

Online Appendix to “Production Targets,” by Caruana and Einav

A. Selected quotes from interviews

We have conducted many interviews with individuals holding a wide range of positions in the automobile industry. ¹ Below we provide a summary of the key relevant insights from these interviews, organized by topic. Throughout, we refer to each individual cited below by a short description of his or her current and/or former role in the industry. Below we provide a longer description of their backgrounds:²

- **Government agency economist:** A senior economist in a government agency who has been in charge of the analysis of the auto industry for more than 15 years.
- **Supplier trade association executive:** Vice president in a large trade association of part suppliers, with more than 20 years of experience in the industry in a variety of different positions (director at forecasting and consulting firms, equity investment analyst specialized in the automotive manufacturers, and others).
- **Automobile research center economist:** Chief economist at a large research center devoted to the study of the automobile industry. The center performs economic and business modeling of the motor vehicle industry for the purpose of forecasting and policy analysis.
- **Industry consultant:** A professional with a long experience in the industry. Before working as a consultant, he worked for one of the Big Three in various positions, including the management of relationships with suppliers, as well as in production scheduling.
- **Financial analyst:** A senior financial analyst who covers the industry for one of the big financial firms.
- **Big Three executive:** Served for more than a decade as the Chief Economist for one of the Big Three. He retired recently as Group Vice President of the company.
- **Big Three production scheduler:** An economist working at the production scheduling department of one of the Big Three.
- **Ward’s analyst:** For more than a decade, he/she has been in charge of gathering, analyzing, and publishing the production schedules figures we use in our paper, as well as other data published at *Ward’s Automotive Report*.
- **Management professor:** An academic specialized in the car industry. He/she has written many books and papers on the relationship between manufacturers and suppliers.
- **Operations professor:** An academic who has studied supply chain management and conducted a lot of field work in auto assembly plants.
- **Law professor:** A legal scholar who is an expert in the contractual relationship between suppliers and manufacturers in the industry.

Throughout this appendix, we use square brackets when we add some clarification to the original statements. Finally, there are three industry-specific terms that are being used repeatedly in the interviews, and we clarify their meaning below:

- **OEM:** Original Equipment Manufacturer; a term used in the industry to refer to the automobile manufacturers.

¹We should note that we started all our interviews with a short description of our paper, and were encouraged that all individuals found our basic story plausible. While, of course, this by itself should not be over interpreted, it is reassuring that none of these experts had an obvious alternative explanation for the empirical pattern we find in the data.

²Full names and job descriptions are available from the authors upon request.

- **Program:** Roughly, a program parallels a model design, and typically lasts for a period of 3-5 years. Among other things, it specifies the overall terms of the relationship with suppliers.
- **Tier-1 suppliers:** The supply chain in the industry is organized in three vertical layers. Manufacturers negotiate almost exclusively with tier-1 suppliers. Tier-1 suppliers obtain their inputs from tier-2 suppliers, who obtain their inputs from tier-3 suppliers.

A.1 On the credibility, accuracy, and reliability of production plans

Overall production plan figures

1. From an *internal memo* of the financial analyst's firm: "The Big 3's production schedules haven't included any huge cuts year-to-date, but we expect a slow down commencing with this summer's shutdowns. GM's production forecast for 2Q:06 is down 3.8%, but this will likely grow to double digit declines in 2H largely due to down time from the GMT900 full-size pickup changeover."
2. Government agency economist: "Suppliers significantly discount forecasts by OEMs and tend to form their own forecasts using forecasting agencies."
3. Supplier trade association executive: "OEMs advance [to suppliers] six month production schedules ahead of time, which are relatively unreliable. Then they advance a six week production schedule they try to stick to. How precise the schedule is varies from supplier to supplier: more precise at the chassis-level, but less so for trim-level and color-related parts that are harder to predict. Despite this, suppliers don't fully trust even the six-week level schedule, and use consulting from companies such as *CSM Worldwide*, *J.D. Power*, or *Global Insight*, to come up with their own predictions."
4. Management professor: "Suppliers never take manufacturer numbers at face value, but tend to 'gamble' and make up their own production forecasts based on external information."
5. Automobile research center economist: "The Big Three are known to be optimistic and have more noise in their orders vis-à-vis the original promises/plans. In contrast, Toyota, for example, is known to be very precise. They would give suppliers daily orders well in advance, and often err towards under planning."
6. Financial analyst: "If the OEMs go too low in their forecasts, people think they are too pessimistic about the future, which can hurt their stock. If they go too high, people think they'll be over producing, and this would also hurt their stock. So the OEMs are driven to provide the 'right' numbers."
7. Financial analyst: "There are enough checks in the system, so the forecasts cannot be too far from the truth. If [the manufacturers] systematically deviated from final numbers, people wouldn't pay much attention to the numbers, and would come up with their own predictions."
8. Big Three executive: "Most of the production scheduling decisions are based on dealer orders for future months. Suppliers and dealers are the main consumers of this information."
9. Supplier trade association executive: "In my past role as an analyst and consultant, we used production schedules published by the manufacturers in our models, but they were noisy, so we always discounted them somewhat."
10. Government agency economist: "Production forecasts are an important input for the economic forecasts our agency does. There is not much data that's forward looking, so even though production forecasts are noisy, they are one of the few sources that can be used for such forward looking predictions."
11. Big Three production scheduler: "Suppliers and dealers are the main consumers of information about production schedules. Wall street analysts and other parties may also loosely follow the production schedules, but not as closely."

