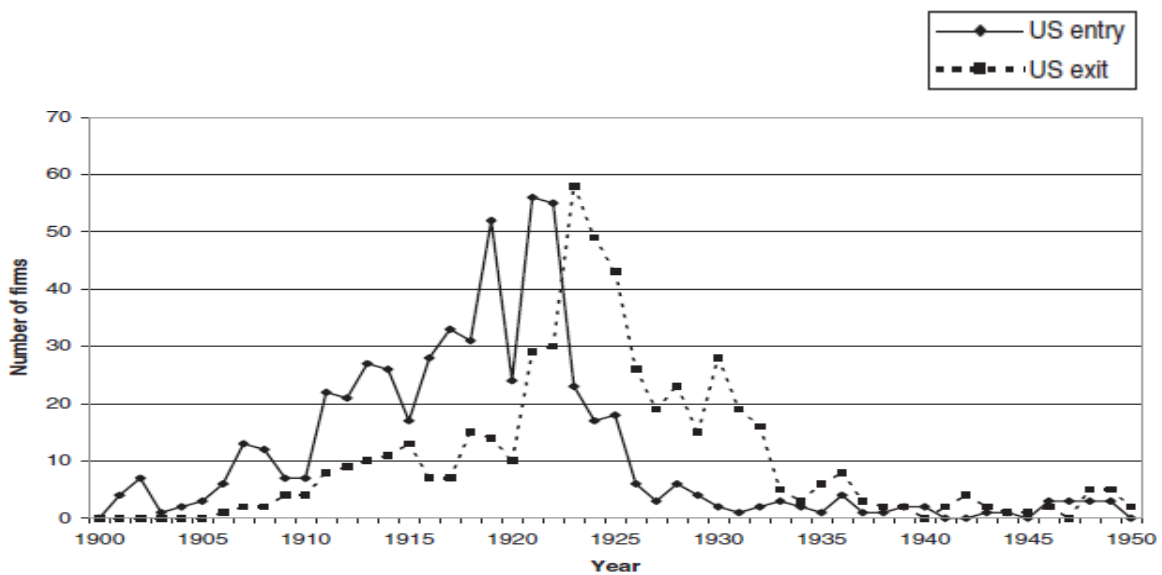
⁷ Lief (1951b), pp. 67, 78; Love and Giffels (1999), p. 17; Nelson (1991), p. 18; Blackford and Kerr (1996), p. 34.

⁸ French (1991), pp. 16-17; Blackford and Kerr (1996), p. 32.

This number was much higher than the average of 13 new entrants per year from 1901 to 1916, highlighting the robustness of new entries into the U.S. tire industry.⁹

However, as depicted in Figure 1, things significantly changed for new entries in 1923 due to the maturation of the automobile market, particularly from the mid-1920s onwards. The number of new entries sharply declined to 24 in 1923, and further to 17 in 1924 and 1925. Subsequently, from 1926 to 1950, there were almost no new entrants (Figure 1).

Figure 1 The number of firms entering and exiting the U.S. tire industry by year, 1901-1915



Source: Buenstorf and Klepper (2010), p. 1566.

1.2 Exit from the industry

Regarding withdrawals from the industry, in the 1900s, the number of exits was very small and not considerable. The average exit rate ($= \text{number of withdrawn companies} / \text{number of companies in the industry} \times 100$) from 1905 to 1922 remained at 7.6%. Nonetheless, the number of companies that withdrew from the tire business significantly increased in 1922 (Figure 1). The average withdrawal rate increased to 19.7% from 1922 to 1930. Moreover, the withdrawal rate from 1922 to 1932 doubled from that in the previous decade. As many companies had already withdrawn from the market in the early 1930s, exits stabilized after the Great Depression.

⁹ French (1986), p. 40. Some major tire manufacturers, such as Goodyear and Goodrich, established smaller affiliated tire manufacturers to produce cheaper second-line tire products in this period. For example, Goodyear established Marathon Rubber Company and Goodrich established Brunswick Tires subsidiaries to produce second-line products.

Firm exits from the tire business was undoubtedly influenced by stagnation in the growth of the automobile market since the mid-1920s. Faced with the maturation of the car market, large tire manufacturers aggressively tried to expand sales at low prices across all regions, as is discussed later. This fierce price competition disadvantaged smaller manufacturers. Consequently, they lost their strong regional markets to larger competitors, reducing sales volumes. Reduced sales volume scale increased average costs and worsened profitability. Consequently, a wave of bankruptcies and withdrawals occurred among small and medium-sized tire companies. Some companies faced financial difficulties owing to the increased prices of raw materials, such as natural rubber. Hence, they exited the unprofitable tire business. Other factors also played a role in firms' exit. For example, the management problems of individual companies, problems with product quality and marketing capability, and delayed adaptation to the establishment of dominant designs for tire products may have contributed to firm exits.¹⁰

1.3 Trend in the number of U.S. tire companies and formation of an oligopolistic industry organization

Amidst these movements of new entries and withdrawals, the number of companies monotonically increased up to a certain period and subsequently decrease. As shown in Figure 2, after the number of U.S. tire companies increased to 278 in 1922, it consistently declined until the early 1930s. It only stabilized in the late 1930s at approximately 30.

The concentration of a few top companies called the “Big Four”—Goodyear, Firestone, U.S. Rubber, and Goodrich—became remarkable in the tire industry. That is, an oligopolistic structure dominated by a few top companies was formed. The emergence of the “Big Four” was already evident in 1913. It only increased over time: their share in the U.S. tire market was 53.3% and 72.1% in 1926 and 1933, respectively.¹¹ This oligopolistic structure persisted until the 1960s, when some large U.S. tire companies merged with major overseas tire manufacturers.¹²

¹⁰ Allen (1943), p. 353; French (1991), p. 54; Kim (2018), p. 32.

¹¹ French (1991), p. 47.

¹² Nelson (1991), p. 46; French (1991), p. 13; Blackford and Kerr (1996), pp. 44, 64; Rodengen (1997), p. 33; Pennock (1997), p. 548; Kim (2018), pp. 8-9.

Figure 2 Number of companies in the U.S. tire industry from 1901 to 1950



Source: Buenstorf and Klepper (2010), p. 1566.

2. Competition among U.S. tire companies until the 1910s

From the perspective of interfirm relations, the tire industry exhibits highly distinctive features. This pertains to the existence of two distinct types of products based on the characteristics of the demand and point of purchase: original equipment (OE) tires, which are installed on new vehicles, and replacement equipment (RE) tires, which are replaced by wear or damage.

OE tires function as parts and are considered as intermediate goods, with demand originating from automobile companies. Meanwhile, the demand for RE tires, categorized as non-durable consumer goods, primarily comes from individual consumers. Consequently, in the OE tire market, the interfirm relationship between tire and automotive manufacturers is crucial. Meanwhile, in the RE tire market, the relationship between tire manufacturers and distribution retailers becomes significant. The nature of the competition in the two market segments is also substantially different. Therefore, we separately examine competition and interfirm relationships in the two market segments.

By market size, the RE tire market was larger than OE tire market. For instance, RE tires accounted for approximately 70% of the total tire market from 1910 to 1936. OE tires are only installed on new vehicles, resulting in a one-time demand per new vehicle. Meanwhile, tire wear and failures occur frequently, leading to multiple instances of demand for RE tires from a single vehicle. Consequently, the RE tire market is more critical for tire manufacturers to successfully compete. As such, I primarily analyze the competition and interfirm relationships in the RE tire market.

2.1 Competition among U.S. tire companies in the 1900s

In the 1900s, signifying the very initial period of the U.S. tire industry, diversified firms like

Goodrich and U.S. Rubber demonstrated their strength in the RE tire market. Both companies competed for the top position in this market, capturing approximately 90% of the total tire market in 1905 rather than the OE market.¹³

Goodrich initially entered the automobile tire market with a strong presence in the RE tire market rather than the OE tire market. Tire production and sales expanded in the late 1900s. Although Goodrich diversified into various rubber products, the proportion of tire production amount to total sales increased. For instance, the company's production of automobile tires significantly increased from 45,000 units in 1904 to over 240,000 units in 1907.¹⁴ Consequently, Goodrich's market share in the automobile tire market rose from 15% in 1904 to 21% in 1908. Furthermore, in 1912, Goodrich increased its market share in the U.S. tire market to 25% by acquiring Diamond Rubber, which held the exclusive rights to use British tire codes in the U.S.¹⁵

Goodrich was the most proactive in integrating wholesale functions by establishing branch houses and had the most advanced branch house system during the early stages of the U.S. tire industry. The active integration of wholesale functions further increased its market share. In fact, Goodrich already began integrating wholesale operations to expand various rubber products in 1889 by acquiring Columbia Rubber. Goodrich continued to establish new branch houses in Boston, Buffalo, Denver, Philadelphia, Cleveland, and St. Louis until 1907. By then, 52% of Goodrich's automobile tire sales were directed towards its own branch houses. In response to the increasing demand for RE tires beyond major cities, the company expanded with company depots and smaller wholesale points along branch houses.¹⁶

U.S. Rubber that diversified into various rubber products like Goodrich. It also held a top position along with Goodrich in the U.S. tire industry during the first decade of the 1900s. Moreover, by acquiring several tire manufacturers from 1910, U.S. Rubber gained a market share of approximately 25%.¹⁷

Compared to Goodrich and U.S. Rubber, other tire manufacturers had a smaller presence in the market in the 1900s. Even Goodyear and Firestone, which emerged as top companies in the late 1910s were perceived to have lower tire product quality compared to the top two companies, Goodrich and U.S. Rubber.¹⁸

Goodyear's market share in the U.S. tire market remained at approximately 2% from 1902 to 1906, while Firestone's market share was also in single digits in the first decade of the twentieth century. Even the combined market shares of Goodyear and Firestone fell short of two-thirds of

¹³ Rodengen (1997), p. 33.

