Ford and the world automobile industry in 2012

At the beginning of 2012, the Chief Financial Officer of Ford Motor Company, Lewis Booth, was reviewing his financial forecasts for 2012-16. Ford's turnaround since the crisis of 2007-8 had been remarkable. After a loss of $14.7 billion in 2008, Ford earned net profits of $6.6 billion in 2010, and it looked as though Ford's profit for 2011 would exceed this. The recovery had been much more rapid than Booth had expected. Ford's business plan of December 2008 projected that it would not break even until 2011.[1] Booth attributed the speed of the turnaround to three factors: first government measures in North America and Europe to stimulate demand through incentives for scrapping old cars and subsidies for purchasing new, fuel-efficient models; second, the recovery of demand in several major markets including China, India, Brazil and the US; third, Ford's own restructuring. The "One Ford" transformation plan introduced in 2006 had closed plants, cut Ford's workforce from 295 000 at the beginning of 2006 to 148 000 at the end of 2011, sold Jaguar, Land Rover and Volvo and a large chunk of Mazda; integrated Ford's global activities; and accelerated product development including an increasing emphasis on smaller cars.

Despite these successes, Booth looked to the future with much trepidation. Ford's performance over the next five years would depend on three main factors: Ford's ability to continuing success with its One Ford strategy, the state of the world economy, and developments in the global automobile industry. On the first of these, Booth had few doubts. On the second, he realized that, for all the uncertainty, there was little that Ford could do other than closely monitor the unfolding economic situation and be prepared to adapt to unforeseeable events. On developments in the global automobile industry, Booth was perplexed.

The collapse in industry profitability in 2007-9 and descent into bankruptcy of General Motors and Chrysler was not simply a consequence of the financial crisis. It also reflected

the massive structural problems of the industry—most notably, too many firms with too much capacity chasing too little demand. The catastrophic declines in industry revenues and profits in 2008 promised a major industry restructuring. Daimler's CEO had predicted that 2009 would be a "Darwinian year" for the auto industry. Yet, the industry's pre-crisis structure survived almost intact. The *Financial Times* commented:

> [I]nstead of natural selection, something else happened: governments around the world, from Canada and Brazil to Russia and South Korea, stepped in with prodigious amounts of cash to keep car plants open and assembly lines running. All told, automakers have benefited from well in excess of $100 billion of direct bail-out funds or indirect state aid . . . the biggest ever short-term intervention in manufacturing . . . (T)he money has prevented a necessary shake-out in an industry that has long had too many producers. Consultants at PwC estimate the industry has the capacity to build 86 million units this year, almost a record—and 31 million more than the 55 million vehicles that it will sell.[2]

Even before financial crisis hit, the financial performance of the industry was dire: between 1990 and 2008 the world's five biggest auto makers (GM, Toyota, Ford, Daimler-Chrysler and Volkswagen) had earned on average a net margin of 1.1%; their return on invested capital and together they had destroyed billions in shareholder value. However, despite the lack of exit or consolidation by the leading auto makers, it was clear that the structure of the industry was far from remaining static. The shifting of demand from the mature industrial nations to the growing markets of Asia, Eastern Europe and Latin America was accompanied by the emergence of new competitors from these same regions. Meanwhile, new technologies and environmental concerns—including the growing use of all-electric vehicles—wereredirecting the industry's development path. Understanding how these different forces would impact the overall profit potential of the world automobile industry would be a key determinant of Ford's financial performance in the coming years.

Development of the world automobile industry[3,4]

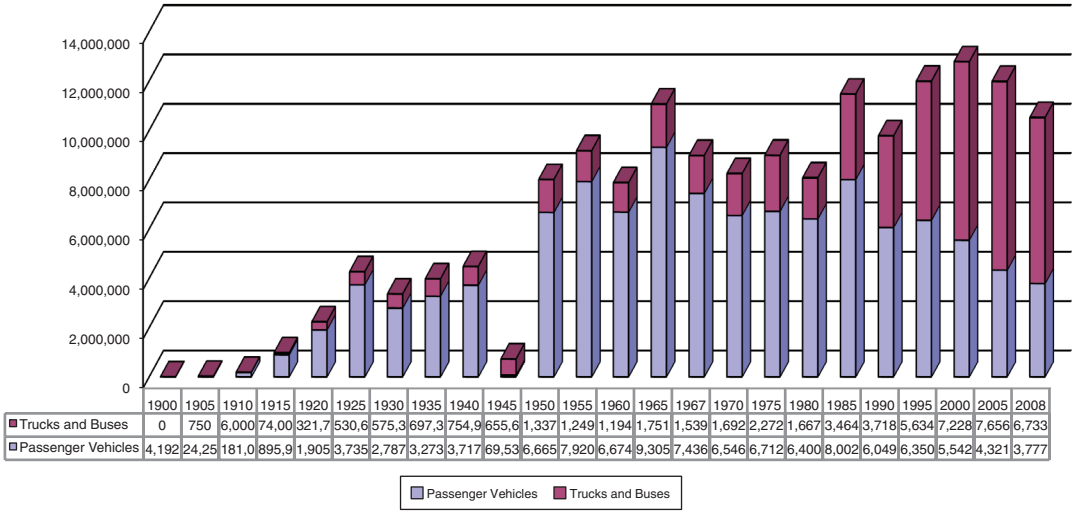
The growth of demand and production

Vehicles powered by internal-combustion appeared in Europe during the 1880s—Gottlieb Daimler and Karl Benz were among the first. By the end of the 19th century, hundreds of small companies were producing automobiles both in Europe and in America.