Specific references to the *Ward's* data we use in the paper

1. Supplier trade association executive: “In my work as an industry consultant, the key components we used for forecasting were: *Ward's* published numbers, OEMs’ part behavior, inventory state, and current sale trends.”
2. Automobile research center economist: “There are many sources for production plans, but *Ward's* tables are definitely the most reliable one.”
3. Financial analyst: “The *Ward's* figures are considered reliable. We use the quarterly production forecasts provided to the press by the OEMs together with the *Ward's* monthly estimates and other data, such as inventory and sales, as inputs in our profitability models.”
4. Financial analyst: “Suppliers look into the *Ward's* production schedules, mainly to make sure that they are consistent with the numbers they get from the manufacturers directly.”
5. *Ward's* analyst: “We get data from the OEMs about once a month. It comes from three individuals at the Big Three: one is a high level executive, another is in the economics department, and the third is in the production scheduling department. The data they provide are their best estimates, and are quite accurate. They cannot provide wrong numbers. At least within the Detroit area, the daily newspapers report the numbers that *Ward's* publish. If these guys are consistently off, that would indicate they’re in trouble. There have been, however, some instances of fudging in the past.”
6. *Ward's* analyst: “There used to be heterogeneity across the Big Three in the reliability and the accuracy of the production scheduling numbers. Far in advance, numbers are mainly driven by program sales and previous production schedule. As production gets closer, the manufacturers get more information from dealers’ orders, which helps them get a better handle on production schedules. Chrysler used to be very good in producing accurate numbers, having plant-by-plant schedules, while Ford used to only give us round aggregate numbers, with GM in between. But recently Ford got better and Chrysler worse, so the difference [in terms of accuracy] isn’t that big.”

A.2 On the strategic role of production plans

1. Automobile research center economist: “Strategic effects are big. There are a small number of players, and they all track each other very closely. Production plans from one company are being tracked by the others, and companies respond to the production planning of each other. Executives know that if they state their production goals they affect the production goals of competitors. Planning, schedules, and production are all being tracked by everyone.”
2. Industry consultant: “There’s a lot of strategic interaction in the industry. They all look at each other, all the time.”
3. Financial analyst: “The OEMs definitely look at each other’s numbers. They do it all the time, but they’ll never admit it.”
4. *Ward's* analyst: “I’m not exactly sure why they give us these figures. They probably want their competitors to see the numbers.”
5. Big Three executive: “We always looked at the numbers released by our competitors as a way to get a feel for the market and the competition we were facing.”

A.3 On the existence and sources of adjustment costs

Sources of adjustment costs

1. Industry consultant: “There is always a cost to any change. If we’re on 90 day production [that is, need to supply a part 90 days before production], and running at capacity, changes are a problem. Consider seat makers for example. If I’m a tier 1 supplier making seats, there’s always the ‘weakest link,’ the least agile upstream supplier that will determine the response time of the supply chain.”