¹⁴ French (1991), p. 16; Blackford and Kerr (1996), pp. 31-32.

¹⁵ Allen (1943), p. 33; Nelson (1987), p. 330; French (1991), pp. 17, 26; Blackford and Kerr (1996), p. 34.

¹⁶ Kim (2018), p. 35.

¹⁷ Allen (1943), p. 349; Allen (1949), p. 12; Blackford and Kerr (1996), p. 34.

¹⁸ Allen (1943), p. 340; O'Reilly (1983), p. 28; Rodengen (1997), pp. 33, 38.

that of Goodrich in 1909.¹⁹

However, both companies began strengthening their competitive advantage over other small- and medium-sized tire manufacturers by around 1910. For instance, Goodyear, by the early 1910s, had increased its market share to 5% in 1909 and was the fourth largest after U.S. Rubber, Goodrich, and Diamond.²⁰

2.2 Competition among U.S. tire companies in the 1910s

In the 1910s, a significant shift in market share occurred among tire manufacturers, coinciding with a substantial and continuous growth in automobile demand. Top companies such as Goodrich and U.S. Rubber lost market share through the 1910s²¹. In particular, the market share of U.S. Rubber plummeted from 25% in 1910 to 11.3% in 1917. Goodrich also experienced a continuous decrease in market share. It slipped from its top position to second place by 1913, further to third place by 1915, and eventually dropped to fourth place.²²

In contrast, during this period, smaller tire manufacturers such as Goodyear and Firestone, which entered the market later than Goodrich and U.S. Rubber, saw their market share rise significantly, propelling them into the top ranks of the U.S. tire market.²³

Goodyear's increase in market share is noteworthy. Its sales in 1912 were more than 12 times higher than those in 1908,²⁴ and the company's market share grew from 12% in 1910 to 21% by 1916. In 1917, the company's total sales exceeded \$100 million, surpassing U.S. Rubber's tire sales, although it fell short of \$171 million of the total revenue of U.S. Rubber including non-tire revenue. Firestone also saw its market share in the tire market grow from 8% in 1910 to 20% by 1916. Moreover, in terms of tire production, it had surpassed U.S. Rubber and Goodrich by 1920.²⁵

Goodyear and Firestone increased their market share through investments in facilities, enabling lower pricing during this period. Their aggressive advertising campaigns, such as media advertisements, contributed to their increased market share in the U.S. tire market. Goodyear began nationwide advertising campaigns earlier than its competitors, utilizing media such as national magazines. For example, Goodyear featured a full-page advertisement in the national newspaper, *Saturday Evening Post*, since 1909. The scale of advertising expenditure was

¹⁹ French (1991), p. 17; Blackford and Kerr (1996), p. 34; Kim (2018), p. 15.

²⁰ Rodengen (1997), p. 27.

²¹ Nelson (1991), p. 46; Blackford and Kerr (1996), p. 64.

²² French (1991), pp. 25-26; Blackford and Kerr (1996), pp. 63, 76; Nelson (1991), p. 46; Kim (2018), p. 25.

²³ French (1991), p. 26; Blackford and Kerr (1996), p. 64.

²⁴ O'Reilly (1983), pp. 40-41; Rodengen (1997), p. 29.

²⁵ O'Reilly (1983), pp. 52, 69; French (1989), p. 184; French (1991), p. 26; Nelson (1991), p. 47; Blackford and Kerr (1996), p. 64; Rodengen (1997), pp. 9, 41.

significant. In 1906, Goodyear invested \$250,000 in advertising, which was approximately twice its profit, making it the largest advertising spender among the rubber product manufacturers that year. In 1913, Goodyear was advertised in 402 publications, including 19 weekly magazines, 18 general magazines, 265 major daily newspapers, 86 agricultural magazines, and 14 publications for drivers and tire users. In 1915, Goodyear placed advertisements in all major national newspapers using differentiated advertising in cities across the U. S., and categorized them into three classes based on market size.²⁶ This proactive advertising from its early stages significantly contributed to Goodyear becoming the top company in the tire market in less than 20 years since its foundation.

3. Distribution channels and interfirm relationships

3.1 Distribution channel in RE tire market

From the inception of the automotive tire market to the mid-1920s, dealers and jobbers were the main players in the RE tire distribution channel. In the mid-1920s, there were approximately 12,000 tire sales dealers, with over 90% of the retail RE tire sales occurring through independent dealers in 1926 (Table 1). The only alternative route was through mail-order retailers, which accounted for less than 10% of the total.

Table 1 Distribution channel of replacement tire sales by outlets, 1926-37 (%)

Year	Independent Dealer	Mail Order	Company Retail Store	Oil Companies
1926	91.2	8.8	0.0	0.0
1927	90.5	9.5	0.0	0.0
1928	86.3	12.9	0.8	0.0
1929	76.2	18.3	4.4	1.1
1930	72.5	16.8	8.1	2.6
1931	70.5	14.0	10.3	5.2
1932	68.8	14.2	10.3	6.7
1933	65.9	14.7	11.0	8.4
1934	65.0	15.0	10.0	10.0
1937	53.0	19.0	11.0	17.0

Source: U.S. National Recovery Administration, *History of the Code of Fair Competition for the Retailed Rubber Tire and Battery Code 3*, Table 2; French (1991), p. 63; Gaffey (1940), p. 57.

However, from the late 1920s to the 1930s, the distribution channels for RE tires underwent significant changes. First, in the 1930s, the importance of purchasing tires via dealers significantly declined. For instance, as shown in Table 1, the proportion of sales through dealers to the total

²⁶ Good Year Tires (1914), p. 30; Good Year Tire (1915), pp. 8, 10, 30; Allen (1943), pp. 340-341.

RE tire sales decreased from approximately 91% in 1926 to 53% in 1937. This decline was largely due to the deterioration of dealer profitability under severe competition. Fierce price competition worsened the profitability of tire dealers. Consequently, many dealers either downsized their RE tire sales operations and withdrew from the market, or went bankrupt. Consequently, the number of tire dealers substantially decreased. According to data from the National Tire Dealers Association, the number of independent dealers decreased from 85,000 in 1928 to 75,000 in 1930, 65,000 in 1932, and 59,000 in 1933, eventually becoming a third of the 1928 figure by 1933.²⁷ Thus, the proportion of dealer-based distribution channels for RE tires substantially declined.

Second, large mail-order retailers, such as Sears, Roebuck, and Montgomery Ward, entered RE tire retailing primarily in urban areas in the late 1920s and expanded their businesses in this market segment. These companies ordered tires, shipped them to their stores, and sold 4.5 million units in 1933. Furthermore, they continued to steadily increase RE tire sales through the mid-1930s, accounting for nearly 20% of RE tire retailing in 1937 (Table 1).

Third, oil companies entered the RE tire retailing business. Oil companies had no tire retailing records until 1928 but began retailing RE tires in 1928. By 1934, they handled tires in 65,000 stores, and sold 3 and 3.8 million units in 1933 and 1934, respectively. The proportion of sales via oil companies to total RE tire sales increased from 8.4% in 1933 to 10% in 1934 and 17% in 1937 (Table 1).

Fourth, in the late 1920s onwards, major U.S. tire companies actively pursued the vertical integration of retail functions by successively establishing “company stores”.²⁸ The ratio of tire retail sales through manufacturers’ vertical integration to total RE tire sales increased to over 10% by the mid-1930s. By successively establishing company-owned retail stores in the late 1920s, tire manufacturers began replacing dealer activities.²⁹ Indeed, this was one of the reasons why the proportion of dealers in total tire retailing declined from the late 1920s, as mentioned earlier.

Finally, automotive parts retailers, such as Western Auto Supply and Pep Boys, as well as truck shops entered the tire retailing business, although they had a relatively small share in tire retailing.³⁰

These drastic changes in the RE tire distribution channels were largely due to the increase in PB tires.³¹ The maturation of the automobile industry in the late 1920s led to a slowdown in tire demand. In the midst of the stagnating demand for tires, private or special brand tires had a stronger appeal to consumers than ordinary tire products. Additionally, the overall improvement

²⁷ Leigh (1936), pp. 93, 104; Office of National Recovery Administration (1936), p. 98; French (1991), p. 72.

²⁸ Leigh (1936), p. 102; Gaffey (1950), p. 56; French (1986), p. 179; French (1991), pp. 56, 62.

²⁹ Pennock (1997), p. 548.

³⁰ Leigh (1936), p. 97; Pennock (1997), p. 548.

³¹ Gaffey (1950), pp. 95-96.

in tire quality until the 1920s led to the approximation of quality standards among various companies' products, encouraging consumer preference for special-brand products.

In fact, PB products grew. For instance, approximately 140 PB brands existed around 1936. If they were subdivided by inner tire tubes, the number of PB brand items reached 400.³² In terms of sales volume, PB products accounted for nearly 70 million units in 1936, approaching 120 million units by 1939. The share of PB products in the RE tire market also increased, comprising approximately a quarter between 1936 and 1937, and exceeding 30% in 1939 (Table 2).

