Figure 11.4b. COSTS OF POOR QUALITY AND PRODUCTIVITY: An Introductory Canadian Perspective

The article EM9622 from *The Globe and Mail* reprinted in this Figure 11.4b complements the *Science* editorial in the previous Figure 11.4a in the following ways:

∗ it refers to a *Canadian* context, specifically Ontario;
∗ it particularizes the discussion to *automotive* manufacturing;
∗ it highlights the economic importance of automotive manufacturing to Ontario.

The last matter is a reason why illustrations from the automotive industry are often used in this introduction to industrial problem solving in Part 11 of these Course Materials.

EM9622: The Globe and Mail, March 2, 1996, pages A1, A10

COVER STORY / *As car making becomes a truly global industry, the province's automotive sector will be tested as never before.*

Ontario's economic future is the sum of its auto parts

BY BRUCE LITTLE
and GREG KEENAN
The Globe and Mail

LIKE the millions of people who crowd the northern shore of Lake Ontario, Jack Diamond has zipped along the Queen Elizabeth Way past the Ford plant in Oakville more times than he can count.

But it wasn't until Mr. Diamond sat on a task force that studied the Greater Toronto Area that he realized how much Canada's largest city and its environs rely on the auto industry to keep the economy humming.

"I was aware of its importance, I was amazed at its magnitude," said the erudite, South African-born architect, who has lived in Toronto since 1964. "It's a huge industry."

The companies that make cars, trucks, minivans and the parts that go into them employ about 150,000 people, a number that doesn't even begin to count the hundreds of thousands who work for the suppliers that feed products and services into those industries.

In fact, it's no stretch today to say that what's good for the auto industry is good for Ontario, to borrow a phrase from Charles Wilson, the General Motors Corp. chairman whose statement half a century ago that "What's good for the country is good for General Motors, and vice versa" earned him an enduring reputation for arrogance.

Indeed, when the provincial economy shrinks and expands, it's often a case of Follow That Car.

Ontario's short-lived recession and rebound last year paralleled the auto sector's decline and subsequent recovery. During the first six months of 1995, when auto-industry production fell 5.7 per cent, the province's gross domestic product fell 1.5 per cent. In the next three months, when auto output climbed 2.4 per cent, Ontario's GDP expanded by 1.2 per cent.

But success has a price. As auto making becomes a truly global industry, Ontario's companies will be tested as never before.

Nonetheless, recent corporate decisions made in Detroit or Tokyo to expand operations in Ontario have produced quiet rejoicing among politicians, business people and would-be workers alike.

Chrysler Canada Ltd. is on the verge of announcing a sizable investment at its assembly plant in Bramalea, west of Toronto. General Motors of Canada Ltd. will spend a substantial sum to retool one of its Oshawa car plants beginning in the fall. The finishing touches are being put on a $950-million investment in the Ford Motor Co. of Canada Ltd. operation that Mr. Diamond drives by regularly.

Toyota is already sorting through the tens of thousands of applications it received for the 1,200 jobs it will create by next year when it completes a $600-million expansion at its Cambridge factory 90 minutes southwest of Toronto. Toyota archrival Honda will follow suit later in the decade when it hires another 1,200 people to begin building minivans in Alliston, northwest of Toronto.

Lately, though, the first niggles of fear are beginning to creep into the way some auto executives and analysts talk of Ontario's most important private-sector industry.

"We are a huge part of this economy," said Mark Hutchins, the Boston-born, 30-year veteran of Ford Motor Co. who presides over Ford Canada, which has pumped $4.5-billion into its Canadian operations since 1992.

What worries him is that recent investments in Canada – his company's new $400-million paint shop at a pickup-truck plant in Oakville, Honda's $300-million nvestment to build minivans and others – are mere expansions or upgrades of existing operations.

What Mr. Hutchins calls "greenfield" plants – a new BMW plant in South Carolina, Mercedes-Benz's first North American factory in Alabama and a new Toyota truck plant in Indiana – have bypassed Canada

"As I look around the world, I don't see on the road a lot of investment scheduled to come to Canada," he said, "and I think we've just got to ask ourselves why."

He has come up with some disturbing answers. As Mr. Hutchins sees it, workers might be a little more productive in some of those U.S. states, regulation and legislation are a little less stringent and the tax breaks are better.

Ford Canada, on the other hand, spent $500-million to build a body shop for its truck plant in Oakville and got smacked with a municipal levy of $9 million for infrastructure improvements – even though it didn't make any.

Mr. Hutchins is not the only one fretting that the increasingly global nature of auto making could hurt Ontario in the future.