During the 20th century the industry followed different development paths in different parts of the world. The U.S. auto industry grew rapidly during 1910–28 and 1946–65 before reaching market saturation (see Figure 1).The automobile industries of Western Europe and Japan also experienced maturing of their markets with production peaking in 1989–90. In all the advanced industrial countries the increased longevity of cars dampened market demand (see Figure 2).

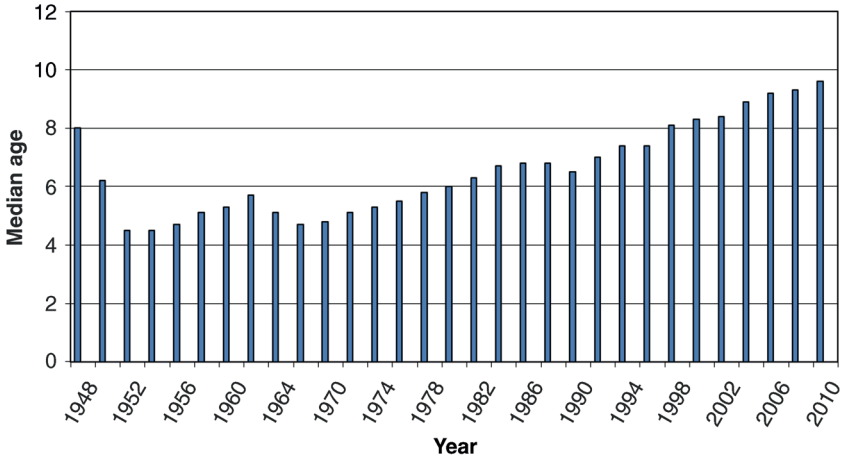
Despite declining output in the advanced industrialized countries, the world automobile industry has continued to grow (see Figure 3). This growth has been the

Figure 1 U.S. motor vehicle production, 1900–2008



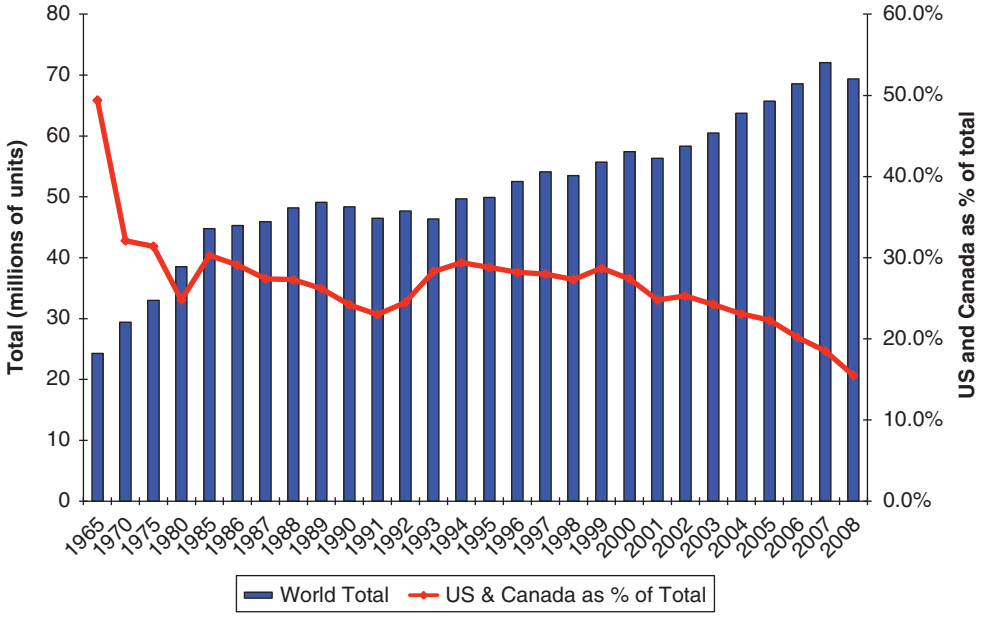
	1900	1905	1910	1915	1920	1925	1930	1935	1940	1945	1950	1955	1960	1965	1967	1970	1975	1980	1985	1990	1995	2000	2005	2008
Trucks and Buses	0	750	6,000	74,00	321,7	530,6	575,3	697,3	754,9	655,6	1,337	1,249	1,194	1,751	1,539	1,692	2,272	1,667	3,464	3,718	5,634	7,228	7,656	6,733
Passenger Vehicles	4,192	24,25	181,0	895,9	1,905	3,735	2,787	3,273	3,717	69,53	6,665	7,920	6,674	9,305	7,436	6,546	6,712	6,400	8,002	6,049	6,350	5,542	4,321	3,777

Figure 2 Median age of passenger cars in the U.S.



Source: R. L. Polk & Co.