Table 2 Sales of PB tires and the proportion PB tire sales to total RE tire sales (units, %)

Year	Sales of private tire products	Proportion of PB tires in the total RE tire sales
1936	6,995	23.9
1937	7,552	25.1
1938	8,662	28.3
1939	11,568	30.4

Source: Gettell (1941), p. 119.

In the special brand tire market, major U.S. tire manufacturers recognized the utilization of the retail outlets of major distribution players, such as large mail-order retailers and big oil companies, because they could enjoy economies of scale. For large mail-order retailers and oil companies, selling these special-brand products had a significant advantage in the RE tire market.

Consumers now had the choice to not only buy conventional tire products from dealers but also special or PB tires from major mail-order retailers, oil companies, and automotive parts retailers. In summary, for tire consumers, the drastic change in distribution channels resulted in a diversification of purchasing options.

Primary U.S. tire companies vertically integrated the retail function for several reasons. First, given the saturation of the car market in the late 1920s and early 1930s, the ratio of distribution expenses to the total costs of tires rapidly increased. To reduce these distribution expenses, U.S. tire companies vertically integrated their retail function by establishing company stores. Indeed, the introduction of company stores resulted in significant cost reductions for tire companies from 1932 onwards. Tire companies were able to successfully implement price-cutting strategies in major urban markets based on the cost reduction of forward vertical integration. Furthermore, utilizing company stores was expected to enhance the effectiveness of tire manufacturers' advertising and promotional efforts.³³

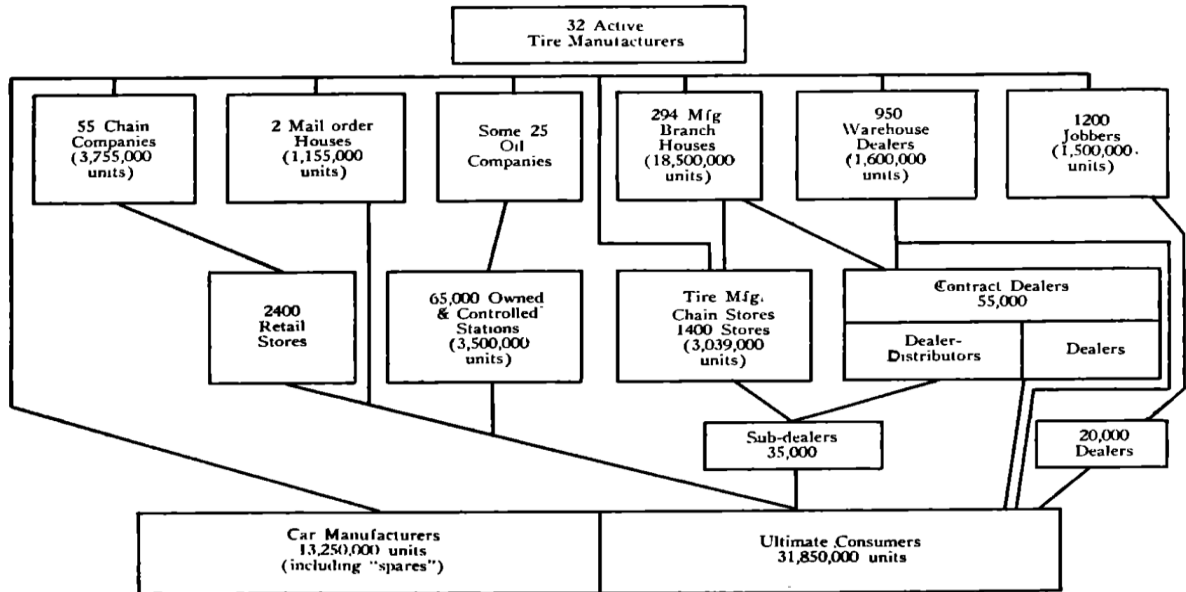
³² Office of National Recovery Administration (1936), p. 147.

³³ Leigh (1936), pp. 94, 105; French (1986), pp. 40, 42. In general, forward integration by the manufacturer often tends to be limited to wholesale operations. This is because vertical integration into retail entails significant investment and carries substantial risks. Therefore, the integration of retail functions by U.S. tire manufacturers represents a rare occurrence among large manufacturing

Therefore, by the mid-1930s, the distribution channel had become established in the U.S. tire market, as shown in Figure 3. U.S. tire manufacturers either wholesaled to retail traders through their own branch houses or other wholesalers. Branch houses sold to dealers or tire manufacturers' own retail stores, such as company houses. In addition, jobbers and warehouses were involved. Jobbers not only sold to dealers under contract with tire manufacturers, but also to independent dealers. Warehouse dealers directly sold tires to consumers. Chain stores also wholesaled to retail traders, who then sold to general consumers.

Dealers under contract with tire manufacturers would wholesale RE tires from branch houses, jobbers, and warehouses, and sell them to consumers or sub-dealers. Sub-dealers would then wholesale from tire manufacturers' retail outlets and dealers, and sell to consumers.

Figure 3 U.S. tire distribution channels in 1934



Source: Leigh (1936), p. 202.

3.2 The interfirm relationship in RE tire transaction through the distribution channel

In the U.S. RE tire market in the prewar period, tire manufacturers and distributors transacted through the distribution channel and had strong ties. Through the late 1920s and 1930s, large mail-order chain stores and oil companies increased their importance within the distribution channels of RE tires. Because these major distributors had their private brands manufactured by specific tire manufacturers, long-term over-the-counter relationships between the specific major tire manufacturers and major distributors were formed.

enterprises. Even U.S. Rubber, one of major tire makers, established only a limited number of company stores.

Major tire manufacturers had strong ties with the emerging large-scale distributors, which garnered significant attention in the late 1920s and 1930s. As big retailers primarily commissioned PB tire products from major U.S. tire manufacturers, except for Firestone, they had strong ties with specific distributor companies for transactions involving private-brand tires. Montgomery Ward's private brand, Riverside, was produced by U.S. Rubber. Standard Oil's private brand, Atlas, which was to be sold by Atlas Supply, was exclusively made by U.S. Rubber and Goodrich.³⁴

In particular, Goodyear had a long-term transaction relationship with Sears, Roebuck. Sears entered into a long-term contract with Goodyear shortly after entering the tire retail business in 1926. Sears' failure to procure private-brand tires from small tire manufacturers led to the long-term transaction between Goodyear and Sears. Specifically, Sears encountered issues with the quality of tires made by small tire companies and questioned their financial stability. With growing dissatisfaction under the leadership of Robert E. Wood, who joined Sears as president from being Montgomery Ward's vice president of sales in 1924, Sears chose Goodyear as its long-term transaction partner in 1926.³⁵

Trade between the two companies continued for over ten years until the contract was terminated in 1938 by the Federal Trade Commission's (FTC) order. Specifically, Sears' private brand, Allstate, was manufactured by Goodyear for approximately a decade. Additionally, amidst intense price competition, Goodyear could engage in transactions with Sears at lower prices than its competitors, while still securing profits. According to investigations and legal proceedings by the FTC, the amount Goodyear sold to independent dealers was \$182,598,399.59, whereas the amount sold to Sears at a discriminatively lower price was calculated at \$12,710,012.65. This amounted to approximately 6.96% of the sales for dealers, indicating advantageous pricing for Sears.³⁶

In addition, during that period, a close relationship between the two companies can be observed along with long-term transactions. A prominent example is Goodyear's construction of a dedicated tire factory for Sears in 1928 in Gadsden, Alabama. It was capable of producing 5,000 unit tires per day, with the aim of supplying tires specifically to Sears. Goodyear also transferred a portion of its stock to Sears. In 1931, when they renewed their tire contracts, Goodyear paid Sears \$400,000, comprising \$180,000 worth of preferred stock and \$800,000 in cash. This cash

³⁴ Reynold (1938), p. 461. Among the four major U.S. tire companies, only Firestone failed to secure manufacturing contracts for PB tires with major retail distributors. Consequently, Firestone faced fiercer competition with these distributors compared to its manufacturing rivals (French, 1986, p. 42).

³⁵ Allen (1943), p. 364.

³⁶ "Brief of respondent" (Federal Trade Commission v. Goodyear Tire and Rubber Co U.S. Supreme Court Transcript of Record with Supporting Pleadings), October 1937, p. 2: "Petition" (Federal Trade Commission v. Goodyear Tire and Rubber Co U.S. Supreme Court Transcript of Record with Supporting Pleadings), October 1937, pp. 3-4.

was used to purchase 32,000 shares of Goodyear stock.³⁷

Since 1931, Sears obtained various financial concessions from Goodyear in terms of finance and rapidly increased its market share in the replacement tire market. This was due to large amount of transactions with Goodyear. For instance, before contracting with Goodyear, Sears ranked 16th among the retailers in the RE tire market. Through continued transactions with Goodyear, Sears rose to become the leading company in the market.³⁸

U.S. Rubber and Goodrich also had contracts to produce private brand tires for other subsidiaries of oil companies like Colonial Beacon, automotive parts seller Western Auto Supply, and Gamble-Skogmo, maintaining long-term relationships.

However, these major companies and large distribution companies in the RE tire market had a competitive relationship because large tire manufacturers also produced products under their own original brands,³⁹ which are primarily sold through their own retail outlets.