2. Industry consultant: “When production levels move around from month to month, not all suppliers can respond quickly.”
3. Management professor: “Rescheduling shifts, or adding third shifts, can be quite costly in terms of adjustment costs.”
4. Operations professor: “Suppliers, even if they supply to different manufacturers, allocate specific employees to specific companies [manufacturers], and it is not easy for them to shift employees around, due to confidentiality issues. So someone making a seat for Ford is stuck with Ford seats for several years and cannot be easily transferred.”
5. Industry consultant: “The sources of adjustment costs are different depending on whether the adjustments themselves are upwards or downwards. Adjusting up is costly mainly because of capacity constraints somewhere in the supply chain. Adjusting down is mainly about the [opportunity] cost of idle capacity. Much of the production costs are fixed, so [suppliers] want to produce close to capacity; thus, going below capacity is costly. For example, Chrysler had an engine that wasn’t selling, so they needed to do something else just to keep their plants running.”
6. Government agency economist: “Last minute changes may be costly in many ways. One reason is material. For example, buying aluminium in the spot market is much more costly than buying it ahead of time in the forward market, or taking advantage of opportunities in the aluminium market. Logistics of deliveries of finished parts may add to last minute adjustment costs. For example, it may be hard to organize this due to a lack of trucks, etc.”
7. Government agency economist: “Adjustments up are mainly associated with capacity issues. Adjustments down are associated with penalties.”
8. Industry consultant: “Consider an example that actually happened. GM over-forecasted the demand for a certain type of wheel, and the market wanted a different type. It took 14 months to build enough capacity of the new one to meet demand.”
9. Supplier trade association executive: “I remember a study by McKinsey which tried to understand the drivers behind the heterogeneity in performance of different components. It found that most was related to poor design and complexity, but about 10% of the differences in efficiency were driven by poor capacity and demand planning, mainly due to over-planning rather than under-planning.”
10. Automobile research center economist: “Guaranteed orders would help on several levels. First, they would allow [manufacturers and suppliers] ordering and getting better prices for materials, like steel. Second, managing labor would be easier. Hiring and firing is very costly, as most of the workers are unionized. So, for example, fired employees keep getting paid for a while after they’re fired. Thus, suppliers and manufacturers would like to minimize turnover. Third, guaranteed orders help in reducing capital costs. All the suppliers go to the local Detroit banks begging for loans to finance their investments. They would come to the banks with the planned orders. Bankers used to laugh in their face when they were pushing the numbers, because so often the true orders would be less than the plans, which often triggered defaults or renegotiating the loan terms. Guaranteed orders would make this process much smoother.”

On adjustment costs borne by manufacturers

Through direct and indirect transfers to compensate suppliers

1. Supplier trade association executive: “Last minute changes or adjustments are costly, mainly due to extra shifts and overtime. Although suppliers often pick up the additional costs, manufacturers sometimes pitch in. When they do, it’s typically by barter deals, such as a slot in the next program. For example, Honda Civics recently ran behind of projected demand, so suppliers got downgraded by analysts because a program got pushed back.”

2. Industry consultant: “Car makers typically don’t pay overtime [to labor] or premiums [to tier-2 and tier-3 upstream firms]. However, even if automakers win the battle they will eventually lose the war: suppliers will eventually migrate to better or more collaborative OEMs.”
3. Big Three production scheduler: “Adjusting production plans mainly affects suppliers. Unexpectedly going up a lot has the most significant costs, because suppliers may not have enough parts produced or inventoried. Small fluctuations are to be expected, and are not very costly. Going down is not such a big deal, because suppliers can manage inventory, but there is a limit to how much of a hit suppliers would tolerate.”
4. Government agency economist: “Most suppliers work with multiple OEMs - seat suppliers are an exception - and can play one customer against the other. They also use this to hedge against short term order fluctuations.”
5. Government agency economist: “Much of the direct adjustment costs at the supplier level are borne by suppliers, but some of it may be indirectly transmitted to manufacturers, e.g. through higher bids in subsequent programs, reputation, etc.”
6. Government agency economist: “An important distinction between the Big Three and the Japanese manufacturers, such as Honda and Toyota, is that the Japanese have better knowledge of the cost structure of suppliers and much less ex-post changes in design. The Big Three face a lot of pressure to reduce cost, so they weight unit price heavily in the bidding process. They also have more ex-post changes in design. This leads suppliers to submit bids below marginal costs and then make up for it by over charging on the ex-post modifications to the design. I remember a case when a supplier used the same strategy with Honda and lost a lot of money, because Honda never changed its design or orders ex-post.”
7. Operations professor: “Suppliers expect some volume fluctuations, and will bare some of the costs. But frequent adjustments are likely to make the supplier jack up prices or charge more penalties in subsequent programs.”
8. Supplier trade association executive: “Adjustment and risk premiums are occasionally paid to suppliers by manufacturers.”
9. Law professor: “Small fluctuations in orders are frequent and expected. Large fluctuations are a problem. Large adjustments up will likely lead to capacity problems somewhere in the supply chain. A large adjustment down may hurt the relationship.”
10. Automobile research center economist: “Suppliers love Toyota. The guaranteed orders save a lot of costs on the supplier side. This translates to transfers in many ways, such as per unit prices for subsequent programs, on-time delivery, etc. In general, the Japanese manufacturers get better deals because of more precise and committed planning.”

