

3. Automotive

The global automotive industry is dominated by world-scale manufacturers, such as Toyota, General Motors, Ford, Chrysler, Honda, Nissan, and others. These manufacturers outsource much of their parts production to larger "Tier 1" suppliers, who, in turn, often subcontract production to smaller "Tier 2/3" manufacturers. Parts manufacturers may supply both Original Equipment Manufacturers (OEMs) and the replacement parts market.

a) Representative Operation – Auto Parts

Most "Tier 2/3" suppliers manufacture a specialty or some combination of metal components (approximately 75 percent of a vehicle), plastic components (15 percent), and electronic components (10 percent). The representative operation modeled is a "Tier 2/3" supplier of manufactured auto parts assemblies. As illustrated in Exhibit 3.10, this operation is characterized by:

- Moderate facility and equipment requirements
- A balanced workforce of skilled and unskilled workers
- Moderate energy requirements
- Relatively high costs for materials, reflecting the significant use of components and sub-assemblies
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The business is assumed to operate as a stand-alone profit center.

b) International Results

International results are illustrated in Exhibit 3.11. These results reflect the combined impact of 26 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.12.

c) Selected Cities

Exhibit 3.13 profiles results for selected cities, by country, from among the 95 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.7.

EXHIBIT 3.10 – AUTOMOTIVE	
Auto Parts Manufacturing – Summary of Operating Parameters	
Facilities Requirements	
Leased industrial facility	6 acres (24,281 m2)
Size of factory built	100,000 ft2 (9,290 m2)
Other Initial Investment Requirements	
Machinery and equipment – US \$'000	\$13,000
Office equipment – US \$'000	\$500
R&D equipment – US \$'000	\$75
Inventory – US \$'000	\$2,500
Equity financing – % of project costs	50%
Workforce	
Management	4
Sales and administration	15
Production/non-dedicated product development	
- Professional, technical	22
- Operators	36
- Unskilled laborers	18
Other	5
Total employees	100
Energy requirements	
Electricity monthly consumption/peak demand	352,500 kWh and 1,152 kW
Gas monthly consumption	13,295 CCF (37,663 m3)
Other Annual Operating Characteristics	
Sales at full production – US \$'000	\$40,000
Materials and other direct costs – % of sales	55%
Other operating costs – % of sales	6%
Investment in tax-eligible R&D – % of sales	2.5%