Concurrently, large tire companies had close ties with small- and medium-sized dealers. They automatically engaged in long-term contracts with small dealers, typically lasting three to five years, provided no significant issues arose. As the small dealers lagged behind the large mail-order competitors in modern retail practices, they often required support from specific tire manufacturers with whom they had long term relationships. Tire manufacturers provided various forms of support, such as funding and marketing, to the dealers. Additionally, under intense price competition from the late 1920s onwards, tire manufacturers offered rebates or discounts to dealers, allowing them to sell second-line products at prices lower than those of major chain stores. For example, the “net billing prices” passed from tire manufacturers to dealers were set 25% lower than the listed consumer prices of the manufacturers’ first-line products, and 22% lower than those of their second- and third-line products. Manufacturers commonly provided rebates to dealers who sold products at secret lower prices to consumers.⁴⁰

Among the individual company cases, Firestone is considered the most successful in providing financial and marketing support to dealers in urban markets among the “Big Four” U.S. tire companies. Firestone supported dealers by establishing a service station development department to assist in the selection of real estate, deciding on and altering store layouts, and handling construction and equipment setups.⁴¹ Among large tire manufacturers, Firestone alone did not

³⁷ Paul W. Litchfield to R. E. Wood, 28 May 1928, box 364, file 2116-1-1; Testimony of Paul W. Litchfield, box 380, file 2116-2-1: 9279-80, 9304-5 and box 380, file 2116-2-1:80, 536, 540-44, 559; testimony of Charles H. Brook, and testimony of Paul E. H. Leroy, box 380, file 2116-2-1:415-16, 433-34, 442-43.

³⁸ Lief (1951b), p. 271; Nelson (1991), p. 83.

³⁹ Kim (2018), p. 24.

⁴⁰ Office of National Recovery Administration (1936), pp. 99, 145-146; Lief (1951a), p. 202; Lief (1951b), p. 269; French (1991), pp. 55, 64, 71; Blackford and Kerr (1996), p. 120.

⁴¹ Lief (1951a), pp. 179, 192, 262-263.

engage in the manufacturing of PB tires for large distribution companies. Consequently, struggling to compete with large distribution companies, it was important to have friendly relationships with dealers to sell RE tires. Indeed, in the late 1920s, dealers often sought financial support from Firestone. In response to this request, Firestone invested in dealers in San Francisco, Fitchburg, and Memphis. In 1927, Firestone extended financial support to dealers in six more cities. Meanwhile, during the early 1930s recession, as dealer-based sales ratios on the entire U.S. tire market were declining, Firestone increased the number of dealers it worked with and took action to deepen close relationships with these dealers, including providing support.⁴²

Recognizing the need for loyal dealers to sell its products, Goodyear actively cultivated exclusive relationships with dealers as well. Goodyear provided support by assigning approximately 500 sales representatives, and by establishing branch offices and warehouses to assist dealers. In addition, Goodyear applied discounted prices to pass RE tires to dealers.⁴³

However, there were conflicts of interest between manufacturers and small dealers. This may represent market principles, as they impede organizational transactions. Dealers with poor sales performance were often terminated.⁴⁴ In 1936, the president of Goodyear clarified a strategy shift to prioritize “profits over quantity,” prompting sales executives to pressure small dealers to break the pricing agreements previously established between them.⁴⁵ Furthermore, because small dealers did not maintain inventory but bought tires from manufacturers as needed, they had smaller purchase volumes per brand. Because larger dealers received higher price discounts based on their sales volumes and purchase quantities, the margins for small dealers were lower than those for large dealers.⁴⁶

Furthermore, as mentioned earlier, because large manufacturers integrated retail, tire makers competed against dealers in selling RE tires. Thus, a transactional and competitive relationship existed between large manufacturers and dealers. In other words, the interfirm relationship between large tire companies and small dealers represents cooperation and conflicts of interest.

In addition, while dealing with many dealers, Goodyear made efforts to standardize the wholesale prices provided to dealers to compete effectively.⁴⁷ For instance, since the mid-1910s, Goodyear had been following a “One-Price Basis,” aiming to reduce price discrimination among dealers. Dealers also transacted with multiple tire makers. In 1920, 85% of dealers retailing Goodyear RE tires also handled products from other manufacturers.⁴⁸ That is, major tire manufacturers also maintained “dry” and “open” relationships with many dealers.

⁴² Lief (1951a), pp. 179, 267; Lief (1951b), pp. 265-266.

⁴³ Hugh Allen (1943), p. 354; French (1986), p. 46.

⁴⁴ French (1991), p. 62.

⁴⁵ French (1986), p. 51.

⁴⁶ *Harvard Business Review*, Vol. 2 No. 1, p. 118.

⁴⁷ *Property of The Goodyear Tire and Rubber Company* No. 543, 1915, pp. 6-7.

⁴⁸ Rodengen (1997), p. 69.

4. Competition combined with interfirm relationship

4.1 Competition along with many-to-many transaction of tires

Although major distribution companies ordered their PB products from specific major tire manufacturers, they were not necessarily restricted to one manufacturer. Major distribution companies commonly ordered PB products from multiple major tire companies.⁴⁹ Essentially, through these multi-sourcing orders, major distribution companies used the competition among tire manufacturers and increased the possibility of a stable supply of tires. For example, although Sears had significant transactions with Goodyear, as described earlier, Armstrong Rubber simultaneously manufactured a substantial volume of PB tires for Sears.⁵⁰ Gas stations were selling PB products to be manufactured by many tire companies. Standard Oil ordered its special brand tires not only from Goodrich but also from U.S. Rubber. Simultaneously, tire companies endeavored to maintain multiple distribution companies. For example, while transacting with Sears as a close trading partner, Goodyear also had relationships with smaller dealers. Goodyear effectively leveraged the competitive dynamics between large distribution companies and dealers. In summary, tire companies competed against rivals through many-to-many transactions with tire distributors.

Both RE and OE tire transactions spurred competition among tire manufacturers largely due to the trend of multi-sourcing policies by many automobile manufacturers. Multi-sourcing stimulated competition between tire companies, even those with long-term relationships with tire makers. For instance, in the OE tire market, automobile manufacturers intentionally maintained fierce competition among tire manufacturers to prevent the dominance of a single manufacturer, even in the oligopolistic U.S. tire industry.⁵¹

General Motors (GM) consistently engaged in a multi-sourcing policy to purchase parts across its entire organization.⁵² The competition between GM's divisions not just indirectly stimulated competition among tire manufacturers, each individual division also adhered to the principle of multiple sourcing policies for tires. In 1924, each GM division engaged in decentralized tire procurement. GM procurement teams meticulously balanced the allocation of orders among multiple tire manufacturers, fostering competition among them.⁵³ In 1924, of the 71 American automobile manufacturers surveyed, 46 procured tires from multiple tire manufacturers. Similarly, among the 36 surveyed U.S. automobile manufacturers surveyed in 1926, most placed orders with multiple tire manufacturers. The practice of multiple sourcing policies by automobile

⁴⁹Allen (1943), p. 357.

⁵⁰Rodengen (1997), p. 96.

⁵¹Allen (1943), p. 353; Bobcock (1966), p. 213; French (1991), p. 53; Kim (2018), p. 30.

⁵²Bobcock (1966), pp. 305-306.

⁵³Bobcock (1966), p. 307; Kim (2018), pp. 30-31.

manufacturers was very common in the procurement of tires.⁵⁴ Long-term transactions between specific tire makers and automobiles was practiced based on severe competition among tire companies.

4.2 Competition intensified by long-term transaction

Moreover, the long-term trading relationship between Goodyear and Sears, akin to "champions" in their respective domains, did not necessarily ease competition in the RE tire market. Instead, their transaction contracts may have intensified competition, particularly price competition among tire companies. In particular, Firestone, which was not initially involved in the PB tire business, aggressively pursued a low-price strategy using dealerships rather than relying on close relationships with specific major distributors. This leads to intensified price competition between Goodyear and Firestone. Indeed, the dissolution of the transaction contract between Goodyear and Sears in 1938 is said to have eased the intense competition between Goodyear and Firestone.⁵⁵

5. Price competition and its results

5.1 Price competition among tire companies and distributors

5.1.1 Price competition among tire companies

In the RE tire market, although non-price competition, such as product differentiation, was present among tire manufacturers,⁵⁶ the focus of competition among tire manufacturers was on price. Indeed, price competition was remarkably intense.

Tire companies used diverse methods and means of price competition in the RE tire market. Until the mid-1920s, the major RE tire manufacturers maintained a uniform pricing structure by rigorously controlling their prices. However, around in 1926-1927, a full-fledged "price war" began.⁵⁷ From the late 1920s onwards, a wide range of RE tire products, from highest-line specialty tires to lowest-line convenience tires, were introduced to the market, with lower prices set for lower-tier products.⁵⁸ During the early 1930s, the proportion of lower-line products in the RE tire market increased rapidly.⁵⁹ For example, in the case of Firestone, the proportion of second- and third-line products by sales revenue surged from 8% in 1929 to nearly 60% in 1933. These

⁵⁴ Goodyear (1924).

⁵⁵ French (1991), pp. 70-71.

⁵⁶ Gettell (1941), p. 121; Woodruff (1955), p. 389.

⁵⁷ Lief (1951a), p. 179; French (1991), p. 53.

⁵⁸ Second-line tires had already been introduced to the market since the post-World War I depression. However, at that stage, full-scale price competition had not yet begun (Leigh, 1936, p. 94).

