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Memorandum



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Traffic Safety
Administration

Subject: Cost, Weight, and Lead Time Tear Down Analysis
Advanced Air Bag Systems, Contract No. DTNH22-96-D 12003
Task Orders-001,003, and 005, Final Report.

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From: *Noble Bowie*
Noble Bowie, Director
Office of Planning

Reply to
Attn. of:

To: and Consumer Programs, NPS-30

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Thru: *Christina Spas*
Chief Counsel, NCC-20

Attached are two (2) copies of NHTSA's summary report on the cost, weight, and lead time tear down analysis of advanced air bag systems for inclusion in the subject Docket.

U.S. DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING
06/16/00 11:12:05



ADVANCED AIR BAG SYSTEMS
COST, WEIGHT, AND LEAD TIME ANALYSIS
SUMMARY REPORT

CONTRACT NO. DTNH22-96-0-12003

TASK ORDERS - 001, 003, AND 005

Prepared By

Bruce C. Spinney CPA , COTR
Planning and Analysis Division
Office of Planning and Consumer Programs

Barbara M. Faigin, Chief
Planning and Analysis Division
Office of Planning and Consumer Programs

Noble N. Bowie, Director
Office of Planning and Consumer Programs
Safety Performance Standards

Stephen R. Kratzke
Associate Administrator
Safety Performance Standards
National Highway Traffic Safety Administration

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I. Abstract

This report summarizes the results of the **Indefinite Quantity Contract No.DTNH22-96-D-12003, Task Order's 001 and 003, Cost, Weight, and Lead Time Analysis**. The findings contained herein represent NHTSA's latest effort to determine the cost, weight, and lead time implications of adopting advanced occupant restraint technology. The objectives of this program were twofold:

- ❑ To establish baseline costs and weights for existing air bag / seat belt systems of varying complexity.
- ❑ To determine, as far as possible, the cost, weight, lead time, and capital investment implications of adopting advanced air bag technology.

The systems analyzed in Task Order 001 were:

- ❑ **The 1998 Chrysler Cirrus / Dodge Stratus** baseline front occupant air bag / three-point belt system. This is the system against which the advanced designs will be compared. **Estimated retail price is \$354 and absolute weight is about 20 lbs.**
- ❑ **The 1998 BMW 528i** state-of-the-art comprehensive occupant protection system with dual threshold frontal air bags with a right front seat occupant detection switch pad, side impact air bags including torso and head bags for the driver and right front passenger along with three-point belts / pretensioners for both. **Estimated retail price and absolute weights are \$730 and 33 lbs. respectfully.**

The systems analyzed in Task Order 003 were:

- ❑ **The Ford Taurus 2000** driver and passenger air bag system with dual stage inflation capability and three-point belts with pre tensioners. Side impact air bags were not available for study. **Retail price and absolute weight are estimated to be \$372 and 24 lbs.**
- ❑ The **BMW Z3** driver and passenger air bag system with dual stage inflators and a current production occupant detection switchpad. Side impact air bags and seat belts were not included in this analysis. **Retail price and absolute weight impacts are expected to be \$362 and 12 lbs.**
- ❑ The **inflatable head cushion offered by Volvo** for side impact protection and the **inflatable knee bag offered by Kia**. These systems were studied in anticipation of future rulemaking and will be presented later in the contractor's final report.

Table I-1 summarizes the results of both studies by parts group.

| TABLE I-1 | TASK ORDER-001 | TASK ORDER-001 | TASK ORDER-003 | TASK ORDER-003 |
|-------------------------------------|--------------------------------|------------------------------------|------------------------------|-------------------------|
| STUDY RESULTS BY PARTS GROUP | CHRYSLER CIRRUS-STRATUS | BMW S-SERIES U.S. ECONOMICS | BMW Z3 U.S. ECONOMICS | FORD TAURUS 2000 |
| DRIVER POSITION : | | | | |
| Frontal Air Bag Assembly | \$43.18 | \$38.65 | \$44.98 | \$53.88 |
| Clock Spring Assembly | \$2.18 | \$2.69 | \$2.61 | \$2.18 |
| Head Air Bag Assembly | | \$42.50 | | |
| Door Air Bag Assembly | | \$20.41 | | |
| Seat Belt | \$14.88 | \$10.28 | | \$14.56 |
| Belt Tensioner Assembly | | \$10.90 | | \$14.57 |
| B" Pillar Adj. Upper Anchor | \$1.26 | \$1.92 | | |
| Lower Belt Anchor | \$2.09 | | | |
| Knee Bolster | \$1.44 | \$2.10 | | |
| Side Impact Sensor | | \$30.12 | | |
| TOTAL DRIVER | \$65.03 | \$159.57 | \$47.59 | \$85.19 |
| R-F PASSENGER POSITION : | | | | |
| Frontal Air Bag Assembly | \$72.72 | \$62.44 | \$73.20 | \$68.53 |
| Lid - Passenger Frontal Air Bag | | \$1.26 | | |
| Head Air Bag Assembly | | \$42.50 | | |
| Door Air Bag Assembly | | \$20.41 | | |
| Seat Belt | \$14.51 | \$10.28 | | \$14.56 |
| Belt Tensioner | | \$10.90 | | \$14.57 |
| B" Pillar Adj. Upper Anchor | \$1.26 | \$1.92 | | |
| Lower Belt Anchor | \$2.22 | | | |
| Knee Bolster | \$0.72 | \$1.00 | | |
| Seat Switchpad | | \$2.44 | \$3.56 | |
| Side Impact Sensor | | \$30.12 | | |
| TOTAL R-F PASSENGER | \$91.43 | \$183.27 | \$76.76 | \$97.66 |
| AIR BAG ELECTRONICS | | | | |
| BST" Battery Safety Terminal | | \$9.29 | | |
| Wiring Harness - Prorated | \$6.47 | \$25.70 | \$11.56 | |
| Electronic Control Module | \$71.57 | \$105.64 | \$103.56 | \$63.70 |
| TOTAL ELECTRONICS | \$78.04 | \$140.63 | \$115.12 | \$63.70 |
| OEM VARIABLE COST | \$234.50 | \$483.47 | \$239.47 | \$246.55 |
| DEALER COST | \$318.92 | \$657.52 | \$325.68 | \$335.31 |
| RETAIL PRICE (MSRP) | \$354.00 | \$729.85 | \$361.50 | \$372.19 |

II.0 Cost, Weight, and Lead Time Analysis Summary

The estimates presented herein have been generated according to the methodology used by NHTSA for the last 25 years. The ground rules for each estimate are set forth below:

1. All estimates are based on U.S. economies of scale which assumes an annual production volume of 250,000 units per year for each vehicle model made in North America. The underlying order quantities for each restraint system component are based on this volume assumption.
2. Material costs reflect those incurred by U. S. manufacturers from domestic suppliers. No offshore or south-of-the-border sourcing is assumed
3. Labor costs reflect Michigan rates (union shops).
4. Variable burden rates developed for each work station or an asset centers are based on domestic assembly line practice and volume assumptions.
5. Per unit depreciation of plant assets and amortization of special tooling are based on 7-year and 3-year cost recovery periods respectfully.

The retail pricing formula used by NHTSA assumes a 1.36 markup factor on OEM variable costs to arrive at dealer cost and a 1.11 markup factor on dealer cost to arrive at estimated retail price. Variable costs consist of direct materials, direct labor, and variable burden per unit. The 1.36 markup factor was developed from financial analysis of “Big Three” income statements . The 1.11 markup factor constitutes the dealer’s margin over cost, or Manufacturer’s Suggested Retail Price (MSRP). Dealer discounting is ignored. The 1.11 dealer margin factor is a price-volume weighted average developed from a model by model analysis of domestic light duty vehicle prices and sales per annum. The retail pricing formula is expressed as follows:

$$\text{OEM Variable Manufacturing Costs} \times 1.36 \times 1.11 = \text{MSRP}$$

The reason for using domestic costs and markup rates as well as a dealer margin which assumes no discounting from MSRP is to present Agency cost estimates in the least favorable light. **A detailed step by step description of NHTSA’s estimating methodology is found in Section III of this report.**

II.1. Chrysler Cirrus / Dodge Stratus Frontal Impact Air Bag / Three Point Belt System, Task Order -001.

This system was selected as the baseline air bag system against which more advanced configurations were to be compared. Selection was based on the premise that the design was new at the time (1997) and would be most representative of typical systems offered for sale in North America. The Chrysler driver occupant protection system is estimated to retail for **\$215.98** including all air bag electronics. (Table II-1). The right front passenger system is estimated to retail for **\$138.02** (Table II-2). Thus, the estimated price of the entire system is **\$354.00. Absolute weight is about 20 lbs.**

II.2. BMW 528i Comprehensive Frontal and Side Impact Air Bag / Three Point Belt System, Task Order- 001.

The BMW system constituted the most advanced occupant protection system at the time this Task Order was initiated. In addition to the basic frontal air bags and three-point belt system, both driver and passenger positions came equipped with side impact air bags, inflatable tubular head air bags, pyrotechnic belt **pretensioners**, an occupant detection switch pad (passenger only), and a sensing system with both frontal and side impact detection capability. The BMW driver system, including side impact satellite sensor is estimated to retail for **\$240.89** (Table II-3).. The right front passenger system including the side impact satellite sensor is estimated to retail for **\$276.66** (Table II-4). The electronics including the battery safety disconnect, wiring harness, central electronic control module is expected to retail for **\$212.30** (Table II-5). Total retail price and absolute weight for the entire frontal occupant protection system are estimated to be **\$729.85 and 32 lbs. 13oz.** respectively.

II.3. BMW Z3 Driver and Right Front Passenger Frontal Air Bag Systems With Dual Stage Inflators, Task Order-003.

Selection of the BMW Z3 system was predicated on the manufacturer's plans to incorporate dual stage inflators and a more advanced occupant detection system in the roadster body style first. In the event, development of the production ready occupant detection system has taken longer than anticipated and hardware was unavailable for analysis. The driver and right front passenger air bag systems do, however, incorporate dual stage inflators. The driver system represents a departure from previous practice in that the air bag and inflator are integrated with the steering wheel by the Tier-1 supplier rather than the vehicle manufacturer. Dual staging for the driver air bag inflator is accomplished by packaging the propellant in two distinct cylindrical solid charges. Dual

TABLE H-1

**CHRYSLER CIRRUS OCCUPANT RESTRAINT SYSTEM
RETAIL PRICE DEVELOPMENT**

| PARTS GROUP | DIRECT MATERIAL | DIRECT LABOR | VARIABLE BURDEN | VARIABLE MFG. COSTS | TIER-3 MARKUP | TIER-2 MARKUP | TIER-1 MARKUP | TOTAL OEM VARIABLE COST | OTHER COST + PROFIT | WHOLESALE (DEALER COST) |
|----------------------------|------------------------------------|---------------------|------------------------|----------------------------|----------------------|----------------------|----------------------|--------------------------------|----------------------------|--------------------------------|
| DRIVER POSITION | | | | | | | | | | |
| Frontal Air Bag Assembly | \$21.58 | \$2.46 | \$3.18 | \$27.22 | \$0.13 | \$5.41 | \$9.89 | \$42.65 | \$15.35 | \$58.00 |
| Installation | \$0.16 | \$0.06 | \$0.31 | \$0.53 | | | | \$0.53 | \$0.19 | \$0.72 |
| Clock Spring Assembly | \$0.41 | \$0.45 | \$0.44 | \$1.30 | | \$0.15 | \$0.26 | \$1.71 | \$0.62 | \$2.33 |
| Installation | | \$0.08 | \$0.39 | \$0.47 | | | | \$0.47 | \$0.17 | \$0.64 |
| Electronic Control Module | \$53.95 | \$0.43 | \$2.82 | \$57.20 | | | \$14.30 | \$71.50 | \$25.74 | \$97.24 |
| Installation | | \$0.04 | \$0.03 | \$0.07 | | | | \$0.07 | \$0.03 | \$0.10 |
| Wire Harness | \$0.72 | \$1.72 | \$1.43 | \$3.87 | | | \$0.97 | \$4.84 | \$1.74 | \$6.58 |
| Installation | | \$0.95 | \$0.68 | \$1.63 | | | | \$1.63 | \$0.59 | \$2.22 |
| Seat Belt | \$4.30 | \$3.27 | \$1.25 | \$8.82 | \$0.16 | \$0.30 | \$2.10 | \$11.38 | \$4.10 | \$15.48 |
| Installation | \$1.16 | \$0.40 | \$1.94 | \$3.50 | | | | \$3.50 | \$1.26 | \$4.76 |
| 'B" Pillar Upper Anchor | \$0.64 | \$0.18 | \$0.19 | \$1.01 | | | \$0.25 | \$1.26 | \$0.45 | \$1.71 |
| Installation | Included in Seat Belt Installation | | | | | | | | | |
| Lower Belt Anchor | \$0.51 | \$0.10 | \$0.13 | \$0.74 | | | \$0.23 | \$0.97 | \$0.35 | \$1.32 |
| Installation | | \$0.19 | \$0.93 | \$1.12 | | | | \$1.12 | \$0.40 | \$1.52 |
| Knee Bolster | \$0.58 | \$0.10 | \$0.18 | \$0.86 | | | \$0.21 | \$1.07 | \$0.39 | \$1.46 |
| Installation | | \$0.06 | \$0.31 | \$0.37 | | | | \$0.37 | \$0.13 | \$0.50 |
| VARIABLE COSTS | \$84.01 | \$10.49 | \$14.21 | \$108.71 | | | | | | |
| OEM VARIABLE COSTS | | | | \$108.71 | \$0.29 | \$5.86 | \$28.21 | \$143.07 | | |
| DEALER COST | | | | | | | | \$143.07 | \$51.51 | \$194.58 |
| DEALER MARGIN | | | | | | | | | | \$21.40 |
| RETAIL PRICE (MSRP) | | | | | | | | | | \$215.98 |

TABLE II-2

**CHRYSLER CIRRUS OCCUPANT RESTRAINT SYSTEM
RETAIL PRICE DEVELOPMENT**

| PARTS GROUP | DIRECT MATERIAL | DIRECT LABOR | VARIABLE BURDEN | VARIABLE MFG. COSTS | TIER-3 MARKUP | TIER-2 MARKUP | TIER-1 MARKUP | TOTAL OEM VARIABLE COST | OTHER COST + PROFIT | WHOLESALE (DEALER COST) |
|----------------------------|------------------------------------|---------------------|------------------------|----------------------------|----------------------|----------------------|----------------------|--------------------------------|----------------------------|--------------------------------|
| PASSENGER POSITION | | | | | | | | | | |
| Air Bag Module | \$39.93 | \$4.38 | \$8.74 | \$53.05 | \$0.19 | \$9.16 | \$9.39 | \$71.79 | \$25.84 | \$97.63 |
| Installation | | \$0.16 | \$0.77 | \$0.93 | | | | \$0.93 | \$0.33 | \$1.26 |
| Passenger Seat Belt | \$4.05 | \$3.27 | \$1.28 | \$8.60 | \$0.16 | \$0.22 | \$2.03 | \$11.01 | \$3.96 | \$14.97 |
| Installation | \$1.16 | \$0.40 | \$1.94 | \$3.50 | | | | \$3.50 | \$1.26 | \$4.76 |
| B " Pillar Upper Anchor | \$0.64 | \$0.18 | \$0.19 | \$1.01 | | | \$0.25 | \$1.26 | \$0.45 | \$1.71 |
| Installation | Included in Seat Belt Installation | | | | | | | | | |
| Lower Belt Anchor | \$0.51 | \$0.16 | \$0.13 | \$0.80 | | | \$0.30 | \$1.10 | \$0.40 | \$1.50 |
| Installation | | \$0.19 | \$0.93 | \$1.12 | | | | \$1.12 | \$0.40 | \$1.52 |
| Knee Bolster | \$0.39 | \$0.07 | \$0.12 | \$0.58 | | | \$0.14 | \$0.72 | \$0.26 | \$0.98 |
| Installation | | | | | | | | | | |
| VARIABLE COSTS | \$46.68 | \$8.81 | \$14.10 | \$69.59 | | | | | | |
| OEM VARIABLE COSTS | | | | \$69.59 | \$0.35 | \$9.38 | \$12.11 | \$91.43 | | |
| DEALER COST | | | | | | | | \$91.43 | \$32.91 | \$124.34 |
| DEALER MARGIN | | | | | | | | | | \$13.68 |
| RETAIL PRICE (MSRP) | | | | | | | | | | \$138.02 |

TABLE II-3

**BMW 528i TYPE OCCUPANT RESTRAINT SYSTEM
RETAIL PRICE DEVELOPMENT**

| PARTS GROUP DRIVER POSITION | DIRECT MATERIAL | DIRECT LABOR | VARIABLE BURDEN | VARIABLE MFG. COSTS | TIER-3 MARKUP | TIER-2 MARKUP | TIER-1 MARKUP | TOTAL OEM VARIABLE COST | OTHER COST + PROFIT | WHOLESALE (DEALER COST) |
|--|----------------------------|-------------------------|----------------------------|--------------------------------|--------------------------|--------------------------|--------------------------|------------------------------------|--------------------------------|------------------------------------|
| Frontal Air Bag Assembly | \$21.29 | \$2.83 | \$4.35 | \$28.47 | \$0.69 | \$4.15 | \$4.97 | \$38.28 | \$13.78 | \$52.06 |
| Installation | \$0.00 | \$0.06 | \$0.31 | \$0.37 | | | | \$0.37 | \$0.13 | \$0.50 |
| Clock Spring Assembly | \$0.72 | \$0.50 | \$0.41 | \$1.63 | | \$0.32 | \$0.27 | \$2.22 | \$0.80 | \$3.02 |
| Installation | \$0.00 | \$0.08 | \$0.39 | \$0.47 | | | | \$0.47 | \$0.17 | \$0.64 |
| Head Air Bag Assembly | \$27.98 | \$1.60 | \$1.21 | \$30.79 | \$0.25 | \$2.56 | \$5.16 | \$38.76 | \$13.95 | \$52.71 |
| Installation | \$0.00 | \$0.64 | \$3.10 | \$3.74 | | | | \$3.74 | \$1.35 | \$5.09 |
| Door Air Bag Assembly | \$12.74 | \$1.72 | \$2.59 | \$17.05 | \$0.19 | \$0.29 | \$2.58 | \$20.11 | \$7.24 | \$27.35 |
| Installation | \$0.00 | \$0.11 | \$0.19 | \$0.30 | | | | \$0.30 | \$0.11 | \$0.41 |
| Seat Belt | \$3.95 | \$2.00 | \$1.83 | \$7.78 | | \$0.32 | \$1.81 | \$9.91 | \$3.57 | \$13.48 |
| Installation | \$0.00 | \$0.06 | \$0.31 | \$0.37 | | | | \$0.37 | \$0.13 | \$0.50 |
| Belt Tensioner Assembly | \$3.70 | \$1.59 | \$2.23 | \$7.52 | \$0.02 | \$0.61 | \$1.63 | \$9.78 | \$3.52 | \$13.30 |
| Installation | \$0.00 | \$0.19 | \$0.93 | \$1.12 | | | | \$1.12 | \$0.40 | \$1.52 |
| B" Pillar Adj. Upper Anchor | \$0.98 | \$0.27 | \$0.24 | \$1.49 | | \$0.10 | \$0.33 | \$1.92 | \$0.69 | \$2.61 |
| Installation | \$0.00 | \$0.00 | \$0.00 | \$0.00 | | | | \$0.00 | \$0.00 | \$0.00 |
| Knee Bolster | \$0.90 | \$0.10 | \$0.20 | \$1.20 | | | \$0.30 | \$1.50 | \$0.54 | \$2.04 |
| Installation | \$0.00 | \$0.10 | \$0.50 | \$0.60 | | | | \$0.60 | \$0.22 | \$0.82 |
| Side Impact Sensor | \$23.27 | \$0.24 | \$0.53 | \$24.04 | | | \$6.01 | \$30.05 | \$10.82 | \$40.87 |
| Installation | \$0.00 | \$0.04 | \$0.03 | \$0.07 | | | | \$0.07 | \$0.03 | \$0.10 |
| -VARIABLE COSTS | \$95.53 | \$12.13 | \$19.35 | \$127.01 | | | | | | |
| OEM VARIABLE COSTS | | | | \$127.01 | \$1.15 | \$8.35 | \$23.06 | \$159.57 | | |
| DEALER COST | | | | | | | | \$159.57 | \$57.45 | \$217.02 |
| DEALER MARGIN | | | | | | | | | | \$23.87 |
| RETAIL PRICE (MSRP) | | | | | | | | | | \$240.89 |

TABLE II-4

**BMW 528i TYPE OCCUPANT RESTRAINT SYSTEM
RETAIL PRICE DEVELOPMENT**

| PARTS GROUP | DIRECT MATERIAL | DIRECT LABOR | VARIABLE BURDEN | VARIABLE MFG. COSTS | TIER-3 MARKUP | TIER-2 MARKUP | TIER-1 MARKUP | TOTAL OEM VARIABLE COST | OTHER COST + PROFIT | WHOLESALE (DEALER COST) |
|-----------------------------|------------------------|---------------------|------------------------|----------------------------|----------------------|----------------------|----------------------|--------------------------------|----------------------------|--------------------------------|
| Frontal Air Bag Assembly | \$34.86 | \$3.73 | \$6.89 | \$45.48 | \$2.92 | \$4.27 | \$9.40 | \$62.07 | \$22.35 | \$84.42 |
| Installation | \$0.00 | \$0.06 | \$0.31 | \$0.37 | | | | \$0.37 | \$0.13 | \$0.50 |
| Lid-Frontal Air Bag | \$0.51 | \$0.21 | \$0.29 | \$1.01 | | | \$0.25 | \$1.26 | \$0.45 | \$1.71 |
| Installation | | | | | | | | | | |
| Head Air Bag Assembly | \$27.98 | \$1.60 | \$1.21 | \$30.79 | \$0.25 | \$2.56 | \$5.16 | \$38.76 | \$13.95 | \$52.71 |
| Installation | \$0.00 | \$0.64 | \$3.10 | \$3.74 | | | | \$3.74 | \$1.35 | \$5.09 |
| Door Air Bag Assembly | \$12.74 | \$1.72 | \$2.59 | \$17.05 | \$0.19 | \$0.29 | \$2.58 | \$20.11 | \$7.24 | \$27.35 |
| Installation | \$0.00 | \$0.11 | \$0.19 | \$0.30 | | | | \$0.30 | \$0.11 | \$0.41 |
| Seat Belt | \$3.95 | \$2.00 | \$1.83 | \$7.78 | | \$0.32 | \$1.81 | \$9.91 | \$3.57 | \$13.48 |
| Installation | \$0.00 | \$0.06 | \$0.31 | \$0.37 | | | | \$0.37 | \$0.13 | \$0.50 |
| Belt Tensioner Assembly | \$3.70 | \$1.59 | \$2.23 | \$7.52 | \$0.02 | \$0.61 | \$1.63 | \$9.78 | \$3.52 | \$13.30 |
| Installation | \$0.00 | \$0.19 | \$0.93 | \$1.12 | | | | \$1.12 | \$0.40 | \$1.52 |
| B" Pillar Adj. Upper Anchor | \$0.98 | \$0.27 | \$0.24 | \$1.49 | | \$0.10 | \$0.33 | \$1.92 | \$0.69 | \$2.61 |
| Installation | | | | | | | | | | |
| Knee Bolster | \$0.60 | \$0.07 | \$0.13 | \$0.80 | | | \$0.20 | \$1.00 | \$0.36 | \$1.36 |
| Installation | | | | | | | | | | |
| Seat Switchpad | \$0.96 | \$0.44 | \$0.45 | \$1.85 | | | \$0.42 | \$2.27 | \$0.82 | \$3.09 |
| Installation | \$0.00 | \$0.10 | \$0.07 | \$0.17 | | | | \$0.17 | \$0.06 | \$0.23 |
| Side Impact Sensor | \$23.27 | \$0.24 | \$0.53 | \$24.04 | | | \$6.01 | \$30.05 | \$10.82 | \$40.87 |
| Installation | \$0.00 | \$0.04 | \$0.03 | \$0.07 | | | | \$0.07 | \$0.03 | \$0.10 |
| VARIABLE COSTS | \$109.55 | \$13.07 | \$21.33 | \$143.95 | | | | | | |
| OEM VARIABLE COSTS | | | | \$143.95 | \$3.38 | \$8.15 | \$27.79 | \$183.27 | | |
| DEALER COST | | | | | | | | \$183.27 | \$65.98 | \$249.25 |
| DEALER MARGIN | | | | | | | | | | \$27.42 |
| RETAIL PRICE (MSRP) | | | | | | | | | | \$276.66 |

TABLE II-5

BMW 528i OCCUPANT RESTRAINT SYSTEM
RETAIL PRICE DEVELOPMENT

| PARTS GROUP ELECTRONICS | DIRECT MATERIAL | DIRECT LABOR | VARIABLE BURDEN | VARIABLE MFG. COSTS | TIER-3 MARKUP | TIER-2 MARKUP | TIER-1 MARKUP | TOTAL OEM VARIABLE COST | OTHER COST + PROFIT | WHOLESALE (DEALER COST) |
|----------------------------|--------------------|-----------------|--------------------|------------------------|------------------|------------------|------------------|----------------------------|------------------------|----------------------------|
| Battery Safety Terminal | \$5.27 | \$0.50 | \$0.52 | \$6.29 | | \$0.33 | \$1.44 | \$8.06 | \$2.90 | \$10.96 |
| Installation | \$0.00 | \$0.21 | \$1.02 | \$1.23 | | | | \$1.23 | \$0.44 | \$1.67 |
| Wiring Harness-Prorated | \$2.94 | \$6.07 | \$5.03 | \$14.04 | | | \$3.51 | \$17.55 | \$6.32 | \$23.87 |
| Installation | \$0.00 | \$4.75 | \$3.40 | \$8.15 | | | | \$8.15 | \$2.93 | \$11.08 |
| Electronic Control Module | \$79.02 | \$1.75 | \$3.69 | \$84.46 | | | \$21.11 | \$105.57 | \$38.01 | \$143.58 |
| Installation | \$0.00 | \$0.04 | \$0.03 | \$0.07 | | | | \$0.07 | \$0.03 | \$0.10 |
| VARIABLE COSTS | \$87.23 | \$13.32 | \$13.69 | \$114.24 | | | | | | |
| OEM VARIABLE COSTS | | | | \$114.24 | \$0.00 | \$0.33 | \$26.06 | \$140.63 | | |
| DEALER COST | | | | | | | | \$140.63 | \$50.63 | \$191.26 |
| DEALER MARGIN | | | | | | | | | | \$21.04 |
| RETAIL PRICE (MSRP) | | | | | | | | | | \$212.30 |

staging for the passenger side is accomplished by a hybrid inflator using stored gas with two small pyrotechnic booster charges capable of single or simultaneous ignition. Only the driver and right front passenger air bag systems were costed out for this particular vehicle. However, the passenger position estimate includes an occupant detection switchpad similar to that found on the BMW 528i. The Z3 driver steering wheel / air bag module, passenger air bag module, electronic control module, and other related electronics are estimated to retail for **\$361.50** in total. (Table II-6).

II.4. Ford Taurus 2000 Driver and Right Front Passenger Occupant Protection System with Dual Stage Inflators and Seat Belt Pretensioners, Task Order-003.

The selection of the Ford Taurus 2000 was based on the manufacturer's announced plans to offer this model with advanced front occupant air bags and three-point belts with **pretensioners**. Also it was hoped that NHTSA would be able to obtain an example of the seat integrated side impact air bag slated for this car. However, this combination head / torso side impact protection system has not yet materialized. Nevertheless, the Taurus frontal air bag / belt system represents a significant improvement over previous Ford designs and includes dual stage inflators and belt **pretensioners** similar in design and function to those found on the BMW models. The Taurus 2000 driver / right front passenger air bag system is estimated to retail for **\$284.24** (Table II-7). With the addition of belt system and **pretensioners**, the whole front occupant protection package is estimated to retail for **\$372.19** (Table II-8).