Figure 3 World motor vehicle production, 1965–2008



result of growing output from the newly industrializing countries—notably Korea, China, Brazil, and India. (see Table 1). As a result, the proportion of world output contributed by the traditional production centers—the US, Western Europe, and Japan—fell from 77% in 1994 to 40% in 2010 (see Table 2).

Table 1 World motor vehicle production by countries and regions (% of world total)[1]

AU: We have deleted repetition of Table 1. Plz check.

	1960	1989	1994	2000	2005	2008	2010
U.S.	52.0	23.8	24.5	22.2	20.0	18.6	12.9
Western Europe	38.0	31.7	31.2	29.9	28.4	20.7	14.6
Central and E. Europe	2.0	4.8	4.3	4.6	5.4	9.5	7.7
Japan	1.0	18.2	21.2	17.7	17.0	16.7	12.6
Korea	n.a.	1.8	4.6	5.0	5.3	5.5	5.6
China	n.a.	n.a.	2.7	3.5	5.7	13.3	24.0
World total (millions)	12.8	49.5	50.0	57.4	66.8	69.4	76.1

Note:

1 Motor vehicles include automobiles, trucks and buses.

Source: A. K. Binder (ed.), Ward's Automotive Yearbook, 2011, Wards Communications, Southfield MI, 2011.

Table 2 Leading automobile-producing countries (thousands of cars; excludes trucks)

	1987	1990	1995	2000	2005	2008	2010
China	n.a.	n.a.	356	620	3118	6341	9494
Japan	7891	9948	7664	8363	9017	9916	8307
Germany	4604	4805	4360	5132	5350	5532	5552
Brazil	789	663	1312	1348	2009	2561	2828
Korea	793	987	1893	1881	2195	2436	2793
U.S.	7099	6077	6338	5542	4321	3777	2731[1]
India	n.a.	n.a.	394	541	999	1507	2317
Spain	1403	1679	1959	2445	2098	2014	1951
France	3052	3295	3051	2883	3113	2144	1914
Mexico	266	346	710	1130	846	1217	1386
Russia[2]	1329	1260	834	967	1288	1469	1208
U.K.	1143	1296	1532	1641	1596	1448	1274
Czech Rep.	n.a.	n.a.	193	428	599	933	1070
Canada	810	1072	1339	1551	1356	1195	967
Poland	301	256	260	533	527	840	799
Italy	1701	1874	1422	1442	726	659	573

Notes:

1 The production data for the US do not include the large volumes of pick-up trucks and SUVs produced by the automobile companies but classed as trucks.

2 U.S.S.R. in 1987 and 1990.

Sources: Japan Automobile Manufacturers Association; Korean Automobile Manufacturers Association; A. K. Binder (Ed.), Ward's Automotive Yearbook, 2011, Wards Communications, Southfield MI, 2011.

The evolution of the automobile

The early years of the industry were characterized by considerable uncertainty over the design and technology of the motorcar. The first "horseless carriages" were precisely that—they followed design features of existing horse-drawn carriages and buggies. Soon a bewildering variety of technologies were competing. The internal-combustion engine vied with the steam propulsion and electric motors. Transmission systems, steering systems and brakes all displayed a remarkable range of technologies and designs.

Over the years, technologies and designs converged. The Ford Model T with its front-mounted, water-cooled, four-cylinder engine represented the first "dominant design" in automobiles. Convergence continued throughout the twentieth century with the

elimination of most distinctively different technologies and designs. Air-cooled engines, such as those of the VW Beetle disappeared along with Citroen's distinctive suspension systems. Power trains standardized around four cylinders, in-line engines, with V-6 and V-8 configurations for larger cars. Front-wheel drive became standard on smaller cars; suspension, steering, braking systems and body shapes became more similar. Technological progress was incremental: new materials, new safety features, multi-valve cylinders, and applications of electronics such as traction control systems, electronic fuel injection, variable suspension, satellite navigation systems, and intelligent monitoring systems.

Convergence also occurred across countries. The distinctive differences that once distinguished American, French and Japanese cars largely disappeared—partly due to the manufacturers' promotion of global models. The same market segments are present in different countries, though the sizes of these segments vary greatly across countries.In the U.S., "mid-size" family sedans, SUVs, and pickup trucks are the largest segments; in Europe and Asia, small family cars ("subcompacts") formed the largest market segment.

This trend toward design convergence and piecemeal innovation was interrupted by the introduction of electric powered cars. This was hardly a disruptive technology: the first electrically-powered cars and buses were in use at the beginning of the 20th century—in 1900, 28% of all automobiles produced in the U.S. were all electric. Their reintroduction was incremental: in 1997 both Toyota and Audi introduced mass-produced hybrid cars—100 years after Ferdinand Porsche had developed the first hybrid car in which an internal combustion engine powered an electric motor. The launch of highway-capable, mass-produced, all-electric cars was much anticipated but long delayed—despite the well established markets for neighborhood electric vehicles (NEVs)—golf carts, maintenance vehicles, and site-transport vehicles. At the beginning of 2012, all the leading vehicle manufacturers had all-electric models in development, but the only mass-marketed all-electric, plug-in cars were the Nissan Leaf and the Mitsubishi iMiEVs.