⁵⁹ Lief (1951a), pp. 182-183; French (1991), p. 64; Blackford and Kerr (1996), p. 84. Firestone named their secondary products as "Oldfield" for standard quality products. Their third-line products, priced in the middle range, were named "Courier." The fourth-line products were aimed at competing in the low-price segment and were called "Airway."

lower-line products were priced lower than higher-line products. For example, Firestone aligned the prices of its second- and third-line products with the selling prices of Sears' PB tires. Therefore, the increased proportion of lower-tier products in the market signified the intensification of price competition.⁶⁰

Not only were direct price reductions, such as offering discounts to bulk purchasers, frequently observed, but also other hidden forms of essential discounting, especially broad price reductions, were common.⁶¹ For instance, tire companies often held special sales events and discounts, deducted trade-in prices for used tires from the selling prices and engaged in spurious adjustments or conducted sales at confidential prices. They also offered sales with favorable payment terms, provided complementary goods, made combination and free goods offers, and offered extra services beyond price comparison.⁶²

5.1.2 Price competition between tire companies and distributors

Since the entry of major chain stores into the RE tire market around 1926, fierce price competition between chain stores and tire manufacturers also began, with chain stores setting the retail prices of PB products lower than the wholesale prices of original brand tires of major tire manufacturers with equivalent quality.

Sears began focusing on RE tire advertising in 1926 and set the prices of PB products lower than the prices of manufacturers' RE tires of the same quality. Major tire manufacturers countered this by offering tire discounts, as price became a more significant factor in tire competition in urban areas.⁶³

Price competition recurred during the Great Depression in the early 1930s. In particular, the "price war" between these companies intensified in the spring of 1933.⁶⁴ At the beginning of 1933, major chain stores initiated price competition by setting the price of PB tires to an average 54% lower than the manufacturer's list consumer price.⁶⁵ The quickest response to discounts offered by the distribution companies came from Firestone and Fisk Rubber. Firestone matched the price of its own second-line product with Sears' PB product price. Influenced by Firestone's discounts, other major and mid-sized tire manufacturers also lowered their prices.⁶⁶ Each tire company

⁶⁰ Lief (1951a), p. 189.

⁶¹ Office of National Recovery Administration (1936), p. 100. The discount rates on tires at that time were determined by factors such as market size, type of competition, and negotiating power of dealers (Office of National Recovery Administration, 1936, p. 146).

⁶² Office of National Recovery Administration (1936), pp. 97, 99; Gettell (1941), p. 121; Lief (1951a), p. 200; French (1991), pp. 60-64, 65.

⁶³ French (1986), p. 40; French (1991), p. 56.

⁶⁴ French (1986), pp. 46-47.

⁶⁵ Office of National Recovery Administration (1936), p. 147.

⁶⁶ Lief (1951a), pp. 200, 203; French (1986), p. 52.

utilized second-line product prices more actively, setting them 10–15% lower than listed consumer prices. Furthermore, manufacturers extended the initial warranty period and offered trade-in discounts.⁶⁷

In response to manufacturers' price reductions, major chain stores, such as Sears, implemented further price cuts in January 1934, repeating them throughout the winter. Specifically, they lowered RE tire product prices by 25% and set them to 10%–15% lower than the list consumer prices of major tire manufacturers. For instance, in early 1934, the price of Sears' PB first-line product, Allstate, was reportedly 10% cheaper than Firestone, Goodyear, and Fisk's products with the same quality level.⁶⁸ Additionally, these distribution companies made their third-grade products, such as Sears' "All-State Crusaders" or Montgomery Ward's "Rambler Tires," as their main competitive products against manufacturers and sold them at lower prices so that they were unprofitable for major manufacturers. Furthermore, Sears offered a 25%–30% discount on new tires when trading in used tires starting in January 1934. Montgomery Ward also provided a 25% discount on all new tire prices when trading in used tires.⁶⁹ In summary, whereas major U.S. tire companies had strong ties with big distribution companies via the transaction of PB products, they also manufactured their own original brand tires. Consequently, tire makers competed against big distribution companies and repeatedly engaged in "price wars." Hence, transactional and competitive relationships between major tire companies and large distribution companies overlapped. Overall, organizational principles were intertwined with market principles in transactions and competition in the U.S. tire market during the prewar period.

5.1.3 Price competition among tire distributors

The distribution channel of tires changed followed by an increase in retailers. The number of tire manufacturers peaked in the mid-1920s and continued to decrease through the late 1920s and 1930s. Meanwhile, the number of tire retailers, such as retail outlets of mail-order retailers, gas stations of oil companies, auto supply chain stores, dealers, and jobbers, increased in the same period. For example, while there were approximately 75,000 retail stores in 1926, this number rose to 150,000 in the late 1920s and exceeded 180,000 in 1934.⁷⁰ As the number of retailers outpaced market growth, the average share of each retailer decreased. Indeed, in 1928, when the U.S. tire market began to contract, price competition among distribution companies began.⁷¹ Thereafter, competition among tire retailers intensified.⁷²

⁶⁷ Pennock (1997), p. 548.

⁶⁸ Emmet and Jeuck (1950), pp. 618-619.

⁶⁹ Lief (1951a), p. 202; Office of National Recovery Administration (1936), p. 149; Blackford and Kerr (1996), p. 120.

⁷⁰ Holt (1934); Allen (1943), p. 358; Pennock (1997), p. 544.

⁷¹ Office of National Recovery Administration (1936), p. 99.

⁷² Gettell (1941), p. 120; Allen (1943), pp. 348, 357; French (1991), p. 71.

Montgomery Ward had a strong position in the market until the mid-1920s because of its earlier entry and much larger tire sales than Sears. For example, in 1925, Montgomery Ward recorded sales of two million units compared to Sears' 700,000 units.⁷³ In terms of tire sales revenue, Montgomery Ward earned nearly three times that of Sears in that year.

Among the distribution companies, Sears was the most aggressive in price competition. Sears continued to sell RE tire products at significantly lower prices than other distributors such as Montgomery Ward, Western Auto Supply, and Standard Oil. When Sears began a long-term contract with Goodyear for RE tire sales in 1926, it set significantly lower prices than the prevailing market prices for common tire sizes. Specifically, Sears set prices 40% lower than the average retail price based on the four common tire sizes.⁷⁴ Additionally, the price of Sears' first-line product, Allstate, was sold at an approximately 25% lower than the market price. Even after subtracting transportation costs and customary price discounts, the prices of Sears were 11–22% lower than market prices and 10% lower than those of independent dealers.⁷⁵ Consequently, although other retail distributors followed Sears in terms of price, Sears caught up rapidly. By market share in the 1930s, it surpassed Montgomery Ward, the top distributor of RE tires in the U.S.⁷⁶

Sears strengthened its position in the RE tire market through an active price discount. In 1928, Sears sold 3 million RE tires through its sales outlets, and recorded about 3.25 million dollars in sales revenue, far surpassing Montgomery Ward which only achieved sales of approximately 2.05 million dollars. By 1933, Sears became the largest RE tire retail company in the U. S.⁷⁷ The price differentiation proved successful for Sears.⁷⁸

There are several reasons for Sears' success. First, the change in the sales approach was effective. Under Wood's leadership, Sears shifted its focus from mail-order sales to face-to-face sales through a nationwide expansion of retail stores, which led to changes in the tire sales approach. In February 1925, Sears opened a retail test store on the first floor of Sears' Chicago mail-order headquarters. By the end of 1925, it had added six more stores in the same location, and opened one store each in Chicago and Indiana. As shown in Table 3, Sears' RE tire sales were primarily through traditional mail-order catalog sales until 1927. There was a rapid shift towards retail store sales from 1928 onwards, which became the main sales approach thereafter (Table 3). This shift contributed to the expansion of Sears' RE tire sales.⁷⁹

⁷³ Allen (1943), p. 356.

⁷⁴ Kim (2018), pp. 25-26.

⁷⁵ Emmet and Jeuck (1950), p. 390; Allen (1943), p. 370.

⁷⁶ Allen (1943), p. 356; Emmet and Jeuck (1950), pp. 389-390.

⁷⁷ Gaffey (1940), p. 56; Emmet and Jeuck (1950), p. 390; French (1991), p. 55.

⁷⁸ "Petition", "Brief of respondent", and "Brief for the petitioner" (1937); Reynold (1938), p. 461; French (1991), p. 55.

⁷⁹ For Sears, this shift to retail store sales was not limited to tire sales. Robert Wood undertook

Table 3 Sears' RE tire sales by sales methods, 1927-1933 (units)

Year	Tire sales	Mail-order	Retail Store
1927	1,791,570	1,238,158	553,412
1928	3,247,463	1,221,933	2,025,530
1929	4,379,667	1,328,526	3,051,151
1930	3,462,858	801,414	2,661,444
1931	3,238,016	630,242	2,607,776
1932	2,525,892	506,158	2,019,734
1933	1,842,724	444,550	1,398,174

Source: Emmet and Jeuck (1950), p. 619.

Second, unlike Montgomery, which primarily focuses on sales in small cities, Sears concentrated its efforts on sales in major cities of the Eastern U.S. by increasing the number of retail stores in the suburbs of major cities. For instance, the number of Sears' tire retail stores increased from nine in 1926 to 281 in 1929, with most new stores strategically located in major urban areas.