TABLE II-6

**BMW Z3 DRIVER AND R-F PASSENGER AIR BAG SYSTEM
WITH DUAL STAGE INFLATORS AND OCCUPANT SENSOR**

| PARTS GROUP | DIRECT MATERIAL | DIRECT LABOR | VARIABLE BURDEN | VARIABLE MFG. COSTS | TIER-3 MARKUP | TIER-2 MARKUP | TIER-1 MARKUP | TOTAL OEM VARIABLE COST | OTHER COST + PROFIT | WHOLESALE (DEALER COST) |
|----------------------------|------------------------|---------------------|------------------------|----------------------------|----------------------|----------------------|----------------------|--------------------------------|----------------------------|--------------------------------|
| DRIVER POSITION | | | | | | | | | | |
| Frontal Air Bag Assembly | \$28.49 | \$3.04 | \$4.15 | \$35.68 | \$0.62 | \$3.78 | \$4.53 | \$44.61 | \$16.06 | \$60.67 |
| Installation | \$0.00 | \$0.06 | \$0.31 | \$0.37 | | | | \$0.37 | \$0.13 | \$0.50 |
| Clock Spring Assembly | \$0.75 | \$0.50 | \$0.42 | \$1.67 | | \$0.18 | \$0.28 | \$2.13 | \$0.77 | \$2.90 |
| Installation | \$0.00 | \$0.08 | \$0.40 | \$0.48 | | | | \$0.48 | \$0.17 | \$0.65 |
| Electronic Control Module | \$76.98 | \$1.52 | \$3.25 | \$81.75 | | | \$21.74 | \$103.49 | \$37.26 | \$140.75 |
| Installation | \$0.00 | \$0.04 | \$0.03 | \$0.07 | | | | \$0.07 | \$0.03 | \$0.10 |
| PASSENGER POSITION | | | | | | | | | | |
| Air Bag Module | \$43.56 | \$3.21 | \$5.89 | \$52.66 | \$3.55 | \$5.19 | \$11.43 | \$72.83 | \$26.22 | \$99.05 |
| Installation | | \$0.06 | \$0.31 | \$0.37 | | | | \$0.37 | \$0.13 | \$0.50 |
| Occupant Sensor R-F Seat | \$1.36 | \$0.34 | \$0.34 | \$2.04 | | | \$0.42 | \$2.46 | \$0.89 | \$3.35 |
| Seat Sensor Switch | \$0.05 | \$0.40 | \$0.31 | \$0.76 | | | | \$0.76 | \$0.27 | \$1.03 |
| Installation | \$0.17 | \$0.10 | \$0.07 | \$0.34 | | | | \$0.34 | \$0.12 | \$0.46 |
| Other Electrical | \$6.54 | \$1.18 | \$1.50 | \$9.22 | | | \$2.08 | \$11.30 | \$4.07 | \$15.37 |
| Installation | | \$0.17 | \$0.09 | \$0.26 | | | | \$0.26 | \$0.09 | \$0.35 |
| VARIABLE COSTS | \$157.90 | \$10.70 | \$17.07 | \$185.67 | | | | | | |
| OEM VARIABLE COSTS | | | | \$185.67 | \$4.17 | \$9.15 | \$40.48 | \$239.47 | | |
| DEALER COST | | | | | | | | \$239.47 | \$86.21 | \$325.68 |
| DEALER MARGIN | | | | | | | | | | \$35.82 |
| RETAIL PRICE (MSRP) | | | | | | | | | | \$361.50 |

TABLE II-7

FORD TAURUS DRIVER AND R-F PASSENGER AIR BAG SYSTEMS
WITH DUAL STAGE INFLATORS

| PARTS GROUP | DIRECT MATERIAL | DIRECT LABOR | VARIABLE BURDEN | VARIABLE MFG. COSTS | TIER-3 MARKUP | TIER-2 MARKUP | TIER-1 MARKUP | TOTAL OEM VARIABLE COST | OTHER COST + PROFIT | WHOLESALE (DEALER COST) |
|----------------------------|-----------------|----------------|-----------------|---------------------|---------------|----------------|----------------|-------------------------|---------------------|-------------------------|
| DRIVER POSITION | | | | | | | | | | |
| Frontal Air Bag Assembly | \$22.28 | \$4.19 | \$7.10 | \$33.57 | \$0.17 | \$6.94 | \$12.67 | \$53.35 | \$19.21 | \$72.56 |
| Installation | \$0.16 | \$0.06 | \$0.31 | \$0.53 | | | | \$0.53 | \$0.19 | \$0.72 |
| Clock Spring Assembly | \$0.41 | \$0.45 | \$0.44 | \$1.30 | | \$0.15 | \$0.26 | \$1.71 | \$0.62 | \$2.33 |
| Installation | | \$0.08 | \$0.39 | \$0.47 | | | | \$0.47 | \$0.17 | \$0.64 |
| Electronic Control Module | \$44.67 | \$1.33 | \$2.90 | \$48.90 | | | \$14.73 | \$63.63 | \$22.91 | \$86.54 |
| Installation | | \$0.04 | \$0.03 | \$0.07 | | | | \$0.07 | \$0.03 | \$0.10 |
| PASSENGER POSITION | | | | | | | | | | |
| Air Bag Module | \$34.74 | \$4.74 | \$6.29 | \$45.77 | \$0.22 | \$10.66 | \$10.93 | \$67.58 | \$24.33 | \$91.91 |
| Installation | | \$0.16 | \$0.79 | \$0.95 | | | | \$0.95 | \$0.34 | \$1.29 |
| VARIABLE COSTS | \$102.26 | \$11.05 | \$18.25 | \$131.56 | | | | | | |
| OEM VARIABLE COSTS | | | | \$131.56 | \$0.39 | \$17.75 | \$38.59 | \$188.29 | | |
| DEALER COST | | | | | | | | \$188.29 | \$67.78 | \$256.07 |
| DEALER MARGIN | | | | | | | | | | \$28.17 |
| RETAIL PRICE (MSRP) | | | | | | | | | | \$284.24 |

TABLE II-8

**FORD TAURUS DRIVER AND R-F PASSENGER RESTRAINT SYSTEM
WITH DUAL STAGE INFLATORS AND BELT PRE-TENSIONERS**

| PARTS GROUP | DIRECT MATERIAL | DIRECT LABOR | VARIABLE BURDEN | VARIABLE MFG. COSTS | TIER-3 MARKUP | TIER-2 MARKUP | TIER-1 MARKUP | TOTAL OEM VARIABLE COST | OTHER COST + PROFIT | WHOLESALE (DEALER COST) |
|--|------------------------|---------------------|------------------------|----------------------------|----------------------|----------------------|----------------------|--------------------------------|----------------------------|--------------------------------|
| DRIVER POSITION | | | | | | | | | | |
| Frontal Air Bag Assembly | \$22.28 | \$4.19 | \$7.10 | \$33.57 | \$0.17 | \$6.94 | \$12.67 | \$53.35 | \$19.21 | \$72.56 |
| Installation | \$0.16 | \$0.06 | \$0.31 | \$0.53 | | | | \$0.53 | \$0.19 | \$0.72 |
| Clock Spring Assembly | \$0.41 | \$0.45 | \$0.44 | \$1.30 | | \$0.15 | \$0.26 | \$1.71 | \$0.62 | \$2.33 |
| Installation | | \$0.08 | \$0.39 | \$0.47 | | | | \$0.47 | \$0.17 | \$0.64 |
| Electronic Control Module | \$44.67 | \$1.33 | \$2.90 | \$48.90 | | | \$14.73 | \$63.63 | \$22.91 | \$86.54 |
| Installation | | \$0.04 | \$0.03 | \$0.07 | | | | \$0.07 | \$0.03 | \$0.10 |
| PASSENGER POSITION | | | | | | | | | | |
| Air Bag Module | \$34.74 | \$4.74 | \$6.29 | \$45.77 | \$0.22 | \$10.66 | \$10.93 | \$67.58 | \$24.33 | \$91.91 |
| Installation | | \$0.16 | \$0.79 | \$0.95 | | | | \$0.95 | \$0.34 | \$1.29 |
| Occupant Sensor R-F Seat Installation | | | | | | | | | | |
| IBELT SYSTEM - FR. (2) | | | | | | | | | | |
| IBelt Hardware | \$12.32 | \$6.82 | \$6.74 | \$25.88 | | \$0.38 | \$2.12 | \$28.38 | \$10.22 | \$38.60 |
| Installation | | \$0.12 | \$0.62 | \$0.74 | | | | \$0.74 | \$0.27 | \$1.01 |
| Pretensioners | \$6.78 | \$8.84 | \$8.48 | \$24.10 | \$0.02 | \$0.74 | \$1.96 | \$26.82 | \$9.66 | \$36.48 |
| Installation | | \$0.40 | \$1.92 | \$2.32 | | | | \$2.32 | \$0.84 | \$3.16 |
| VARIABLE COSTS | \$121.36 | \$27.23 | \$36.01 | \$184.60 | | | | | | |
| OEM VARIABLE COSTS | | | | \$184.60 | \$0.41 | \$18.87 | \$42.67 | \$246.55 | | |
| DEALER COST | | | | | | | | \$246.55 | \$88.76 | \$335.31 |
| DEALER MARGIN | | | | | | | | | | \$36.88 |
| RETAIL PRICE (MSRP) | | | | | | | | | | \$372.19 |

III. RETAIL PRICE ESTIMATING METHODOLOGY

The methodology used by NHTSA to estimate the retail price impacts of proposed Federal Motor Vehicle Safety Standards is grounded in modern cost accounting techniques as practiced by the automotive manufacturers and their suppliers. Specifically, a vehicle's retail price reflects manufacturing costs plus other corporate costs that are allocated in such a way as to arrive at a price that the market will bear for each make and model. The resulting **Manufacturer's Suggested Retail Price, or MSRP**, which appears on the "sticker" includes the dealer's margin over cost or "discount from list."

The relationship between retail price and manufacturing costs is not direct. In market segments where competition is intense, some models cannot be priced high enough to recover each unit's manufacturing costs plus its full *pro rata* contribution to overhead, other costs, and profit. In less competitive segments, other models may be priced to recover manufacturing costs and contribute more than their *pro rata* share to overhead, other costs, and profit. **The objective of any corporate-wide pricing strategy must therefore be to maximize the total contribution to profit of the entire model lineup on a volume weighted basis.** The company's income statement published at the end of the accounting cycle is the measure of the success, or lack thereof, in achieving this objective.

NHTSA's retail price estimating methodology is based on the derivation of these weighted average cost-price relationships from analysis of vehicle manufacturer and supplier income statements and vehicle pricing data contained in the Automotive Invoice Service New Car Cost Guide.

III.1. Elements of the Retail Price Equation

The accounting elements required to develop weighted average manufacturing cost and retail price estimates consist of the following:

- Variable Manufacturing Costs,**
- Contribution Margin,**
- Wholesale Price,**
- Dealer Margin, and**
- Manufacturer's Suggested Retail Price (MSRP).**

The analytical technique used by NHTSA to isolate these accounting elements is known as "**common sizing.**" Common sizing consists of rearranging corporate income

statements within a given industry according to a uniform format or “template.” Common sizing as practiced by NHTSA consists of isolating and aggregating corporate financial data on a behavioral basis. Costs and expenses are defined by how they behave in total and may be divided into two general categories:

- 1 **Costs which are constant per unit of input but vary directly in total with production volume.** These are called **variable manufacturing costs** and consist chiefly of **direct material, direct labor, and variable factory overhead expenses** such as materials handling and electric power. Variable manufacturing costs are directly traceable to finished goods inventory and cost of goods sold.

2. **Costs which do not vary directly in total with production volume.** These costs cannot be directly traced to finished goods inventory or cost of goods sold. Instead, they are **period costs which must be allocated per unit according to a predetermined methodology.** Period costs are further subdivided into **discretionary** and **fixed costs.** Discretionary costs can be controlled to an extent over a one year accounting cycle. On the other hand, fixed costs are expensed according to rigid **depreciation** and **amortization** schedules over at least one annual cycle. Examples of discretionary costs include **maintenance, research and development, and selling, general, and administrative expenses.** Fixed costs include depreciation of property, plant, machinery and equipment, and amortization of special tools.

III.2. Common-Sizing Vehicle Manufacturer Income Statements

Modern financial accounting standards require full disclosure of all items and their amounts which are material to an informed user of a company’s financial statements and notes thereto. An item is material if its disclosure or non-disclosure in a company’s financial statements would, in all probability, influence the judgement of an informed user relying on the report such as a shareholder, fund manager, bondholder, investment banker, or lending institution.

Another principle central to modern financial accounting is comparability. Comparability is defined as that quality of information that enables the users of financial statements to identify similarities in and differences between two sets of economic information. Rigid uniformity is not prescribed by the Financial Accounting Standards Board (FASB) in its Statements of Financial Accounting Standards. However, consistency in the use of accounting principles, standards, and procedures from period to period is required. Thus, when a corporation adopts a method of depreciation or amortization of fixed assets, it cannot subsequently change to an alternative accounting method without justification and full disclosure.

Notwithstanding the strictures of full disclosure, materiality, and comparability, no two auto companies present their operating results in quite the same format. Some cost and expense accounts are disclosed in the income statement by one firm whereas a competitor may disclose the same information in the cash flow statement, supplemental schedules, or notes to the financial statements. Moreover, Generally Accepted Accounting Principles (GAAP) preclude presenting the income statement in the marginal format which segregates costs and expenses as variable, discretionary, or fixed. The GAAP format requires the full cost approach in which the Costs of Sales account includes both variable manufacturing costs and certain company-wide overhead expenses.

Over the last 25 years, NHTSA has developed and continuously updated a methodology to approximate a manufacturer's total variable, discretionary, and fixed costs by analysis of the financial statements and supplemental schedules contained in the Form 10-K report filed annually with the Securities and Exchange Commission. Since the corporate income statement does not disclose variable manufacturing costs, it is necessary to identify the extent to which discretionary and fixed costs are commingled with the Costs of Sales account. This is done by researching the management's discussion of annual performance and the accompanying notes to the financial statements; identifying all significant overhead accounts not specifically itemized in the income statement. Significance is determined by the size of the account and the title or definition of the account.

NHTSA has identified eight significant discretionary and fixed cost accounts and their sources common to the financial statements of Chrysler, Ford, and General Motors:

| | Account Title | Source |
|----|--|---------------------------------|
| 1. | Maintenance and Repairs. | SEC Form 10-K Sch. X |
| 2. | Research and Development. | Management Discussion |
| 3. | Taxes other than Income. | SEC Form 10-K Various |
| 4. | Selling, General, and Administration. | Income Statement |
| 5. | Depreciation of Property, Plant, and Equipment. | Income Statement |
| 6. | Amortization of Special Tooling. | Income Statement |
| 7. | Pension Expense. | Income Statement / Notes |
| 8. | Other Retirement Benefits Expense. | Income Statement / Notes |

Only accounts 4,5,6,7,and eight are consistently disclosed by the “Big Three” in their income statements provided to shareholders. Therefore, the assumption is made that 1, 2, and three are commingled with Costs of Sales. To common size the income statements of the auto manufacturers, **Maintenance and Repairs, Research and Development, and Taxes other than Income** are subtracted from Costs of Sales and grouped “below the line” with accounts 4-8. The remainder in the Cost of Sales account is reclassified as Variable Manufacturing Costs. Common sizing technique as practiced by NHTSA is shown conceptually in **Figure III-1**.

The resulting income statement is in the marginal costing format with costs and expenses grouped on a behavioral basis. Now it is possible to determine the most important relationship within the framework of NHTSA’s analytical technique, the **Contribution Margin on Sales** or, as it is sometimes called, the **Variable Margin**. At the corporate level, the contribution margin determines the firm’s **operating leverage** or ability to cover discretionary costs, fixed costs, interest expense, taxes, and leave a residual net profit. Contribution Margin is determined by subtracting Variable Manufacturing Costs from Net Sales. The operating ratios are calculated by dividing variable manufacturing costs by net sales and contribution margin by net sales. The operating ratios provide the weighted average cost content as a percentage of all products sold.

Tables III-1 and III-2 present the cumulative results of operations and operating ratios for Chrysler Corporation over the period 1989-1997 in conformity with the Marginal costing format derived above. The column on the far right shows the cumulative operating ratios for Chrysler Corporation over the period 1989-1997. The Contribution Margin is 27.5% of Net Sales. Variable Costs are 72.5% of Net Sales. In order to cover Fixed / Discretionary Costs, Interest, Taxes, and leave a Net Profit of 2.4%, Variable Costs must be marked up by 38%:

$$\frac{\text{Cumulative Contribution Margin}}{\text{Cumulative Variable Costs}} = \text{Markup on Variable Costs}$$

$$\frac{\$ 102,753 \text{ Billion}}{\$ 270,866 \text{ Billion}} = 38\%$$

Cumulative Variable Costs must therefore be marked up by a factor of 1.38 to arrive at Net Sales for the period 1989-1997. This markup factor represents the volume weighted average markup applied to the company’s total variable costs over its entire product range to arrive at Total Wholesale Revenue (Net Sales). As such, this markup factor reflects the company’s overall pricing strategy and represents the cost structure for an “average” Chrysler vehicle at the wholesale price level.

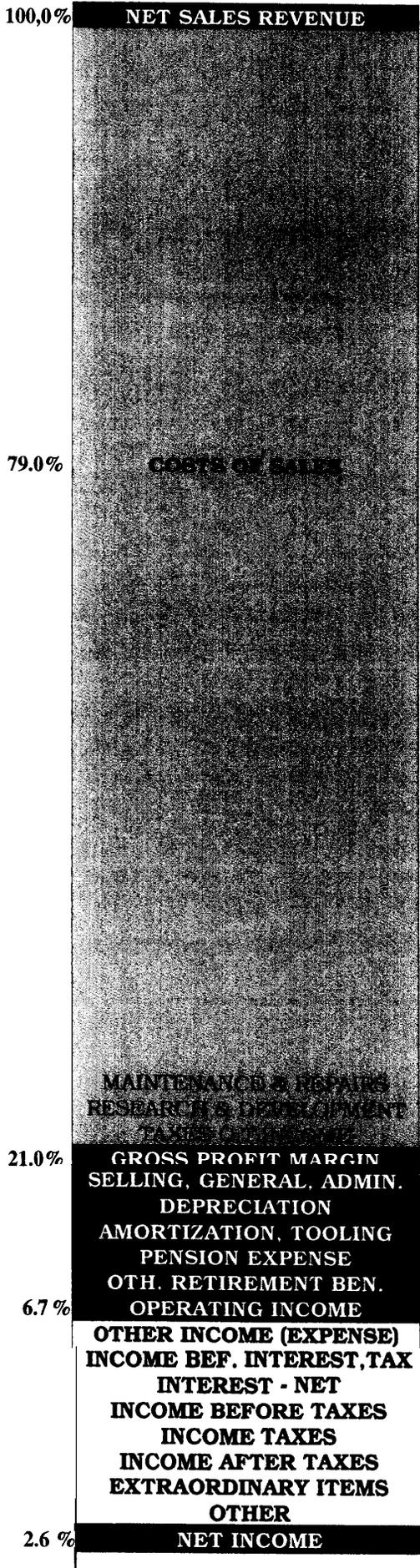


FIGURE III-1
COMMON SIZING

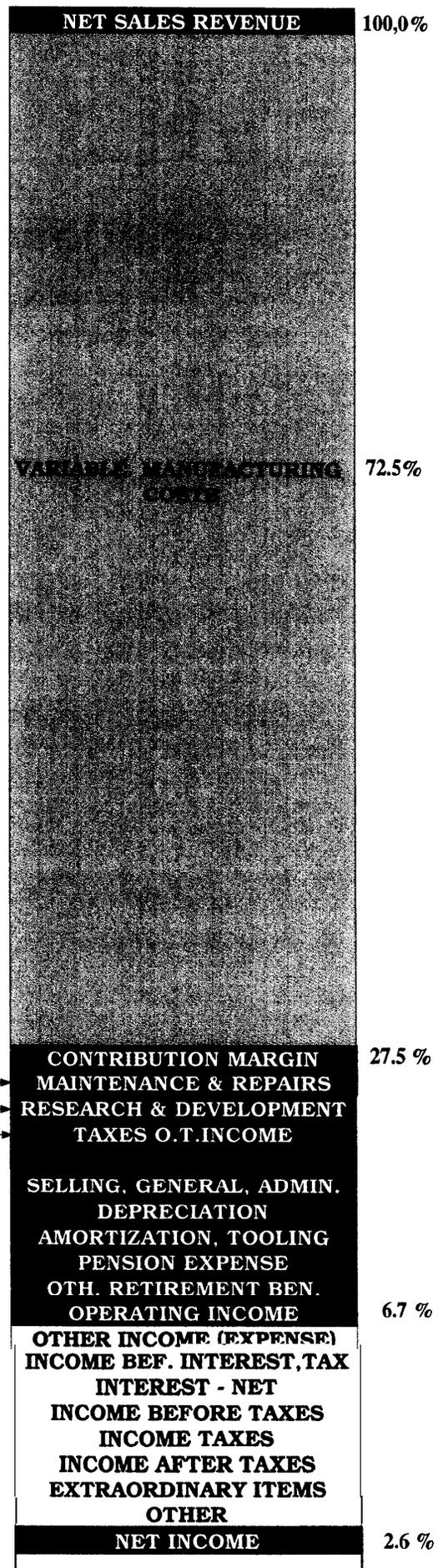


TABLE III-1

CHRYSLER CORPORATION MARGINAL ANALYSIS OF OPERATING RESULTS, 1989-1997

| CHRYSLER | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1989-1997 | % |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|----------|
| NET SALES \$ X 1 MILLION | \$31,039 | \$26,965 | \$26,707 | \$33,409 | \$41,247 | \$49,534 | \$49,747 | \$58,004 | \$56,967 | \$373,619 | 100.0% |
| VARIABLE COSTS - MFG | \$24,136 | \$20,837 | \$21,179 | \$24,790 | \$29,077 | \$34,648 | \$35,629 | \$39,799 | \$40,771 | \$270,866 | 72.5% |
| CONTRIBUTION MARGIN | \$6,903 | \$6,128 | \$5,528 | \$8,619 | \$12,170 | \$14,886 | \$14,118 | \$18,205 | \$16,196 | \$102,753 | 27.5% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | | |
| Maintenance & Repairs | \$668 | \$588 | \$587 | \$740 | \$894 | \$842 | \$846 | \$986 | \$968 | \$7,119 | 1.9% |
| Research & Development | \$958 | \$908 | \$955 | \$1,100 | \$1,200 | \$1,303 | \$1,420 | \$1,602 | \$1,714 | \$11,160 | 3.0% |
| Selling, General, & Admin. | \$1,875 | \$1,945 | \$2,112 | \$2,467 | \$2,619 | \$3,146 | \$3,408 | \$3,985 | \$4,155 | \$25,712 | 6.9% |
| Taxes Other Than Income | \$538 | \$540 | \$540 | \$626 | \$773 | \$694 | \$697 | \$812 | \$798 | \$6,018 | 1.6% |
| Pension Expense & Other P.R. Ben. | \$544 | \$531 | \$1,147 | \$1,201 | \$1,517 | \$1,530 | \$1,970 | \$2,324 | \$1,252 | \$12,016 | 3.2% |
| Depreciation | \$628 | \$644 | \$667 | \$969 | \$969 | \$912 | \$1,012 | \$1,191 | \$1,457 | \$8,449 | 2.3% |
| Amortization, Tooling | \$620 | \$617 | \$644 | \$641 | \$671 | \$961 | \$1,120 | \$996 | \$1,039 | \$7,309 | 2.0% |
| Provision for Plant Closing | | | | | | | | | | | |
| Amortization, Intangibles | | | | | | | | | | | |
| SUBTOTAL | \$5,831 | \$5,773 | \$6,652 | \$7,744 | \$8,643 | \$9,388 | \$10,473 | \$11,896 | \$11,383 | \$77,783 | 20.8% |
| OPERATING INCOME | \$1,072 | \$355 | (\$1,124) | \$875 | \$3,527 | \$5,498 | \$3,645 | \$6,309 | \$4,813 | \$24,970 | 6.7% |
| OTHER REVENUES (EXPENSES) | (\$588) | (\$101) | \$593 | \$299 | \$464 | \$560 | \$0 | \$0 | \$0 | \$1,227 | 0.3% |
| INCOME BEF. INT. TAXES, & OTHER | \$484 | \$254 | (\$531) | \$1,174 | \$3,991 | \$6,058 | \$3,645 | \$6,309 | \$4,813 | \$26,197 | 7.0% |
| INTEREST INCOME (EXPENSE) | \$81 | (\$107) | (\$279) | (\$240) | (\$153) | (\$228) | (\$196) | (\$217) | (\$256) | (\$1,595) | -0.4% |
| INCOME BEF. TAXES, OTHER | \$565 | \$147 | (\$810) | \$934 | \$3,838 | \$5,830 | \$3,449 | \$6,092 | \$4,557 | \$24,602 | 6.6% |
| PROVISION FOR TAXES (CREDITS) | \$242 | \$79 | (\$272) | \$429 | \$1,423 | \$2,117 | \$1,328 | \$2,372 | \$1,752 | \$9,470 | 2.5% |
| INCOME AFTER INCOME TAXES | \$323 | \$68 | (\$538) | \$505 | \$2,415 | \$3,713 | \$2,121 | \$3,720 | \$2,805 | \$15,132 | 4.1% |
| EARNINGS IN AFFILIATES-NET | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 0.0% |
| EARNINGS BEFORE OTHER ITEMS | \$323 | \$68 | (\$538) | \$505 | \$2,415 | \$3,713 | \$2,121 | \$3,720 | \$2,805 | \$15,132 | 4.1% |
| OTHER ITEMS | \$36 | | (\$257) | \$218 | (\$4,966) | | (\$96) | (\$191) | | (\$5,256) | -1.4% |
| NET PROFIT | \$359 | \$68 | (\$795) | \$723 | (\$2,551) | \$3,713 | \$2,025 | \$3,529 | \$2,805 | \$9,876 | 2.6% |

 PROFIT

 Loss

TABLE III-2

CHRYSLER CORPORATION MARGINAL ANALYSIS - OPERATING RATIOS, 1989-1997

| CHRYSLER | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1989-1997 |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|
| NET SALES | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| VARIABLE COSTS - MFG | 77.8% | 77.3% | 79.3% | 74.2% | 70.5% | 69.9% | 71.6% | 68.6% | 71.6% | 72.5% |
| CONTRIBUTION MARGIN | 22.2% | 22.7% | 20.7% | 25.8% | 29.5% | 30.1% | 28.4% | 31.4% | 28.4% | 27.5% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | |
| Maintenance & Repairs | 2.2% | 2.2% | 2.2% | 2.2% | 2.2% | 1.7% | 1.7% | 1.7% | 1.7% | 1.9% |
| Research & Development | 3.1% | 3.4% | 3.6% | 3.3% | 2.9% | 2.6% | 2.9% | 2.8% | 3.0% | 3.0% |
| Selling, General, & Admin. | 6.0% | 7.2% | 7.9% | 7.4% | 6.3% | 6.4% | 6.9% | 6.9% | 7.3% | 6.9% |
| Taxes Other Than Income | 1.7% | 2.0% | 2.0% | 1.9% | 1.9% | 1.4% | 1.4% | 1.4% | 1.4% | 1.6% |
| Pension Expense & Other P.R. Ben. | 1.8% | 2.0% | 4.3% | 3.6% | 3.7% | 3.1% | 4.0% | 4.0% | 2.2% | 3.2% |
| Depreciation | 2.0% | 2.4% | 2.5% | 2.9% | 2.3% | 1.8% | 2.0% | 2.1% | 2.6% | 2.3% |
| Amortization, Tooling | 2.0% | 2.3% | 2.4% | 1.9% | 1.6% | 1.9% | 2.3% | 1.7% | 1.8% | 2.0% |
| Provision for Plant Closing | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Amortization, Intangibles | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| SUBTOTAL | 18.8% | 21.4% | 24.9% | 23.2% | 21.0% | 19.0% | 21.1% | 20.5% | 20.0% | 20.8% |
| OPERATING MARGIN | 3.5% | 1.3% | -4.2% | 2.6% | 8.6% | 11.1% | 7.3% | 10.9% | 8.4% | 6.7% |
| OTHER REVENUES (EXPENSES) | -1.9% | -0.4% | 2.2% | 0.9% | 1.1% | 1.1% | 0.0% | 0.0% | 0.0% | 0.3% |
| INCOME BEF. INT. TAXES, & OTHER | 1.6% | 0.9% | -2.0% | 3.5% | 9.7% | 12.2% | 7.3% | 10.9% | 8.4% | 7.0% |
| INTEREST INCOME (EXPENSE) | 0.3% | -0.4% | -1.0% | -0.7% | -0.4% | -0.5% | -0.4% | -0.4% | -0.4% | -0.4% |
| INCOME BEF. TAXES, OTHER | 1.8% | 0.5% | -3.0% | 2.8% | 9.3% | 11.8% | 6.9% | 10.5% | 8.0% | 6.6% |
| PROVISION FOR TAXES (CREDITS) | 0.8% | 0.3% | -1.0% | 1.3% | 3.4% | 4.3% | 2.7% | 4.1% | 3.1% | 2.5% |
| INCOME AFTER INCOME TAXES | 1.0% | 0.3% | -2.0% | 1.5% | 5.9% | 7.5% | 4.3% | 6.4% | 4.9% | 4.1% |
| EARNINGS IN AFFILIATES-NET | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| EARNINGS BEFORE OTHER STEMS | 1.0% | 0.3% | -2.0% | 1.5% | 5.9% | 7.5% | 4.3% | 6.4% | 4.9% | 4.1% |
| OTHER ITEMS | 0.1% | 0.0% | -1.0% | 0.7% | -12.0% | 0.0% | -0.2% | -0.3% | 0.0% | -1.4% |
| NET PROFIT MARGIN | 1.2% | 0.3% | -3.0% | 2.2% | -6.2% | 7.5% | 4.1% | 6.1% | 4.9% | 2.6% |

PROFIT

Loss

The remaining element required to complete the retail pricing formula used in this study is the **Dealer Margin** over cost; sometimes referred to as “dealer markup” or “discount from list.”