Changes in manufacturing technology

At the beginning of the twentieth century, car manufacture, like carriage-making, was a craft industry. Few companies produced more than a 1000 automobiles annually. When Henry Ford began production in 1903, he used a similar approach. His vision of an affordable, mass-produced automobile required the development of more precise machine tools that would permit interchangeable parts. In 1913, he instituted his new system of production. Components were produced either in batches or continuously and were then assembled on moving assembly lines by semi-skilled workers. The productivity

gains were enormous. In 1912 it took 23 man-hours to assemble a Model T; just 14 months later it took just 4 hours.

Toyota's "lean production" was the second major revolution in process technology. Toyota developed its system in postwar Japan where shortages of key materials encouraged extreme parsimony and avoidance of inventories and waste. Lean production combined statistical process control, just-in-time scheduling, quality circles, teamwork and flexible production (multiple models were manufactured on a single production line). During the 1980s and 1990s all the world's car manufacturers redesigned their manufacturing processes to incorporate aspects of Toyota's lean production.

Flexible, lean plants reduced the importance of scale economies in assembly. Minimum efficient scale once required plants producing over 400 000 units a year. After 1990, most new assembly plants had capacities of between 150 000 and 300 000 units per annum. However, scale economies remained important in components and subassemblies: the minimum efficient scale for an engine plant was around 1 million units annually.

New product development

The increasing complexity of new cars in terms of electronics, and new safety and environmental standards caused the cost of developing new models to rise steeply. Taking an entirely new, mass-production model from drawing board to production line typically cost more than $2 billion. Ford's Mondeo/Contour—its first global model—launched in 1994 cost a total of $6 billion (including tooling). The need to amortize huge development costs over large numbers of vehicles was the primary driver of consolidation in the industry. Small automakers had the choice of merging with bigger rivals or seeking niche positions. Geographically-focused manufacturers such as Tofas of Turkey and Proton of Malaysia licensed designs from the global auto makers. The tiny Morgan company survived by making the same hand-crafted sports car that it had designed in the late 1930s. The quest to economize on new product development costs also encouraged a variety of strategic alliances and joint ventures among the auto makers.

To economize on new product development costs, a major trend in the industry was to use a single platform for multiple models. A "platform" comprised a vehicle's architecture including its floorpan, suspension system and layout of powertrain and major components. While the major car makers widened their model ranges, they increasingly based these around a few platforms—typically between four and six. Similarly with major components: in engines, Ford moved to three engine families: V-8/V-10, V-6 and I-4 (four in-line cylinders). The I-4 engine had over 100 variations, an annual volume of 1.5 million,and was built at three different plants—one in North America, one in Europe and one in Japan.

The world auto industry in 2012

The manufacturers

The ranks of the leading producers were dominated by U.S., Japanese, and Western European companies—plus Hyundai of Korea (see Table 3). All were multinational: Toyota, GM and Ford each produced more vehicles outside their home countries than within. Compared with comparable industries—aircraft, motorcycles, or construction equipment—the auto industry remained fragmented—in 2010 there were 18 manufacturers with annual output exceeding 1 million vehicles and the 3-firm concentration ratio (measured by units of production) was 31.5%. Despite the many mergers and acquisitions (see Table 4), the industry's consolidation was limited to the emergence of new competitors (from China and India especially). The crisis of 2008–9 resulted in several divestments, but only one major merger: between Fiat and Chrysler.

Table 3 The world's leading auto manufacturers

		1992	1996	2002	2005	2007	2010
GM	U.S.	6764	8176	8326	9200*	9350	8476
Toyota	Japan	4249	4794	6626	7974*	8534	8557
Volkswagen	Germany	3286	3977	5017	5243*	6268	7341
Ford	U.S.	5742	6611	6729	6818*	6248	4988
Daimler	Germany	605	993	4456	4829*	4635	1940
Chrysler	U.S.	2476	2958				1578
Hyundai[a]	S. Korea	874	1402	2642	2534*	3987	5765
Honda	Japan	1762	2021	2988	3391*	3912	3643
Peugeot	France	2437	1975	3262	3375	3457	2605
Nissan	Japan	2963	2712	2719	3569*	3431	3982
Fiat	Italy	1800	2545	2191	1708*	2679	2410
Renault[b]	France	1929	1755	2329	2533*	2669	2716
Suzuki	Japan	888	1387	1704	2630	2596	2893
BMW	Germany	598	641	1091	1328*	1542	1481
Mitsubishi	Japan	1599	1452	1821	1381	1412	1174
Mazda	Japan	1248	984	1044	1149*	1287	1308
Daihatsu	Japan	610	691	n.a.	909	856	—[c]
Chang'an Automobile	China	n.a.	n.a.	n.a.	n.a.	n.a.	1103

Tata	India	n.a.	n.a.	n.a.	n.a.	588	1011
FAW	China	n.a.	n.a.	n.a.	n.a.	691	896
Geely	China	n.a	n.a	n.a	n.a	n.a	802
Fuji	Japan	648	525	542	571	585	650
Dongfen Motor	China	n.a	n.a	n.a	n.a	n.a	650

Notes:

n.a. = not available.