Third, the ear has made intensive advertising efforts. In particular, through active advertising, its first-line tire product, "Allstate" established the significant brand power and became "vast asset" for Sears shortly after its introduction.⁸⁰

Major retail companies compete with small dealers in the RE tire market. In particular, intense price competition has emerged. The lowering of prices of major retail companies' PB tires has narrowed the price gap between dealers and chain stores of major retail companies.⁸¹ Price competition between major retail companies and independent small dealers was fierce, particularly during the early 1930s, and persisted until the 1940s.⁸²

In this price competition environment, major retail companies have several advantages over small dealers, and the competitive advantage of dealers is significantly threatened. Most importantly, owing to their large sales volumes, major retail companies can procure tires at exceptionally low prices. Additionally, since major companies deal with a wide range of products besides tires, their average costs are lower than those of tire dealers, allowing them more room for price reduction. Furthermore, for retailing RE tires, it is necessary to align diverse tire product

practiced retail store sales not only in tire business but in other businesses. In fact, the reason why Wood's move from Montgomery Ward to Sears was that he was dissatisfied the fact that Montgomery Ward rejected the proposal of opening retail stores.

⁸⁰ Emmet and Jeuck (1950), p. 395; French (1991), p. 55.

⁸¹ Office of National Recovery Administration (1936), p. 97; French (1986), p. 40.

⁸² Gaffey (1940), p. 55; Gettell (1941), p. 120; Allen (1943), p. 369.

sizes to ensure high turnover. Small dealers are disadvantaged in terms of distribution costs compared to larger retailers.

Examining the distribution of RE tire retailers by scale from the late 1920s to the early 1930s, as shown in Table 4, it is apparent that there were many small retailers with a high proportion of sales revenue and numbers. Thus, it can be concluded that most retail businesses were at a disadvantaged competitive position.

Table 4. Number of stores and sales of RE tires by sales amount of distributors, 1929 and 1934 (thousand dollars, stores, %)

Sales amount	Number of store and proportion				Sales revenue and proportion			
	1929		1934		1929		1934	
	Number of store	Proportion	Number of store	Proportion	Sales revenue	Proportion	Sales revenue	Proportion
(Total)	22,313	100	16,027	100	599,295	100	225,970	100
below 9,999\$	9,598	43	10,995	68.6	43,041	7.2	36,996	16.4
10,000~19,999\$	4,373	19.6	1,996	12.5	65,020	10.8	27,589	12.2
20,000~29,999\$	2,470	11.1	962	6	59,777	10	23,574	10.4
30,000~49,999\$	2,539	11.4	992	6.2	97,236	16.2	37,738	16.7
50,000~99,999\$	2,071	9.3	779	4.9	141,738	23.7	53,464	23.7
100,000~199,999\$	788	3.5	256	1.6	105,993	17.7	33,839	15
200,000~299,999\$	165	0.7	32	0.2	40,383	6.7	7,340	3.2
300,000~499,999\$	88	0.4	14	0.1	32,673	5.5	4,930	2.2
over 500,000\$	21	0.1	1	0	13,926	2.3	500	0.2

Source: Statistics Section of National Recovery Administration (1936), pp. 12-13.

5.2 The results of price competition

5.2.1 The persistent price decline

Due to the price competition, RE tire prices continued to decline, with an average annual decline of 5% over the two decades from the late 1920s.⁸³ Although the retail prices of RE tires had been declining since the inception of the automotive tire market, these price drops were more pronounced since the late 1920s.

The substantial price decline began around November 1927, with a 5% decrease in that month alone. By 1928, the retail price of RE tires had dropped to \$18.75 from \$29 in 1926.⁸⁴ During the Great Depression starting in late 1929, prices plummeted further. The average price of various RE tire products dropped from \$20.7 in 1923 to \$10.8 in 1933.

Intensified competition among tire manufacturers, including price differentiation in the OE tire market, exerted downward pressure on the prices of OE products. Consequently, OE tire prices continued to drop through the late 1920s and the 1930s.

⁸³ Gaffey (1940), p. 33; Allen (1943), p. 348; Blackford and Kerr (1996), p. 95.

⁸⁴ Lief (1951b), p. 267.

5.2.2 Deterioration in profitability

Although the tire price continued to decline, the ratio of distribution expenses to the sales revenue of major tire manufacturers rose during the late 1920s and early 1930s. In particular, the proportion of expenses related to discounts and allowances associated with price competition was quite high among the distribution expenses. For example, the costs of discounts and allowances accounted for 10% of sales revenue and 1/4–1/3 of distribution expenses in the late 1920s and early 1930s (Table 5). This implies that the profitability of RE tire manufacturers significantly worsened. Price competition in the U.S. tire industry imposed challenging profitability on each company over a considerable period.

Table 5 The distribution cost-to-sales ratio of major tire manufacturers, 1926-1933 (%)

<i>Item</i>	<i>1928</i>	<i>1929</i>	<i>1930</i>	<i>1931</i>	<i>1932</i>	<i>1933</i>
Sales less returns	\$100,285 (100%)	\$100,779 (100%)	\$91,277 (100%)	\$72,988 (100%)	\$52,127 (100%)	\$48,531 (100%)
Discounts and Allowances	8.68	11.00	12.09	11.63	9.04	12.93
Freight	3.12	3.46	3.86	3.84	4.53	4.09
Warehousing and Shipping	0.50	0.69	0.76	0.75	1.01	0.99
Home Office Selling	1.13	1.49	1.46	2.15	3.03	2.89
Field Selling and Operating	7.29	7.91	8.49	10.27	16.55	14.71
Advertising	4.23	4.65	5.43	6.77	11.80	8.26
Approximate Total Distribution Expense	24.95%	29.20%	31.09%	35.41%	45.96%	43.87%

Source: Leigh (1936), pp. 94, 103; Federal Trade Commission Docket 2116, Respondent's exhibit no. 22088A-C.

In the OE tire market, significant fluctuations in demand and intense competition posed constant challenges to profitability and viability. Owing to the pressure of price competition and demand for price reductions from automobile companies, the OE tire business became an extremely low-margin business.⁸⁵ While fulfilling large OE tire orders often incurred significant inventory costs, tire transactions were conducted on favorable terms for the automobile companies, even in terms of bearing inventory costs. Amid the highly volatile price fluctuations of rubber, transferring inventory costs to tire manufacturers entailed significant financial uncertainty for them.⁸⁶

⁸⁵ Gaffey (1940), p. 133; Allen (1943), p. 353; French (1991), p. 53.

⁸⁶ Kim (2018), p. 33.

Moreover, tire companies had to produce tires with many specifications to expand their OE tire sales. Additionally, with an increase in passenger car model changes from the mid-1920s onwards, the inventory burden for OE tires for older models surged.⁸⁷ Even though the RE tire business had very severe profitability in this period, OE tire operation was a more challenging business in terms of profitability than RE tires.

Consequently, low profit margins persisted throughout the 1920s and 1930s, with the exception of a few years.⁸⁸ For example, the average net profit margin from 1922 to 1935 was only 4.3%, which is significantly below the average profit margin of the entire U.S. manufacturing industry, which was 7.6% during the same period.⁸⁹ Even major companies experienced low profit margins. For instance, the profit margin to sales revenue for the top four U.S. tire companies was approximately 3% for most of the 1930s (see Table 6).

Table 6 Revenue, profit, and profit margin on sales of the top four U.S. tire companies, 1932-1939 (million dollars, %)

Year	Revenue	Profit	Profit margin on sales
1932	346.2	13.1	3.8
1933	352.7	10.8	3.1
1934	445.3	11.9	2.7
1935	533.0	21.0	3.9
1936	623.1	37.4	6.0
1937	709.3	24.3	3.4
1938	564.9	17.9	3.2
1939	691.2	33.3	4.8

Source: Gettell (1941), p. 122.

6. Tire company performances under competition since the 1920s

6.1 Companies' market positions in the 1920s

U.S. Rubber and Goodrich, which were dominant market leaders in the U.S. tire market in the early stage of the industry, saw market share losses through the 1920s. Their shares dwindled to single digits, relegating them to the third and fourth positions in the U.S. tire market (see Table 7). Conversely, Goodyear and Firestone, which specialized in the tire business, gained traction. In the 1920s, they rapidly expanded their production and sales, and saw improved performances, soon surpassing the early leaders, U.S. Goodrich and U.S. Rubber.

⁸⁷ Office of National Recovery Administration (1936), p. 103.

⁸⁸ Gettell (1941), p. 114.

⁸⁹Holt (1933); Cross, Earseman, and Lenaerts (1936), pp. 51, 55; Leigh (1936), pp. 98, 101; Gaffey (1950), pp. 53, 156, 183; Woodruff (1955), p. 389; Blackford and Kerr (1996), p. 91.

Table 7 Market shares of major companies in the U.S. tire industry, 1921-1933 (%)

	1921	1926	1929	1933
Goodyear	16.1	21.8	29.2	30.1
Firestone	8.2	14.1	19.0	15.4
U.S. Rubber	8.5	7.4	6.6	18.9
B.F. Goodrich	n.a.	10	7.2	7.7
Fisk	n.a.	5.3	4.1	3.1
General	n.a.	1.1	1.8	2.7
Dunlop	n.a.	0.8	0.9	1.4
Seiberling	n.a.	1.3	1.4	1.5

Source: French (1986), p. 31.

Since the mid-1910s, Goodyear had a strong presence in the automobile tire market. It had the largest share of the U.S. tire market through the late 1910s and 1920s. After reaching a market share of 21% in 1916, Goodyear's share further increased to 25% by 1919. Although its market share dropped to 16% in 1921, Goodyear rebounded in the following year and continued to increase its market share. By 1926, Goodyear surpassed diversified competitors, such as Goodrich and U.S. Rubber, by market share to become the "world's largest rubber products manufacturer" based on overall rubber sales.⁹⁰ As shown in Table 7, Goodyear had nearly 30% of the U.S. tire market sales in 1929.