Through in-house production of parts and other third parties

1. Management professor: “Adjustment costs [for production plans] are really important for parts that are produced in house [by the manufacturers themselves]. In the past, more stuff was produced in house. It is also important to note that the in-house part producers have more leverage in the production scheduling decisions, so that in-house adjustment costs are more likely to be passed on. Roughly, the percentage of parts [not value] produced in house is 70% for GM, 50% for Ford, 30% for Chrysler.”
2. Industry consultant: “Similar adjustment costs are likely to exist with in-house production, although due to the nature of the parts [e.g., engines rather than seats], changes to the composition of the production schedule will have more impact on external suppliers.”
3. Government agency economist: “However, the same sources of adjustment costs should also operate for the manufacturing of parts that are done in house by the OEMs themselves. In the past, the share of parts produced in house was much greater than it is today.”

4. Supplier trade association executive: “We used to interpret changes in schedules as implying managerial issues. This could have led to a downgrade and lower credibility in the analyst community, dealer network, and with suppliers.”

A.4 More generally, on the production scheduling process

1. Big Three executive: “Production scheduling becomes especially important towards the last few months of the model year. In these months, we try to avoid obsolescence of the parts. We called this ‘material protection’.”
2. Big Three production scheduler: “Towards the end of a model year, production planning is tighter and things are slightly less flexible. Much of the action is not in total number, but in the composition.”
3. Industry consultant: “[One of the Big Three] uses *i2* [a supply chain management software] to continuously do its production planning, starting about 14 weeks ahead of time. Production planning is kind of volatile, although we tried not to have any changes in the last two weeks before production. Schedulers know that some parts are easy to change and others are harder. They may also get some idea about this from suppliers, who will get back to them about how feasible it is for them to make a particular change in the schedule.”
4. Operations professor: “Suppliers make projections for the number of employees and shifts allocated to a program. A program is typically associated with a particular product design, so it lasts 3-5 years. To generate volume projections, suppliers use the manufacturers’ projections, but adjust it up or down based on past experience. Here is a quote from an interview I conducted with a supplier about production scheduling for a large program that started in 1989: ‘We take the target number, look at historical variation, and put cushion around it. For example, if we saw an unexplained 20% fall in the past, we’d adjust the manufacturer’s projection by 20% by adjusting project line capacity from 30,000 to 25,000’.”
5. Automobile research center economist: “Production plans are typically done on a quarterly basis. There is also an annual capacity planning, and often a five-year in advance capacity planning every year.”

B. Selected quotes from the press

In this appendix we provide representative quotes from daily newspapers and industry trade journals, supporting our discussion in Section 3.2 of the paper. Throughout this appendix we make two changes to the original sources: we use italic font to emphasize certain parts of the quotes that seem particularly relevant in our context, and we use squared brackets to add clarifications. Finally, as more recent articles are more easily available, the quotes are naturally biased towards the last decade.