*Sales data.

a Including Kia.

b Including Dacia and Samsung.

c Included in Toyota

Source: Ward's Automotive Yearbook; Wikipedia

Table 4 Mergers and acquisitions among automobile manufacturers, 1986–2011

Year	Acquirer	Target	Notes
2010	Geely (China)	Volvo (Sweden)	Sold by Ford for $1.3 bn.
	Spyker Cars (Neth.)	Saab Auto (Sweden)	Sold by GM for $1bn.
2009	Volkswagen (Germany)	Suzuki (Japan)	Acquires 20% stake
	Fiat (Italy)	Chrysler (U.S.)	Acquires 35% stake, later increased to 58%
	Volkswagen	Porsche (Germany)	Acquires 49%
	Beijing Auto (China)	Fujian Motor; Changfeng Motor (China)	
2008	Tata (India)	Jaguar Cars, Land Rover (U.K.)	Sold by Ford
	SAIC Motor Group (China)	Nanjing Automobile (China)	SAIC combines MG and Rover brands
2005	Nanjing Automobile	Rover (U.K.)	
	Toyota (Japan)	Fuji Heavy Industries (Japan)	Acquired 8.7% stake from GM
2002	GM (U.S.)	Daewoo (S. Korea)	42% of equity acquired
2000	Renault (France)	Samsung Motors (S. Korea)	70% of equity acquired
	GM	Fiat	20% of equity acquired
	DaimlerChrysler (Germany)	Hyundai (S. Korea)	10% of equity acquired
	DaimlerChrysler	Mitsubishi Motors (Japan)	34% of equity acquired
1999	Renault (France)	Nissan (Japan)	38.6% of equity acquired
	Ford (U.S.)	Volvo	Acquires car business only
	Ford	Land Rover	Acquired from BMW
	Toyota	Daihatsu	51% stake acquired

1998	Daimler Benz (Germany)	Chrysler	Biggest auto merger ever
	VW (Germany)	Rolls Royce Motors (U.K.)	Acquired from Vickers plc
	Hyundai (South Korea)	Kia (S. Korea)	
	Daewoo (South Korea)	Ssangyong Motor (South Korea)	
	Daewoo (South Korea)	Samsung Motor (South Korea)	
1997	Proton (Malaysia)	Lotus (U.K.)	
	BMW (Germany)	Rover (U.K.)	
1996	Daewoo (South Korea)	FSO (Poland)	
	Daewoo (South Korea)	FS Lublin (Poland)	
	Ford (U.S.)	Mazda (Japan)	Increases stake from 25% to 33%
1995	Fiat (Italy)	FSM (Poland)	
1994	Daewoo (S. Korea)	Oltcit/Rodae (Romania)	
1991	Volkswagen	Skoda (Czech Rep.)	31% stake later increased to 100%
1990	GM	Saab-Scandia (Sweden)	50% of equity acquired
	Ford	Jaguar	
1987	Ford	Aston Martin (U.K.)	
	Chrysler	Lamborghini (Italy)	
1986	Volkswagen	Seat (Spain)	

Source: Newspaper reports (various).

Outsourcing and the role of suppliers

Henry Ford's system of mass production was supported by intensive backward integration. At Ford's giant River Rouge plant, iron ore entered at one end, Model Ts emerged at the other. Ford even owned rubber plantations in the Amazon basin. Since 1980, the quest for lower costs and increased flexibility has resulted in massive outsourcing of materials, components, and services. At the end of the 1990s GM and Ford both spun off their component businesses as separate companies: Delphi and Visteon, respectively. Relationships with suppliers also changed. The Japanese model of close, collaborative long-term relationships with their "first-tier" suppliers has displaced the U.S. model of contract-based, arm's-length relationships. The new system has resulted in the component companies gaining increased responsibility for technological development—especially for sophisticated subassemblies such as transmissions, braking systems, and electrical and electronic equipment. The component producers have also grown in size and global reach. Bosch, Denso, Johnson Controls and Delphi are as big as some of the larger automobile companies (see Table 5).

Table 5 Revenues and profitability of the biggest automotive component suppliers

	Revenues ($ billion)				ROA (%)	ROE (%)
	1994	2000	2008	2010	2010	2010
Robert Bosch (Germany)	19.6	29.1	58.5	62.6	5.0	8.6
Denso Corp. (Japan)	11	18.2	40.3	36.6	4.6	5.2
Johnson Controls (U.S.)	7.1	17.2	35.9	34.3	4.3	14.8
Aisin Seiki (Japan)	7.3	8.9	27.1	26.4	3.1	7.1
Magna International (Canada)	n.a.	10.5	23.7	24.1	4.0	12.9
TRW Automotive Holdings (U.S.)	n.a.	n.a.	n.a.	14.1	9.0	40.4
Delphi Automotive (U.S.)	n.a.	29.1	18.1	13.8	5.7	n.a.
Eaton (U.S.)	4.4	8.3	15.4	13.7	6.6	12.6
Valeo SA (France)	3.8	8.9	11.4	13.2	4.9	25.5
Lear Corp (U.S.)	3.1	14.1	13.6	12.0	6.6	17.8

Note:
n.a. = not available.
Sources: Financial Times, Fortune.