The companies that assemble the cars and trucks – General Motors, Ford, Chrysler, Toyota and Honda – are all foreign-owned; the companies that make many of the parts – Magna, Linamar, Ventra, Woodbridge Foam, A.G. Simpson, Automated Technology Systems and others – are largely Canadian-owned.

(*continued overleaf*)

Auto makers are increasingly moving to what are called global platforms – in effect building the same basic models in North America, Europe and Asia but tailoring their exteriors to local markets. More and more, they are looking for global parts makers to supply pieces for those models. The winners can build their own new plants close to the auto companies' worldwide assembly plants. The losers may end up packing their bags.

For Ontario's home-grown parts companies, this is their chance to expand boldly onto the world stage, but it's offset by the risk that foreign competitors will instead muscle their way into Ontario with better technology, better products and more efficient production methods.

"You can get whacked by someone you've never heard of," said automotive consultant Dennis DesRosiers, a trend watcher to whom companies, governments and academics turn for statistics, analysis and historical perspective.

The implications for Ontario of the auto industry's global evolution are enormous. Just as a rise or fall in the price of oil or gas reverberates through Alberta and a lumber trade dispute affects British Columbia, so do the twists and turns of the auto industry spread through the Ontario economy.

Auto assemblers and parts makers directly account for 4.3 per cent of Ontario's GDP, a role that pales in comparison to the oil and gas industry's 20-per-cent share of Alberta's output but isn't far off the forest-products industry's 6-per-cent share of the B.C. economy.

Over the past decade, though, there's an almost spooky parallel between the performances of the auto industry and the provincial economy as a whole. The reason: Autos are the pivot around which many other Ontario industries revolve.

The most obvious spinoffs from making autos can be found in the industries that make the physical ingredients of a vehicle. Steelmakers supply the skins of the cars and trucks and the raw material for metal bashers, who stamp and pound metals into myriad shapes for a car's innards.

Rubber makers produce tires and industrial textile producers make seat covers. Scores of plastics companies churn out steering wheels, dashboards and dozens of parts most drivers never see. Little wonder that in 1993 Ontario accounted for more than half of Canada's factory production of plastics, rubber and primary and fabricated metal.

The companies that make auto parts and assemble them into finished cars and trucks employ about 150,000 people in Canada. That doesn't count the less-visible suppliers of services to all those industries – the designers, lawyers, accountants, software writers, advertisers and consultants who tie their fortunes to the whims of tire-kicking customers across North America.

"The auto industry is all-pervasive," Mr. DesRosiers said. "If you visibly pay attention, you see automotive industry everywhere you look."

Yet his company, DesRosiers Automotive Consultants Inc., doesn't show up in the statistics on auto-industry employment, even though it wouldn't exist if Ontario didn't make cars and parts.

His corporate history illustrates vividly how the highs and lows of the auto industry ripple through the Ontario economy. Beginning in 1985, he had built the company to 22 people by 1990, when the recession struck. By 1992, he was down to eight, but has since brought the total to 15, although he said they are doing more work than the 22 did six years ago.

Auto industry drives Ontario's economy

First gear

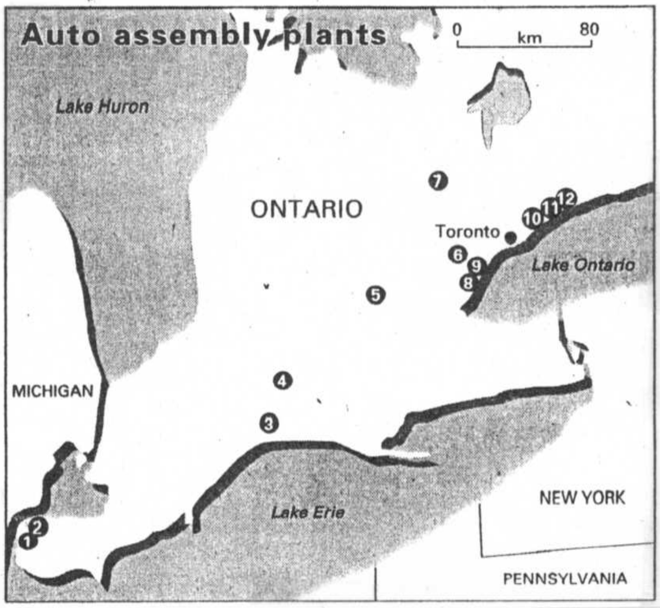
The auto industry, built up in the past 30 years by the Canada-U.S. auto pact, has become so important to Ontario that when the industry slows down, the province's economy often goes into reverse. During the first six months of 1995, when car production fell 5.7 per cent, Ontario's economy shrank by 1.5 per cent.