Dealer Margin is the difference between Wholesale Price (dealer cost) and Manufacturer’s Suggested Retail Price (MSRP or “sticker price”).

Weighted average Dealer Margin for a typical Chrysler vehicle is determined in the following manner:

1. Divide MSRP by Wholesale Price for each vehicle model in Chrysler’s lineup
2. Multiply each result by the sales volume for that particular model in the year under study,
3. Total up the sales volumes and volume weighted dealer margins,
4. Divide total sales volume into total volume weighted dealer margins. The result is the volume weighted dealer margin factor.

For Chrysler Corporation, the weighted average Dealer Margin for passenger cars and light trucks was 11% for Model Year 1997 (Table III-3).

All of the five essential elements of NHTSA’s retail price equation are now in place:

| | % of Net Sales | Markup Factor |
|--|----------------|---------------|
| <input type="checkbox"/> Variable Costs | 72.5% | 1.00 |
| <input type="checkbox"/> Contribution Margin | 27.5% | .38 |
| <input type="checkbox"/> Wholesale Price | 100.0% | 1.38 |
| <input type="checkbox"/> Dealer Margin | 11.0% | 1.11 |
| <input type="checkbox"/> MSRP | 111.0% | 1.52 |

The Chrysler Retail Price Template is expressed as:

Variable Manufacturing Cost X 1.38 X 1.11 = Retail Price

The Chrysler Template was selected since 1997 is the last year in which the company will present financial statements as an independent domestic vehicle manufacturer. The merger

TABLE III-3
CHRYSLER CORP. - DEVELOPMENT OF THE MY 1997 WEIGHTED AVERAGE DEALER MARKUP FACTOR

| MANUFACTURER | DEALER COST | SUGGESTED RETAIL | MARKUP FACTOR | ESTIMATING VOLUME | DOLLAR WEIGHTED WHOLESALE | DOLLAR WEIGHTED RETAIL |
|-----------------------------|--------------------|-------------------------|----------------------|--------------------------|----------------------------------|-------------------------------|
| VEHICLE TYPE | | | | | | |
| MAKE AND MODEL | | | | | | |
| CHRYSLER CORPORATION | | | | | | |
| PASSENGER CARS | | | | | | |
| CHRYSLER | | | | | | |
| CIRRUS | \$17,794 | \$19,460 | 1.094 | 39,254 | \$698,485,676 | \$763,882,840 |
| CONCORDE | \$19,501 | \$21,305 | 1.093 | 41,503 | \$809,350,003 | \$884,221,415 |
| LHS | \$27,702 | \$30,255 | 1.092 | 31,516 | \$873,056,232 | \$953,516,580 |
| SEBRING | \$23,578 | \$25,840 | 1.096 | 91,279 | \$2,152,176,262 | \$2,358,649,360 |
| WEIGHTED AVERAGE | \$22,270 | \$24,369 | 1.094 | 203,552 | \$4,533,068,173 | \$4,960,270,195 |
| DODGE | | | | | | |
| AVENGER | \$15,989 | \$17,415 | 1.089 | 33,264 | \$531,858,096 | \$579,292,560 |
| INTREPID | \$20,524 | \$22,465 | 1.095 | 141,304 | \$2,900,123,296 | \$3,174,394,360 |
| NEON | \$10,595 | \$11,465 | 1.082 | 149,298 | \$1,581,812,310 | \$1,711,701,570 |
| STRATUS | \$16,512 | \$17,665 | 1.070 | 133,220 | \$2,199,728,640 | \$2,353,331,300 |
| VIPER | \$59,700 | \$68,500 | 1.147 | 1,558 | \$93,012,600 | \$106,723,000 |
| WEIGHTED AVERAGE | \$15,931 | \$17,280 | 1.085 | 458,644 | \$7,306,534,942 | \$7,925,442,790 |
| PLYMOUTH | | | | | | |
| BREEZE | \$13,476 | \$14,675 | 1.089 | 80,076 | \$1,079,104,176 | \$1,175,115,300 |
| NEON | \$10,595 | \$11,495 | 1.085 | 102,171 | \$1,082,501,745 | \$1,174,455,645 |
| PROWLER | \$35,863 | \$38,300 | 1.068 | 131 | \$4,698,053 | \$5,017,300 |
| WEIGHTED AVERAGE | \$11,878 | \$12,910 | 1.087 | 182,378 | \$2,166,303,974 | \$2,354,588,245 |

PASSENGER CARS, WT. AVG. \$16,583 \$18,045 1.088 844,574 \$14,005,907,089 \$15,240,301,230

| | | | | | | |
|-----------------------------|-----------------|-----------------|--------------|------------------|-------------------------|-------------------------|
| CHRYSLER CORPORATION | | | | | | |
| JEEP SPORT UTILITIES | | | | | | |
| CHEROKEE | \$16,000 | \$17,055 | 1.066 | 136,946 | \$2,191,136,000 | \$2,335,614,030 |
| GRAND CHEROKEE | \$25,275 | \$27,910 | 1.104 | 278,046 | \$7,027,612,650 | \$7,760,263,860 |
| WRANGLER | \$15,804 | \$17,505 | 1.108 | 88,109 | \$1,392,474,636 | \$1,542,348,045 |
| WEIGHTED AVERAGE | \$21,092 | \$23,133 | 1.097 | 503,101 | \$10,611,223,286 | \$11,638,225,935 |
| LIGHT TRUCKS, VAN'S | | | | | | |
| PLYMOUTH VOYAGER | \$20,171 | \$22,285 | 1.105 | 193,335 | \$3,899,760,285 | \$4,308,470,475 |
| CARAVAN | \$15,845 | \$17,415 | 1.099 | 338,704 | \$5,366,764,880 | \$5,898,530,160 |
| DAKOTA | \$17,854 | \$19,755 | 1.106 | 142,859 | \$2,550,604,586 | \$2,822,179,545 |
| DURANGO | \$23,318 | \$25,610 | 1.098 | 20,532 | \$478,765,176 | \$525,824,520 |
| PICKUP, RAM 1500-3500 | \$20,352 | \$23,285 | 1.144 | 397,200 | \$8,083,814,400 | \$9,248,802,000 |
| RAM VAN | \$19,081 | \$21,860 | 1.146 | 59,684 | \$1,138,830,404 | \$1,304,692,240 |
| RAM WAGON | \$22,285 | \$25,570 | 1.147 | 17,822 | \$397,163,270 | \$455,708,540 |
| TOWN AND COUNTRY | \$30,899 | \$34,260 | 1.109 | 78,951 | \$2,439,506,949 | \$2,704,861,260 |
| WEIGHTED AVERAGE | \$19,498 | \$21,831 | 1.120 | 1,249,087 | \$24,355,209,950 | \$27,269,068,740 |

LIGHT TRUCKS, VANS,
 WEIGHTED AVERAGE \$19,956 \$22,205 1.113 1,752,188 \$34,966,433,236 \$38,907,294,675

ALL LIGHT DUTY VEHICLES
 WEIGHTED AVERAGE \$18,859 \$20,852 1.106 2,596,762 \$48,972,340,325 \$54,147,595,905

with Daimler-Benz has created a multinational conglomerate, Daimler Chrysler AG, in which German shareholders own the controlling interest of 57%. As a result, Chrysler's financial statements will be consolidated with those of the German subsidiaries or operating groups within the new company. The new company filed Form 15-15D, Termination of Registration, with the Securities and Exchange Commission on March 29, 1999. Upon termination, the company is no longer required to submit Form 10-K annual reports to the SEC.

In any event, there are material differences between German accounting standards and GAAP as practiced in the U.S.A.. Currency exchange rate fluctuations further complicate comparative analysis. Attempting a reconciliation between German and American accounting principles is beyond the scope of this study.

The underlying assumption behind the wholesale markup factor is that, since it reflects the weighted average cost / price structure of a "typical" Chrysler vehicle, the same relationship between variable costs and wholesale price should exist within each individual parts group and its underlying elemental parts components, subassemblies, and assemblies. In other words, the sum of the markup factors for all parts, components, subassemblies, and assemblies must equal the markup factor applied to the whole vehicle to arrive at wholesale price.

Thus, when estimating the costs and price impacts of a safety feature, the NHTSA methodology consists of a detailed tear down of the assembly or subassembly into its most elemental parts, estimating the variable manufacturing costs of each element, and multiplying variable costs by the above markup factors to arrive at a weighted average MSRP.

Tables III-4 through III-10 provide the results of operations and operating ratios for the 1989- 1997 time frame as well as the 1997 weighted average dealer margins for Ford Motor Company and General Motors Corporation. The income statements and operating ratio analyses for both companies have been common sizes according to the methodology described above. Likewise, the weighted average dealer margins for Ford and GM were calculated in accordance with the Chrysler example.

Appendix-A provides common-sized statements of income (operating results) and operating ratios for Chrysler, Ford, and General Motors going back as far as 1972. Although there is considerable fluctuation in the operating ratios on a yearly basis, variable costs as a percentage of net sales and the associated contribution margin rates have been very consistent over time for all three companies. Historically, NHTSA has used a "rule of thumb" which segregates industry-wide weighted average net sales into a **variable cost component of 75% with a 25% contribution margin** as the standard wholesale pricing template. **Dealer margin was 14%**. The corresponding markup factors on variable costs were **1.33 to wholesale and 1.14 from wholesale to MSRP**.

TABLE III-4

FORD MOTOR COMPANY MARGINAL ANALYSIS OF OPERATING RESULTS, 1989-1997

| FORD | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1989-1997 | % |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|----------|
| NET SALES \$ X 1 MILLION | \$82,879 | \$81,844 | \$72,050 | \$84,407 | \$91,568 | \$107,137 | \$110,496 | \$118,023 | \$122,935 | \$871,339 | 100.0% |
| VARIABLE COSTS - MFG | \$64,573 | \$66,681 | \$60,306 | \$66,481 | \$69,246 | \$78,895 | \$83,885 | \$90,081 | \$89,913 | \$670,061 | 76.9% |
| CONTRIBUTION MARGIN | \$18,306 | \$15,163 | \$11,744 | \$17,926 | \$22,322 | \$28,242 | \$26,611 | \$27,942 | \$33,022 | \$201,278 | 23.1% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | | |
| Maintenance & Repairs | \$1,914 | \$1,764 | \$1,642 | \$1,872 | \$1,934 | \$2,377 | \$2,762 | \$2,951 | \$3,073 | \$20,289 | 2.3% |
| Research & Development | \$3,167 | \$3,558 | \$3,728 | \$4,332 | \$5,021 | \$5,214 | \$5,414 | \$5,783 | \$6,024 | \$42,241 | 4.8% |
| Selling, General, & Admin. | \$3,517 | \$3,816 | \$3,818 | \$4,434 | \$4,968 | \$5,131 | \$5,304 | \$5,665 | \$5,901 | \$42,553 | 4.9% |
| Taxes Other Than Income | \$1,243 | \$1,228 | \$1,225 | \$2,279 | \$2,472 | \$2,892 | \$2,983 | \$3,187 | \$3,319 | \$20,828 | 2.4% |
| Pension Expense & Other P.R. Ben. | \$648 | \$547 | \$823 | \$2,118 | \$2,091 | \$2,376 | \$1,647 | \$1,925 | \$1,821 | \$13,995 | 1.6% |
| Depreciation | \$2,057 | \$2,241 | \$2,456 | \$2,569 | \$2,392 | \$2,297 | \$2,454 | \$2,644 | \$2,759 | \$21,868 | 2.5% |
| Amortization, Tooling | \$1,509 | \$1,695 | \$1,822 | \$2,097 | \$2,012 | \$2,129 | \$2,765 | \$3,272 | \$3,179 | \$20,480 | 2.4% |
| Provision for Plant Closing Amortization, Intangibles | | | | | | | | | | | |
| SUBTOTAL | \$14,055 | \$14,847 | \$15,513 | \$19,701 | \$20,890 | \$22,416 | \$23,330 | \$25,426 | \$26,076 | \$182,254 | 20.9% |
| OPERATING INCOME | \$4,252 | \$316 | (\$3,769) | (\$1,775) | \$1,432 | \$5,826 | \$3,281 | \$2,516 | \$6,946 | \$19,024 | 2.2% |
| OTHER REVENUES (EXPENSES) | (\$123) | (\$101) | (\$57) | \$30 | \$103 | \$227 | (\$293) | (\$91) | (\$192) | (\$497) | -0.1% |
| INCOME BEF. INT. TAXES, & OTHER | \$4,128 | \$214 | (\$3,826) | (\$1,745) | \$1,535 | \$6,053 | \$2,988 | \$2,425 | \$6,754 | \$18,527 | 2.1% |
| INTEREST INCOME (EXPENSE) | \$466 | \$60 | (\$226) | (\$207) | (\$244) | (\$56) | \$178 | \$146 | \$328 | \$445 | 0.1% |
| INCOME BEF. TAXES, OTHER | \$4,594 | \$275 | (\$4,052) | (\$1,952) | \$1,291 | \$5,997 | \$3,166 | \$2,571 | \$7,082 | \$18,972 | 2.2% |
| PROVISION FOR TAXES (CREDITS) | \$1,419 | \$176 | (\$866) | (\$418) | \$351 | \$2,173 | \$1,110 | \$916 | \$2,368 | \$7,229 | 0.8% |
| INCOME AFTER INCOME TAXES | \$3,175 | \$99 | (\$3,186) | (\$1,534) | \$940 | \$3,824 | \$2,056 | \$1,655 | \$4,714 | \$11,743 | 1.3% |
| EARNINGS IN AFFILIATES-NET | | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 0.0% |
| EARNINGS BEFORE OTHER ITEMS | \$3,175 | \$99 | (\$3,186) | (\$1,534) | \$940 | \$3,824 | \$2,056 | \$1,655 | \$4,714 | \$11,743 | 1.3% |
| OTHER ITEMS | | | | (\$7,094) | | | | | | | |
| NET PROFIT | \$3,175 | \$99 | (\$3,186) | (\$8,628) | \$940 | \$3,824 | \$2,056 | \$1,655 | \$4,714 | \$4,649 | 0.5% |

 PROFIT

 LOSS

TABLE III-5

FORD MOTOR COMPANY MARGINAL ANALYSIS, OPERATING RATIOS, 1989-1997

| FORD | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1989-1997 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|
| NET SALES | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| VARIABLE COSTS - MFG | 77.9% | 81.5% | 83.7% | 78.8% | 75.6% | 73.6% | 75.9% | 76.3% | 73.1% | 76.9% |
| CONTRIBUTION MARGIN | 22.1% | 18.5% | 16.3% | 21.2% | 24.4% | 26.4% | 24.1% | 23.7% | 26.9% | 23.1% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | |
| Maintenance & Repairs | 2.3% | 2.2% | 2.3% | 2.2% | 2.1% | 2.2% | 2.5% | 2.5% | 2.5% | 2.3% |
| Research & Development | 3.8% | 4.3% | 5.2% | 5.1% | 5.5% | 4.9% | 4.9% | 4.9% | 4.9% | 4.8% |
| Selling, General, & Admin. | 4.2% | 4.7% | 5.3% | 5.3% | 5.4% | 4.8% | 4.8% | 4.8% | 4.8% | 4.9% |
| Taxes Other Than Income | 1.5% | 1.5% | 1.7% | 2.7% | 2.7% | 2.7% | 2.7% | 2.7% | 2.7% | 2.4% |
| Pension Expense & Other P.R. Ben. | 0.8% | 0.7% | 1.1% | 2.5% | 2.3% | 2.2% | 1.5% | 1.6% | 1.5% | 1.6% |
| Depreciation | 2.5% | 2.7% | 3.4% | 3.0% | 2.6% | 2.1% | 2.2% | 2.2% | 2.2% | 2.5% |
| Amortization, Tooling | 1.8% | 2.1% | 2.5% | 2.5% | 2.2% | 2.0% | 2.5% | 2.8% | 2.6% | 2.4% |
| Provision for Plant Closing | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Amortization, Intangibles | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| SUBTOTAL | 17.0% | 18.1% | 21.5% | 23.3% | 22.8% | 20.9% | 21.1% | 21.5% | 21.2% | 20.9% |
| OPERATING MARGIN | 5.1% | 0.4% | -5.2% | -2.1% | 1.6% | 5.4% | 3.0% | 2.1% | 5.7% | 2.2% |
| OTHER REVENUES (EXPENSES) | -0.1% | -0.1% | -0.1% | 0.0% | 0.1% | 0.2% | -0.3% | -0.1% | -0.2% | -0.1% |
| INCOME BEF. INT. TAXES, & OTHER | 5.0% | 0.3% | -5.3% | -2.1% | 1.7% | 5.6% | 2.7% | 2.1% | 5.5% | 2.1% |
| INTEREST INCOME (EXPENSE) | 0.6% | 0.1% | -0.3% | -0.2% | -0.3% | -0.1% | 0.2% | 0.1% | 0.3% | 0.1% |
| INCOME BEF. TAXES, OTHER | 5.5% | 0.3% | -5.6% | -2.3% | 1.4% | 5.6% | 2.9% | 2.2% | 5.8% | 2.2% |
| PROVISION FOR TAXES (CREDITS) | 1.7% | 0.2% | -1.2% | -0.5% | 0.4% | 2.0% | 1.0% | 0.8% | 1.9% | 0.8% |
| INCOME AFTER INCOME TAXES | 3.8% | 0.1% | -4.4% | -1.8% | 1.0% | 3.6% | 1.9% | 1.4% | 3.8% | 1.3% |
| EARNINGS IN AFFILIATES-NET | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| EARNINGS BEFORE OTHER ITEMS | 3.8% | 0.1% | -4.4% | -1.8% | 1.0% | 3.6% | 1.9% | 1.4% | 3.8% | 1.3% |
| OTHER ITEMS | | | | | | | | | | |
| NET PROFIT MARGIN | 3.8% | 0.1% | -4.4% | -10.2% | 1.0% | 3.6% | 1.9% | 1.4% | 3.8% | 0.5% |

 PROFIT

 Loss

**TABLE III-6
FORD MOTOR CO. - DEVELOPMENT OF THE MY 1997 WEIGHTED AVERAGE DEALER MARKUP FACTOR**

| MANUFACTURER VEHICLE TYPE MAKE AND MODEL | DEALER COST | SUGGESTED RETAIL | MARKUP FACTOR | ESTIMATING VOLUME | D O L L A R WEIGHTED WHOLESALE | DOLLAR WEIGHTED RETAIL |
|---|------------------------|-----------------------------|--------------------------|------------------------------|---|---------------------------------------|
| FORD MOTOR COMPANY | | | | | | |
| PASSENGERCARS | | | | | | |
| FORD | | | | | | |
| CONTOUR | \$20,325 | \$22,405 | 1.102 | 175,682 | \$3,570,736,650 | \$3,936,155,210 |
| CROWN VICTORIA | \$21,568 | \$23,185 | 1.075 | 112,263 | \$2,421,288,384 | \$2,602,817,655 |
| ESCORT | \$11,893 | \$12,620 | 1.061 | 323,112 | \$3,842,771,016 | \$4,077,673,440 |
| MUSTANG | \$23,258 | \$25,630 | 1.102 | 118,785 | \$2,762,701,530 | \$3,044,459,550 |
| TAURUS | \$17,761 | \$19,455 | 1.095 | 380,412 | \$6,756,497,532 | \$7,400,915,460 |
| WEIGHTEDAVERAGE | \$17,432 | \$18,970 | 1.088 | 1,110,254 | \$19,353,995,112 | \$21,062,021,315 |
| LINCOLN | | | | | | |
| CONTINENTAL | \$35,524 | \$37,830 | 1.065 | 32,319 | \$1,148,100,156 | \$1,222,627,770 |
| MARK VIII | \$35,850 | \$39,320 | 1.097 | 16,649 | \$596,866,650 | \$654,638,680 |
| TOWN CAR | \$34,524 | \$37,830 | 1.096 | 94,257 | \$3,254,128,668 | \$3,565,742,310 |
| WEIGHTED AVERAGE | \$34,904 | \$38,003 | 1.089 | 143,225 | \$4,999,095,474 | \$5,443,008,760 |
| MERCURY | | | | | | |
| COUGAR | \$16,279 | \$17,830 | 1.095 | 31,221 | \$508,246,659 | \$556,670,430 |
| GRAND MARQUIS | \$22,184 | \$23,790 | 1.072 | 112,311 | \$2,491,507,224 | \$2,671,878,690 |
| MISTIQUE | \$16,090 | \$17,645 | 1.097 | 54,598 | \$878,481,820 | \$963,381,710 |
| SABLE | \$18,716 | \$20,495 | 1.095 | 123,238 | \$2,306,522,408 | \$2,525,762,810 |
| TRACER | \$11,932 | \$12,760 | 1.069 | 43,589 | \$520,103,948 | \$556,195,640 |
| WEIGHTED AVERAGE | \$18,372 | \$19,931 | 1.085 | 364,957 | \$6,704,862,059 | \$7,273,889,280 |
| PASSENGER CARS, WT. AVG. | \$19,190 | \$20,871 | 1.088 | 1,618,436 | \$31,057,952,645 | \$33,778,919,355 |
| FORD MOTOR COMPANY | | | | | | |
| SPORT UTILITIES | | | | | | |
| FORD EXPLORER | \$24,117 | \$26,695 | 1.107 | 406,865 | \$9,812,363,205 | \$10,861,261,175 |
| FORD EXPEDITION | \$30,233 | \$34,699 | 1.148 | 222,504 | \$6,726,963,432 | \$7,720,666,296 |
| LINCOLN NAVIGATOR | \$37,351 | \$42,860 | 1.147 | 27,983 | \$1,045,193,033 | \$1,199,351,380 |
| MERCURY MOUNTAINEER | \$25,873 | \$28,680 | 1.108 | 45,363 | \$1,173,676,899 | \$1,301,010,840 |
| WEIGHTED AVERAGE | \$26,694 | \$30,001 | 1.124 | 702,715 | \$18,758,196,569 | \$21,082,289,691 |
| LIGHT TRUCKS, VAN'S | | | | | | |
| PICKUP, F-SERIES | \$24,087 | \$27,715 | 1.151 | 853,353 | \$20,554,713,711 | \$23,650,678,395 |
| RANGER | \$17,604 | \$19,595 | 1.113 | 310,300 | \$5,462,521,200 | \$6,080,328,500 |
| VILLAGER | \$24,211 | \$26,905 | 1.111 | 58,585 | \$1,418,401,435 | \$1,576,229,425 |
| WINDSTAR | \$19,060 | \$21,000 | 1.102 | 257,470 | \$4,907,378,200 | \$5,406,870,000 |
| WEIGHTED AVERAGE | \$21,858 | \$24,812 | 1.135 | 1,479,708 | \$32,343,014,546 | \$36,714,106,320 |
| LIGHT TRUCKS, VANS, WEIGHTEDAVERAGE | \$23,415 | \$26,483 | 1.131 | 2,182,423 | \$51,101,211,115 | \$57,796,396,011 |
| ALL LIGHT DUTY VEHICLES WEIGHTED AVERAGE | \$21,616 | \$24,093 | 1.115 | 3,800,859 | \$82,159,163,760 | \$91,575,315,366 |

TABLE III-7

GENERAL MOTORS CORPORATION MARGINAL ANALYSIS OF OPERATING RESULTS, 1989-1997

| GENERAL MOTORS | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1989-1997 | % |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|----------|
| NET SALES \$ X 1 MILLION | \$112,533 | \$110,797 | \$109,157 | \$118,572 | \$125,253 | \$141,576 | \$143,754 | \$145,427 | \$153,781 | \$1,160,850 | 100.0% |
| VARIABLE COSTS - MFG | \$79,412 | \$81,082 | \$81,176 | \$88,131 | \$88,043 | \$96,715 | \$98,784 | \$101,759 | \$108,453 | \$823,555 | 70.9% |
| CONTRIBUTION MARGIN | \$33,122 | \$29,715 | \$27,981 | \$30,441 | \$37,210 | \$44,861 | \$44,970 | \$43,668 | \$45,328 | \$337,295 | 29.1% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | | |
| Maintenance & Repairs | \$5,858 | \$5,592 | \$5,699 | \$5,600 | \$5,731 | \$5,663 | \$6,469 | \$6,544 | \$6,920 | \$54,077 | 4.7% |
| Research & Development | \$5,248 | \$5,342 | \$5,887 | \$5,917 | \$6,030 | \$7,036 | \$8,200 | \$8,300 | \$8,200 | \$60,159 | 5.2% |
| Selling, General, & Admin. | \$7,240 | \$8,667 | \$9,148 | \$9,634 | \$9,766 | \$10,575 | \$10,195 | \$11,827 | \$13,254 | \$90,305 | 7.8% |
| Taxes Other Than Income | \$3,586 | \$3,530 | \$3,408 | \$3,794 | \$4,008 | \$4,200 | \$4,313 | \$4,363 | \$4,613 | \$35,816 | 3.1% |
| Pension Expense & Other P.R. | \$811 | \$820 | \$1,520 | \$1,982 | \$2,685 | \$3,677 | \$3,546 | \$2,003 | \$1,855 | \$18,899 | 1.6% |
| Depreciation | \$3,646 | \$3,681 | \$3,740 | \$3,670 | \$3,825 | \$3,868 | \$3,575 | \$4,559 | \$6,129 | \$36,693 | 3.2% |
| Amortization, Tooling | \$1,442 | \$1,806 | \$1,820 | \$2,504 | \$2,535 | \$2,901 | \$3,212 | \$2,856 | \$5,674 | \$24,749 | 2.1% |
| Provision for Plant Closing | | \$3,314 | \$2,821 | \$1,237 | \$950 | | | | | \$8,322 | 0.7% |
| Amortization, Intangibles | \$506 | \$373 | \$320 | \$189 | \$189 | \$181 | | | | \$1,758 | 0.2% |
| SUBTOTAL | \$28,335 | \$33,125 | \$34,364 | \$34,526 | \$35,719 | \$38,101 | \$39,510 | \$40,452 | \$46,646 | \$330,778 | 28.5% |
| OPERATING INCOME | \$4,786 | (\$3,410) | (\$6,383) | (\$4,085) | \$1,491 | \$6,761 | \$5,460 | \$3,216 | (\$1,318) | \$6,517 | 0.6% |
| OTHER REVENUES (EXPENSES) | \$2,331 | \$1,814 | \$1,942 | \$1,046 | \$1,195 | \$1,252 | \$1,150 | \$2,056 | \$7,836 | \$20,623 | 1.8% |
| INCOME BEF. INT. TAXES, OTHER | \$7,117 | (\$1,596) | (\$4,441) | (\$3,039) | \$2,686 | \$8,013 | \$6,610 | \$5,272 | \$6,518 | \$27,140 | 2.3% |
| INTEREST INCOME (EXPENSE) | (\$2,228) | (\$2,049) | (\$2,375) | (\$1,887) | (\$1,511) | (\$1,305) | (\$344) | (\$859) | (\$971) | (\$13,529) | -1.2% |
| INCOME BEF. TAXES, OTHER | \$4,889 | (\$3,645) | (\$6,816) | (\$4,926) | \$1,175 | \$6,708 | \$6,266 | \$4,413 | \$5,547 | \$13,611 | 1.2% |
| PROVISION FOR TAXES (CREDITS) | \$1,733 | (\$890) | (\$1,510) | (\$1,595) | (\$482) | \$2,182 | \$1,563 | \$885 | \$155 | \$2,041 | 0.2% |
| INCOME AFTER INCOME TAXES | \$3,156 | (\$2,755) | (\$5,306) | (\$3,331) | \$1,657 | \$4,526 | \$4,703 | \$3,528 | \$5,392 | \$11,570 | 1.0% |
| EARNINGS IN AFFILIATES-NET | \$1,069 | \$769 | \$646 | \$428 | \$809 | \$1,125 | \$1,330 | \$1,425 | \$1,306 | \$8,906 | 0.8% |
| EARNINGS BEFORE OTHER ITEMS | \$4,224 | (\$1,986) | (\$4,661) | (\$2,903) | \$2,466 | \$5,651 | \$6,033 | \$4,953 | \$6,698 | \$20,476 | 1.8% |
| OTHER ITEMS | | | | (\$20,595) | | (\$751) | \$848 | \$10 | | (\$20,488) | -1.8% |
| NET PROFIT | \$4,224 | (\$1,986) | (\$4,661) | (\$23,498) | \$2,466 | \$4,901 | \$6,881 | \$4,963 | \$6,698 | (\$12) | -0.0% |