However, the company's market share in the RE tire market was relatively lower than that of the total tire market. Goodyear's share in the RE market was 13% in 1926 and increased to 18% by 1929, whereas its overall market share in the tire market was 21.8% in 1926 and 29.2% in 1929. One reason for Goodyear's relatively passive approach to the RE market was its lack of capital to build its own network of stores as well as retail through dealers. Consequently, Goodyear sold RE tires not through its own sales outlets, but through service stations and automotive accessory shops.⁹¹ Goodyear's sales department acknowledged that it lacked the capacity to increase sales to meet the growing demand.⁹²

Another tire-specialized company, Firestone, also strengthened its presence in the market. Firestone rose to third position in the tire market in 1921, following U.S. Rubber. By 1926, Firestone had captured a share of slightly over 14%, surpassing U.S. Rubber to become the second-largest player in the market. By 1929, it had nearly reached a 20% share, closely trailing Goodyear.

⁹⁰ Allen (1943), p. 349; Rodengen (1997), p. 56.

⁹¹ Rodengen (1997), pp. 39-40.

⁹² French (1991), p. 41.

Aggressive capital investment was a significant factor contributing to the market share growth of Goodyear and Firestone.

In the early 1920s, Goodyear and Firestone continued expanding their production capacity anticipating market growth, and reinvested in new facilities and factories.⁹³ Specifically, with the tire market's expansion, leading tire manufacturers introduced highly efficient equipment, such as fast and flexible conveyors, and labor-saving machinery, such as the Banbury Mixer. This increased the optimal efficiency of the scale of tire factories, highlighting the industrial character of the machinery.⁹⁴ In 1916, Goodyear launched a production line for new tire products⁹⁵ and its total capital investment in land, buildings, machinery, and ancillary facilities reached approximately \$13 million. The increased production capacity in that year alone almost matched the tire production capacity of Goodyear. Goodyear and Firestone were proactive in their investments; in 1928, they constructed new factories in Los Angeles, California, apart from their main production bases in Akron.⁹⁶ By 1933, Goodyear's tire production capacity was greater than that of the second- and third-largest tire companies combined.

In the pursuit of the advantages of "specialization" in the mass production of tires, Goodyear and Firestone advanced dedicated tire manufacturing by an "internal growth strategy" based on the accumulation of internal resources rather than mergers and acquisitions.⁹⁷ Consequently, they engaged in proactive investments in the tire production equipment.

Goodrich and U.S. Rubber were so contrasting in the sense that they were behind in the aggressiveness of equipment investment, particularly due to its diversified business portfolio. In fact, despite the rapid growth in tire demand in the 1910s, Goodrich hesitated to invest in the tire business and missed the timing of investment with only partial reinforcing existing factories. It solely relied solely on its main production base in Akron and faced issues related to aging equipment. Consequently, it could not catch up with the production expansion of Goodyear and Firestone, and lost market share.⁹⁸ Similarly, U.S. Rubber faced a lack of proactive equipment investments. When Charles B. Segar, who hailed from New York's financial district and was the chairman of the Union Pacific Railroad, became president in the 1920s, little investment was made in the tire business, leading to equipment inefficiencies.⁹⁹

Another factor that reduced Firestone and Goodyear's market shares was the active vertical integration of tire retailing. Firestone was the first mover in the vertical integration of tire retailing,

⁹³ French (1991), p. 37.

⁹⁴ Nelson (1988), p. 19.

⁹⁵ French (1991), p. 37; Blackford and Kerr (1996), p. 63; Rodengen (1997), p. 43.

⁹⁶ French (1991), p. 39.

⁹⁷ Allen (1943), p. 351; Chandler (1956), pp. 137-138; French (1991), pp. 26-27; Nelson (1991), p. 112; Blackford and Kerr (1996), pp. 55, 113.

⁹⁸ Gaffey (1950), p. 172; Blackford and Kerr (1996), pp. 31-32, 44, 62, 63.

⁹⁹ Gaffey (1950), p. 175; Chandler (1956), pp. 134-135; Bobcock (1966), p. 215.

ahead of others in the RE tire market segment. Meanwhile, Firestone, the only company among the “Big Four” without PB production, was pioneering vertically integrated tire retail in the same market ahead of other companies.¹⁰⁰ Beginning with their first company store, “Firestone Tire Stores, Inc.” in Portland, Maine, Firestone established 40 MandM stores by 1928 and invested \$8.8 million to create 337 company stores by the late 1920s.¹⁰¹ Goodyear also expanded its retail presence by establishing Goodyear Service Inc. with 98 locations in 1929, which increased to 233 locations by 1932.¹⁰² Although Firestone led the way and followed by Goodyear, Goodrich, and Dunlop establishing retail company stores in urban areas, generally, company stores by tire-focused manufacturers like Firestone and Goodyear were prevalent. These company stores significantly contributed to enhancing the brand loyalty of Firestone and Goodyear, as expected, during this period.¹⁰³

6.2 The trend in the market positions of companies in the 1930s

6.2.1 U.S. Rubber

In the 1930s, there was another shift in rankings among the “Big 4” tire companies. As mentioned earlier, U.S. Rubber, which lost its market share through the 1920s and settled in third place, managed to rapidly increase its market share during the early 1930s. Meanwhile, Goodyear maintained its position as the market leader. However, U.S. Rubber recorded a market share of over 19% in 1933, more than three times its share in 1929, whereas the company occupied only less 7% in 1929 (Table 7). Furthermore, by 1937, it increased its market share to 22.6%.¹⁰⁴ Consequently, U.S. Rubber surpassed Firestone to claim the second position in the U.S. tire market.

U.S. Rubber increased its market share in both the RE and OE tire markets through the 1930s. While U.S. Rubber held approximately 7% of the RE tire market in the early 1920s,¹⁰⁵ its market share surged to 15.4% during the Great Depression in 1932. Furthermore, U.S. Rubber expanded its RE tire sales in the late 1930s and occupied a market share of over 30% by 1940 in the U.S. RE tire market. Behind this advancement of U.S. Rubber in the RE market was the increase in orders for PB tires from major mail-order companies such as Gillette, Atlas, and Montgomery Ward, which had entered the RE tire sales business in the late 1920s.¹⁰⁶

¹⁰⁰ Pennock (1997), p. 548.

¹⁰¹ Allen (1943), pp. 356-357; Lief (1951a), p. 185; Lief (1951b), pp. 268-269; Blackford and Kerr (1996), p. 94.

¹⁰² French (1991), p. 62; Pennock (1997), p. 548.

¹⁰³ French (1989), p. 184; French (1991), p. 56.

¹⁰⁴ French (1989), p. 180; French (1991), pp. 46, 62-63.

¹⁰⁵ Bobcock (1966), p. 214; Nelson (1991), p. 46.

¹⁰⁶ French (1989), pp. 63, 185; Kim (2018), p. 28.

Similarly, U.S. Rubber's progress in the OE market in the 1930s was remarkable. Its share in the U.S. OE tire market surged from 6.9% in 1929 to 12.1% in 1930; thereafter, it exceeded 28% for several years.¹⁰⁷ U.S. Rubber formed long-term transaction relationships with GM, Ford, Packard, Graham-Paige, and Mach Truck. By the 1940s, it had become the largest OE tire supplier not only in the United States but also worldwide.¹⁰⁸

The breakthrough of U.S. Rubber in the U.S. tire market can largely be attributed to the consolidation and streamlining of its production facilities.¹⁰⁹ At the end of the 1920s, several of its factories were reportedly much less efficient and operated at significantly higher costs than the Akron factories of Goodyear and Firestone. The top management of U.S. Rubber identified that significant diversification led to the dispersion of production and management resources, which largely contributed to inefficient production. In response to this problem, it changed the division of production by factories. Specifically, each factory specialized in specific tire products and the production of specific products was concentrated in a specific factory. For example, automobile tire production was concentrated in Detroit and Hartford, truck tire production in Providence, and bicycle and motorcycle tire production in Indianapolis. In addition, U.S. Rubber established a vast, new, and modernized factory in Detroit and concentrated passenger car tire production there.

6.2.2 Goodyear

Goodyear still held over 30% of the U.S. tire market in 1933, widening the gap with its competitors (Table 7). In the RE tire market, its transactions with Sears contributed to its large market share in this market segment. Sales to Sears accounted for approximately 20% of Goodyear's total sales from 1931 to 1933, making Sears the last customer of Goodyear.¹¹⁰

However, in the RE tire market, Goodyear sharply declined from 1937 (Table 8) owing to the dissolution of the transaction contract between Goodyear and Sears. This decline significantly affected Goodyear.

Notably, the decrease in the share of sales to Sears did not shift towards an increase in sales to dealers. Instead, the proportion of sales to automobile manufacturers for OE tires and exports increased. In other words, Goodyear's sales partly transitioned from RE to OE tires and domestic markets to foreign markets of RE tires during this period. Consequently, it was able to maintain its position in the U.S. tire industry.

¹⁰⁷ French (1991), p. 27; Kim (2018), p. 28.

¹⁰⁸ Kim (2018), pp. 28, 36.

¹⁰⁹ French (1991), p. 60.

¹¹⁰ The transaction volume between the two companies alone accounted for approximately 2.8% to 9.6% of the entire RE tire retail market of U.S.