B.1 Sources of adjustment costs to manufacturers

1. “Suppliers had a tough time adjusting their plant schedules throughout the year as car makers would forecast increased volumes, then generally decrease orders. *DaimlerChrysler suppliers started the year out with larger than expected mandates for immediate 5-percent price cuts. Those without clout granted them, others negotiated alternative prices and still others—the giants of the automotive supplier community—reportedly refused the car maker’s demands, jeopardizing future business with the company.*” (*Tire Business*; January 7, 2002)
2. “[GM] trimmed its second-quarter North American vehicle production plans by one percent, but analysts said the automaker will have to make much larger cuts in the third quarter in the wake of weak sales ... [GM] said it plans to make 1.54 million cars and trucks at its U.S., Canadian and Mexican plants, down 16,000 units from an estimate of 1.56 million made in early April. GM made 1.57 million vehicles in the second quarter of 1994. Analysts predicted Tuesday that most automakers would be forced to cut their output plans for the second and third quarters following last month’s weak sales. ‘We expect the bigger cuts to come in the third quarter if sales don’t pick up, or you’ll have inventory levels sky high,’ said Todd Grieco of the WEFA Group, which tracks automotive-production trends. ‘*They are already locked into the second-quarter schedules with commitments to suppliers.*’ GM said some of the reduction was because of a six-day strike at its Pontiac East pickup truck plant in Pontiac, Mich., last month.” (*The Gazette* (Montreal, Quebec); May 4, 1995)
3. “Under the revised plan, ... [GM] lowered its fourth-quarter forecast by 16,000 vehicles, to 1,491,000. The figures include production from joint-venture plants in Canada and California. GM attributed the decline to slow starts for new models, like the Chevrolet Cavalier and Pontiac Sunfire, parts shortages at some plants, and the lingering effects of a strike at the company’s Buick City auto complex in Flint, Mich. *In September, GM had intended to build 1,541,000 cars and trucks in North America in the fourth quarter, but it reduced that in October to 1,507,000 vehicles after realizing it would not be able to meet its target.*” (*The New York Times*; November 5, 1994)
4. “In a report, Competitiveness in the North American Automotive Industry, prepared by a panel of U.S. and Canadian auto executives that included domestic car producers and parts suppliers, the group concluded that fixed costs have gone so high for the domestics that they must reach 85 percent capacity-utilization of their assembly plants to break even in the ’90s, whereas the break-even point was 62 percent in the ’70s. The advent of transplants, Japanese automakers building in the United States, has only compounded the problems of domestic automakers, the report went on to say. ‘The new entrants also enjoy cost advantages because they established green-field (brand-new) plants, often with the help of government subsidies, and employ a younger work force with lower overall compensation costs, including benefits. *The traditional producers face much higher health-care and pension costs and must bear the adjustment costs of closing down redundant facilities,*’ the report said.” (*Journal of Commerce*; August 31, 1992)
5. “Industry sources and analysts said, however, that GM has already scaled back its production plans because of weak sales, and that further plant closings and job cuts are the next logical step ... *Last week GM canceled \$60 million in holiday bonuses for white-collar workers but was unsuccessful in winning similar concessions from the United Auto Workers union, which oversees GM’s blue-collar workforce.*” (*The San Francisco Chronicle*; December 10, 1991)

6. “[GM and Ford] yesterday disclosed that they had significantly cut their production plans for the final months of the year. GM announced that it would produce 300,000 fewer cars in the final three months than it had originally planned – a 22 percent reduction. Some of that cutback had been previously announced. Ford said ... that it also was trimming its fourth-quarter production schedule. The company said it will build 425,000 cars, 7 percent fewer than it built in the same quarter a year ago, and that it will assemble 342,000 trucks, 8 percent less than last year. Production cutbacks at GM, Ford and Chrysler this week found 14 assembly plants shut down across the country with 38,000 workers laid off. *Many of the layoffs are temporary*, but they have cast a pall over an industry already struggling with declining sales and profit margins. They have also begun to drag down the economies of Midwestern states that had resisted the economic downturn engulfing much of the Northeast. *Workers on temporary layoffs normally collect 90 percent of their usual take-home pay through a combination of public unemployment benefits and company-funded layoff protection plans negotiated by the United Auto Workers.*” (*The Washington Post*; November 30, 1990)
7. “Chrysler, reacting to the softening of the domestic automobile market in recent months, has announced a 15 percent cut in production of its compact Dodge Shadow and Plymouth Sundance models. The plant in Sterling Heights, Mich., that makes those models is closed for a two-week vacation. When it reopens in late July, only 2,900 of the 3,300 employees will be called back, and production will drop to 815 cars a day from the current 958 ... *Because of commitments to suppliers, manufacturers cannot immediately adjust production to match anticipated sales.* That is one reason Detroit has cut its production plans for the third quarter by only 3 percent since May 1, to 1.47 million units, as tabulated by Ward’s Automotive Reports, an industry weekly. Chrysler is the only American auto maker that has made production cuts requiring indefinite layoffs. This began in late May when it said it would not recall 1,600 workers to a second shift at the Detroit plant that makes the Dodge Omni and Plymouth Horizon. However, it added 200 people to the remaining shift, which increased its production by a third.” (*The New York Times*; July 4, 1989)
8. “Suffering from softer car and truck sales, the nation’s two largest auto makers [Ford and GM] are trimming production plans for the next six months in an effort to reduce bloated inventories of cars and trucks. The cutbacks are likely to result in longer seasonal layoffs at auto plants this summer, slower production-line speeds and fewer hours of overtime - all of which have a deadening effect on the nation’s economy. The cutbacks were reported in today’s issue of Ward’s Automotive Reports, a trade publication that surveys industry executives who usually are not identified by name, and by automotive officials. ... An industry source confirmed today that GM had reduced its North American production forecast for the April-to-June quarter to 910,000 passenger cars, from 936,000 cars earlier this month. The reduction will be accomplished through ‘elimination of planned overtime’ at various GM assembly plants, the source said. Ward’s reported that GM is cutting up to 60,000 cars from its planned production through September. Quoting unidentified sources at GM, Ward’s said the company’s planners believe that overall United States car production could dip below 10 million units for the first time since 1983.” (*The New York Times*; April 25, 1989)