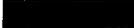
 PROFIT

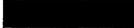
 LOSS

TABLE III-8

GENERAL MOTORS CORPORATION MARGINAL ANALYSIS, OPERATING RATIOS, 1989-1997

| GENERAL MOTORS | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1989-1997 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|
| NET SALES | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| VARIABLE COSTS - MFG | 70.6% | 73.2% | 74.4% | 74.3% | 70.3% | 68.3% | 68.7% | 70.0% | 70.5% | 70.9% |
| CONTRIBUTION MARGIN | 29.4% | 26.8% | 25.6% | 25.7% | 29.7% | 31.7% | 31.3% | 30.0% | 29.5% | 29.1% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | |
| Maintenance & Repairs | 5.2% | 5.0% | 5.2% | 4.7% | 4.6% | 4.0% | 4.5% | 4.5% | 4.5% | 4.7% |
| Research & Development | 4.7% | 4.8% | 5.4% | 5.0% | 4.8% | 5.0% | 5.7% | 5.7% | 5.3% | 5.2% |
| Selling, General, & Admin. | 6.4% | 7.8% | 8.4% | 8.1% | 7.8% | 7.5% | 7.1% | 8.1% | 8.6% | 7.8% |
| Taxes Other Than Income | 3.2% | 3.2% | 3.1% | 3.2% | 3.2% | 3.0% | 3.0% | 3.0% | 3.0% | 3.1% |
| Pension Expense & Other P.R. | 0.7% | 0.7% | 1.4% | 1.7% | 2.1% | 2.6% | 2.5% | 1.4% | 1.2% | 1.6% |
| Depreciation | 3.2% | 3.3% | 3.4% | 3.1% | 3.1% | 2.7% | 2.5% | 3.1% | 4.0% | 3.2% |
| Amortization, Tooling | 1.3% | 1.6% | 1.7% | 2.1% | 2.0% | 2.0% | 2.2% | 2.0% | 3.7% | 2.1% |
| Provision for Plant Closing | 0.0% | 3.0% | 2.6% | 1.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% |
| Amortization, Intangibles | 0.4% | 0.3% | 0.3% | 0.2% | 0.2% | 0.1% | 0.0% | 0.0% | 0.0% | 0.2% |
| SUBTOTAL | 25.2% | 29.9% | 31.5% | 29.1% | 28.5% | 26.9% | 27.5% | 27.8% | 30.3% | 28.5% |
| OPERATING MARGIN | 4.3% | -3.1% | -5.8% | -3.4% | 1.2% | 4.8% | 3.8% | 2.2% | -0.9% | 0.6% |
| OTHER REVENUES (EXPENSES) | 2.1% | 1.6% | 1.8% | 0.9% | 1.0% | 0.9% | 0.8% | 1.4% | 5.1% | 1.8% |
| INCOME BEF. INT. TAXES, & OTHER | 6.3% | -1.4% | -4.1% | -2.6% | 2.1% | 5.7% | 4.6% | 3.6% | 4.2% | 2.3% |
| INTEREST INCOME (EXPENSE) | -2.0% | -1.8% | -2.2% | -1.6% | -1.2% | -0.9% | -0.2% | -0.6% | -0.6% | -1.2% |
| INCOME BEF. TAXES, OTHER | 4.3% | -3.3% | -6.2% | -4.2% | 0.9% | 4.7% | 4.4% | 3.0% | 3.6% | 1.2% |
| PROVISION FOR TAXES (CREDITS) | 1.5% | -0.8% | -1.4% | -1.3% | -0.4% | 1.5% | 1.1% | 0.6% | 0.1% | 0.2% |
| INCOME AFTER INCOME TAXES | 2.8% | -2.5% | -4.9% | -2.8% | 1.3% | 3.2% | 3.3% | 2.4% | 3.5% | 1.0% |
| EARNINGS IN AFFILIATES-NET | 0.9% | 0.7% | 0.6% | 0.4% | 0.6% | 0.8% | 0.9% | 1.0% | 0.8% | 0.8% |
| EARNINGS BEFORE OTHER ITEMS | 3.8% | -1.8% | -4.3% | -2.4% | 2.0% | 4.0% | 4.2% | 3.4% | 4.4% | 1.8% |
| OTHER ITEMS | | | | -17.4% | | -0.5% | 0.6% | 0.0% | | -1.8% |
| NET PROFIT MARGIN | 3.8% | -1.8% | -4.3% | -19.8% | 2.0% | 3.5% | 4.8% | 3.4% | 4.4% | -0.0% |

 PROFIT

 LOSS

**TABLE III-9
GENERAL MOTORS CORP. DEVELOPMENT OF THE MY 1997 WEIGHTED AVERAGE DEALER MARKUP FACTOR**

| MANUFACTURER VEHICLETYPE MAKE AND MODEL | DEALER COST | SUGGESTED RETAIL | MARKUP FACTOR | ESTIMATING VOLUME | DOLLAR WEIGHTED WHOLESALE | DOLLAR WEIGHTED RETAIL |
|--|------------------------|-----------------------------|--------------------------|------------------------------|--|---------------------------------------|
| GENERAL MOTORS CORP. | | | | | | |
| PASSENGER CARS | | | | | | |
| BUICK | | | | | | |
| CENTURY | \$18,302 | \$19,575 | 1.070 | 91,232 | \$1,669,728,064 | \$1,785,866,400 |
| LESABRE | \$23,597 | \$25,799 | 1.093 | 150,744 | \$3,557,106,168 | \$3,889,044,456 |
| PARKAVENUE | \$32,172 | \$35,550 | 1.105 | 68,777 | \$2,212,693,644 | \$2,445,022,350 |
| REGAL | \$21,676 | \$23,690 | 1.093 | 50,691 | \$1,098,778,116 | \$1,200,869,790 |
| RIVIERA | \$29,412 | \$32,500 | 1.105 | 14,097 | \$414,620,964 | \$458,152,500 |
| SKYLARK | \$15,337 | \$16,230 | 1.058 | 59,331 | \$909,959,547 | \$962,942,130 |
| WEIGHTEDAVERAGE | \$22,680 | \$24,701 | 1.089 | 434,872 | \$9,862,886,503 | \$10,741,897,626 |
| CADILLAC | | | | | | |
| CATERA | \$31,244 | \$35,610 | 1.140 | 25,411 | \$793,941,284 | \$904,885,710 |
| DEVILLE | \$38,254 | \$42,295 | 1.106 | 104,703 | \$4,005,308,562 | \$4,428,413,385 |
| EL DORADO | \$39,220 | \$42,605 | 1.086 | 20,609 | \$808,284,980 | \$878,046,445 |
| SEVILLE | \$43,155 | \$48,995 | 1.135 | 29,837 | \$1,287,615,735 | \$1,461,863,815 |
| WEIGHTED AVERAGE | \$38,188 | \$42,497 | 1.113 | 180,560 | \$6,895,150,561 | \$7,673,209,955 |
| CHEVROLET | | | | | | |
| CAMARO | \$18,730 | \$20,470 | 1.093 | 55,973 | \$1,048,374,290 | \$1,145,767,310 |
| CAVALIER | \$13,303 | \$14,250 | 1.071 | 302,161 | \$4,019,647,783 | \$4,305,794,250 |
| CORVETTE | \$38,871 | \$44,425 | 1.143 | 22,724 | \$883,304,604 | \$1,009,513,700 |
| LUMINA | \$17,609 | \$19,245 | 1.093 | 228,451 | \$4,022,793,659 | \$4,396,539,495 |
| MALIBU | \$16,900 | \$18,470 | 1.093 | 164,654 | \$2,782,652,600 | \$3,041,159,380 |
| METRO | \$9,371 | \$9,455 | 1.009 | 55,629 | \$521,299,359 | \$525,972,195 |
| MONTE CARLO | \$18,570 | \$20,295 | 1.093 | 71,543 | \$1,328,553,510 | \$1,451,965,185 |
| PRIZM | \$13,474 | \$14,614 | 1.085 | 62,992 | \$848,754,208 | \$920,565,088 |
| WEIGHTEDAVERAGE | \$16,030 | \$17,422 | 1.087 | 964,127 | \$15,455,380,013 | \$16,797,276,603 |
| OLDSMOBILE | | | | | | |
| ACHIEVA | \$16,835 | \$17,815 | 1.058 | 63,196 | \$1,063,904,660 | \$1,125,836,740 |
| AURORA | \$32,543 | \$35,960 | 1.105 | 25,404 | \$826,722,372 | \$913,527,840 |
| CUTLASS | \$17,774 | \$19,425 | 1.093 | 26,708 | \$474,707,992 | \$518,802,900 |
| EIGHTY-EIGHT | \$22,138 | \$24,195 | 1.093 | 67,190 | \$1,487,452,220 | \$1,625,662,050 |
| INTRIGUE | \$20,221 | \$22,100 | 1.093 | 23,460 | \$474,384,660 | \$518,466,000 |
| WEIGHTED AVERAGE | \$21,010 | \$22,831 | 1.087 | 205,958 | \$4,327,171,904 | \$4,702,295,530 |
| PONTIAC | | | | | | |
| BONNEVILLE | \$26,591 | \$29,390 | 1.105 | 75,882 | \$2,017,778,262 | \$2,230,171,980 |
| FIREBIRD | \$23,767 | \$25,975 | 1.093 | 32,524 | \$772,997,908 | \$844,810,900 |
| GRANDAM | \$17,174 | \$19,425 | 1.131 | 204,078 | \$3,504,835,572 | \$3,964,215,150 |
| GRAND PRIX | \$18,679 | \$20,415 | 1.093 | 142,018 | \$2,652,754,222 | \$2,899,297,470 |
| SUNFIRE | \$11,579 | \$12,495 | 1.079 | 102,160 | \$1,182,910,640 | \$1,276,489,200 |
| WEIGHTED AVERAGE | \$18,200 | \$20,147 | 1.107 | 556,662 | \$10,131,276,604 | \$11,214,984,700 |

COMBINED WEIGHTED AVERAGES :

| | | | | | | |
|--------------------------|----------|----------|-------|-----------|------------------|-------------------|
| PASSENGERCARS | \$19,927 | \$21,830 | 1.096 | 2,342,179 | \$46,671,865,585 | \$51,129,663,814 |
| LT. TRUCKS, VAN'S, SUV'S | \$21,870 | \$24,671 | 1.128 | 2,165,378 | \$47,357,841,416 | \$53,422,856,968 |
| ALL LIGHT DUTY VEHICLES | \$20,860 | \$23,195 | 1.112 | 4,507,557 | \$94,029,707,001 | \$104,552,520,782 |

TABLE III-10

GENERAL MOTORS CORP.- DEVELOPMENT OF THE MY 1997 WEIGHTED AVERAGE DEALER MARKUP FACTOR

| MANUFACTURER VEHICLE TYPE MAKE & MODEL, MY1997 | DEALER COST | SUGGESTED RETAIL | MARKUP FACTOR | ESTIMATING VOLUME | DOLLAR WEIGHTED WHOLESALE | DOLLAR WEIGHTED RETAIL |
|--|-----------------|------------------|---------------|-------------------|---------------------------|-------------------------|
| GENERAL MOTORS CORP. | | | | | | |
| SPORT UTILITIES | | | | | | |
| CHEVROLET | | | | | | |
| BLAZER | \$22,784 | \$25,176 | 1.105 | 133,585 | \$3,043,600,640 | \$3,363,135,960 |
| TAHOE | \$28,262 | \$32,300 | 1.143 | 130,684 | \$3,693,391,208 | \$4,221,093,200 |
| SUBURBAN | \$26,018 | \$29,739 | 1.143 | 103,766 | \$2,699,783,788 | \$3,085,897,074 |
| GEO TRACKER | \$14,856 | \$15,605 | 1.050 | 36,100 | \$536,301,600 | \$563,340,500 |
| GMC | | | | | | |
| SUBURBAN | \$25,995 | \$29,634 | 1.140 | 51,121 | \$1,328,890,395 | \$1,514,919,714 |
| YUKON | \$28,528 | \$32,604 | 1.143 | 43,136 | \$1,230,583,808 | \$1,406,406,144 |
| JIMMY | \$23,398 | \$25,855 | 1.105 | 80,859 | \$1,891,938,882 | \$2,090,609,445 |
| WEIGHTED AVERAGE | \$24,902 | \$28,046 | 1.126 | 579,251 | \$14,424,490,321 | \$16,245,402,037 |
| GENERAL MOTORS CORP. | | | | | | |
| LIGHT TRUCKS, VANS | | | | | | |
| CHEVROLET | | | | | | |
| ASTRO VAN | \$17,503 | \$19,340 | 1.105 | 133,585 | \$2,338,138,255 | \$2,583,533,900 |
| EXPRESS VAN | \$23,140 | \$26,450 | 1.143 | 90,685 | \$2,098,450,900 | \$2,398,618,250 |
| C-K SERIES PICKUPS | \$22,836 | \$26,099 | 1.143 | 631,629 | \$14,423,879,844 | \$16,484,885,271 |
| S-SERIES PICKUPS | \$18,128 | \$20,032 | 1.105 | 199,295 | \$3,612,819,760 | \$3,992,277,440 |
| VENTURE PASS. VAN | \$20,144 | \$22,259 | 1.105 | 97,126 | \$1,956,506,144 | \$2,161,927,634 |
| GMC | | | | | | |
| C-K SERIES PICKUPS | \$17,500 | \$20,000 | 1.143 | 192,365 | \$3,366,387,500 | \$3,847,300,000 |
| SONOMA PICKUP | \$16,561 | \$18,300 | 1.105 | 43,246 | \$716,197,006 | \$791,401,800 |
| SAFARI VAN | \$19,732 | \$21,904 | 1.110 | 42,797 | \$844,470,404 | \$937,425,488 |
| SAVANNA VAN | \$23,198 | \$26,514 | 1.143 | 37,202 | \$863,011,996 | \$986,373,828 |
| OLDSMOBILE | | | | | | |
| SILHOUETTE | \$24,584 | \$27,185 | 1.106 | 24,615 | \$605,135,160 | \$669,158,775 |
| BRAVADA | \$27,733 | \$30,645 | 1.105 | 28,481 | \$789,863,573 | \$872,800,245 |
| PONTIAC | | | | | | |
| TRANS SPORT | \$20,253 | \$22,300 | 1.101 | 65,101 | \$1,318,490,553 | \$1,451,752,300 |
| WEIGHTED AVERAGE | \$20,763 | \$23,439 | 1.129 | 1,586,127 | \$2,933,351,095 | \$3,177,454,931 |

LT. TRUCKS, VAN'S, SUV'S \$24,584 \$27,185 1.128 2,165,378 47,357,841,416 53,422,856,968

The markup factor from variable cost to MSRP is thus:

$$\text{Variable Cost X 1.33 X 1.14} = \text{Variable Cost X 1.51}$$

Although the variable cost and contribution rates are slightly different, the overall markup on variable cost to MSRP is almost identical for both the Chrysler template and the NHTSA historical composite.

III.3. Development of a Weighted Average Composite Pricing Template for the “Big Three” U. S. Auto Manufacturers

The volume weighted average composite pricing template is developed by combining the common-sized income statements of Chrysler, Ford, and General Motors for each of the years over the period in question. In this case, the template is based on operating results for the three companies over the 1989-1997 accounting periods. The selection of this time frame allows the productivity and efficiency gains of the late 1980's and early 1990's to be fully reflected in the rates to cost used for the pricing template.

Tables III-11, III-12, and III-13 provide the composite operating results, operating ratios, and dealer margin for the “Big Three” domestic auto manufacturers. The weighted average dealer margin is based on prices and dealer discounts published in the *New Car Cost Guides* for MY 1997 published by Automotive Invoice Service.

The column on the far right of Table III-1 1 reveals that, over the 1989-1997 time frame, the variable manufacturing cost rate on cumulative net sales was 73.3%; leaving a contribution margin of 26.7%. The markup from variable costs to net sales (wholesale) is thus:

$$\text{Contribution Margin / Variable Costs} = 26.7\% / 73.3\% = 36.4\%$$

The corresponding markup equation would be Variable Costs X 1.36 = Net Sales.

Table III-13 provides the computation of the weighted average **dealer markup factor** which is shown at the bottom center at 1.112 which rounds to **1.11**.

The weighted average pricing template for the “Big Three” over the years 1989-1997 would be expressed as follows:

$$\text{Variable Costs X 1.36 X 1.11} = \text{Variable Costs X 1.51}$$

Although contribution margins have become larger over time, the “Big Three” have reduced the dealer’s discount from MSRP; resulting in a pricing template virtually identical with NHTSA’s historical pricing formula.

TABLE III-1 1

BIG THREE WEIGHTED AVERAGE MARGINAL ANALYSIS OF OPERATING RESULTS, 1989-1997

| CHRYSLER, FORD, & GM | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1989-1997 | % |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|----------|
| NET SALES \$ X 1 MILLION | \$226,451 | \$219,606 | \$207,914 | \$236,388 | \$258,068 | \$298,247 | \$303,997 | \$321,274 | \$333,683 | \$2,405,628 | 100.0% |
| VARIABLE COSTS - MFG | \$168,120 | \$168,600 | \$162,661 | \$179,402 | \$186,366 | \$210,258 | \$218,298 | \$231,459 | \$239,137 | \$1,764,301 | 73.3% |
| CONTRIBUTION MARGIN | \$58,331 | \$51,006 | \$45,253 | \$56,986 | \$71,702 | \$87,989 | \$85,699 | \$89,815 | \$94,546 | \$641,327 | 26.7% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | | |
| Maintenance & Repairs | \$8,440 | \$7,942 | \$7,929 | \$8,211 | \$8,559 | \$8,881 | \$10,078 | \$10,480 | \$10,962 | \$81,482 | 3.4% |
| Research & Development | \$9,373 | \$9,808 | \$10,570 | \$11,349 | \$12,251 | \$13,553 | \$15,034 | \$15,685 | \$15,938 | \$113,561 | 4.7% |
| Selling, General, & Admin. | \$12,632 | \$14,428 | \$15,078 | \$16,535 | \$17,353 | \$18,852 | \$18,907 | \$21,477 | \$23,310 | \$158,572 | 6.6% |
| Taxes Other Than Income | \$5,367 | \$5,298 | \$5,173 | \$6,699 | \$7,253 | \$7,786 | \$7,993 | \$8,362 | \$8,730 | \$62,661 | 2.6% |
| Pension Expense & Other P.R. Ben. | \$2,003 | \$1,898 | \$3,490 | \$5,301 | \$6,293 | \$7,583 | \$7,163 | \$6,252 | \$4,928 | \$44,911 | 1.9% |
| Depreciation | \$6,331 | \$6,566 | \$6,863 | \$7,208 | \$7,186 | \$7,077 | \$7,041 | \$8,394 | \$10,345 | \$67,011 | 2.8% |
| Amortization, Tooling | \$3,571 | \$4,118 | \$4,286 | \$5,242 | \$5,218 | \$4,990 | \$7,097 | \$7,124 | \$9,892 | \$52,538 | 2.2% |
| Provision for Plant Closing | | \$3,314 | \$2,821 | \$1,237 | \$950 | | | | | \$8,322 | 0.3% |
| Amortization Intangibles | \$506 | \$373 | \$320 | \$189 | \$189 | \$181 | | | | \$1,758 | 0.1% |
| SUBTOTAL | \$48,223 | \$53,745 | \$56,530 | \$61,971 | \$65,252 | \$69,903 | \$73,313 | \$77,774 | \$84,105 | \$590,816 | 24.6% |
| OPERATING INCOME | \$10,108 | (\$2,739) | (\$11,277) | (\$4,985) | \$6,450 | \$18,086 | \$12,386 | \$12,041 | \$10,441 | \$50,511 | 2.1% |
| OTHER REVENUES (EXPENSES) | \$1,620 | \$1,612 | \$2,478 | \$1,375 | \$1,762 | \$2,039 | \$857 | \$1,965 | \$7,644 | \$21,352 | 0.9% |
| INCOME BEF. INT. TAXES, & OTHER | \$11,728 | (\$1,127) | (\$8,799) | (\$3,610) | \$8,212 | \$20,125 | \$13,243 | \$14,006 | \$18,085 | \$71,863 | 3.0% |
| INTEREST INCOME (EXPENSE) | (\$1,681) | (\$2,096) | (\$2,880) | (\$2,334) | (\$1,908) | (\$1,589) | (\$362) | (\$930) | (\$899) | (\$14,679) | -0.6% |
| INCOME BEF. TAXES, OTHER | \$10,047 | (\$3,223) | (\$11,679) | (\$5,944) | \$6,304 | \$18,536 | \$12,881 | \$13,076 | \$17,186 | \$57,184 | 2.4% |
| PROVISION FOR TAXES (CREDITS) | \$3,394 | (\$635) | (\$2,648) | (\$1,584) | \$1,292 | \$6,472 | \$4,001 | \$4,173 | \$4,275 | \$18,740 | 0.8% |
| INCOME AFTER INCOME TAXES | \$6,653 | (\$2,588) | (\$9,031) | (\$4,360) | \$5,012 | \$12,064 | \$8,880 | \$8,903 | \$12,911 | \$38,444 | 1.6% |
| EARNINGS IN AFFILIATES-NET | \$1,069 | \$769 | \$646 | \$428 | \$809 | \$1,125 | \$1,330 | \$1,425 | \$1,306 | \$8,907 | 0.4% |
| EARNINGS BEFORE OTHER ITEMS | \$7,722 | (\$1,819) | (\$8,385) | (\$3,932) | \$5,821 | \$13,189 | \$10,210 | \$10,328 | \$14,217 | \$47,351 | 2.0% |
| OTHER ITEMS | \$36 | | (\$257) | (\$27,471) | (\$4,966) | (\$751) | \$752 | (\$181) | | (\$32,838) | -1.4% |
| NET PROFIT | \$7,758 | (\$1,819) | (\$8,642) | (\$31,403) | \$855 | \$12,438 | \$10,962 | \$10,147 | \$14,217 | \$14,513 | 0.6% |

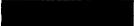
PROFIT

LOSS

TABLE III-12

BIG THREE WEIGHTED AVERAGE MARGINAL ANALYSIS - OPERATING RATIOS, 1989-1997

| CHRYSLER, FORD, & GM | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1989-1997 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|
| NET SALES | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| VARIABLE COSTS - MFG | 74.2% | 76.8% | 78.2% | 75.9% | 72.2% | 70.5% | 71.8% | 72.0% | 71.7% | 73.3% |
| CONTRIBUTION MARGIN | 25.8% | 23.2% | 21.8% | 24.1% | 27.8% | 29.5% | 28.2% | 28.0% | 28.3% | 26.7% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | |
| Maintenance & Repairs | 3.7% | 3.6% | 3.8% | 3.5% | 3.3% | 3.0% | 3.3% | 3.3% | 3.3% | 3.4% |
| Research & Development | 4.1% | 4.5% | 5.1% | 4.8% | 4.7% | 4.5% | 4.9% | 4.9% | 4.8% | 4.7% |
| Selling, General, & Admin. | 5.6% | 6.6% | 7.3% | 7.0% | 6.7% | 6.3% | 6.2% | 6.7% | 7.0% | 6.6% |
| Taxes Other Than Income | 2.4% | 2.4% | 2.5% | 2.8% | 2.8% | 2.6% | 2.6% | 2.6% | 2.6% | 2.6% |
| Pension Expense & Other P.R. Ben. | 0.9% | 0.9% | 1.7% | 2.2% | 2.4% | 2.5% | 2.4% | 1.9% | 1.5% | 1.9% |
| Depreciation | 2.8% | 3.0% | 3.3% | 3.0% | 2.8% | 2.4% | 2.3% | 2.6% | 3.1% | 2.8% |
| Amortization, Tooling | 1.6% | 1.9% | 2.1% | 2.2% | 2.0% | 2.0% | 2.3% | 2.2% | 3.0% | 2.2% |
| Provision for Plant Closing | 0.0% | 1.5% | 1.4% | 0.5% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% |
| Amortization, Intangibles | 0.2% | 0.2% | 0.2% | 0.1% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% | 0.1% |
| SUBTOTAL | 21.3% | 24.5% | 27.2% | 26.2% | 25.3% | 23.4% | 24.1% | 24.2% | 25.2% | 24.6% |
| OPERATING MARGIN | 4.5% | -1.2% | -5.4% | -2.1% | 2.5% | 6.1% | 4.1% | 3.7% | 3.1% | 2.1% |
| OTHER REVENUES (EXPENSES) | 0.7% | 0.7% | 1.2% | 0.6% | 0.7% | 0.7% | 0.3% | 0.6% | 2.3% | 0.9% |
| INCOME BEF. INT. TAXES, & OTHER | 5.2% | -0.5% | -4.2% | -1.5% | 3.2% | 6.7% | 4.4% | 4.4% | 5.4% | 3.0% |
| INTEREST INCOME (EXPENSE) | -0.7% | -1.0% | -1.4% | -1.0% | -0.7% | -0.5% | -0.1% | -0.3% | -0.3% | -0.6% |
| INCOME BEF. TAXES, OTHER | 4.4% | -1.5% | -5.6% | -2.5% | 2.4% | 6.2% | 4.2% | 4.1% | 5.2% | 2.4% |
| PROVISION FOR TAXES (CREDITS) | 1.5% | -0.3% | -1.3% | -0.7% | 0.5% | 2.2% | 1.3% | 1.3% | 1.3% | 0.8% |
| INCOME AFTER INCOME TAXES | 2.9% | -1.2% | -4.3% | -1.8% | 1.9% | 4.0% | 2.9% | 2.8% | 3.9% | 1.6% |
| EARNINGS IN AFFILIATES NET | 0.5% | 0.4% | 0.3% | 0.2% | 0.3% | 0.4% | 0.4% | 0.4% | 0.4% | 0.4% |
| EARNINGS BEFORE OTHER ITEMS | 3.4% | -0.8% | -4.0% | -1.7% | 2.3% | 4.4% | 3.4% | 3.2% | 4.3% | 2.0% |
| OTHER ITEMS | 0.0% | 0.0% | -0.1% | -11.6% | -1.9% | -0.3% | 0.2% | -0.1% | 0.0% | -1.4% |
| NET PROFIT MARGIN | 3.4% | -0.8% | -4.2% | -13.3% | 0.3% | 4.2% | 3.6% | 3.2% | 4.3% | 0.6% |

 PROFIT

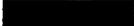
 LOSS

TABLE III-13
CHRYSLER, FORD, & GM - DEVELOPMENT OF THE WEIGHTED AVERAGE DEALER MARKUP FACTOR

| MANUFACTURER VEHICLE TYPE | DEALER COST | SUGGESTED RETAIL | MARKUP FACTOR | ESTIMATING VOLUME | DOLLAR WEIGHTED WHOLESALE | DOLLAR WEIGHTED RETAIL |
|-------------------------------------|-----------------------|----------------------------|-------------------------|-----------------------------|--|---|
| CHRYSLER CORPORATION | | | | | | |
| PASSENGER CARS | \$16,583 | \$18,045 | 1.088 | 844,574 | \$14,005,907,089 | \$15,240,301,230 |
| SPORT UTILITIES | \$21,092 | \$23,133 | 1.097 | 503,101 | \$10,611,223,286 | \$11,638,225,931 |
| LT. TRUCKS, VAN'S, | \$19,498 | \$21,831 | 1.120 | 1,249,087 | \$24,355,209,950 | \$27,269,068,740 |
| CHRYSLER WT. AVERAGE | \$18,859 | \$20,852 | 1.106 | 2,596,762 | \$48,972,340,325 | \$54,147,595,905 |
| FORD MOTOR COMPANY | | | | | | |
| PASSENGER CARS | \$19,190 | \$20,871 | 1.088 | 1,618,436 | \$31,057,952,645 | \$33,778,919,355 |
| SPORT UTILITIES | \$26,694 | \$30,001 | 1.124 | 702,715 | \$18,758,196,569 | \$21,082,289,691 |
| LT. TRUCKS, VAN'S, | \$21,858 | \$24,812 | 1.135 | 1,479,708 | \$32,343,014,546 | \$36,714,106,320 |
| FORD WT. AVERAGE | \$21,616 | \$24,093 | 1.115 | 3,800,859 | \$82,159,163,760 | \$91,575,315,366 |
| GENERAL MOTORS CORP. | | | | | | |
| PASSENGER CARS | \$19,927 | \$21,830 | 1.096 | 2,342,179 | \$46,671,865,585 | \$51,129,663,814 |
| SPORT UTILITIES | \$24,902 | \$28,046 | 1.126 | 579,251 | \$14,424,490,321 | \$16,245,402,037 |
| LT. TRUCKS, VAN'S, | \$20,763 | \$23,439 | 1.129 | 1,586,127 | \$32,933,351,095 | \$37,177,454,931 |
| GM WT. AVERAGE | \$20,860 | \$23,195 | 1.112 | 4,507,557 | \$94,029,707,001 | \$104,552,520,782 |

COMBINED WEIGHTED AVERAGES :

| | | | | | | |
|--------------------------|----------|----------|-------|------------|-------------------|-------------------|
| PASSENGER CARS | \$19,091 | \$20,842 | 1.092 | 4,805,189 | \$91,735,725,319 | \$100,148,884,399 |
| LT. TRUCKS, VAN'S, SUV'S | \$21,873 | \$24,611 | 1.125 | 6,099,989 | \$133,425,485,767 | \$150,126,547,654 |
| ALL LIGHT DUTY VEHICLES | \$20,647 | \$22,950 | 1.112 | 10,905,178 | \$225,161,211,086 | \$250,275,432,053 |

IV. MANUFACTURING COST DEVELOPMENT - VEHICLE TEAR DOWN AND INDUSTRIAL PRODUCTION PROCESS COST ANALYSIS

For the most part, NHTSA's manufacturing cost estimates are developed from a tear down analysis of the vehicle system under study. This method is also known as "**reverse engineering**" and has long been used by the auto manufacturers as a means of analyzing the technology of competitors. In some cases, the agency has conducted design analysis using blueprints, CAD/CAM programs, or other manufacturer specifications when hardware or software have not been available.