Table 8 The distribution of Goodyear tire, 1929-1939 (%)

Year	To dealer	To big distributors	To automobile companies	Export
1929	35.3	20.4	26.5	17.7
1930	41.5	18.8	21.2	18.6
1931	44.5	19.9	18.5	17.1
1932	47.7	18.5	12.8	21.0
1933	42.3	12.0	27.3	18.4
1934	39.5	13.0	28.1	19.5
1935	31.6	12.8	38.4	17.2
1936	24.1	13.0	44.2	18.7
1937	21.7	4.3	52.9	21.1
1938	33.5	5.0	32.3	29.4
1939	30.3	5.5	45.3	23.4

Source: Goodyear Tire and Rubber Company Records, Record Group No. 99/106, Archival Services, University Libraries, The University of Akron.

6.2.3 Firestone

In contrast to U.S. Rubber, Firestone, which had maintained its second position in the market, fell to third place in the 1930s (Table 7).

While Firestone aggressively pioneered the tire market and expanded its business through proactive equipment investment until the 1920s, the company changed its strategy in the early 1930s. Specifically, in the 1930s, when the influence on management by Harvey Firestone, the company's founder, weakened, Firestone reduced the concentration of management resources in the tire business and stopped focusing on creating competitive innovations.¹¹¹ In addition, the limits to the vertical integration of tire retailing emerged in the 1930s. For instance, Firestone's company stores incurred a \$500,000 loss in 1930, while Goodyear's retail operations recorded a cumulative deficit of \$9.4 million from 1926 to 1933. In summary, even companies that actively pursued retail integration were unable to mitigate the profitability challenges of company stores during the early 1930s. Indeed, among the "Big Four," U.S. Rubber, which was the most reluctant to integrate tire retailing, significantly increased its market share in the RE tire market during the 1930s, as described earlier. Thus, the vertical integration of retail function alone exposed the limitations in the 1930s.

Moreover, whereas the number of independent dealers decreased from 1928 to 1933, Firestone expanded the number of dealers to trade during the early 1930s' economic depression. It began

¹¹¹ Gettell (1941), p. 122.

transacting with 6,928 dealers in 1930 and 8,613 dealers in 1931. Consequently, the total number of dealers supplied by Firestone reached approximately 30,000.¹¹² This change in Firestone's tire distribution strategy may have negatively affected its market position.

Conclusion

In the first decade of the 20th century, along with the beginning of automobile mass production in the U.S. and the onset of increasing demand for automobile tires, several companies began manufacturing automobile tires. For instance, from 1917 to 1922, new entries in the U.S. tire industry were so prominent that 42 companies per year on average, totaling 249 companies, entered the market.

The early entrants were diversified firms such as Goodrich, Diamond Rubber, which was merged into Goodrich in 1912, and U.S. Rubber. In the 1900s, representing the very initial period of the U.S. tire industry, Goodrich and U.S. Rubber demonstrated their strength in the RE tire market, which occupied the dominant proportion of U.S. tire market. In particular, the active integration of wholesale functions contributed to increasing Goodrich's market share.

However, Goodrich and U.S. Rubber experienced market share losses through the 1910s. Meanwhile, Goodyear and Firestone, which entered the market later than Goodrich and U.S. Rubber, saw their significant market share gains, propelling them into the top ranks of the U.S. tire market through investments in facilities.

From the inception of the automotive tire market to the mid-1920s, dealers and jobbers were the main players in the RE tire distribution channel. Tire manufacturers also had long-term contracts with small dealers. Furthermore, they often required support from specific tire manufacturers that continued to transact for a long time. Furthermore, tire manufacturers provided various forms of support, such as funding and marketing, to dealers. In this sense, tire manufacturers had strong and close ties with dealers. Meanwhile, while dealing with many dealers, Goodyear made efforts to standardize the wholesale prices provided to dealers to compete effectively. Major tire manufacturers also maintained "dry" and "open" relationships with many dealers. Moreover, most major U.S. tire companies actively pursued vertical integration of retail functions by successively establishing "company stores" in the late 1920s. Consequently, tire makers competed against dealers in selling of RE tires. In summary, the interfirm relationship between large tire companies and small dealers exhibited both cooperation and conflicts of interest.

Meanwhile, drastic changes in RE tire distribution channels occurred in the late 1920s. While the importance of purchasing tires via dealers significantly declined, large mail-order retailers, oil companies, and automotive parts retailers entered the RE tire retailing business. These changes in

¹¹² Lief (1951a), pp. 187, 271-272.

the RE tire distribution channels were largely due to the increase in PB tires. The new tire retailers primarily commissioned PB tire products from major U.S. tire manufacturers, except for Firestone. Consequently, long-term over-the-counter relationships were formed between the specific major tire manufacturers and distributors. Meanwhile, although major distribution companies ordered their PB products from specific major tire manufacturers, it was not necessarily restricted to just one manufacturer. Through this multi-sourcing policy, major distribution companies used the competition among tire manufacturers and increased the possibility of a stable supply of tires. Tire companies competed against rivals and engaged in many-to-many transactions with tire distributors. Tire companies also endeavored to maintain multiple distribution companies for their transactions.

Competition intensified during the late 1920s. Whereas major U.S. tire companies had strong ties with big distribution companies through PB product sales, they also manufactured their own brand tires. Consequently, tire makers started competing against big distribution companies since the late 1920s and repeatedly engaged in “price wars.” In the RE tire market, although non-price competition, such as product differentiation, was present among tire manufacturers, the focus of competition was on price. Indeed, price competition was remarkably intense. In the OE tire market, competition among OE tire manufacturers became severe largely because of the multi-sourcing policies adopted by many automobile manufacturers. Long-term transactions between specific tire makers and automobiles were undertaken given the severe competition among tire companies. Again, the competition among retailers intensified. As the number of retailers outpaced market growth, the average share of each retailer decreased. In 1928, when the U.S. tire market began contracting, price competition among distribution companies began again and intensified. Among the distribution companies, Sears was the most aggressive competitor.

Because of price competition, both RE and OE tire prices continued declining through the late 1920s and 1930s. Yet, the ratio of distribution expenses to the sales revenue of major tire manufacturers increased during this period, leading to worsening profitability and a low margin.

Owing to severe price competition and the worsening profitability of the business, new entrants into the industry almost ceased. Furthermore, the number of companies that withdrew from the tire business significantly increased. Meanwhile, the number of U.S. tire manufacturers continued declining since the mid-1920s. In this price competition environment, major retail companies held advantages over small dealers, while most retail businesses were in a disadvantaged position. Meanwhile, the concentration of “Big 4”—Goodyear, Firestone, U.S. Rubber, and Goodrich—became remarkable in the tire industry.

However, the performances of major tire companies were very different and variable during this period. Through the 1920s, U.S. Rubber and Goodrich, which were dominant positions of the U.S. tire market in the early stage of the industry, lost market share. Both U.S. Rubber and

Goodrich, which had pursued diversification through acquisitions dwindled to single digit market share, relegating them to the third and fourth position, respectively, in the U.S. tire market.

In contrast, Goodyear and Firestone, who specialized in the tire business, gained traction. By 1926, Goodyear surpassed diversified competitors such as Goodrich and U.S. Rubber. Further, in terms of market share, it became the “world’s largest rubber products manufacturer” based on overall rubber sales. Another tire-specialized company, Firestone, also strengthened its presence in the market, rising to the third position in 1921, following U.S. Rubber. By 1926, Firestone had captured a share of slightly over 14%, surpassing U.S. Rubber to become the second-largest player in the market.

Aggressive capital investment significantly contributed to the market share gains of Goodyear and Firestone. They continued expanding their production capacities, anticipating market growth, and reinvested in new facilities and factories. In the pursuit of the advantages of “specialization” in the mass production of tires, Goodyear and Firestone advanced dedicated tire manufacturing by an “internal growth strategy” based on the accumulation of internal resources rather than mergers and acquisitions. An additional factor for their increased market share was the active vertical integration of tire retailing. Firestone was the first mover in the vertical integration of tire retailing, ahead of others in the RE tire market segment.

In the 1930s, there was another shift in rankings among the “Big 4” tire companies. U.S. Rubber had a market share of over 19% in 1933, which was more than three times its share in 1929. By 1937, it had further increased its market share to 22.6% and surpassed Firestone to claim the second position in the U.S. tire market. This breakthrough can largely be attributed to the consolidation and streamlining of its production facilities.

Goodyear still held over 30% of the U.S. tire market share in 1933, widening the gap with its competitors. In the RE tire market, the transaction with Sears contributed to the large market share of Goodyear in this market segment. The company sharply declined in this market from 1937 owing to the dissolution of the contract between Goodyear and Sears. This decline underscores its significant impact on Goodyear. Nevertheless, Goodyear’s sales partly transitioned from RE tires to OE tires and domestic to the foreign markets of RE tires during this period. Consequently, it was able to maintain its position in the U.S. tire industry.

By contrast, Firestone fell to third place in the 1930s due to several reasons. Crucially, Firestone changed its strategy in the early 1930s. The company weakened its concentration of management resources in the tire business and stopped focusing on creating competitive innovations. In addition, the vertical integration of tire retail revealed the limits to the 1930s. Indeed, even companies that actively pursued retail integration were unable to avoid the profitability challenges of company stores in the early 1930s. Moreover, Firestone aggressively increased dealers to trade

during the early 1930s, while other rivals decreased them. This change in Firestone's tire distribution strategy may have negatively affected its market position.

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