Second gear

About 150,000 Canadians, the vast majority of them in Canada's most populous province, depend for their livelihood on the car makers and the parts companies that supply them. New investment is pouring in, with major expansions under way or about to begin at Toyota and Honda and the Canadian units of the Big Three pumping billions into assembly plants.

Third gear

While the present is not perfect, the future is more tense, as the car makers go global and insist that their suppliers go with them. The challenge for suppliers is to have the financial resources to do that. The challenge for Ontario is to keep attracting the investment that keeps the industry vibrant and thriving.



	COMPANY	LOCATION	EMPLOYMENT	PRODUCT
1.	Chrysler Canada	Windsor, Pillette Road Truck	2,000	Ram Vans
2.	Chrysler Canada	Windsor Assembly	5,600	Chrysler minivans
3.	Ford Canada	St. Thomas Assembly	2,700	Crown Victoria/ Grand Marquis
4.	Cami Automotive	Ingersoll	2,200	Geo Metro, Tracker, Suzuki Swift, Sidekick
5.	Toyota Motor Manufacturing	Cambridge	800	Corolla
6.	Chrysler Canada	Bramalea Assembly	3,200	Dodge Intrepid, Chrysler Concorde, Eagle Vision
7.	Honda Canada Manufacturing	Alliston	1,800	Civic
8.	Ford Canada	Oakville Assembly	3,600	Ford Windstar
9.	Ford Canada	Oakville, Ontario Truck	1,000	F-series pickups
10.	GM Canada	Oshawa Truck	3,250	C/K pickups
11.	GM Canada	Oshawa No. 1	3,250	Chevrolet Lumina, Monte Carlo
12.	GM Canada	Oshawa No. 2	3,800	Chevrolet Lumina, Buick Regal

(*continued*)

Figure 11.4b. COSTS OF POOR QUALITY AND PRODUCTIVITY: ..... (continued)

You could replicate his experience hundreds of times across the Greater Toronto Area, a region the size of Prince Edward Island that fans west, north and east from the city itself. It contains the second-largest auto sector in North America, according to a study the Boston Consulting Group did for the task force on which Mr. Diamond sat.

The GTA is a distant second to the industry giant, with only about one-quarter the output of Detroit, but it ranks ahead of runners-up Flint, Mich., Chicago and Los Angeles.

Between 1986 and 1993, while non-auto manufacturers in the Toronto area shrank their output 8 per cent and cut employment 5 per cent, the auto industry expanded production by a staggering 72 per cent and its work force by 47 per cent. The vast majority of the industry's 150,000 jobs are within a four-hour drive of Toronto.

It's hard to recall that three decades ago Canada's auto industry was a notorious weakling. And even five years ago, auto-sector companies were shaken by the manufacturing overhaul that followed the launch of the Canada-U.S. free-trade agreement in 1989. By then, however, a quarter-century of competition had weeded out the most unproductive, courtesy of the auto pact between the two countries in 1965.

In the early 1960s, Canada was running persistent and growing deficits – amounting to more than 1 per cent of GDP – in its trade in autos and parts with the United States.

"In the 1960s, people talked about the demise of the auto industry," Slawek Skorupinski, director-general of the automotive branch at Industry Canada, recalled.

A royal commission in 1961 concluded that the industry was "totally inefficient, overpriced and uncompetitive," Mr. DesRosiers said. The parts industry was pitiful. When Ottawa's first efforts to prop up the auto sector were challenged by Washington, negotiators for the two countries produced a solution.

It was a trade deal that constituted "the single most significant industry policy" for Ontario since the Second World War, according to political scientist David Wolfe and geographer Meric Gertler, University of Toronto professors who have analyzed Ontario's industrial system.

The pact could be described as a free-trade deal between the two countries except for the safeguards it contained to ensure minimum levels of production in Canada. The Big Three had to produce $1 worth of car in Canada for $1 worth of car they sold here. The same rule applied to light trucks (such as vans) and heavy-duty vehicles (such as buses). The auto pact also imposed Canadian-content rules for each vehicle – 60 per cent for cars, 50 for trucks and 40 for buses.

The three-way division of the regulations was hugely beneficial, Mr. DesRosiers said.

Although the Big Three had to buy Canadian parts, they didn't have to settle for ones badly made and overpriced. Parts makers suddenly had to find a competitive niche. Mr. DesRosiers figures about 200 of them have gone bankrupt since 1965, leaving about 400 companies with about 600 plants.