In either case, the Agency has relied almost exclusively on contractors to perform the tear down or design analysis. Contractors are selected based on their expertise in automotive design and manufacturing engineering. The disciplines utilized in these studies cover the full spectrum of vehicle and production technologies available today such as:

1. Biomechanics
2. Engine and Transmission Modeling
3. Finite Element Analysis of Vehicle Structures
4. Body-In- White Production Processes and Material Content
5. Occupant Restraint Systems-All Types
6. Seating Systems
7. Antilock Brake Systems
8. Fuel Systems
9. Automotive Materials - Characteristics and Production Processes
10. Material Costs-Raw, Conversion, Finished
11. Labor Cost Development Including Time and Motion Analysis
12. Capital Equipment and Tooling Investment Analysis.

IV.1. Asset Center Costing

Over the last decade or so, the term “**activity-based costing**” or **ABC** has become the buzzword used to describe the cost accounting method which accumulates costs at activity centers within a business. In fact, activity-based costing has been used extensively and routinely by the auto industry for more than fifty years and by NHTSA since completion of its first vehicle tear down contract in 1975.

This contract was conceived and managed by Charles Westphal of NHTSA and conducted over a nine-month period by Pioneer Engineering and Manufacturing Co.. An entire vehicle, a 1975 Chevrolet Chevelle, was torn down to its most elemental parts and analyzed for cost and weight content.

The tear down was conducted according to a uniform parts grouping system (UPG) in which parts costs and weights were reconciled to their respective components which, in turn were reconciled to their respective subsystems, systems, product planning group (PPG), and finally, to the total vehicle. Estimates for direct labor content, direct material and scrap, variable burden and fixed burden, as well as capital investment in machinery, equipment and tooling were developed for each part based on the manufacturing processes employed.

Appendix B of the accompanying contractor final report (DTNH22-96-D-12003, Task Order-005) provides a detailed discussion of “**Asset Center Costing**” as practiced by NHTSA in its contractor studies. Sufficed to say here, variable costs per part are accumulated at each machine or work station based upon direct labor time and motion, direct material used (including scrap), and the occupancy time required to process one part or complete one cycle.

Capital investments in machinery, equipment, and special tooling are allocated over the useful life of the asset using pre-determined depreciation or amortization schedules. **For analytical purposes, NHTSA uses a depreciation rate of seven (7) years for machinery and equipment. Special tools are amortized over three (3) years.** NHTSA has adopted the auto industry convention of using the term “depreciation” to define the write-off of capital assets with expected lives greater than three-years. “Amortization” defines the write-off of capital assets with useful lives of three-years or less. Per unit price recovery of capital investment is determined by dividing annual depreciation or amortization by the expected annual sales volume.

IV.2. Retail Price Estimation - Applying The Pricing Template to Per Unit Variable Cost

Figure IV-1 traces the flow of costs from the four elements of variable manufacturing costs to estimated MSRP for a hypothetical part provided by a Tier-1 supplier. Note that the cost elements to be isolated for the supplier are identical to those for the vehicle manufacturer. In such a case, a markup on variable manufacturing cost must be developed for the supplier in exactly the same manner as in Section III for the vehicle manufacturer **The transfer price from the supplier to vehicle manufacturer includes the supplier's profit and is treated as direct material, finished parts by the vehicle manufacturer.**

The same holds true for a multi-tier delivery chain. As the part or component makes its way down the chain from a Tier-3 supplier to the vehicle manufacturer, the transfer price including profit to the Tier-3 supplier is booked by the Tier-2 supplier as direct material , finished parts (**Figure IV-2**). Likewise, the transfer price from the Tier-2 supplier including its profit is booked by the Tier-1 as direct material, finished parts (**Figure IV-3**). The Tier-1 supplier's transfer price is booked by the vehicle manufacturer as direct material, finished parts. Vehicle manufacturer's variable costs, including the supplier costs and prices accumulated at each stage in the delivery chain, are marked up to wholesale and MSRP using the pricing template developed in Section III (**Figure IV-4**).

For each tier in the delivery chain, markup factors from variable manufacturing costs to selling price (or transfer price) must be developed. With the exception of the vehicle manufacturer's pricing template, these markup factors are developed by the contractor based on analysis of the facilities, machinery, equipment, and tooling required to support the projected volume per finished part at each tier. The multi-step presentation in **Figures IV-2, IV-3, and IV-4** can be consolidated into one flow chart by subtracting the Tier-3 and Tier-2 markups from the Tier-1 Direct Materials, Finished Parts block in Figure IV-4 and transferring them to the Tier-3 and Tier-2 Markup blocks. The result is **Figure IV-1** which isolates all supplier variable costs, supplier markups for each tier in the delivery chain, and the vehicle manufacturing cost and pricing template developed in Section III. This is, in fact, exactly how the costs and prices are accumulated in Tables II-1 through II-8 and this presentation will be standardized henceforth wherever possible (See Section II).

Figures IV-5 through IV-S present the flow of costs for each of the occupant protection systems analyzed in this study according to this single step format. However the actual tear down analysis is performed sequentially as in Figures IV-2, IV-3, and IV-4. Every part in the stock list accompanying the contractor's final report can be traced down the delivery chain from Tier-3 manufacturing cost and transfer price to estimated MSRP by following this sequence.

In the case of internal sourcing, transfer prices for parts, sub-assemblies, assemblies, and entire vehicle systems between divisions or subsidiaries of the parent vehicle manufacturer