B.2 The effect of production target adjustments on suppliers

1. “[Ford] says it now will give suppliers lower, more realistic volume projections for new vehicles ... In late January, Ford updated suppliers on the Atlanta programs. Suppliers who attended the meeting in Dearborn, Mich., said Ford shared specific production volumes for the new vehicles that are more conservative than projections on past programs. Ford acknowledged that planning volumes on new-vehicle programs have been too high in the past, said one supplier in attendance. *‘People spend money on investment based on that,’* said the supplier, who requested anonymity. *‘You end up upside down because you’ve got additional capacity.’* As part of Ford’s pledge to work more collaboratively with its suppliers, the automaker intends to project more realistic planning volumes, Ford spokesman Paul Wood confirmed. *‘It’s a fair statement that suppliers tend to discount what we’ve told them,’* he said.” (*Automotive News*; February 6, 2006)
2. “Ford’s latest restructuring plan will accelerate an already alarming loss of business for North American suppliers that count on Ford as a big customer. On Sept. 15, Ford said that by the end of

2008 it will cut North American production capacity 26 percent from 2005 levels, to 3.6 million units. But production cuts of 21 percent in the fourth quarter compared with the year-ago period already have suppliers bracing. To make matters worse, GM is reducing North American production 12 percent in the quarter, and DaimlerChrysler is cutting production 10 percent. *Visteon Corp., Lear Corp., Johnson Controls Inc. and Superior Industries International Inc. already have started layoffs in anticipation of the production cuts.* Superior, an aluminum wheel supplier in Van Nuys, Calif., said Friday it will close a plant in Tennessee that supplies the three auto makers. About 500 people will lose their jobs. Among the hardest hit could be Visteon, which counts on Ford for about 48 percent of its sales. Said analyst Glenn Reynolds of CreditSights in New York: ‘With Ford still the overwhelmingly largest customer concentration of Visteon, the production cuts will definitely flow downhill; Visteon is the first stop on that hill.’ Visteon CEO Michael Johnston said Sept. 12 at the Reuters Autos Summit that layoffs have begun. ‘We’ve had some announcements at some local plants where we’ve reduced shifts and laid off some folks, and we’ll take the normal actions that any supplier would take given a large customer reducing volumes,’ he said.” (*Rubber & Plastics News*; September 25, 2006)