Out of the carnage, however, came the entrepreneurs who now are running large, successful companies, Mr. DesRosiers said.

Frank Stronach of Magna and Art Simpson of A.G. Simpson got their start in the 1960s, as did Woodbridge Foam, then a unit of Monsanto. To a large extent, the modern parts industry sprang from the postwar immigration to Ontario of skilled European tool and die makers.

"A.G. Simpson was a tool and die maker, Frank Stronach was a tool and die maker," Mr. DesRosiers said. "Klaus Woerner of ATS Systems. Frank Hasenfratz of Linamar. It's not surprising that they evolved their tool and die making skills into big conglomerates.

"Put that together with the steel industry in Hamilton and the [petro-chemical] feedstock industry in Sarnia for plastics. Put a tool and die maker together with a competitive steel industry and you have a stamping sector. Put a mould maker together with a feedstock provider and you have a plastics industry."

Ontario produces most of North America's supply of aluminum wheels because it can combine aluminum from Quebec with the talents of its mould makers and the nearby low-cost electricity. Because they use energy so intensively, wheel makers are clustered near the Bruce Peninsula nuclear plant and Niagara Falls.

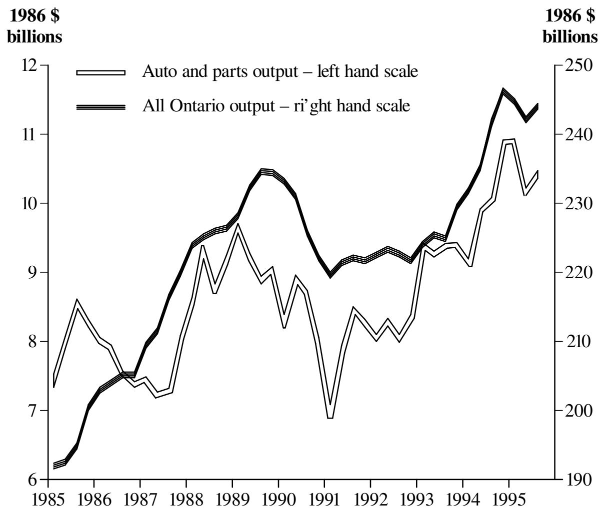
The first big shakeout in the parts industry lasted for at least 15 years after the signing of the auto pact, when most of the competition –- and the pressure to improve – came from the United States.

Japanese auto makers triggered the second upheaval in the parts industry during the 1980s, Mr. Wolfe said, when they began making cars in Ontario – T'oyota in Cambridge, Honda in Alliston, and Suzuki, in a joint venture with GM called Cami Automotive, in Ingersoll.

If parts makers wanted a chunk of the business, they had to bring statistical process controls into their plants, automate their produc-

Follow that car

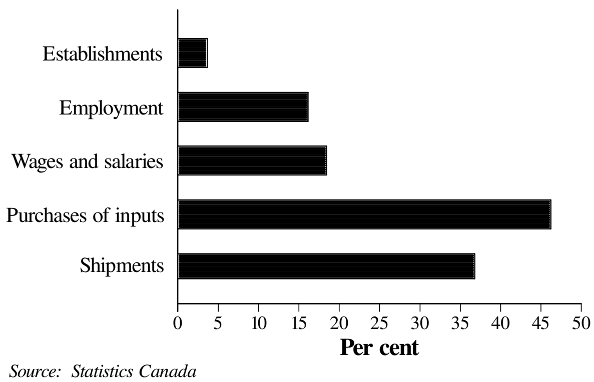
As goes the auto industry, so too goes Ontario's economy.



Source: Ontario Ministry of Finance, Statistics Canada

The big player

Ontario's auto and auto parts makers account for only 4 per cent of all factories, but their impact is far greater than that. The industry as a percentage of all manufacturing in Ontario, 1993



Source: Statistics Canada

(*continued overleaf*)

tion lines and retrain workers to run the new machinery. "The ability to adopt SPC was critical to getting a foot in the door of the Japanese companies," Mr Wolfe said.

In their study, Mr. Wolfe and Mr. Gertler said the Japanese companies "forced quality improvements – in both products and processes – throughout the Ontario auto-parts sector." Suddenly, parts makers had a strong incentive, and good teachers, to make big strides in quality control, inventory management and worker participation in the design and production of parts.

A contract with Toyota that helped prompt a re-engineering at Seeburn Metal Products Ltd. contributed to the transformation of a metal basher into the world's largest maker of automotive jacks and jack systems – perhaps the most unnecessary part on any car or truck, until a tire goes flat.