The quest for cost reduction

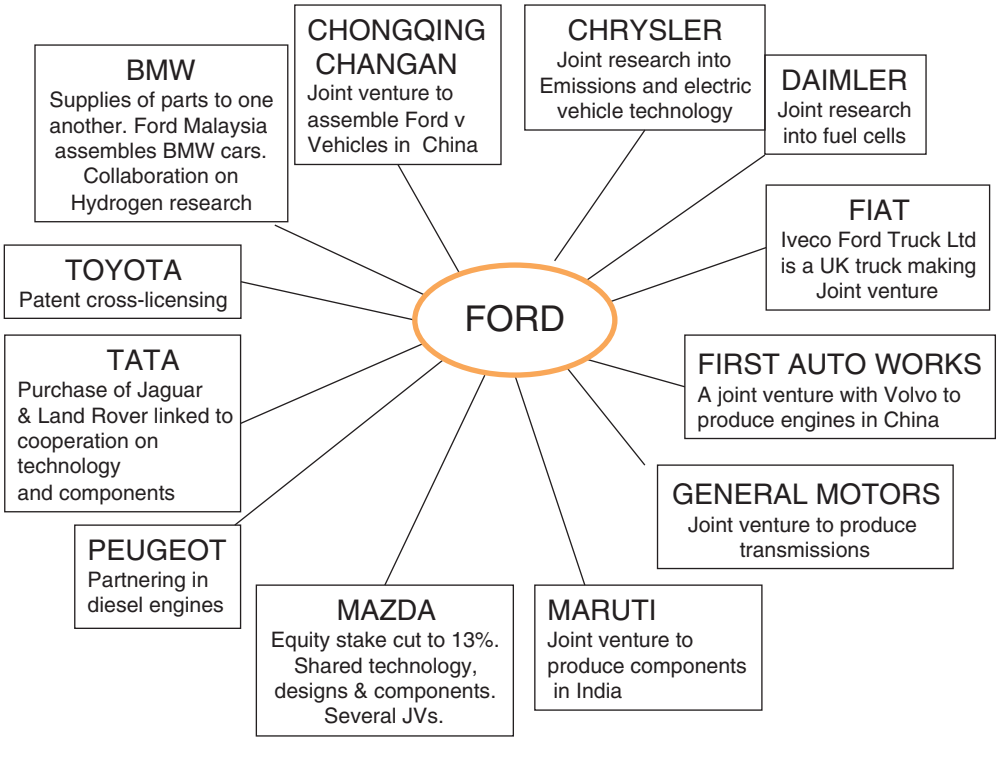
Strong competition pressured companies to seek cost reduction through several sources:

- *Economies of scale* were critically important in research, component production, and product development. According to Sergio Marchionne, the CEO of Fiat and Chrysler, efficiency for a global auto producer required producing at least five million cars a year: companies producing less would struggle to survive.[4]
- *Economies of scope*. Many cost economies could be exploited across different models. Investments in technology, dealerships, and marketing could be applied across all models—indeed, the use of common components and platforms meant that economies of scope were often converted into economies of scale. By 2012, all the leading auto makers had models ranges that covered almost every product segment from luxury cars to mini-cars—including SUVs. However, Ford had narrowed its product range by selling its Jaguar, Land Rover, and Volvo subsidiaries.
- *Worldwide outsourcing*. Outsourcing has grown from individual components to major subassemblies (such as engines and steering systems)—even to complete

cars (including design and engineering). An important source of cost savings from outsourcing derives from component suppliers' lower wages and benefits compared to the auto assemblers.

- *Just-in-time scheduling*, a key element of lean production, permitting radical reductions in inventories and work-in-progress.
- *Off-shoring*. Geographical shifts in production were partly the result of automakers seeking lower cost manufacturing locations; Toyota moved production from Japan to lower cost locations in Southeast Asia; Volkswagen from Germany to central and eastern Europe.
- *Collaboration*. Collaborative arrangements included joint-venture plants, technology alliances, component supply agreements and joint marketing agreements. In emerging market countries, most new auto plants were joint ventures between local and overseas companies. These arrangements economized on the costs of developing new technologies and new products, and accessing overseas markets. Ford's network of alliances (see Figure 4) are typical of linkages among the automobile companies.

Figure 4 Ford's alliances with other automakers



Despite constant cost-cutting, the major automakers were unable to rival low cost producers in China, India, and elsewhere. Tata Motors' 2009 launch of its Nano model—four-seater, 623cc city car, with fuel cosumption of 70 miles per gallon and priced at a mere $2200—was a major shock to the multinational automakers. However, the subsequent difficulties that the Nano encountered in terms of production, safety and market acceptance point to the sheer complexity of the bringing an innovative new model to market and the challenges facing emerging market automakers in rivaling the experience and expertise of the established giants.[5]

Excess capacity

The greatest structural problem of the industry was excess capacity. Ever since the early 1980s, the growth of production capacity had outstripped the growth in the demand for cars. Import restrictions had exacerbated the problem. During the 1980s and early 1990s, North American production capacity grew substantially as a result of Japanese companies building greenfield "transplants." Further big additions to world production capacity resulted from the expansion of the Korean car industry during 1992–7. Since 2000, the main additions to capacity were in Eastern Europe, Asia and Latin America where all the world's leading automakers rushed to build new plants to serve growing demand. The biggest overhangs of excess capacity were in North America and Europe (see Table 6), but even in China, where demand grew by almost 50% annually between 2002 and 2011, growth of capacity outstripped growth in demand. Looking ahead, the prospects of reducing excess capacity were limited by, first, the resistance by national governments to plant closures; second, continuing investment in new plants in emerging market countries—in China capacity utilization was forecast to fall to 66% by 2016.