3. “When you take a look at Ford’s production plan for the third quarter, particularly for the fourth quarter, they are curtailing production by 21 percent ... That is a huge cut in one quarter. And as a result, you have a number of suppliers ... that are going to take the biggest hit. *Now to a certain extent, they have been bracing for it, but you can never completely brace for what is going to be happening.* So as a result you are going to see certain suppliers like Visteon and Lear, those are most closely aligned with Ford. They are probably the ones who are under the most concern right now.” (*Global News Wire*; August 23, 2006)
4. “Ford said Friday it would temporarily halt production at 10 assembly plants between now and the end of the year ... ‘We know this decision will have a dramatic impact on our employees, as well as our suppliers,’ Chairman and Chief Executive Bill Ford said in an e-mail to employees. ‘This is, however, the right call for our customers, our dealers and our long-term future.’ ... The production cuts are likely to affect the revenues of many of Ford suppliers. ‘*When our customers adjust production up or down, we obviously adjust accordingly,*’ said Jim Fisher, a spokesman for Visteon Corp., Ford’s largest supplier. Fisher said the company was assessing the impact of Ford’s cuts.” (*The Associated Press*; August 18, 2006)
5. “Fluctuating sales make it hard for suppliers to plan output and hard for dealers to control inventories.” (*Automotive News*; July 11, 2005)
6. “Meridian Automotive Systems, a parts supplier in bankruptcy protection, shelved plans last week for a \$375m loan to fund its restructuring after GM and Ford notified it of a cut in orders in coming months. GM, Ford and the Chrysler division of DaimlerChrysler make up three-quarters of Meridian’s business.” (*Financial Times*; June 1, 2005)
7. “Suppliers had an inkling of trouble at the start of March when GM said it was going to substantially cut second-quarter production, Gillette says. Ford had already said first-quarter output would be weak. ‘A lot of suppliers have been trying to figure out what GM’s demand statement (for production needed) will look like over the next few months,’ Gillette said. ‘GM seems to be struggling to determine what their production needs are going to be over the next few months,’ he added. *Big unexpected production changes happen infrequently,* he says, and mark major turning points in the industry. Those in recent memory include an overproduction crisis in late 2000 that led to layoffs, and the sales slump that followed the Sept. 11, 2001, attacks.” (*Investor’s Business Daily*; March 17, 2005)
8. “[Ford and GM] said Wednesday they plan to slow down their plants the last three months of 2004 and make about 165,000 fewer cars and trucks than they did a year ago ... Production cuts hurt earnings for the automakers because they count the profits from the vehicles when they are shipped to dealers, not when they are sold to customers. For suppliers, the cuts by their automaker customers means they will build fewer parts and likely make less money. ‘I don’t think production cuts are ever

good news for automakers or suppliers,’ said Catherine Madden, auto-production analyst at Global Insight, an economic-research firm based in Waltham, Mass. ‘*No supplier I’ve talked to was prepared for how much Ford would cut for the rest of the year. They were prepared for GM to cut some, but even they cut a little more than expected.*’ (*Detroit Free Press*; September 2, 2004)

9. “There is concern that if July and August aren’t blockbuster sales months for Detroit’ three automakers ... they will have to slam on the brakes of vehicle production, which would cause a ripple effect across the industry and might push small suppliers into bankruptcy. The big fear: GM will need to idle some plants in the fourth quarter, and other automakers will follow suit. Already, GM’ and Ford’s plans for how many cars and trucks they will build from July through September are lower than they were last year by about 76,000 vehicles. Ford’s third-quarter production plan calls for it to build 755,000 cars and trucks, the lowest third-quarter number in the automaker’s history. GM’s third-quarter production of 1.2 million vehicles is the lowest it has been since the 1990s and down about 4 percent from a year ago. *GM and Ford will announce their production plans for the rest of the year Sept. 1, making that an important day in the immediate future of many Detroit suppliers.* ‘There are quite a few suppliers around town that are watching to see what happens because they are so dependent on GM and the domestics. If GM decides to pull back a lot, that will send a message to the whole industry and have some scary ripples for some local suppliers,’ said Jeff Schuster, executive director of vehicle forecasting at J.D. Power & Associates, the market analysis firm.” (*Detroit Free Press*; July 23, 2004)
10. “There is a 15-20% slowdown in sales this July over last month, forcing car makers to re-examine their production targets ... Component suppliers have been told to slow down.” (*The Economic Times*; July 23, 2004)
11. “But another supplier executive, whose company is building parts for the [Cadillac] CTS, said delays and production cuts play havoc with suppliers. ‘We’ve got a business plan based on a 50,000-unit job, which definitely isn’t going to happen. It puts a lot of stress throughout the whole supply chain,’ the executive said.” (*Automotive News*; December 10, 2001)