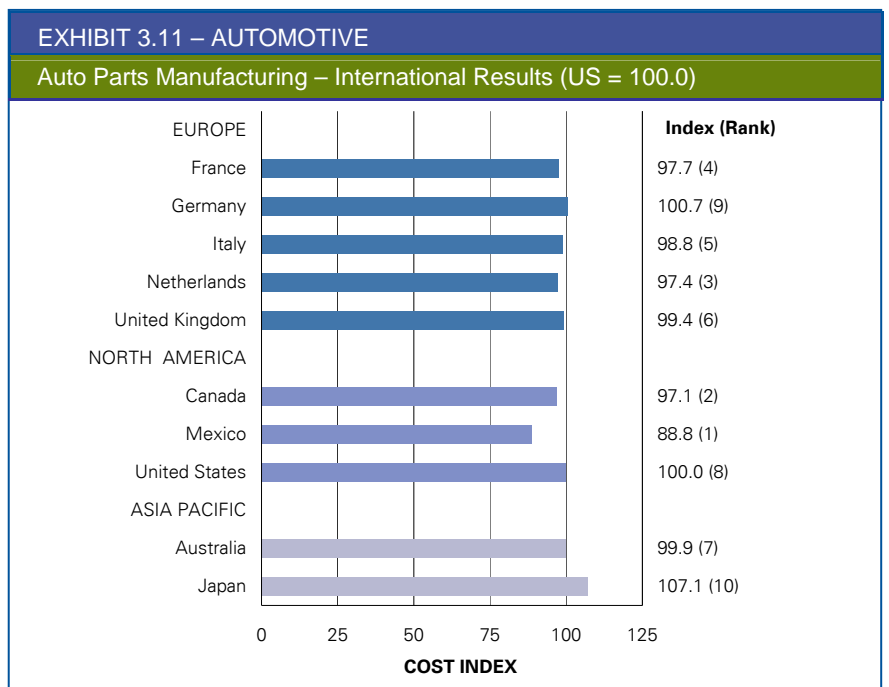


EXHIBIT 3.12 – AUTOMOTIVE

Auto Parts Manufacturing – Costs, by Major Component, US \$'000

	Europe					North America			Asia Pacific	
	France	Germany	Italy	Netherlands	UK	Canada	Mexico	US	Australia	Japan
Revenues	38,200	38,200	38,200	38,200	38,200	38,200	38,200	38,200	38,200	38,200
Costs										
- Salaries & Wages	4,192	5,802	4,501	5,149	4,639	4,981	1,791	4,997	5,143	6,646
- Statutory Plans	1,925	1,042	971	695	435	559	128	505	670	642
- Other Benefits	879	1,226	1,290	1,332	1,565	1,273	538	1,942	1,146	1,705
- Total Labor & Benefits	6,995	8,070	6,761	7,175	6,639	6,813	2,458	7,444	6,959	8,994
- Facility Lease	683	853	820	909	1,394	531	483	506	718	1,584
- Transportation	1,079	940	1,170	980	982	1,625	2,184	1,568	2,335	1,149
- Utilities	587	789	1,137	737	727	480	498	458	816	744
- Interest & Depreciation	2,119	2,231	2,159	2,133	2,237	2,147	1,529	2,178	2,057	2,484
- Non-Income Taxes	516	261	59	56	796	452	49	649	217	1,029
- Location-Insensitive Costs	23,302	23,302	23,302	23,302	23,302	23,302	23,302	23,302	23,302	23,302
Profit Before Income Tax	2,920	1,755	2,793	2,909	2,125	2,851	7,698	2,095	1,798	(1,085)
- Income Taxes ¹	571	536	864	461	405	288	2,095	600	250	38
Effective Rate	19.5%	30.6%	31.0%	15.8%	19.1%	10.1%	27.2%	28.6%	13.9%	n/a
After-Tax Profit	2,349	1,219	1,929	2,449	1,720	2,563	5,603	1,495	1,548	(1,123)
Total Annual Costs	35,852	36,981	36,272	35,751	36,481	35,637	32,597	36,705	36,652	39,323
Index (US=100.0)	97.7	100.7	98.8	97.4	99.4	97.1	88.8	100.0	99.9	107.1
Rank	4	9	5	3	6	2	1	8	7	10

1 Income taxes may be either positive or negative, irrespective of whether profit before income tax is positive or negative, due to the impact of specific expense deduction rules, minimum taxes, and refundable income tax credits. Effective tax rates are not shown where results are not meaningful because of low profitability.

EXHIBIT 3.13 – AUTOMOTIVE

Auto Parts Manufacturing – Results for Selected Cities, by Country

Country and City	Index	Rank ¹	Country and City	Index	Rank ¹	Country and City	Index	Rank ¹
International Locations – All Cities						North America – Selected Cluster Cities		
AU Adelaide	99.7	74	JP Osaka	105.8	92	CA Montreal, QC	96.7	10
Brisbane	99.7	76	Tokyo	108.5	95	Sherbrooke, QC	95.3	4
Melbourne	99.0	67				St. Catharines-Niagara, ON	97.2	18
Sydney	100.7	86	MX Mexico City	89.2	2	Toronto, ON	97.4	25
			Monterrey	88.4	1			
FR Lyon	97.5	26	NL Amsterdam	97.3	20	US Charleston, WV	96.8	12
Paris	97.9	37	Brabant Stad	97.1	17	Detroit, MI	98.8	62
			The Hague	97.5	28	Greenville-Spartanburg, SC	97.0	16
GE Berlin	100.1	80	Utrecht	97.4	23	Jackson, MS	98.0	41
Frankfurt	101.4	88				Lexington, KY	96.9	13
			UK London	102.1	90	Montgomery, AL	97.8	35
IT Milan	98.3	52	Manchester	96.7	9	Nashville, TN	98.2	46
Rome	99.3	69				Saginaw, MI	98.0	40

1 Rank among 95 cities.