In the late 1980s, while already dealing with the auto makers' incessant demands for price concessions, Seeburn was jolted to find that its first shipment of 27,000 jacks to Japan was defective.

"For us to recall those jacks was very, very expensive," said Rick Legate, who was vice-president of product development at Seeburn at the time. He now is president of parent Ventra Group Inc., a mid-sized, publicly listed auto-pars company that is dwarfed by Markham-based giant Magna International but has hopes of writing a similar success story.

Toyota, among the most unyielding customers when it comes to quality, insisted that Seeburn pay half the cost of the recall and cut its defect rate to 15 parts per million – at a time when defects in the range of 250 to 500 parts per million was considered the measure of a high-quality supplier.

For the next four years, Seeburn shipped zero defects.

"To do things like that, you really do have to get better," Mr. Legate said, adding that the constant pressure from auto makers should be seen as opportunities, not demands.

It's a measure of that pressure – for price reductions and quality improvements – that the jack maker pushed revenue to $73-million last year from $45-million in 1989, but only by doubling sales of jacks.

About 390 employees at two plants, in Beaverton, a 90-minute drive northeast of Toronto, and Tottenham, an hour's drive northwest of the city, turn out about 30,000 jacks a day for auto makers from Saturn Corp. to Subaru.

The company now commands 50 per cent of the jack market and has an ambitious goal to boost sales by $100-million over the next five years.

Seeburn hopes to duplicate its success as the king of jacks by attacking the parking-brake market with a product that is 20 per-cent lighter, 20-per-cent smaller and has 20-per-cent fewer parts than those now used. All three conditions meet auto makers' stringent requirements for lighter and cheaper parts. Already, Seeburn has won a contract with GM that will provide revenue of $9-million a year beginning with the 1998 model year.

Operations manager Mark Lawrie cites a case in which parts were repeatedly fed through one machine, dumped into bins and yanked out again to be fed into another machine – until they had travelled through six different machines.

Employees helped design a new flow system that eliminated the bins. Seeburn saved floor space and operators were spared the time and effort spent dumping and yanking. Another bonus: Defective parts are spotted immediately rather than sitting in bins before someone discovers something wrong.

If parts makers wanted a chunk of the business, they had to bring statistical process controls into their plants, automate their production lines and retrain workers to run the new machinery. "The ability to adopt SPC was critical to getting a foot in the door of the Japanese companies," ...

Suddenly, parts makers had a strong incentive, and good teachers, to make big strides in quality control, inventory management and worker participation in the design and production of parts.

This kind of re-engineering has moved down from the auto makers to the factory floors of the thousands of parts makers that dominate many of Southern Ontario's cities and towns.

"Pursuit of lean manufacturing is going to be the success of any of us," Mr. Legate said.

The growing sophistication of Seeburn, Magna, Linamar and others is a large part of the auto industry's contribution to the Ontario economy and may be a key to its future ability to compete globally.

"The auto industry is really in the forefront of technology in manufacturing processing," said Jayson Myers, chief economist at the Canadian Manufacturers Association.

"That creates demand for automation and systems that will be used in building cars. It's creating great demand for software because that's the cutting edge. They're looking for integrated systems that will allow customers to design their own car when they order it. That requires sophisticated software."

"What economists call the multipliers from all this activity can be huge. Mr. Myers figures $1 of manufacturing output generates another $2 of economic activity in Ontario. "The auto sector is a high value-added industry, so there would be a much higher multiplier because it buys from other high value-added industries."

Mr. Skorupinski of Industry Canada said the parts industry has matured in recent years. Companies that once could do little more than stamp metal parts for the auto makers have graduated to the point where they can design and supply whole systems. Now they are developing the next generation of components. "They do a lot of technical stuff that never shows up in the statistics."

Parts makers and assemblers alike have largely guaranteed their prominence for the rest of the decade by investing heavily in new plants and machinery – more than $13.2-billion in the first half of the 1990s, compared with $3.5-billion in the first half of the 1980s.

But how well the Ontario economy fares at the beginning of the new century depends on how big a share Ontario captures of the next big wave of auto investment and how well its auto-parts companies respond to the emergence of a truly global industry.

That gives the industry a window to stay competitive by embracing new technologies and training its workers to use them. The window is equally open for government to ensure that Canada and Ontario remain a good place to invest and grow.

If Canada is bypassed in the first round of big investment decisions of the next decade, the 1990s will be remembered fondly as the short-lived glory years of Canadian auto making.

1 Describe concisely the *specific* instances mentioned in the article EM9622 of:

- the costs of poor quality and productivity;
- the benefits of high quality and productivity.