Table 6 Automobile production capacity utilization

	2008	2009	2010
North America	79%	44%	65%
South America	82%	62%	75%
Europe	84%	65%	68%
Japan and Korea	86%	72%	78%
South Asia	89%	83%	81%

Source: Various press and consulting firm reports.

Internationalization

International expansion was driven primarily by the auto makers' desire to access growing markets; to exploit scale economies in purchasing, technology, and new product development; and to seek low-cost manufacturing locations (see Table 6). Although Ford and General Motors began their international expansion back in the 1920s, until the 1970s the world auto industry was made up of separate national markets where each national market was dominated by indigenous producers. The global strategies of the Japanese automakers changed all that. After 1980, the main strategic priority of all the world's major auto companies was to build aglobal presence through acquisition, alliance and joint venture. As a result of internationalization, the dominance of national champions was undermined (see Table 7).

Table 7 Hourly compensation for motor vehicle workers (U.S.$ per hour, including benefits)

	1975	1984	1994	2004	2006	2009*
Germany	7.9	11.9	34.7	44.0	45.9	46.5
U.S.	9.6	19.0	27.0	33.9	35.1	33.5
U.K.	4.1	7.4	16.0	29.4	30.0	30.8
France	5.1	8.2	18.8	26.3	29.4	40.1
Japan	3.6	7.9	25.9	27.4	27.8	30.4
Spain	3.7	5.3	15.4	21.5	24.2	27.7
Korea	0.5	1.7	7.8	15.8	19.0	14.2
Italy	5.2	8.0	16.3	21.7	18.6	35.0
Mexico	2.9	2.6	3.0	3.5	3.7	5.4

Note: The 2009 data relates to all manufacturing industry; the data for earlier years refers to motor vehicle manufacture only.
Source: U.S. Department of Labor, Bureau of Labor Statistics.

Table 8 Automobile market shares in individual countries (%)

	1988	2006	2010
U.S.*			
GM	36.3	23.5	19.1
Ford	21.7	16.7	16.5
Chrysler	11.3	8.8	9.3
Toyota	6.9	13.9	15.3
Honda	6.2	8.8	10.7

	1988	2006	2010
U.K.			
Ford	26.3	18.5	15.8
GM (Vauxhall)	13.7	12.7	12.8
Peugeot	8.7	10.0	8.8
VW/Audi	5.9	12.9	16.0
BMW (& Rover)	15.0	4.6	6.9

FRANCE			
Renault	29.1	24.8	22.1
Peugeot	34.2	28.2	32.4
VW	9.2	11.6	11.0
Ford	7.1	6.0	5.1
ITALY			
Fiat	59.9	28.5	30.1
VW/Audi	11.7	10.8	11.6
Ford	3.7	7.8	9.1
Peugeot	n.a.	9.6	10.3
Renault	7.1	6.4	
GERMANY			
VW/Audi	28.3	27.8	35.1
GM (Opel)	16.1	9.7	8.9
Ford	10.1	8.0	6.8
Daimler	9.2	11.3	10.6

JAPAN			
Toyota	43.9	40.4	34.4
Nissan	23.2	14.0	12.8
Honda	10.8	12.2	14.2
Suzuki	n.a.	12.1	11.4
KOREA			
Hyundai	55.9	50.0	37.6
Kia	25.0	23.3	28.2
Daewoo	19.1	10.0	22.7
CHINA			
Shanghai GM			10.4
Shanghai VW			9.7
FAW Volkswagen			8.9
Beijing Hyundai			6.1
Dongfeng PSA			6.0
BYD			5.5
Chery			5.1

Notes:

*The market share data is for passenger cars only with the exception of the U.S. which is for cars and light trucks.

n.a. = not available.

Sources: Japan Automobile Manufacturers Association; Korean Automobile Manufacturers Association; A. K. Binder (Ed.), *Ward's Automotive Yearbook, 2009*, Wards Communications, Southfield MI, 2009.

Outlook for the future

As he reviewed the forces likely to impact the world automobile industry during the next five years, he found it difficult to assess their combined impact of these forces on the overall intensity of competition in the industry.

While Ford had forecasts for demand growth in all the major markets of the world, even if the more optimistic boundaries of these forecasts were achieved, market growth would not translate into adequate profit margins if the chronic overhang of excess capacity remained. In the mature industrialized countries there seemed little prospect that either market growth or that plant closures would eliminate the overhang of excess capacity. Indeed, the growth in alternative transport modes—included shared car ownership—pointed to the possibility of decline in private automobile use. In the newly industrializing countries—especially Asia and Latin America where Ford had pinned most of its hopes—the indications were that capacity expansion would outstrip sales growth.

The international aspirations of leading emerging markets producers suggested that the established auto makers would be facing more intense competition. Tata Motor's acquisitions of Jaguar and Land Rover, Geely's of Volvo and SAIC's of the MG and Rover brands provides these firms with international platforms from which to compete.