FIGURE IV-1 CONSOLIDATED FLOW OF COSTS 3-TIER SUPPLIER DELIVERY CHAIN

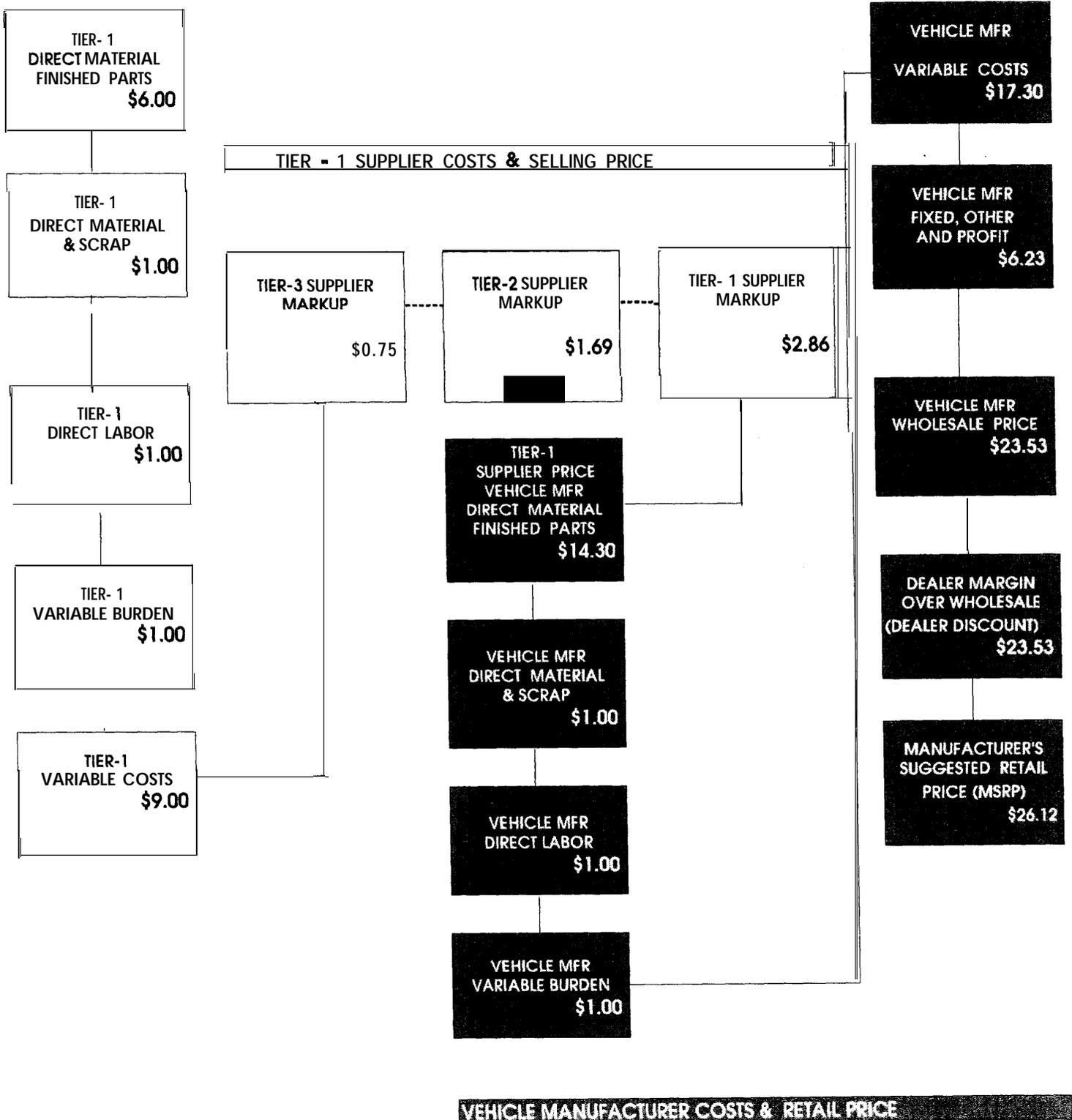


FIGURE IV-2 FLOW OF COSTS 3-TIER SUPPLIER DELIVERY CHAIN

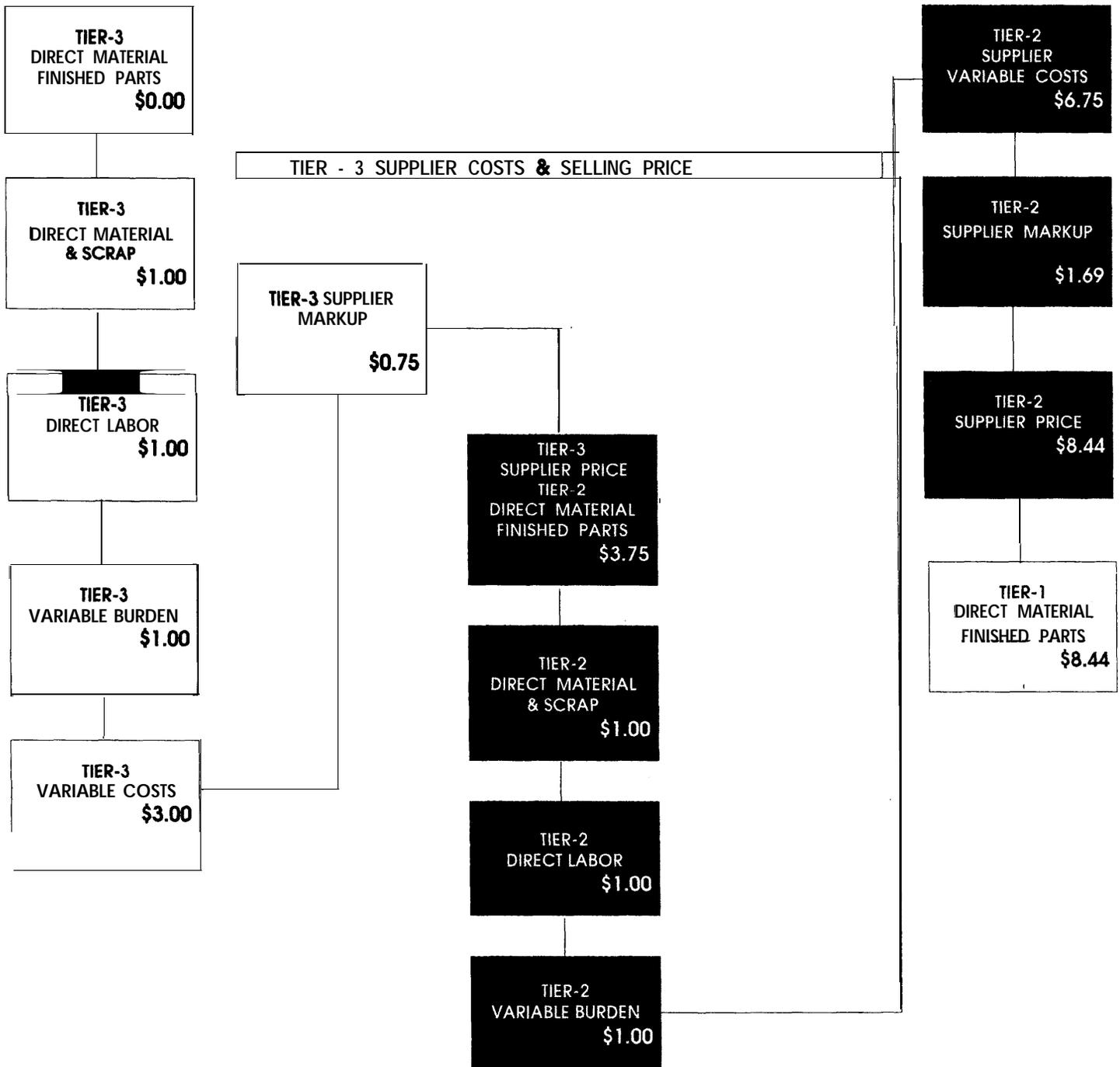


FIGURE IV-3 FLOW OF COSTS 3-TIER SUPPLIER DELIVERY CHAIN

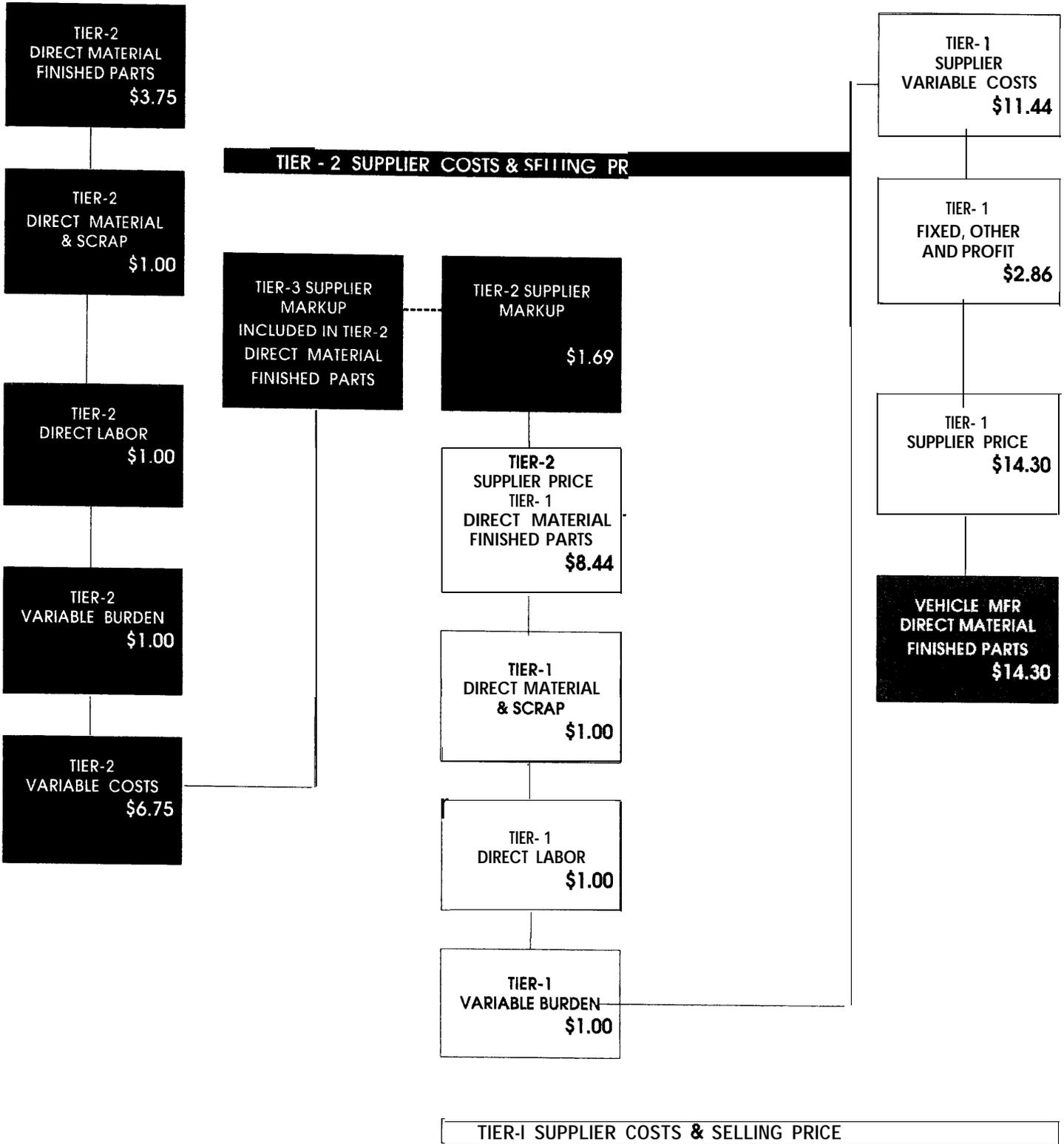


FIGURE IV-4 FLOW OF COSTS 3-TIER SUPPLIER DELIVERY CHAIN

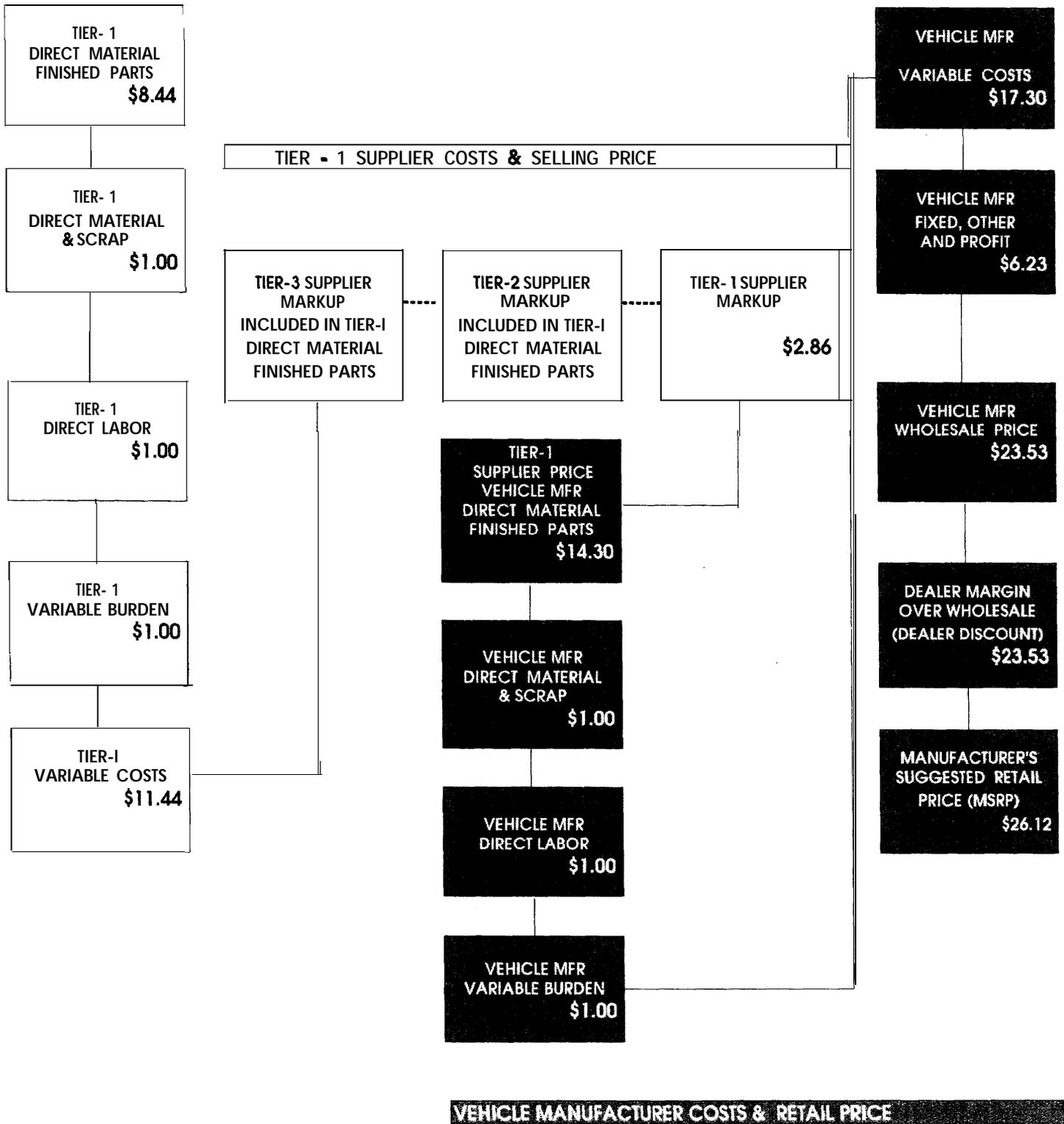


FIGURE IV-5 CHRYSLER CIRRUS / DODGE STRATUS FRONT OCCUPANT RESTRAINT SYSTEM 3-TIER SUPPLIER DELIVERY CHAIN

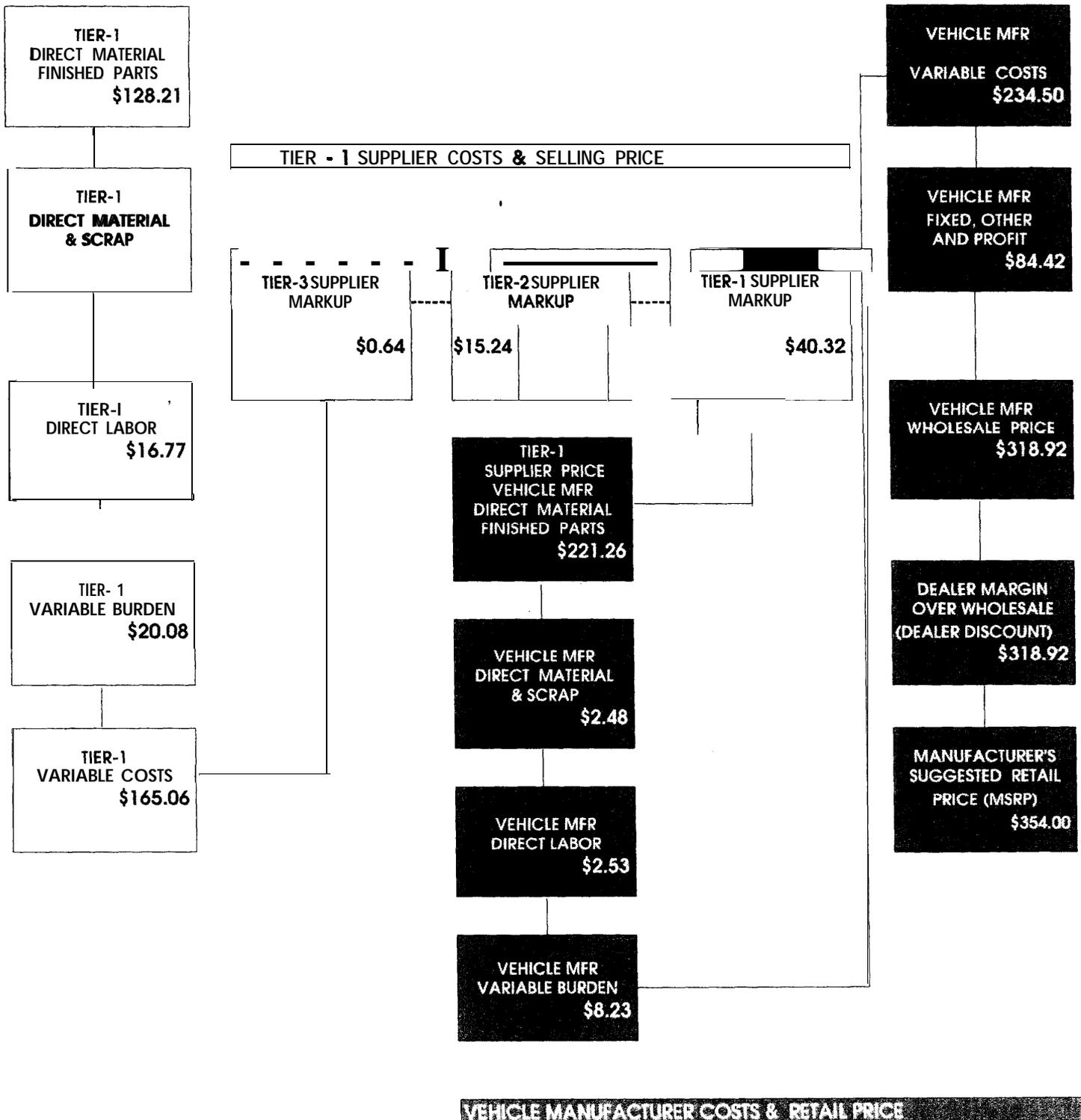


FIGURE IV-6 BMW 528i DRIVER / PASSENGER FRONT OCCUPANT RESTRAINT SYSTEM 3-TIER SUPPLIER DELIVERY CHAIN

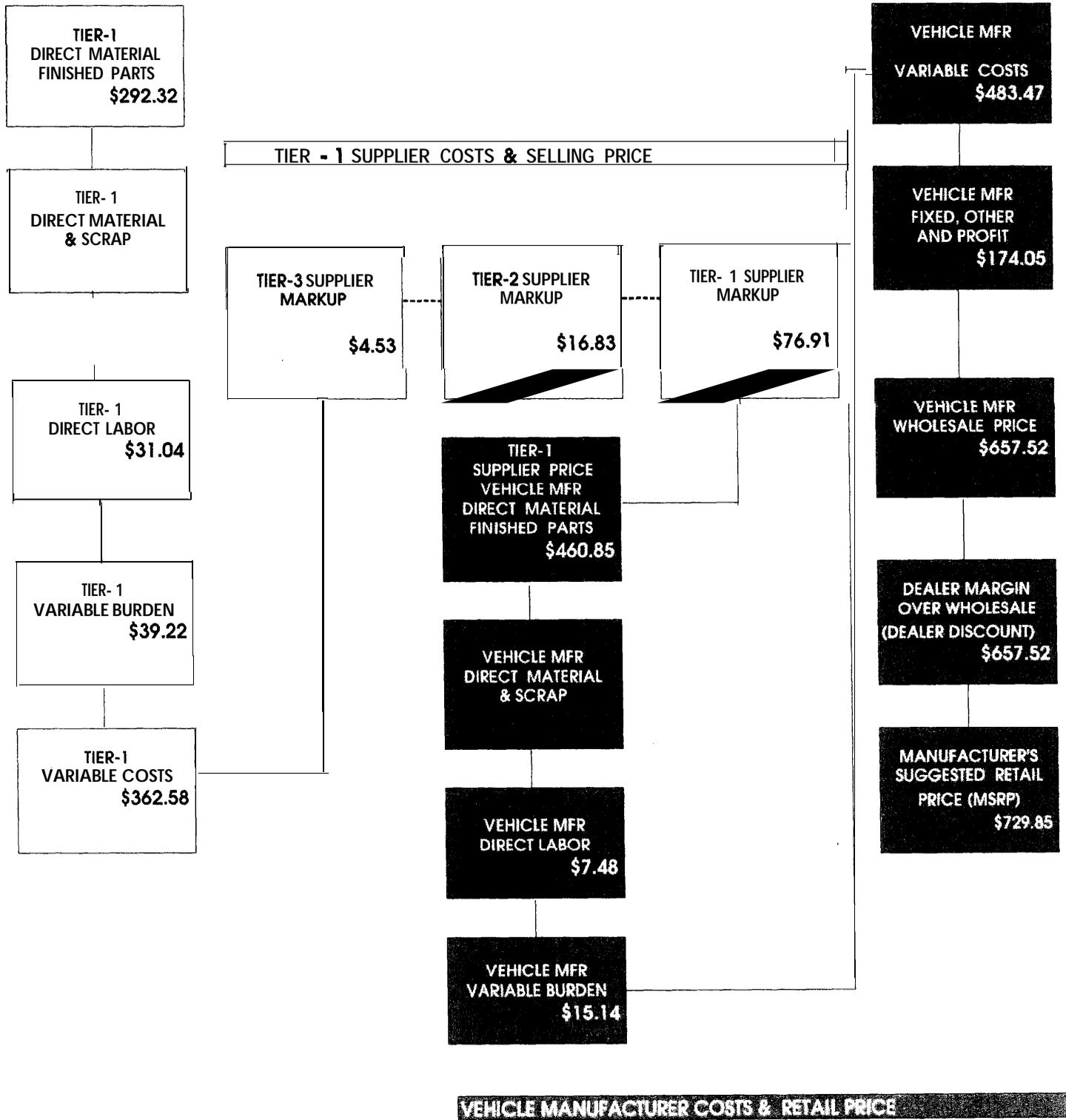


FIGURE IV-7 BMW Z3 DRIVER / PASSENGER FRONT OCCUPANT AIR BAGS ONLY 3-TIER SUPPLIER DELIVERY CHAIN

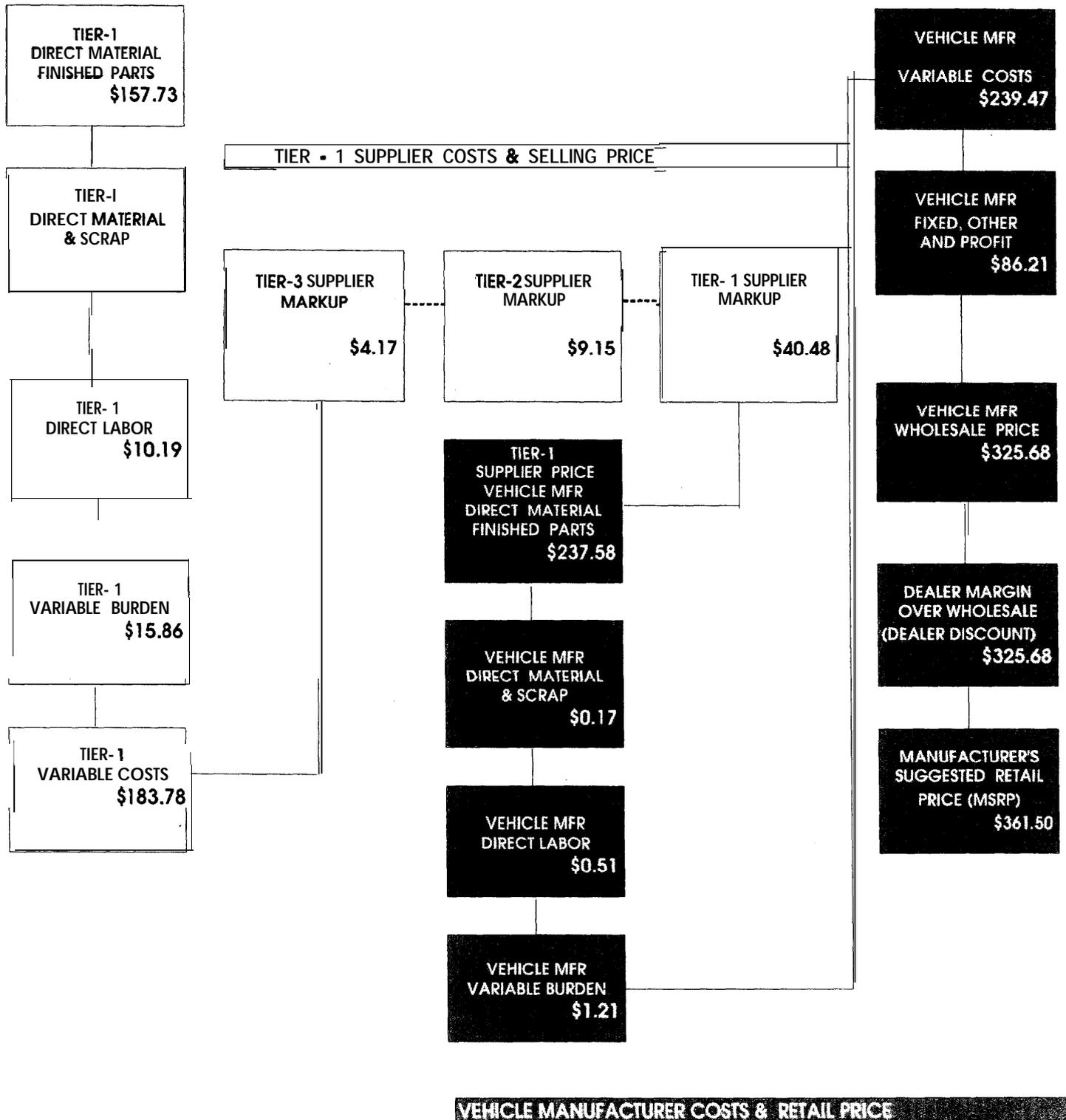
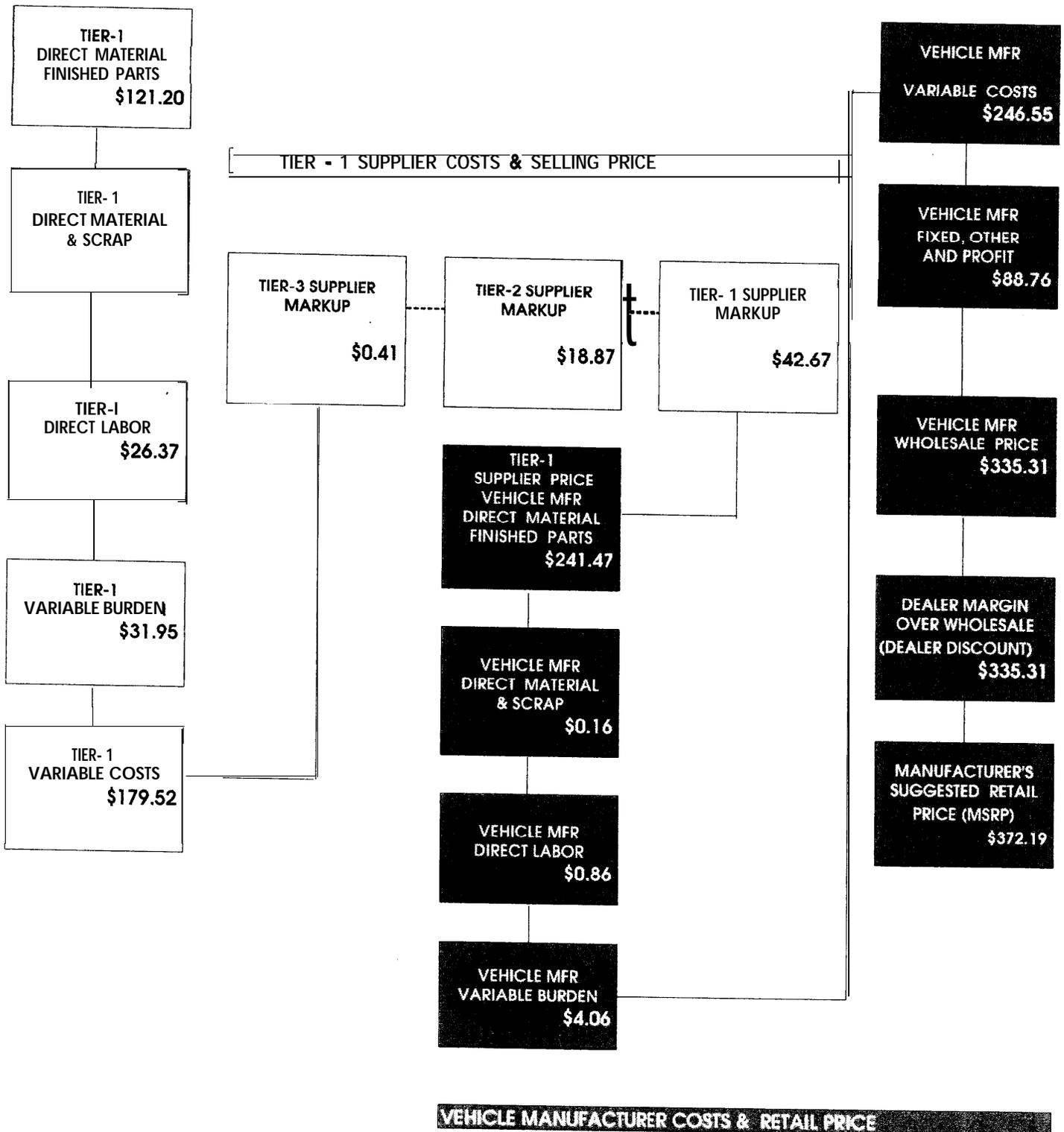


FIGURE IV-8 FORD TAURUS 2000 FRONT OCCUPANT RESTRAINT SYSTEM 3-TIER SUPPLIER DELIVERY CHAIN



may include a profit to the transferor for the purpose of measuring efficiency. However, upon consolidation of subsidiary operating results with those of the parent, all inter-divisional sales revenue and profit must be eliminated: to avoid double counting. The parent corporation is a single economic entity and, therefore, cannot sell to itself for a profit. In the consolidation process, only the variable and fixed manufacturing costs incurred by each subsidiary during the production process end up being booked by the parent.

The average passenger car consists of approximately 15,000 parts. Annual-light duty vehicle sales in North America may exceed 20 million units in calendar year 2000. The futility of allocating fixed costs to individual parts is obvious when faced with numbers of this magnitude. Thus, when estimating the retail price **impact** per part, component, subsystem, or system, NHTSA uses its weighted average vehicle pricing template developed in Section III.

Retail Price Per Unit = Vehicle Manufacturer Variable Costs / Unit X 1.36 X 1.11

Not all vehicle parts conform to this cost-price relationship. There are cases where the 1.36 markup on variable costs does not cover each part's full share of fixed costs, other company costs, and residual profit. However, in aggregate, the variable costing approach allows cost increases or decreases to be determined with greater discrimination than does full costing in which the markup factor is the percentage difference total manufacturing costs and wholesale price (dealer cost equivalent).

APPENDIX-A
“BIG THREE” INCOME STATEMENTS
MARGINAL ANALYSIS
1972-1997

TABLE A-1

CHRYSLER CORPORATION MARGINAL ANALYSIS OF OPERATING RESULTS, 1989-1997

| CHRYSLER | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1989-1997 | % |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|----------|
| NET SALES \$ X 1 MILLION | \$31,039 | \$26,965 | \$26,707 | \$33,409 | \$41,247 | \$49,534 | \$49,747 | \$58,004 | \$56,967 | \$373,619 | 100.0% |
| VARIABLE COSTS - Mm | \$24,136 | \$20,837 | \$21,179 | \$24,790 | \$29,077 | \$34,648 | \$35,629 | \$39,799 | \$40,771 | \$270,866 | 72.5% |
| CONTRIBUTION MARGIN | \$6,903 | \$6,128 | \$5,528 | \$8,619 | \$12,170 | \$14,886 | \$14,118 | \$18,205 | \$16,196 | \$102,753 | 27.5% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | | |
| Maintenance & Repairs | \$668 | \$588 | \$587 | \$740 | \$894 | \$842 | \$846 | \$986 | \$968 | \$7,119 | 1.9% |
| Research & Development | \$958 | \$908 | \$955 | \$1,100 | \$1,200 | \$1,303 | \$1,420 | \$1,602 | \$1,714 | \$11,160 | 3.0% |
| Selling, General, & Admin. | \$1,875 | \$1,945 | \$2,112 | \$2,467 | \$2,619 | \$3,146 | \$3,408 | \$3,985 | \$4,155 | \$25,712 | 6.9% |
| Taxes Other Than Income | \$538 | \$540 | \$540 | \$626 | \$773 | \$694 | \$697 | \$812 | \$798 | \$6,018 | 1.6% |
| Pension Expense & Other P.R. Ben. | \$544 | \$531 | \$1,147 | \$1,201 | \$1,517 | \$1,530 | \$1,970 | \$2,324 | \$1,252 | \$12,016 | 3.2% |
| Depreciation | \$628 | \$644 | \$667 | \$969 | \$969 | \$912 | \$1,012 | \$1,191 | \$1,457 | \$8,449 | 2.3% |
| Amortization, Tooling | \$620 | \$617 | \$644 | \$641 | \$671 | \$961 | \$1,120 | \$996 | \$1,039 | \$7,309 | 2.0% |
| Provision for Plant Closing | | | | | | | | | | | |
| Amortization Intangibles | | | | | | | | | | | |
| SUBTOTAL | \$5,831 | \$5,773 | \$6,652 | \$7,744 | \$8,643 | \$9,388 | \$10,473 | \$11,896 | \$11,383 | \$77,783 | 20.8% |
| OPERATING INCOME | \$1,072 | \$355 | (\$1,124) | \$875 | \$3,527 | \$5,498 | \$3,645 | \$6,309 | \$4,813 | \$24,970 | 6.7% |
| OTHER REVENUES (EXPENSES) | (\$588) | (\$101) | \$593 | \$299 | \$464 | \$560 | \$0 | \$0 | \$0 | \$1,227 | 0.3% |
| INCOME BEF. INT. TAXES, & OTHER | \$484 | \$254 | (\$531) | \$1,174 | \$3,991 | \$6,058 | \$3,645 | \$6,309 | \$4,813 | \$26,197 | 7.0% |
| INTEREST INCOME (EXPENSE) | \$81 | (\$107) | (\$279) | (\$240) | (\$153) | (\$228) | (\$196) | (\$217) | (\$256) | (\$1,595) | -0.4% |
| INCOME BEF. TAXES, OTHER | \$565 | \$147 | (\$810) | \$934 | \$3,838 | \$5,830 | \$3,449 | \$6,092 | \$4,557 | \$24,602 | 6.6% |
| PROVISION FOR TAXES (CREDITS) | \$242 | \$79 | (\$272) | \$429 | \$1,423 | \$2,117 | \$1,328 | \$2,372 | \$1,752 | \$9,470 | 2.5% |
| INCOME AFTER INCOME TAXES | \$323 | \$68 | (\$538) | \$505 | \$2,415 | \$3,713 | \$2,121 | \$3,720 | \$2,805 | \$15,132 | 4.1% |
| EARNINGS IN AFFILIATES-NET | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 0.0% |
| EARNINGS BEFORE OTHER ITEMS | \$323 | \$68 | (\$538) | \$505 | \$2,415 | \$3,713 | \$2,121 | \$3,720 | \$2,805 | \$15,132 | 4.1% |
| OTHER ITEMS | \$36 | | (\$257) | \$218 | (\$4,966) | | (\$96) | (\$191) | | (\$5,256) | -1.4% |
| NET PROFIT | \$359 | \$68 | (\$795) | \$723 | (\$2,551) | \$3,713 | \$2,025 | \$3,529 | \$2,805 | \$9,876 | 2.6% |

 PROFIT

 Loss

TABLE A-2

CHRYSLER CORPORATION MARGINAL ANALYSIS - OPERATING RATIOS, 1989-1997

| CHRYSLER | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1989-1997 |
|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|------------------|
| NET SALES | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| VARIABLE COSTS - MFG | 77.8% | 77.3% | 79.3% | 74.2% | 70.5% | 69.9% | 71.6% | 68.6% | 71.6% | 72.5% |
| CONTRIBUTION MARGIN | 22.2% | 22.7% | 20.7% | 25.8% | 29.5% | 30.1% | 28.4% | 31.4% | 28.4% | 27.5% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | |
| Maintenance & Repairs | 2.2% | 2.2% | 2.2% | 2.2% | 2.2% | 1.7% | 1.7% | 1.7% | 1.7% | 1.9% |
| Research & Development | 3.1% | 3.4% | 3.6% | 3.3% | 2.9% | 2.6% | 2.9% | 2.8% | 3.0% | 3.0% |
| Selling, General, & Admin. | 6.0% | 7.2% | 7.9% | 7.4% | 6.3% | 6.4% | 6.9% | 6.9% | 7.3% | 6.9% |
| Taxes Other Than Income | 1.7% | 2.0% | 2.0% | 1.9% | 1.9% | 1.4% | 1.4% | 1.4% | 1.4% | 1.6% |
| Pension Expense & Other P.R. Ben. | 1.8% | 2.0% | 4.3% | 3.6% | 3.7% | 3.1% | 4.0% | 4.0% | 2.2% | 3.2% |
| Depreciation | 2.0% | 2.4% | 2.5% | 2.9% | 2.3% | 1.8% | 2.0% | 2.1% | 2.6% | 2.3% |
| Amortization, Tooling | 2.0% | 2.3% | 2.4% | 1.9% | 1.6% | 1.9% | 2.3% | 1.7% | 1.8% | 2.0% |
| Provision for Plant Closing | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Amortization, Intangibles | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| SUBTOTAL | 18.8% | 21.4% | 24.9% | 23.2% | 21.0% | 19.0% | 21.1% | 20.5% | 20.0% | 20.8% |
| OPERATING MARGIN | 3.5% | 1.3% | -4.2% | 2.6% | 8.6% | 11.1% | 7.3% | 10.9% | 8.4% | 6.7% |
| OTHER REVENUES (EXPENSES) | -1.9% | -0.4% | 2.2% | 0.9% | 1.1% | 1.1% | 0.0% | 0.0% | 0.0% | 0.3% |
| INCOME BEF. INT. TAXES, & OTHER | 1.6% | 0.9% | -2.0% | 3.5% | 9.7% | 12.2% | 7.3% | 10.9% | 8.4% | 7.0% |
| INTEREST INCOME (EXPENSE) | 0.3% | -0.4% | -1.0% | -0.7% | -0.4% | -0.5% | -0.4% | -0.4% | -0.4% | -0.4% |
| INCOME BEF. TAXES, OTHER | 1.8% | 0.5% | -3.0% | 2.8% | 9.3% | 11.8% | 6.9% | 10.5% | 8.0% | 6.6% |
| PROVISION FOR TAXES (CREDITS) | 0.8% | 0.3% | -1.0% | 1.3% | 3.4% | 4.3% | 2.7% | 4.1% | 3.1% | 2.5% |
| INCOME AFTER INCOME TAXES | 1.0% | 0.3% | -2.0% | 1.5% | 5.9% | 7.5% | 4.3% | 6.4% | 4.9% | 4.1% |
| EARNINGS IN AFFILIATES-NET | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| EARNINGS BEFORE OTHER ITEMS | 1.0% | 0.3% | -2.0% | 1.5% | 5.9% | 7.5% | 4.3% | 6.4% | 4.9% | 4.1% |
| OTHER ITEMS | 0.1% | 0.0% | -1.0% | 0.7% | -12.0% | 0.0% | -0.2% | -0.3% | 0.0% | -1.4% |
| NET PROFIT MARGIN | 1.2% | 0.3% | -3.0% | 2.2% | -6.2% | 7.5% | 4.1% | 6.1% | 4.9% | 2.6% |

 PROFIT

 LOSS

TABLE A-3

CHRYSLER CORPORATION MARGINAL ANALYSIS OF OPERATING RESULTS, 1980-1 989

| CHRYSLER | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1980-1989 | % |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|----------|
| NET SALES \$ X 1 MILLION | \$9,225 | \$10,822 | \$10,045 | \$13,264 | \$19,573 | \$21,256 | \$22,586 | \$25,645 | \$30,889 | \$31,039 | \$194,344 | 100.0% |
| VARIABLE COSTS - MFG | \$8,352 | \$8,845 | \$7,811 | \$10,100 | \$14,220 | \$15,887 | \$16,383 | \$18,614 | \$23,802 | \$24,136 | \$148,150 | 76.2% |
| CONTRIBUTION MARGIN | \$873 | \$1,977 | \$2,234 | \$3,164 | \$5,353 | \$5,369 | \$6,203 | \$7,031 | \$7,087 | \$6,903 | \$46,194 | 23.8% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | | | |
| Maintenance & Repairs | \$298 | \$233 | \$229 | \$339 | \$475 | \$540 | \$674 | \$657 | \$591 | \$668 | \$4,704 | 2.4% |
| Research & Development | \$278 | \$250 | \$307 | \$365 | \$452 | \$609 | \$732 | \$773 | \$859 | \$958 | \$5,583 | 2.9% |
| Selling, General, & Admin. | \$561 | \$605 | \$670 | \$805 | \$988 | \$1,144 | \$1,377 | \$1,560 | \$1,734 | \$1,875 | \$11,319 | 5.8% |
| Taxes Other Than Income | \$213 | \$232 | \$233 | \$281 | \$382 | \$432 | \$455 | \$476 | \$543 | \$538 | \$3,785 | 1.9% |
| Pension Expense & Other P.R. Ben. | \$293 | \$288 | \$272 | \$255 | \$267 | \$220 | \$236 | \$467 | \$575 | \$544 | \$3,417 | 1.8% |
| Depreciation | \$261 | \$233 | \$196 | \$183 | \$272 | \$264 | \$236 | \$455 | \$577 | \$628 | \$3,305 | 1.7% |
| Amortization, Tooling | \$306 | \$218 | \$237 | \$274 | \$283 | \$213 | \$307 | \$412 | \$540 | \$620 | \$3,410 | 1.8% |
| Provision for Plant Closing | | | | | | | | | | | | |
| Amortization, Intangibles | | | | | | | | | | | | |
| SUBTOTAL | \$2,210 | \$2,059 | \$2,144 | \$2,502 | \$3,119 | \$3,422 | \$4,017 | \$4,800 | \$5,419 | \$5,831 | \$35,523 | 18.3% |
| OPERATING INCOME | (\$1,337) | (\$82) | \$90 | \$662 | \$2,234 | \$1,947 | \$2,186 | \$2,231 | \$1,668 | \$1,072 | \$10,671 | 5.5% |
| OTHER REVENUES (EXPENSES) | \$0 | \$0 | \$308 | \$124 | \$145 | \$298 | \$142 | \$0 | \$65 | (\$588) | \$494 | 0.3% |
| INCOME BEF. INT. TAXES, & OTHER | (\$1,337) | (\$82) | \$398 | \$786 | \$2,379 | \$2,245 | \$2,328 | \$2,231 | \$1,733 | \$484 | \$11,165 | 5.7% |
| INTEREST INCOME (EXPENSE) | (\$333) | (\$334) | (\$295) | (\$82) | \$51 | \$125 | (\$302) | (\$120) | (\$126) | \$81 | (\$1,335) | -0.7% |
| INCOME BEF. TAXES, OTHER | (\$1,670) | (\$416) | \$103 | \$704 | \$2,430 | \$2,370 | \$2,026 | \$2,111 | \$1,607 | \$565 | \$9,830 | 5.1% |
| PROVISION FOR TAXES (CREDITS) | \$40 | \$60 | (\$67) | \$402 | \$934 | \$735 | \$908 | \$859 | \$604 | \$242 | \$4,717 | 2.4% |
| INCOME AFTER INCOME TAXES | (\$1,710) | (\$476) | \$170 | \$302 | \$1,496 | \$1,635 | \$1,118 | \$1,252 | \$1,003 | \$323 | \$5,113 | 2.6% |
| EARNINGS IN AFFILIATES-NET | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 0.0% |
| EARNINGS BEFORE OTHER ITEMS | (\$1,710) | (\$476) | \$170 | \$302 | \$1,496 | \$1,635 | \$1,118 | \$1,252 | \$1,003 | \$323 | \$5,113 | 2.6% |
| OTHER ITEMS | | | | \$399 | \$884 | | \$271 | \$38 | \$47 | \$36 | \$1,675 | 0.9% |
| NET PROFIT | (\$1,710) | (\$476) | \$170 | \$701 | \$2,380 | \$1,635 | \$1,389 | \$1,290 | \$1,050 | \$359 | \$6,788 | 3.5% |

 PROFIT

 LOSS

TABLE A-4

CHRYSLER CORPORATION MARGINAL ANALYSIS, OPERATING RATIOS, 1980-1989

| CHRYSLER | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1980-1989 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|
| NET SALES | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| VARIABLE COSTS - MFG | 90.5% | 81.7% | 77.8% | 76.1% | 72.7% | 74.7% | 72.5% | 72.6% | 77.1% | 77.8% | 76.2% |
| CONTRIBUTION MARGIN | 9.5% | 18.3% | 22.2% | 23.9% | 27.3% | 25.3% | 27.5% | 27.4% | 22.9% | 22.2% | 23.8% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | | |
| Maintenance & Repairs | 3.2% | 2.2% | 2.3% | 2.6% | 2.4% | 2.5% | 3.0% | 2.6% | 1.9% | 2.2% | 2.4% |
| Research & Development | 3.0% | 2.3% | 3.1% | 2.8% | 2.3% | 2.9% | 3.2% | 3.0% | 2.8% | 3.1% | 2.9% |
| Selling, General, & Admin. | 6.1% | 5.6% | 6.7% | 6.1% | 5.0% | 5.4% | 6.1% | 6.1% | 5.6% | 6.0% | 5.8% |
| Taxes Other Than Income | 2.3% | 2.1% | 2.3% | 2.1% | 2.0% | 2.0% | 2.0% | 1.9% | 1.8% | 1.7% | 1.9% |
| Pension Expense & Other P.R. Ben. | 3.2% | 2.7% | 2.7% | 1.9% | 1.4% | 1.0% | 1.0% | 1.8% | 1.9% | 1.8% | 1.8% |
| Depreciation | 2.8% | 2.2% | 2.0% | 1.4% | 1.4% | 1.2% | 1.0% | 1.8% | 1.9% | 2.0% | 1.7% |
| Amortization, Tooling | 3.3% | 2.0% | 2.4% | 2.1% | 1.4% | 1.0% | 1.4% | 1.6% | 1.7% | 2.0% | 1.8% |
| Provision for Plant Closing | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Amortization, Intangibles | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| SUBTOTAL | 24.0% | 19.0% | 21.3% | 18.9% | 15.9% | 16.1% | 17.8% | 18.7% | 17.5% | 18.8% | 18.3% |
| OPERATING MARGIN | -14.5% | -0.8% | 0.9% | 5.0% | 11.4% | 9.2% | 9.7% | 8.7% | 5.4% | 3.5% | 5.5% |
| OTHER REVENUES (EXPENSES) | 0.0% | 0.0% | 3.1% | 0.9% | 0.7% | 1.4% | 0.6% | 0.0% | 0.2% | -1.9% | 0.3% |
| INCOME BEF. INT. TAXES, & OTHER | -14.5% | -0.8% | 4.0% | 5.9% | 12.2% | 10.6% | 10.3% | 8.7% | 5.6% | 1.6% | 5.7% |
| INTEREST INCOME (EXPENSE) | -3.6% | -3.1% | -2.9% | -0.6% | 0.3% | 0.6% | -1.3% | -0.5% | -0.4% | 0.3% | -0.7% |
| INCOME BEF. TAXES, OTHER | -18.1% | -3.8% | 1.0% | 5.3% | 12.4% | 11.1% | 9.0% | 8.2% | 5.2% | 1.8% | 5.1% |
| PROVISION FOR TAXES (CREDITS) | 0.4% | 0.6% | -0.7% | 3.0% | 4.8% | 3.5% | 4.0% | 3.3% | 2.0% | 0.8% | 2.4% |
| INCOME AFTER INCOME TAXES | -18.5% | -4.4% | 1.7% | 2.3% | 7.6% | 7.7% | 4.9% | 4.9% | 3.2% | 1.0% | 2.6% |
| EARNINGS IN AFFILIATES-NET | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| EARNINGS BEFORE OTHER ITEMS | -18.5% | -4.4% | 1.7% | 2.3% | 7.6% | 7.7% | 4.9% | 4.9% | 3.2% | 1.0% | 2.6% |
| OTHER ITEMS | | | | 3.0% | 4.5% | | 1.2% | 0.1% | 0.2% | 0.1% | 0.9% |
| NET PROFIT MARGIN | -18.5% | -4.4% | 1.7% | 5.3% | 12.2% | 7.7% | 6.1% | 5.0% | 3.4% | 1.2% | 3.5% |