B.3 The effect of production target adjustments on financial markets

1. “Foreign brands, meanwhile, increased production in the first quarter by 4 percent, said Ceraso [Senior equity research analyst at Credit Suisse Group], who advised investors to watch for any changes to production plans at GM and Ford.” (*Detroit Free Press*; April 16, 2005)
2. “Chrysler says it is ‘not discouraging’ Wall Street analysts who are trimming their fourth-quarter earnings estimates to \$2.25 a diluted share; analysts have been lowering their estimates in recent weeks, citing expectations that Chrysler would reduce its fourth-quarter production plans; Chrysler says it is reducing North American vehicle-production plans for fourth quarter by 37,200 cars and light trucks, more than 15,000 to 20,000 fewer vehicles than analysts had been expecting.” (*Wall Street Journal*; November 9, 1995)
3. “The net effect of the two cuts has been a 50,000-unit reduction in GM’s North American production plan for the fourth quarter, a move that a Lehman Brothers auto analyst, Joseph Phillippi, estimated could cost GM up to \$800 million in lost sales. ‘In terms of profits for North American operations, this is going to hurt,’ Mr. Phillippi said, adding that GM needed to hit its production targets for the rest of the year if it hoped to make money in North America. ‘They can’t afford any major misses off this schedule,’ he said. However, a Salomon Brothers auto analyst, Jack Kirnan, said GM might need to make further cuts. ‘Being a little cynical here, I think they’re still going to fall short of the plan,’ he said, adding that he expected GM to lose another 20,000 vehicles in November and December. GM’s production problems have become a key concern on Wall Street, where the auto maker’s stock has fallen almost 24 percent in the last two months.” (*The New York Times*; November 5, 1994)
4. “Automakers’ fourth-quarter production plans are sending a strong signal they expect consumer spending to remain steady through the end of 1994. Big Three automakers and the seven foreign-owned companies that build autos in North America say they plan to build 3.9 million cars and light

trucks the fourth quarter. That would be up 8.3% from the same period last year. The production goals, compiled by Ward's Automotive Reports and to be released today, are slightly lower than the 4.1 million vehicles built the second quarter." (*USA Today*; September 6, 1994)

5. "U.S. automakers plan to build huge numbers of cars and trucks the second quarter, more evidence that the auto industry's rebound is strong and likely to continue. The robust production plans, tallied in Ward's Automotive Reports, also show how popular trucks continue to be. The 10 companies operating factories in the USA and Canada plan to build nearly 4.1 million cars and light trucks next quarter, just 55,000 fewer than in record-setting second-quarter 1978, according to Ward's, a weekly industry newsletter. ... 'This is the dealers telling the factories what they think they'll need. It's clear the industry expects the recovery to continue,' says Joel Pitcoff, who analyzes sales and production trends at Ford." (*USA Today*; March 3, 1994)
6. "GM, Ford and Chrysler have yet to announce production plans for the first quarter of 1992. But industry observers are expecting extended shutdowns at the plants, even if they're not as long as last year's. ... David Cole, director of the Office for the Study of Automotive Transportation at the University of Michigan, said that he thinks January production schedules will be cut barring some significant move by Congress, such as a tax cut, that could spur more auto sales. 'If they made their decision now as to production cutbacks in the first of the year, I'd say they're going to do it,' he said. Ward's Automotive Reports, which tracks vehicle production, also reported in its Nov. 25 edition that speculation in the industry is widespread that automakers will make significant cuts in planned first-quarter production. However, Ward's editor James W. Bush said that January production should be ahead of depressed levels a year ago. Spokesmen at the Big Three declined to discuss their plans in detail." (*The Sunday Oregonian*; December 1, 1991)
7. "[GM], in another surprise, indicated Thursday that its dividend might be under pressure. Industry analysts, before the production cuts, didn't expect GM to cut its dividend, although they predicted slimmer payouts at Ford and Chrysler. GM's board is 'very aware' of the importance of the payout to shareholders, says spokesman Terry Sullivan. But he says the board's next dividend decision, set for February, 'will be made with extreme care.'" (*USA Today*; November 30, 1990)
8. "'We are determined to keep our inventories in line with demand,' Stempel [GM's chairman] said. It was unusually frank talk from the executive of a company that traditionally has said little about production plans, particularly if those plans spelled bad news. Stempel's aim, some GM officials said, was to signal stockholders that the company recognizes it is moving through troubled times and that it is willing to make the necessary sacrifices to stay on track." (*The Washington Post*; November 30, 1990)