The introduction of all-electric cars, while offering the prospects for new demand, might also be an opportunity for newcomers to muscle-in on the market domains of the major auto makers. Despite the tiny market share of hybrid and all-electric vehicles, environmental concerns, environmental regulation, and depleting oil reserves pointed to their potential to increasingly displace conventional automobiles. Despite heavy investments by most of the leading car makers in both hybrid and all-electric autos, leaders in electrical vehicles included Magna International, the Canadian auto parts producer, Tesla, a Californian start-up producers of luxury electrical cars, Smiths Electrical vehicles in electrically-powered trucks, BYD Auto the leading Chinese producer of hybrid and electric cars, and Think Global the Norwegian producer of electric cars owned by the Russian firm, Electric Mobility Solutions.

Despite the gloom that pervaded many experts' outlook on the auto sector, Booth saw several rays of light. He had noted the success—in terms of both sales and profit margins—of several small cars, notably the BMW Mini and Fiat Cinquecento. It appeared that customer preferences—even in the US—were shifting with a greater interest in fuel economy, safety, and aesthetics. After a long period when different manufacturers' mass market models had been becoming increasingly similar, the future might offer greater potential for differentiation, including mass-customization that the car makers had hardly begun to exploit;cars °had been e auto form's belief in the superiority of the internal combustion engine.

Underlying these opportunities were new approaches to product development—including virtual prototyping, modular design and collaborative design and development—which had the potential to overturn conventional relationships between scale and cost competitiveness within the industry.

Appendix

Table 9 Company sales ($ billion)

	1980–4[a]	1985–9[a]	1990–4[a]	1995–9[a]	2000-4[a]	2005-9 [a]	2010
Toyota	18	42	82	107	125	205	222
VW	16	28	48	64	96	143	168
GM	68	110	128	169	186	167	135
Ford	42	77	96	149	166	155	129

Daimler[b]	12	34	59	71	166	153	129
Honda	8	18	35	50	62	94	104
Nissan	16	26	51	57	58	90	102
Hyundai Motor	n.a.	n.a.	n.a.	18	38	70	97
BMW	5	10	21	34	45	70	80
Peugeot	13	19	28	35	58	73	74
Mitsubishi	12	14	25	32	27	43	61
Renault	15	31	31	37	44	52	52
Fiat	18	27	42	50	59	72	47
Mazda	n.a.	12	21	18	19	27	27

a Annual average.

b Daimler Chrysler 2000–6.

n.a. = not available.

Source: Company Financial Statements; Hoovers.

Table 10 Company profitability (return on equity, %)

	1980–4[a]	1985–9[a]	1990–4[a]	1995–9[a]	2000–4	2005–9	2010
Toyota	12.6	10.6	6.1	6.8	10.1	7.0	2.1
VW	1.6	6.3	(0.4)	11.1	6.8	5.5	25.0
GM[b]	11.4	11.8	3.2	27.5	11.7	(10.5)	17.1
Ford	0.4	21.8	5.9	35.4	(7.7)	(10.4)	
Daimler	24.3	18.3	6.9	22.1	7.7	4.8	14.9
Honda	18.1	11.8	5.3	15.1	13.2	8.0	6.6
Nissan	10.3	4.7	3.6	(0.1)	29.3	7.4	10.3
Hyundai Motor	n.a.	n.a.	n.a.	4.4	10.6	12.0	20.0
BMW	14.8	10.4	9.7	(4.0)	15.4	10.8	22.1
Peugeot	(15.2)	36.7	12.5	3.0	13.4	(1.4)	9.1
Mitsubishi	10.0	7.9	4.8	(5.3)	(113.3)	(12.7)	6.5
Renault	(152.4)	51.1	9.1	11.0	14.7	14.4	18.3
Fiat	10.9	18.7	6.8	7.6	(24.2)	9.9	15.2
Mazda	n.a.	4.8	5.0	6.3	(34.2)	9.6	(18.4)

a Annual average.

b GM made a net loss of $2billion in 2006, $39 billion in 2007 and $31 bn. in 2008.

n.a. = not available.

n.c. = not calculable (shareholders' equity negative).

Source: Company financial statements; Hoovers.

Notes

1 Ford Motor Company, Business Plan Submitted to the Senate Banking Committee, December 2, 2008.

2 "U.S. Car Industry: Back on the Road," *Financial Times*, June 17, 2009.

3 Automobiles (passenger motor cars) used to transport people are normally distinguished from commercial vehicles (trucks) used to transport goods. However, in the US, sport-utility vehicles and pick-up trucks (classed as light trucks) are used primarily for personal transportation. Ideally we would like to define the automobile industry as comprising automobiles and light trucks (small vans, pick-up trucks, SUVs, passenger vans), but excluding heavy trucks and large buses. However, most of the statistics we use, "automobiles" exclude light trucks, while "motor vehicles comprise automobiles and and all trucks and buses.

4 "Fiat's Marchionne sees auto-industry consolidation" *MarketWatch*, Sept. 9, 2011. http://www.marketwatch.com/story/fiats-marchionne-sees-auto-industry-consolidation-2011-09-09

5 "Tata's Nano: Stuck in low gear," *The Economist*, August 20, 2011.