PROFIT

Loss

TABLE A-5

CHRYSLER CORPORATION MARGINAL ANALYSIS OF OPERATING RESULTS, 1972-1979

| CHRYSLER | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1972-1979 | % |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|----------|
| NET SALES | \$7,749 | \$8,983 | \$8,389 | \$8,572 | \$12,240 | \$13,059 | \$13,618 | \$12,002 | \$84,612 | 100.0% |
| VARIABLE COSTS - MFG | \$6,181 | \$7,160 | \$7,220 | \$7,674 | \$9,962 | \$10,942 | \$11,736 | \$10,871 | \$71,746 | 84.8% |
| CONTRIBUTION MARGIN | \$1,568 | \$1,823 | \$1,169 | \$898 | \$2,278 | \$2,117 | \$1,882 | \$1,131 | \$12,866 | 15.2% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | |
| Maintenance & Repairs | \$251 | \$328 | \$277 | \$230 | \$351 | \$439 | \$426 | \$321 | \$2,623 | 3.1% |
| Research & Development | \$161 | \$211 | \$202 | \$161 | \$237 | \$286 | \$344 | \$358 | \$1,960 | 2.3% |
| Selling, General, & Admin. | \$248 | \$314 | \$260 | \$223 | \$428 | \$453 | \$572 | \$599 | \$3,097 | 3.7% |
| Taxes Other Than Income | \$156 | \$189 | \$187 | \$190 | \$249 | \$278 | \$308 | \$279 | \$1,836 | 2.2% |
| Pension Expense & Other P.R. 1 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 0.0% |
| Depreciation | \$129 | \$123 | \$131 | \$93 | \$108 | \$130 | \$154 | \$181 | \$1,049 | 1.2% |
| Amortization, Tooling | \$173 | \$168 | \$124 | \$149 | \$229 | \$190 | \$198 | \$220 | \$1,451 | 1.7% |
| Provision for Plant Closing | | | | | | | | | | |
| Amortization, Intangibles | | | | | | | | | | |
| SUBTOTAL | \$1,118 | \$1,333 | \$1,181 | \$1,046 | \$1,602 | \$1,776 | \$2,002 | \$1,958 | \$12,016 | 14.2% |
| OPERATING INCOME | \$450 | \$490 | (\$12) | (\$148) | \$676 | \$341 | (\$120) | (\$827) | \$850 | 1.0% |
| OTHER REVENUES (EXPENSES) | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 0.0% |
| INCOME BEF. INT. TAXES, & OTH | \$450 | \$490 | (\$12) | (\$148) | \$676 | \$341 | (\$120) | (\$827) | \$850 | 1.0% |
| INTEREST INCOME (EXPENSE) | (\$63) | (\$72) | (\$101) | (\$121) | (\$101) | (\$106) | (\$166) | (\$275) | (\$1,005) | -1.2% |
| INCOME BEF. TAXES, OTHER | \$387 | \$418 | (\$113) | (\$269) | \$575 | \$235 | (\$286) | (\$1,102) | (\$155) | -0.2% |
| PROVISION FOR TAXES (CREDIT) | \$167 | \$163 | (\$61) | (\$9) | \$152 | \$72 | (\$81) | (\$5) | \$398 | 0.5% |
| INCOME AFTER INCOME TAXES | \$220 | \$255 | (\$52) | (\$260) | \$423 | \$163 | (\$205) | (\$1,097) | (\$553) | -0.7% |
| EARNINGS IN AFFILIATES-NET | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 0.0% |
| EARNINGS BEFORE OTHER ITEM | \$220 | \$255 | (\$52) | (\$260) | \$423 | \$163 | (\$205) | (\$1,097) | (\$553) | -0.7% |
| OTHER ITEMS | | | | | | | | | | |
| NET PROFIT | \$220 | \$255 | (\$52) | (\$260) | \$423 | \$163 | (\$205) | (\$1,097) | (\$553) | -0.7% |

 PROFIT

 Loss

TABLE A-6

CHRYSLER CORPORATION MARGINAL ANALYSIS - OPERATING RATIOS, 1972-1979

| CHRYSLER | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1972-1979 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|
| NET SALES | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| VARIABLE COSTS - MFG | 79.8% | 79.7% | 86.1% | 89.5% | 81.4% | 83.8% | 86.2% | 90.6% | 84.8% |
| CONTRIBUTION MARGIN | 20.2% | 20.3% | 13.9% | 10.5% | 18.6% | 16.2% | 13.8% | 9.4% | 15.2% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | |
| Maintenance & Repairs | 3.2% | 3.7% | 3.3% | 2.7% | 2.9% | 3.4% | 3.1% | 2.7% | 3.1% |
| Research & Development | 2.1% | 2.3% | 2.4% | 1.9% | 1.9% | 2.2% | 2.5% | 3.0% | 2.3% |
| Selling, General, & Admin. | 3.2% | 3.5% | 3.1% | 2.6% | 3.5% | 3.5% | 4.2% | 5.0% | 3.7% |
| Taxes Other Than Income | 2.0% | 2.1% | 2.2% | 2.2% | 2.0% | 2.1% | 2.3% | 2.3% | 2.2% |
| Pension Expense & Other P.R. | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Depreciation | 1.7% | 1.4% | 1.6% | 1.1% | 0.9% | 1.0% | 1.1% | 1.5% | 1.2% |
| Amortization, Tooling | 2.2% | 1.9% | 1.5% | 1.7% | 1.9% | 1.5% | 1.5% | 1.8% | 1.7% |
| Provision for Plant Closing | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Amortization, Intangibles | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| SUBTOTAL | 14.4% | 14.8% | 14.1% | 12.2% | 13.1% | 13.6% | 14.7% | 16.3% | 14.2% |
| OPERATING MARGIN | 5.8% | 5.5% | -0.1% | -1.7% | 5.5% | 2.6% | -0.9% | -6.9% | 1.0% |
| OTHER REVENUES (EXPENSES) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| INCOME BEF. INT. TAXES, & OTH | 5.8% | 5.5% | -0.1% | -1.7% | 5.5% | 2.6% | -0.9% | -6.9% | 1.0% |
| INTEREST INCOME (EXPENSE) | -0.8% | -0.8% | -1.2% | -1.4% | -0.8% | -0.8% | -1.2% | -2.3% | -1.2% |
| INCOME BEF. TAXES, OTHER | 5.0% | 4.7% | -1.3% | -3.1% | 4.7% | 1.8% | -2.1% | -9.2% | -0.2% |
| PROVISION FOR TAXES (CREDI | 2.2% | 1.8% | -0.7% | -0.1% | 1.2% | 0.6% | -0.6% | -0.0% | 0.5% |
| INCOME AFTER INCOME TAXES | 2.8% | 2.8% | -0.6% | -3.0% | 3.5% | 1.2% | -1.5% | -9.1% | -0.7% |
| EARNINGS IN AFFILIATES-NET | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| EARNINGS BEFORE OTHER ITEM | 2.8% | 2.8% | -0.6% | -3.0% | 3.5% | 1.2% | -1.5% | -9.1% | -0.7% |
| OTHER ITEMS | | | | | | | | | |
| NET PROFIT MARGIN | 2.8% | 2.8% | -0.6% | -3.0% | 3.5% | 1.2% | -1.5% | -9.1% | -0.7% |

 PROFIT

 LOSS

TABLE A-7

FORD MOTOR COMPANY MARGINAL ANALYSIS OF OPERATING RESULTS, 1989-1 997

| FORD | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1989-1997 | % |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|----------|
| NET SALES \$ X 1 MILLION | \$82,879 | \$81,844 | \$72,050 | \$84,407 | \$91,568 | \$107,137 | \$110,496 | \$118,023 | \$122,935 | \$871,339 | 100.0% |
| VARIABLE COSTS - MFG | \$64,573 | \$66,681 | \$60,306 | \$66,481 | \$69,246 | \$78,895 | \$83,885 | \$90,081 | \$89,913 | \$670,061 | 76.9% |
| CONTRIBUTION MARGIN | \$18,306 | \$15,163 | \$11,744 | \$17,926 | \$22,322 | \$28,242 | \$26,611 | \$27,942 | \$33,022 | \$201,278 | 23.1% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | | |
| Maintenance & Repairs | \$1,914 | \$1,764 | \$1,642 | \$1,872 | \$1,934 | \$2,377 | \$2,762 | \$2,951 | \$3,073 | \$20,289 | 2.3% |
| Research & Development | \$3,167 | \$3,558 | \$3,728 | \$4,332 | \$5,021 | \$5,214 | \$5,414 | \$5,783 | \$6,024 | \$42,241 | 4.8% |
| Selling, General, & Admin. | \$3,517 | \$3,816 | \$3,818 | \$4,434 | \$4,968 | \$5,131 | \$5,304 | \$5,665 | \$5,901 | \$42,553 | 4.9% |
| Taxes Other Than Income | \$1,243 | \$1,228 | \$1,225 | \$2,279 | \$2,472 | \$2,892 | \$2,983 | \$3,187 | \$3,319 | \$20,828 | 2.4% |
| Pension Expense & Other P.R. Ben. | \$648 | \$547 | \$823 | \$2,118 | \$2,091 | \$2,376 | \$1,647 | \$1,925 | \$1,821 | \$13,995 | 1.6% |
| Depreciation | \$2,057 | \$2,241 | \$2,456 | \$2,569 | \$2,392 | \$2,297 | \$2,454 | \$2,644 | \$2,759 | \$21,868 | 2.5% |
| Amortization, Tooling | \$1,509 | \$1,695 | \$1,822 | \$2,097 | \$2,012 | \$2,129 | \$2,765 | \$3,272 | \$3,179 | \$20,480 | 2.4% |
| Provision for Plant Closing | | | | | | | | | | | |
| Amortization Intangibles | | | | | | | | | | | |
| SUBTOTAL | \$14,055 | \$14,847 | \$15,513 | \$19,701 | \$20,890 | \$22,416 | \$23,330 | \$25,426 | \$26,076 | \$182,254 | 20.9% |
| OPERATING INCOME | \$4,252 | \$316 | (\$3,769) | (\$1,775) | \$1,432 | \$5,826 | \$3,281 | \$2,516 | \$6,946 | \$19,024 | 2.2% |
| OTHER REVENUES (EXPENSES) | (\$123) | (\$101) | (\$57) | \$30 | \$103 | \$227 | (\$293) | (\$91) | (\$192) | (\$497) | -0.1% |
| INCOME BEF. INT. TAXES, & OTHER | \$4,128 | \$214 | (\$3,826) | (\$1,745) | \$1,535 | \$6,053 | \$2,988 | \$2,425 | \$6,754 | \$18,527 | 2.1% |
| INTEREST INCOME (EXPENSE) | \$466 | \$60 | (\$226) | (\$207) | (\$244) | (\$56) | \$178 | \$146 | \$328 | \$445 | 0.1% |
| INCOME BEF. TAXES, OTHER | \$4,594 | \$275 | (\$4,052) | (\$1,952) | \$1,291 | \$5,997 | \$3,166 | \$2,571 | \$7,082 | \$18,972 | 2.2% |
| PROVISION FOR TAXES (CREDITS) | \$1,419 | \$176 | (\$866) | (\$418) | \$351 | \$2,173 | \$1,110 | \$916 | \$2,368 | \$7,229 | 0.8% |
| INCOME AFTER INCOME TAXES | \$3,175 | \$99 | (\$3,186) | (\$1,534) | \$940 | \$3,824 | \$2,056 | \$1,655 | \$4,714 | \$11,743 | 1.3% |
| EARNINGS IN AFFILIATES-NET | | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 0.0% |
| EARNINGS BEFORE OTHER ITEMS | \$3,175 | \$99 | (\$3,186) | (\$1,534) | \$940 | \$3,824 | \$2,056 | \$1,655 | \$4,714 | \$11,743 | 1.3% |
| OTHER ITEMS | | | | (\$7,094) | | | | | | | |
| NET PROFIT | \$3,175 | \$99 | (\$3,186) | (\$8,628) | \$940 | \$3,824 | \$2,056 | \$1,655 | \$4,714 | \$4,649 | 0.5% |

 PROFIT

 LOSS

TABLE A-8

FORD MOTOR COMPANY MARGINAL ANALYSIS, OPERATING RATIOS, 1989-1997

| FORD | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1989-1997 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|
| NET SALES | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| VARIABLE COSTS - MFG | 77.9% | 81.5% | 83.7% | 78.8% | 75.6% | 73.6% | 75.9% | 76.3% | 73.1% | 76.9% |
| CONTRIBUTION MARGIN | 22.1% | 18.5% | 16.3% | 21.2% | 24.4% | 26.4% | 24.1% | 23.7% | 26.9% | 23.1% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | |
| Maintenance & Repairs | 2.3% | 2.2% | 2.3% | 2.2% | 2.1% | 2.2% | 2.5% | 2.5% | 2.5% | 2.3% |
| Research & Development | 3.8% | 4.3% | 5.2% | 5.1% | 5.5% | 4.9% | 4.9% | 4.9% | 4.9% | 4.8% |
| Selling, General, & Admin. | 4.2% | 4.7% | 5.3% | 5.3% | 5.4% | 4.8% | 4.8% | 4.8% | 4.8% | 4.9% |
| Taxes Other Than Income | 1.5% | 1.5% | 1.7% | 2.7% | 2.7% | 2.7% | 2.7% | 2.7% | 2.7% | 2.4% |
| Pension Expense & Other P.R. Ben. | 0.8% | 0.7% | 1.1% | 2.5% | 2.3% | 2.2% | 1.5% | 1.6% | 1.5% | 1.6% |
| Depreciation | 2.5% | 2.7% | 3.4% | 3.0% | 2.6% | 2.1% | 2.2% | 2.2% | 2.2% | 2.5% |
| Amortization, Tooling | 1.8% | 2.1% | 2.5% | 2.5% | 2.2% | 2.0% | 2.5% | 2.8% | 2.6% | 2.4% |
| Provision for Plant Closing | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Amortization, Intangibles | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| SUBTOTAL | 17.0% | 18.1% | 21.5% | 23.3% | 22.8% | 20.9% | 21.1% | 21.5% | 21.2% | 20.9% |
| OPERATING MARGIN | 5.1% | 0.4% | -5.2% | -2.1% | 1.6% | 5.4% | 3.0% | 2.1% | 5.7% | 2.2% |
| OTHER REVENUES (EXPENSES) | -0.1% | -0.1% | -0.1% | 0.0% | 0.1% | 0.2% | -0.3% | -0.1% | -0.2% | -0.1% |
| INCOME BEF. INT. TAXES, & OTHER | 5.0% | 0.3% | -5.3% | -2.1% | 1.7% | 5.6% | 2.7% | 2.1% | 5.5% | 2.1% |
| INTEREST INCOME (EXPENSE) | 0.6% | 0.1% | -0.3% | -0.2% | -0.3% | -0.1% | 0.2% | 0.1% | 0.3% | 0.1% |
| INCOME BEF. TAXES, OTHER | 5.5% | 0.3% | -5.6% | -2.3% | 1.4% | 5.6% | 2.9% | 2.2% | 5.8% | 2.2% |
| PROVISION FOR TAXES (CREDITS) | 1.7% | 0.2% | -1.2% | -0.5% | 0.4% | 2.0% | 1.0% | 0.8% | 1.9% | 0.8% |
| INCOME AFTER INCOME TAXES | 3.8% | 0.1% | -4.4% | -1.8% | 1.0% | 3.6% | 1.9% | 1.4% | 3.8% | 1.3% |
| EARNINGS IN AFFILIATES-NET | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| EARNINGS BEFORE OTHER ITEMS | 3.8% | 0.1% | -4.4% | -1.8% | 1.0% | 3.6% | 1.9% | 1.4% | 3.8% | 1.3% |
| OTHER ITEMS | | | | | | | | | | |
| NET PROFIT MARGIN | 3.8% | 0.1% | -4.4% | -10.2% | 1.0% | 3.6% | 1.9% | 1.4% | 3.8% | 0.5% |

 PROFIT

 LOSS

TABLE A-9

FORD MOTOR COMPANY MARGINAL ANALYSIS OF OPERATING RESULTS, 1980-1989

| FORD | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1980-1989 | % |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|----------|
| NET SALES \$ X 1 MILLION | \$37,086 | \$38,247 | \$37,067 | \$44,455 | \$52,366 | \$52,774 | \$62,868 | \$71,797 | \$82,193 | \$82,879 | \$561,733 | 100.0% |
| VARIABLE COSTS - MFG | \$30,712 | \$30,643 | \$28,647 | \$33,200 | \$38,968 | \$39,827 | \$47,322 | \$53,382 | \$62,219 | \$64,573 | \$429,492 | 76.5% |
| CONTRIBUTION MARGIN | \$6,373 | \$7,604 | \$8,420 | \$11,255 | \$13,399 | \$12,948 | \$15,546 | \$18,415 | \$19,975 | \$18,306 | \$132,241 | 23.5% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | | | |
| Maintenance & Repairs | \$1,081 | \$1,056 | \$1,051 | \$1,175 | \$1,290 | \$1,324 | \$1,362 | \$1,600 | \$1,852 | \$1,914 | \$13,703 | 2.4% |
| Research & Development | \$1,675 | \$1,718 | \$1,764 | \$1,751 | \$1,915 | \$2,018 | \$2,305 | \$2,514 | \$2,930 | \$3,167 | \$21,757 | 3.9% |
| Selling, General, & Admin. | \$1,931 | \$2,042 | \$2,300 | \$2,400 | \$2,544 | \$2,525 | \$3,109 | \$3,289 | \$3,452 | \$3,517 | \$27,110 | 4.8% |
| Taxes Other Than Income | \$1,233 | \$1,209 | \$1,001 | \$1,191 | \$1,253 | \$1,267 | \$943 | \$1,077 | \$1,233 | \$1,243 | \$11,650 | 2.1% |
| Pension Expense & Other P.R. Ben. | \$763 | \$655 | \$631 | \$643 | \$667 | \$691 | \$712 | \$498 | \$646 | \$648 | \$6,555 | 1.2% |
| Depreciation | \$1,057 | \$1,169 | \$1,201 | \$1,263 | \$1,329 | \$1,444 | \$1,680 | \$1,828 | \$1,915 | \$2,057 | \$14,942 | 2.7% |
| Amortization, Tooling | \$912 | \$1,011 | \$956 | \$1,029 | \$979 | \$948 | \$1,293 | \$1,353 | \$1,335 | \$1,509 | \$11,325 | 2.0% |
| Provision for Plant Closing | | | | | | | | | | | | |
| Amortization, Intangibles | | | | | | | | | | | | |
| SUBTOTAL | \$8,652 | \$8,860 | \$8,904 | \$9,451 | \$9,976 | \$10,218 | \$11,404 | \$12,159 | \$13,363 | \$14,055 | \$107,041 | 19.1% |
| OPERATING INCOME | (\$2,278) | (\$1,256) | (\$484) | \$1,804 | \$3,422 | \$2,730 | \$4,142 | \$6,256 | \$6,612 | \$4,252 | \$25,199 | 4.5% |
| OTHER REVENUES (EXPENSES) | \$187 | \$168 | \$259 | \$361 | \$479 | \$599 | (\$24) | (\$127) | \$169 | (\$123) | \$1,946 | 0.3% |
| INCOME BEF. INT. TAXES, & OTHER | (\$2,091) | (\$1,088) | (\$225) | \$2,164 | \$3,901 | \$3,329 | \$4,118 | \$6,129 | \$6,781 | \$4,128 | \$27,146 | 4.8% |
| INTEREST INCOME (EXPENSE) | \$111 | (\$50) | (\$183) | \$2 | \$382 | \$303 | \$182 | \$371 | \$531 | \$466 | \$2,113 | 0.4% |
| INCOME BEF. TAXES, OTHER | (\$1,981) | (\$1,138) | (\$408) | \$2,166 | \$4,283 | \$3,631 | \$4,299 | \$6,499 | \$7,312 | \$4,594 | \$29,258 | 5.2% |
| PROVISION FOR TAXES (CREDITS) | (\$435) | (\$68) | \$257 | \$270 | \$1,329 | \$1,103 | \$1,787 | \$2,732 | \$2,703 | \$1,419 | \$11,097 | 2.0% |
| INCOME AFTER INCOME TAXES | (\$1,545) | (\$1,070) | (\$665) | \$1,896 | \$2,954 | \$2,528 | \$2,512 | \$3,767 | \$4,609 | \$3,175 | \$18,161 | 3.2% |
| EARNINGS IN AFFILIATES-NET | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 0.0% |
| EARNINGS BEFORE OTHER ITEMS | (\$1,545) | (\$1,070) | (\$665) | \$1,896 | \$2,954 | \$2,528 | \$2,512 | \$3,767 | \$4,609 | \$3,175 | \$18,161 | 3.2% |
| OTHER ITEMS | \$2 | \$10 | \$7 | (\$29) | (\$47) | (\$13) | | | | | (\$71) | -0.0% |
| NET PROFIT | (\$1,543) | (\$1,060) | (\$658) | \$1,867 | \$2,907 | \$2,515 | \$2,512 | \$3,767 | \$4,609 | \$3,175 | \$18,091 | 3.2% |

PROFIT

Loss

TABLE A-10

FORD MOTOR COMPANY MARGINAL ANALYSIS, OPERATING RATIOS, 1980-1989

| FORD | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1980-1989 |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|
| NET SALES | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| VARIABLE COSTS - MFG | 82.8% | 80.1% | 77.3% | 74.7% | 74.4% | 75.5% | 75.3% | 74.4% | 75.7% | 77.9% | 76.5% |
| CONTRIBUTION MARGIN | 17.2% | 19.9% | 22.7% | 25.3% | 25.6% | 24.5% | 24.7% | 25.6% | 24.3% | 22.1% | 23.5% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | | |
| Maintenance & Repairs | 2.9% | 2.8% | 2.8% | 2.6% | 2.5% | 2.5% | 2.2% | 2.2% | 2.3% | 2.3% | 2.4% |
| Research & Development | 4.5% | 4.5% | 4.8% | 3.9% | 3.7% | 3.8% | 3.7% | 3.5% | 3.6% | 3.8% | 3.9% |
| Selling, General, & Admin. | 5.2% | 5.3% | 6.2% | 5.4% | 4.9% | 4.8% | 4.9% | 4.6% | 4.2% | 4.2% | 4.8% |
| Taxes Other Than Income | 3.3% | 3.2% | 2.7% | 2.7% | 2.4% | 2.4% | 1.5% | 1.5% | 1.5% | 1.5% | 2.1% |
| Pension Expense & Other P.R. Ben. | 2.1% | 1.7% | 1.7% | 1.4% | 1.3% | 1.3% | 1.1% | 0.7% | 0.8% | 0.8% | 1.2% |
| Depreciation | 2.9% | 3.1% | 3.2% | 2.8% | 2.5% | 2.7% | 2.7% | 2.5% | 2.3% | 2.5% | 2.7% |
| Amortization, Tooling | 2.5% | 2.6% | 2.6% | 2.3% | 1.9% | 1.8% | 2.1% | 1.9% | 1.6% | 1.8% | 2.0% |
| Provision for Plant Closing | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Amortization, Intangibles | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| SUBTOTAL | 23.3% | 23.2% | 24.0% | 21.3% | 19.1% | 19.4% | 18.1% | 16.9% | 16.3% | 17.0% | 19.1% |
| OPERATING MARGIN | -6.1% | -3.3% | -1.3% | 4.1% | 6.5% | 5.2% | 6.6% | 8.7% | 8.0% | 5.1% | 4.5% |
| OTHER REVENUES (EXPENSES) | 0.5% | 0.4% | 0.7% | 0.8% | 0.9% | 1.1% | -0.0% | -0.2% | 0.2% | -0.1% | 0.3% |
| INCOME BEF. INT. TAXES, & OTHER | -5.6% | -2.8% | -0.6% | 4.9% | 7.5% | 6.3% | 6.5% | 8.5% | 8.2% | 5.0% | 4.8% |
| INTEREST INCOME (EXPENSE) | 0.3% | -0.1% | -0.5% | 0.0% | 0.7% | 0.6% | 0.3% | 0.5% | 0.6% | 0.6% | 0.4% |
| INCOME BEF. TAXES, OTHER | -5.3% | -3.0% | -1.1% | 4.9% | 8.2% | 6.9% | 6.8% | 9.1% | 8.9% | 5.5% | 5.2% |
| PROVISION FOR TAXES (CREDITS) | -1.2% | -0.2% | 0.7% | 0.6% | 2.5% | 2.1% | 2.8% | 3.8% | 3.3% | 1.7% | 2.0% |
| INCOME AFTER INCOME TAXES | -4.2% | -2.8% | -1.8% | 4.3% | 5.6% | 4.8% | 4.0% | 5.2% | 5.6% | 3.8% | 3.2% |
| EARNINGS IN AFFILIATES-NET | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| EARNINGS BEFORE OTHER ITEMS | -4.2% | -2.8% | -1.8% | 4.3% | 5.6% | 4.8% | 4.0% | 5.2% | 5.6% | 3.8% | 3.2% |
| OTHER ITEMS | | | | | | | | | | | |
| NET PROFIT MARGIN | -4.2% | -2.8% | -1.8% | 4.2% | 5.6% | 4.8% | 4.0% | 5.2% | 5.6% | 3.8% | 3.2% |

 PROFIT

 Loss

TABLE A-11

FORD MOTOR COMPANY MARGINAL ANALYSIS OF OPERATING RESULTS, 1972-1979

| FORD | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1972-1979 | % |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|----------|
| NET SALES \$ X 1 MILLION | \$20,194 | \$23,015 | \$23,621 | \$24,009 | \$28,837 | \$37,842 | \$42,784 | \$43,514 | \$243,815 | 100.0% |
| VARIABLE COSTS - MFG | \$14,656 | \$17,056 | \$18,507 | \$19,054 | \$21,996 | \$28,761 | \$33,048 | \$33,985 | \$187,064 | 76.7% |
| CONTRIBUTION MARGIN | \$5,538 | \$5,960 | \$5,113 | \$4,955 | \$6,840 | \$9,080 | \$9,736 | \$9,529 | \$56,751 | 23.3% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | |
| Maintenance & Repairs | \$616 | \$702 | \$735 | \$664 | \$829 | \$1,200 | \$1,316 | \$1,224 | \$7,286 | 3.0% |
| Research & Development | \$621 | \$826 | \$825 | \$748 | \$925 | \$1,170 | \$1,464 | \$1,720 | \$8,298 | 3.4% |
| Selling, General, & Admin. | \$1,007 | \$1,047 | \$1,032 | \$1,037 | \$1,167 | \$1,286 | \$1,491 | \$1,702 | \$9,768 | 4.0% |
| Taxes Other Than Income | \$452 | \$546 | \$601 | \$646 | \$806 | \$938 | \$1,090 | \$1,300 | \$6,379 | 2.6% |
| Pension Expense & Other P.R. Ben. | \$312 | \$336 | \$385 | \$427 | \$506 | \$624 | \$703 | \$811 | \$4,104 | 1.7% |
| Depreciation | \$455 | \$485 | \$531 | \$584 | \$590 | \$629 | \$736 | \$896 | \$4,904 | 2.0% |
| Amortization, Tooling | \$458 | \$463 | \$393 | \$435 | \$431 | \$488 | \$578 | \$709 | \$3,954 | 1.6% |
| Provision for Plant Closing | | | | | | | | | | |
| Amortization, Intangibles | | | | | | | | | | |
| SUBTOTAL | \$3,921 | \$4,406 | \$4,502 | \$4,540 | \$5,253 | \$6,335 | \$7,377 | \$8,361 | \$44,694 | 18.3% |
| OPERATING INCOME | \$1,618 | \$1,554 | \$612 | \$415 | \$1,587 | \$2,746 | \$2,359 | \$1,168 | \$12,057 | 4.9% |
| OTHER REVENUES (EXPENSES) | \$61 | \$49 | \$59 | \$107 | \$136 | \$150 | \$159 | \$2 | \$722 | 0.3% |
| INCOME BEF. INT. TAXES, & OTHER | \$1,679 | \$1,602 | \$670 | \$522 | \$1,723 | \$2,896 | \$2,518 | \$1,170 | \$12,780 | 5.2% |
| INTEREST INCOME (EXPENSE) | \$0 | \$15 | (\$110) | (\$145) | \$16 | \$106 | \$261 | \$1 | \$144 | 0.1% |
| INCOME BEF. TAXES, OTHER | \$1,679 | \$1,618 | \$560 | \$377 | \$1,739 | \$3,002 | \$2,779 | \$1,170 | \$12,924 | 5.3% |
| PROVISION FOR TAXES (CREDITS) | \$773 | \$702 | \$202 | \$152 | \$731 | \$1,326 | \$1,175 | \$1 | \$5,061 | 2.1% |
| INCOME AFTER INCOME TAXES | \$906 | \$915 | \$359 | \$225 | \$1,009 | \$1,676 | \$1,604 | \$1,169 | \$7,863 | 3.2% |
| EARNINGS IN AFFILIATES-NET | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 0.0% |
| EARNINGS BEFORE OTHER ITEMS | \$906 | \$915 | \$359 | \$225 | \$1,009 | \$1,676 | \$1,604 | \$1,169 | \$7,863 | 3.2% |
| OTHER ITEMS | (\$36) | (\$9) | (\$32) | \$98 | (\$26) | (\$4) | (\$15) | | | |
| NET PROFIT | \$870 | \$907 | \$327 | \$323 | \$983 | \$1,673 | \$1,589 | \$1,169 | \$7,840 | 3.2% |

 PROFIT

 LOSS

TABLE A-12

FORD MOTOR COMPANY MARGINAL ANALYSIS, OPERATING RATIOS, 1972-1979

| FORD | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1972-1979 |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|
| NET SALES | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| VARIABLE COSTS - MFG | 72.6% | 74.1% | 78.4% | 79.4% | 76.3% | 76.0% | 77.2% | 78.1% | 76.7% |
| CONTRIBUTION MARGIN | 27.4% | 25.9% | 21.6% | 20.6% | 23.7% | 24.0% | 22.8% | 21.9% | 23.3% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | |
| Maintenance & Repairs | 3.0% | 3.1% | 3.1% | 2.8% | 2.9% | 3.2% | 3.1% | 2.8% | 3.0% |
| Research & Development | 3.1% | 3.6% | 3.5% | 3.1% | 3.2% | 3.1% | 3.4% | 4.0% | 3.4% |
| Selling, General, & Admin. | 5.0% | 4.6% | 4.4% | 4.3% | 4.0% | 3.4% | 3.5% | 3.9% | 4.0% |
| Taxes Other Than Income | 2.2% | 2.4% | 2.5% | 2.7% | 2.8% | 2.5% | 2.5% | 3.0% | 2.6% |
| Pension Expense & Other P.R. Bene | 1.5% | 1.5% | 1.6% | 1.8% | 1.8% | 1.7% | 1.6% | 1.9% | 1.7% |
| Depreciation | 2.3% | 2.1% | 2.2% | 2.4% | 2.0% | 1.7% | 1.7% | 2.1% | 2.0% |
| Amortization, Tooling | 2.3% | 2.0% | 1.7% | 1.8% | 1.5% | 1.3% | 1.4% | 1.6% | 1.6% |
| Provision for Plant Closing | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Amortization, Intangibles | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| SUBTOTAL | 19.4% | 19.1% | 19.1% | 18.9% | 18.2% | 16.7% | 17.2% | 19.2% | 18.3% |
| OPERATING MARGIN | 8.0% | 6.8% | 2.6% | 1.7% | 5.5% | 7.3% | 5.5% | 2.7% | 4.9% |
| OTHER REVENUES (EXPENSES) | 0.3% | 0.2% | 0.2% | 0.4% | 0.5% | 0.4% | 0.4% | 0.0% | 0.3% |
| INCOME BEF. INT. TAXES, & OTHER | 8.3% | 7.0% | 2.8% | 2.2% | 6.0% | 7.7% | 5.9% | 2.7% | 5.2% |
| INTEREST INCOME (EXPENSE) | 0.0% | 0.1% | -0.5% | -0.6% | 0.1% | 0.3% | 0.6% | 0.0% | 0.1% |
| INCOME BEF. TAXES, OTHER | 8.3% | 7.0% | 2.4% | 1.6% | 6.0% | 7.9% | 6.5% | 2.7% | 5.3% |
| PROVISION FOR TAXES (CREDITS) | 3.8% | 3.1% | 0.9% | 0.6% | 2.5% | 3.5% | 2.7% | 0.0% | 2.1% |
| INCOME AFTER INCOME TAXES | 4.5% | 4.0% | 1.5% | 0.9% | 3.5% | 4.4% | 3.7% | 2.7% | 3.2% |
| EARNINGS IN AFFILIATES-NET | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| EARNINGS BEFORE OTHER ITEMS | 4.5% | 4.0% | 1.5% | 0.9% | 3.5% | 4.4% | 3.7% | 2.7% | 3.2% |
| OTHER ITEMS | | | | | | | | | |
| NET PROFIT MARGIN | 4.3% | 3.9% | 1.4% | 1.3% | 3.4% | 4.4% | 3.7% | 2.7% | 3.2% |

 PROFIT

 LOSS

TABLE A-13

GENERAL MOTORS CORPORATION MARGINAL ANALYSIS OF OPERATING RESULTS, 1989-1997

| GENERAL MOTORS | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1989-1997 | % |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|----------|
| NET SALES \$ X 1 MILLION | \$112,533 | \$110,797 | \$109,157 | \$118,572 | \$125,253 | \$141,576 | \$143,754 | \$145,427 | \$153,781 | \$1,160,850 | 100.0% |
| VARIABLE COSTS - MFG | \$79,412 | \$81,082 | \$81,176 | \$88,131 | \$88,043 | \$96,715 | \$98,784 | \$101,759 | \$108,453 | \$823,555 | 70.9% |
| CONTRIBUTION MARGIN | \$33,122 | \$29,715 | \$27,981 | \$30,441 | \$37,210 | \$44,861 | \$44,970 | \$43,668 | \$45,328 | \$337,295 | 29.1% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | | |
| Maintenance & Repairs | \$5,858 | \$5,592 | \$5,699 | \$5,600 | \$5,731 | \$5,663 | \$6,469 | \$6,544 | \$6,920 | \$54,077 | 4.7% |
| Research & Development | \$5,248 | \$5,342 | \$5,887 | \$5,917 | \$6,030 | \$7,036 | \$8,200 | \$8,300 | \$8,200 | \$60,159 | 5.2% |
| Selling, General, & Admin. | \$7,240 | \$8,667 | \$9,148 | \$9,634 | \$9,766 | \$10,575 | \$10,195 | \$11,827 | \$13,254 | \$90,305 | 7.8% |
| Taxes Other Than Income | \$3,586 | \$3,530 | \$3,408 | \$3,794 | \$4,008 | \$4,200 | \$4,313 | \$4,363 | \$4,613 | \$35,816 | 3.1% |
| Pension Expense & Other P.R. | \$811 | \$820 | \$1,520 | \$1,982 | \$2,685 | \$3,677 | \$3,546 | \$2,003 | \$1,855 | \$18,899 | 1.6% |
| Depreciation | \$3,646 | \$3,681 | \$3,740 | \$3,670 | \$3,825 | \$3,868 | \$3,575 | \$4,559 | \$6,129 | \$36,693 | 3.2% |
| Amortization, Tooling | \$1,442 | \$1,806 | \$1,820 | \$2,504 | \$2,535 | \$2,901 | \$3,212 | \$2,856 | \$5,674 | \$24,749 | 2.1% |
| Provision for Plant Closing | | \$3,314 | \$2,821 | \$1,237 | \$950 | | | | | \$8,322 | 0.7% |
| Amortization, Intangibles | \$506 | \$373 | \$320 | \$189 | \$189 | \$181 | | | | \$1,758 | 0.2% |
| SUBTOTAL | \$28,335 | \$33,125 | \$34,364 | \$34,526 | \$35,719 | \$38,101 | \$39,510 | \$40,452 | \$46,646 | \$330,778 | 28.5% |
| OPERATING INCOME | \$4,786 | (\$3,410) | (\$6,383) | (\$4,085) | \$1,491 | \$6,761 | \$5,460 | \$3,216 | (\$1,318) | \$6,517 | 0.6% |
| OTHER REVENUES (EXPENSES) | \$2,331 | \$1,814 | \$1,942 | \$1,046 | \$1,195 | \$1,252 | \$1,150 | \$2,056 | \$7,836 | \$20,623 | 1.8% |
| INCOME BEF. INT. TAXES, OTHER | \$7,117 | (\$1,596) | (\$4,441) | (\$3,039) | \$2,686 | \$8,013 | \$6,610 | \$5,272 | \$6,518 | \$27,140 | 2.3% |
| INTEREST INCOME (EXPENSE) | (\$2,228) | (\$2,049) | (\$2,375) | (\$1,887) | (\$1,511) | (\$1,305) | (\$344) | (\$859) | (\$971) | (\$13,529) | -1.2% |
| INCOME BEF. TAXES, OTHER | \$4,889 | (\$3,645) | (\$6,816) | (\$4,926) | \$1,175 | \$6,708 | \$6,266 | \$4,413 | \$5,547 | \$13,611 | 1.2% |
| PROVISION FOR TAXES (CREDITS) | \$1,733 | (\$890) | (\$1,510) | (\$1,595) | (\$482) | \$2,182 | \$1,563 | \$885 | \$155 | \$2,041 | 0.2% |
| INCOME AFTER INCOME TAXES | \$3,156 | (\$2,755) | (\$5,306) | (\$3,331) | \$1,657 | \$4,526 | \$4,703 | \$3,528 | \$5,392 | \$11,570 | 1.0% |
| EARNINGS IN AFFILIATES-NET | \$1,069 | \$769 | \$646 | \$428 | \$809 | \$1,125 | \$1,330 | \$1,425 | \$1,306 | \$8,906 | 0.8% |
| EARNINGS BEFORE OTHER ITEMS | \$4,224 | (\$1,986) | (\$4,661) | (\$2,903) | \$2,466 | \$5,651 | \$6,033 | \$4,953 | \$6,698 | \$20,476 | 1.8% |
| OTHER ITEMS | | | | (\$20,595) | | (\$751) | \$848 | \$10 | | (\$20,488) | -1.8% |
| NET PROFIT | \$4,224 | (\$1,986) | (\$4,661) | (\$23,498) | \$2,466 | \$4,901 | \$6,881 | \$4,963 | \$6,698 | (\$12) | -0.0% |

PROFIT**LOSS**

TABLE A-14

GENERAL MOTORS CORPORATION MARGINAL ANALYSIS, OPERATING RATIOS, 1989-1997

| GENERAL MOTORS | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1989-1997 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|
| NET SALES | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| VARIABLE COSTS - MFG | 70.6% | 73.2% | 74.4% | 74.3% | 70.3% | 68.3% | 68.7% | 70.0% | 70.5% | 70.9% |
| CONTRIBUTION MARGIN | 29.4% | 26.8% | 25.6% | 25.7% | 29.7% | 31.7% | 31.3% | 30.0% | 29.5% | 29.1% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | |
| Maintenance & Repairs | 5.2% | 5.0% | 5.2% | 4.7% | 4.6% | 4.0% | 4.5% | 4.5% | 4.5% | 4.7% |
| Research & Development | 4.7% | 4.8% | 5.4% | 5.0% | 4.8% | 5.0% | 5.7% | 5.7% | 5.3% | 5.2% |
| Selling, General, & Admin. | 6.4% | 7.8% | 8.4% | 8.1% | 7.8% | 7.5% | 7.1% | 8.1% | 8.6% | 7.8% |
| Taxes Other Than Income | 3.2% | 3.2% | 3.1% | 3.2% | 3.2% | 3.0% | 3.0% | 3.0% | 3.0% | 3.1% |
| Pension Expense & Other P.R. | 0.7% | 0.7% | 1.4% | 1.7% | 2.1% | 2.6% | 2.5% | 1.4% | 1.2% | 1.6% |
| Depreciation | 3.2% | 3.3% | 3.4% | 3.1% | 3.1% | 2.7% | 2.5% | 3.1% | 4.0% | 3.2% |
| Amortization, Tooling | 1.3% | 1.6% | 1.7% | 2.1% | 2.0% | 2.0% | 2.2% | 2.0% | 3.7% | 2.1% |
| Provision for Plant Closing | 0.0% | 3.0% | 2.6% | 1.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% |
| Amortization, Intangibles | 0.4% | 0.3% | 0.3% | 0.2% | 0.2% | 0.1% | 0.0% | 0.0% | 0.0% | 0.2% |
| SUBTOTAL | 25.2% | 29.9% | 31.5% | 29.1% | 28.5% | 26.9% | 27.5% | 27.8% | 30.3% | 28.5% |
| OPERATING MARGIN | 4.3% | -3.1% | -5.8% | -3.4% | 1.2% | 4.8% | 3.8% | 2.2% | -0.9% | 0.6% |
| OTHER REVENUES (EXPENSES) | 2.1% | 1.6% | 1.8% | 0.9% | 1.0% | 0.9% | 0.8% | 1.4% | 5.1% | 1.8% |
| INCOME BEF. INT. TAXES, & OTHER | 6.3% | -1.4% | -4.1% | -2.6% | 2.1% | 5.7% | 4.6% | 3.6% | 4.2% | 2.3% |
| INTEREST INCOME (EXPENSE) | -2.0% | -1.8% | -2.2% | -1.6% | -1.2% | -0.9% | -0.2% | -0.6% | -0.6% | -1.2% |
| INCOME BEF. TAXES, OTHER | 4.3% | -3.3% | -6.2% | -4.2% | 0.9% | 4.7% | 4.4% | 3.0% | 3.6% | 1.2% |
| PROVISION FOR TAXES (CREDITS) | 1.5% | -0.8% | -1.4% | -1.3% | -0.4% | 1.5% | 1.1% | 0.6% | 0.1% | 0.2% |
| INCOME AFTER INCOME TAXES | 2.8% | -2.5% | -4.9% | -2.8% | 1.3% | 3.2% | 3.3% | 2.4% | 3.5% | 1.0% |
| EARNINGS IN AFFILIATES-NET | 0.9% | 0.7% | 0.6% | 0.4% | 0.6% | 0.8% | 0.9% | 1.0% | 0.8% | 0.8% |
| EARNINGS BEFORE OTHER ITEMS | 3.8% | -1.8% | -4.3% | -2.4% | 2.0% | 4.0% | 4.2% | 3.4% | 4.4% | 1.8% |
| OTHER ITEMS | | | | -17.4% | | -0.5% | 0.6% | 0.0% | | -1.8% |
| NET PROFIT MARGIN | 3.8% | -1.8% | -4.3% | -19.8% | 2.0% | 3.5% | 4.8% | 3.4% | 4.4% | -0.0% |

 PROFIT

 LOSS

TABLE A-15

GENERAL MOTORS CORPORATION MARGINAL ANALYSIS OF OPERATING RESULTS, 1980-1989

| GENERAL MOTORS | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1980-1989 | % |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|----------|
| NET SALES \$ X 1 MILLION | \$57,729 | \$62,699 | \$60,026 | \$74,582 | \$83,890 | \$96,372 | \$102,814 | \$101,789 | \$110,229 | \$112,533 | \$862,660 | 100.0% |
| VARIABLE COSTS - MFG | \$42,291 | \$45,263 | \$42,180 | \$49,948 | \$57,435 | \$68,088 | \$75,639 | \$75,226 | \$78,841 | \$79,412 | \$614,323 | 71.2% |
| CONTRIBUTION MARGIN | \$15,438 | \$17,436 | \$17,846 | \$24,633 | \$26,455 | \$28,284 | \$27,174 | \$26,563 | \$31,388 | \$33,122 | \$248,338 | 28.8% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | | | |
| Maintenance & Repairs | \$3,414 | \$3,673 | \$3,157 | \$3,780 | \$4,585 | \$5,428 | \$5,398 | \$5,532 | \$5,793 | \$5,858 | \$46,620 | 5.4% |
| Research & Development | \$2,225 | \$2,250 | \$2,175 | \$2,602 | \$3,076 | \$3,625 | \$4,158 | \$4,361 | \$4,753 | \$5,248 | \$34,472 | 4.0% |
| Selling, General, & Admin. | \$2,637 | \$2,715 | \$2,965 | \$3,234 | \$4,003 | \$4,294 | \$5,591 | \$5,896 | \$6,655 | \$7,240 | \$45,230 | 5.2% |
| Taxes Other Than Income | \$2,249 | \$2,506 | \$2,470 | \$2,675 | \$3,572 | \$3,186 | \$3,227 | \$2,905 | \$3,595 | \$3,586 | \$29,970 | 3.5% |
| Pension Expense & Other P.R. | \$1,922 | \$1,494 | \$1,566 | \$1,714 | \$1,618 | \$1,675 | \$776 | \$715 | \$544 | \$811 | \$12,835 | 1.5% |
| Depreciation | \$1,458 | \$1,837 | \$2,403 | \$2,570 | \$2,663 | \$2,778 | \$3,500 | \$3,418 | \$3,518 | \$3,646 | \$27,791 | 3.2% |
| Amortization, Tooling | \$2,720 | \$2,569 | \$2,148 | \$2,550 | \$2,237 | \$3,083 | \$2,596 | \$2,156 | \$1,432 | \$1,442 | \$22,931 | 2.7% |
| Provision for Plant Closing | | | | | | | | | | | | |
| Amortization, Intangibles | | | | | | | \$498 | \$539 | \$506 | \$506 | \$2,048 | 2.7% |
| SUBTOTAL | \$16,623 | \$17,044 | \$16,884 | \$19,125 | \$21,755 | \$24,069 | \$25,743 | \$25,521 | \$26,797 | \$28,335 | \$221,896 | 25.7% |
| OPERATING INCOME | (\$1,186) | \$392 | \$962 | \$5,508 | \$4,700 | \$4,214 | \$1,431 | \$1,043 | \$4,591 | \$4,786 | \$26,442 | 3.1% |
| OTHER REVENUES (EXPENSES) | \$349 | \$368 | \$1,164 | \$1,785 | \$2,531 | \$2,307 | \$983 | \$1,527 | \$1,847 | \$2,331 | \$15,192 | 1.8% |
| INCOME BEF. INT. TAXES, & OTHER | (\$837) | \$760 | \$2,126 | \$7,294 | \$7,231 | \$6,522 | \$2,414 | \$2,569 | \$6,438 | \$7,117 | \$41,634 | 4.8% |
| INTEREST INCOME (EXPENSE) | (\$532) | (\$898) | (\$1,415) | (\$1,353) | (\$909) | (\$892) | (\$954) | (\$564) | (\$1,537) | (\$2,228) | (\$11,283) | -1.3% |
| INCOME BEF. TAXES, OTHER | (\$1,369) | (\$138) | \$711 | \$5,941 | \$6,322 | \$5,629 | \$1,460 | \$2,005 | \$4,901 | \$4,889 | \$30,351 | 3.5% |
| PROVISION FOR TAXES (CREDITS) | (\$385) | (\$123) | (\$252) | \$2,224 | \$1,805 | \$1,630 | (\$300) | (\$60) | \$1,493 | \$1,733 | \$7,764 | 0.9% |
| INCOME AFTER INCOME TAXES | (\$984) | (\$15) | \$963 | \$3,717 | \$4,517 | \$3,999 | \$1,761 | \$2,065 | \$3,409 | \$3,156 | \$22,587 | 2.6% |
| EARNINGS IN AFFILIATES-NET | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$1,184 | \$1,486 | \$1,224 | \$1,069 | \$4,962 | 0.6% |
| EARNINGS BEFORE OTHER ITEMS | (\$984) | (\$15) | \$963 | \$3,717 | \$4,517 | \$3,999 | \$2,945 | \$3,551 | \$4,632 | \$4,224 | \$27,549 | 3.2% |
| OTHER ITEMS | \$221 | \$348 | | \$13 | | | | | \$224 | | \$807 | 0.1% |
| NET PROFIT | (\$763) | \$333 | \$963 | \$3,730 | \$4,517 | \$3,999 | \$2,945 | \$3,551 | \$4,856 | \$4,224 | \$28,356 | 3.3% |

 PROFIT

 LOSS

TABLE A-16

GENERAL MOTORS CORPORATION MARGINAL ANALYSIS, OPERATING RATIOS, 1980-1989

| GENERAL MOTORS | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1980-1989 |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|
| NET SALES | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| VARIABLE COSTS - MFG | 73.3% | 72.2% | 70.3% | 67.0% | 68.5% | 70.7% | 73.6% | 73.9% | 71.5% | 70.6% | 71.2% |
| CONTRIBUTION MARGIN | 26.7% | 27.8% | 29.7% | 33.0% | 31.5% | 29.3% | 26.4% | 26.1% | 28.5% | 29.4% | 28.8% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | | |
| Maintenance & Repairs | 5.9% | 5.9% | 5.3% | 5.1% | 5.5% | 5.6% | 5.3% | 5.4% | 5.3% | 5.2% | 5.4% |
| Research & Development | 3.9% | 3.6% | 3.6% | 3.5% | 3.7% | 3.8% | 4.0% | 4.3% | 4.3% | 4.7% | 4.0% |
| Selling, General, & Admin. | 4.6% | 4.3% | 4.9% | 4.3% | 4.8% | 4.5% | 5.4% | 5.8% | 6.0% | 6.4% | 5.2% |
| Taxes Other Than Income | 3.9% | 4.0% | 4.1% | 3.6% | 4.3% | 3.3% | 3.1% | 2.9% | 3.3% | 3.2% | 3.5% |
| Pension Expense & Other P.R. | 3.3% | 2.4% | 2.6% | 2.3% | 1.9% | 1.7% | 0.8% | 0.7% | 0.5% | 0.7% | 1.0% |
| Depreciation | 2.5% | 2.9% | 4.0% | 3.4% | 3.2% | 2.9% | 3.4% | 3.4% | 3.2% | 3.2% | 3.2% |
| Amortization, Tooling | 4.7% | 4.1% | 3.6% | 3.4% | 2.7% | 3.2% | 2.5% | 2.1% | 1.3% | 1.3% | 2.7% |
| Provision for Plant Closing | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Amortization Intangibles | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 0.5% | 0.5% | 0.4% | 0.2% |
| SUBTOTAL | 28.8% | 27.2% | 28.1% | 25.6% | 25.9% | 25.0% | 25.0% | 25.1% | 24.3% | 25.2% | 25.7% |
| OPERATING MARGIN | -2.1% | 0.6% | 1.6% | 7.4% | 5.6% | 4.4% | 1.4% | 1.0% | 4.2% | 4.3% | 3.1% |
| OTHER REVENUES (EXPENSES) | 0.6% | 0.6% | 1.9% | 2.4% | 3.0% | 2.4% | 1.0% | 1.5% | 1.7% | 2.1% | 1.8% |
| INCOME BEF. INT. TAXES, & OTHER | -1.4% | 1.2% | 3.5% | 9.8% | 8.6% | 6.8% | 2.3% | 2.5% | 5.8% | 6.3% | 4.8% |
| INTEREST INCOME (EXPENSE) | -0.9% | -1.4% | -2.4% | -1.8% | -1.1% | -0.9% | -0.9% | -0.6% | -1.4% | -2.0% | -1.3% |
| INCOME BEF. TAXES, OTHER | -2.4% | -0.2% | 1.2% | 8.0% | 7.5% | 5.8% | 1.4% | 2.0% | 4.4% | 4.3% | 3.5% |
| PROVISION FOR TAXES (CREDITS) | -0.7% | -0.2% | -0.4% | 3.0% | 2.2% | 1.7% | -0.3% | -0.1% | 1.4% | 1.5% | 0.9% |
| INCOME AFTER INCOME TAXES | -1.7% | -0.0% | 1.6% | 5.0% | 5.4% | 4.1% | 1.7% | 2.0% | 3.1% | 2.8% | 2.6% |
| EARNINGS IN AFFILIATES-NET | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.2% | 1.5% | 1.1% | 0.9% | 0.6% |
| EARNINGS BEFORE OTHER ITEMS | -1.7% | -0.0% | 1.6% | 5.0% | 5.4% | 4.1% | 2.9% | 3.5% | 4.2% | 3.8% | 3.2% |
| OTHER ITEMS | | | | | | | | | | | |
| NET PROFIT MARGIN | -1.3% | 0.5% | 1.6% | 5.0% | 5.4% | 4.1% | 2.9% | 3.5% | 4.4% | 3.8% | 3.3% |

 PROFIT

 LOSS

TABLE A-17

GENERAL MOTORS CORPORATION MARGINAL ANALYSIS OF OPERATING RESULTS, 1972-1979

| GENERAL MOTORS | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1972-1979 | % |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|----------|
| NET SALES \$ X 1 MILLION | \$30,435 | \$35,798 | \$31,550 | \$35,725 | \$47,181 | \$54,961 | \$63,221 | \$66,311 | \$365,183 | 100.0% |
| VARIABLE COSTS - MFG | \$19,722 | \$23,739 | \$22,554 | \$25,865 | \$32,830 | \$38,047 | \$43,759 | \$46,123 | \$252,638 | 69.2% |
| CONTRIBUTION MARGIN | \$10,713 | \$12,059 | \$8,996 | \$9,860 | \$14,351 | \$16,915 | \$19,462 | \$20,188 | \$112,545 | 30.8% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | | |
| Maintenance & Repairs | \$1,632 | \$2,043 | \$1,854 | \$1,715 | \$2,453 | \$3,133 | \$3,409 | \$3,880 | \$20,119 | 5.5% |
| Research & Development | \$1,064 | \$1,242 | \$1,370 | \$1,114 | \$1,257 | \$1,451 | \$1,633 | \$1,950 | \$11,081 | 3.0% |
| Selling, General, & Admin. | \$1,163 | \$1,328 | \$1,364 | \$1,333 | \$1,760 | \$1,997 | \$2,256 | \$2,476 | \$13,676 | 3.7% |
| Taxes Other Than Income | \$918 | \$1,091 | \$1,142 | \$1,286 | \$1,492 | \$1,810 | \$1,148 | \$2,325 | \$11,211 | 3.1% |
| Pension Expense & Other P.R. | | | | | | | \$1,327 | \$1,572 | \$2,898 | 0.8% |
| Depreciation | \$912 | \$903 | \$846 | \$906 | \$939 | \$974 | \$1,181 | \$1,237 | \$7,898 | 2.2% |
| Amortization, Tooling | \$874 | \$1,081 | \$858 | \$1,180 | \$1,297 | \$1,406 | \$1,856 | \$1,950 | \$10,503 | 2.9% |
| Provision for Plant Closing | | | | | | | | | | |
| Amortization, Intangibles | | | | | | | | | | |
| SUBTOTAL | \$6,564 | \$7,687 | \$7,434 | \$7,534 | \$9,198 | \$10,772 | \$12,809 | \$15,388 | \$77,386 | 21.2% |
| OPERATING INCOME | \$4,149 | \$4,372 | \$1,562 | \$2,327 | \$5,154 | \$6,143 | \$6,653 | \$4,800 | \$35,159 | 9.6% |
| OTHER REVENUES (EXPENSES) | \$175 | \$254 | \$121 | (\$35) | \$457 | \$290 | \$112 | \$410 | \$1,783 | 0.5% |
| INCOME BEF. INT. TAXES, & OTHER | \$4,324 | \$4,626 | \$1,683 | \$2,292 | \$5,610 | \$6,433 | \$6,765 | \$5,210 | \$36,942 | 10.1% |
| INTEREST INCOME (EXPENSE) | | | | | | | | | \$0 | 0.0% |
| INCOME BEF. TAXES, OTHER | \$4,324 | \$4,626 | \$1,683 | \$2,292 | \$5,610 | \$6,433 | \$6,765 | \$5,210 | \$36,942 | 10.1% |
| PROVISION FOR TAXES (CREDITS) | \$2,060 | \$2,115 | \$727 | \$1,108 | \$2,568 | \$2,934 | \$3,089 | \$2,183 | \$16,783 | 4.6% |
| INCOME AFTER INCOME TAXES | \$2,264 | \$2,511 | \$956 | \$1,184 | \$3,043 | \$3,499 | \$3,676 | \$3,027 | \$20,159 | 5.5% |
| EARNINGS IN AFFILIATES-NET | | | | | | | | | \$0 | 0.0% |
| EARNINGS BEFORE OTHER ITEMS | \$2,264 | \$2,511 | \$956 | \$1,184 | \$3,043 | \$3,499 | \$3,676 | \$3,027 | \$20,159 | 5.5% |
| OTHER ITEMS | (\$101) | (\$113) | (\$6) | (\$33) | (\$140) | (\$161) | (\$168) | (\$134) | | |
| NET PROFIT | \$2,163 | \$2,398 | \$950 | \$1,151 | \$2,903 | \$3,338 | \$3,508 | \$2,893 | \$19,303 | 5.3% |

 PROFIT

 LOSS

TABLE A-18

GENERAL MOTORS CORPORATION MARGINAL ANALYSIS, OPERATING RATIOS, 1972-1979

| GENERAL MOTORS | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1972-1979 |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|
| NET SALES | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| VARIABLE COSTS - M m | 64.8% | 66.3% | 71.5% | 72.4% | 69.6% | 69.2% | 69.2% | 69.6% | 69.2% |
| CONTRIBUTION MARGIN | 35.2% | 33.7% | 28.5% | 27.6% | 30.4% | 30.8% | 30.8% | 30.4% | 30.8% |
| FIXED & DISCRETIONARY COSTS: | | | | | | | | | |
| Maintenance & Repairs | 5.4% | 5.7% | 5.9% | 4.8% | 5.2% | 5.7% | 5.4% | 5.9% | 5.5% |
| Research & Development | 3.5% | 3.5% | 4.3% | 3.1% | 2.7% | 2.6% | 2.6% | 2.9% | 3.0% |
| Setting, General, & Admin. | 3.8% | 3.7% | 4.3% | 3.7% | 3.7% | 3.6% | 3.6% | 3.7% | 3.7% |
| Taxes Other Than Income | 3.0% | 3.0% | 3.6% | 3.6% | 3.2% | 3.3% | 1.8% | 3.5% | 3.1% |
| Pension Expense & Other P.R. | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.1% | 2.4% | 0.8% |
| Depreciation | 3.0% | 2.5% | 2.7% | 2.5% | 2.0% | 1.8% | 1.9% | 1.9% | 2.2% |
| Amortization, Tooling | 2.9% | 3.0% | 2.7% | 3.3% | 2.7% | 2.6% | 2.9% | 2.9% | 2.9% |
| Provision for Plant Closing | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Amortization, Intangibles | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| SUBTOTAL | 21.6% | 21.5% | 23.6% | 21.1% | 19.5% | 19.6% | 20.3% | 23.2% | 21.2% |
| OPERATING MARGIN | 13.6% | 12.2% | 5.0% | 6.5% | 10.9% | 11.2% | 10.5% | 7.2% | 9.6% |
| OTHER REVENUES (EXPENSES) | 0.6% | 0.7% | 0.4% | -0.1% | 1.0% | 0.5% | 0.2% | 0.6% | 0.5% |
| NCOME BEF. INT. TAXES, & OTHER | 14.2% | 12.9% | 5.3% | 6.4% | 11.9% | 11.7% | 10.7% | 7.9% | 10.1% |
| INTEREST INCOME (EXPENSE) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| NCOME BEF. TAXES, OTHER | 14.2% | 12.9% | 5.3% | 6.4% | 11.9% | 11.7% | 10.7% | 7.9% | 10.1% |
| PROVISION FOR TAXES (CREDITS) | 6.8% | 5.9% | 2.3% | 3.1% | 5.4% | 5.3% | 4.9% | 3.3% | 4.6% |
| NCOME AFTER INCOME TAXES | 7.4% | 7.0% | 3.0% | 3.3% | 6.4% | 6.4% | 5.8% | 4.6% | 5.5% |
| EARNINGS IN AFFILIATES-NET | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| EARNINGS BEFORE OTHER ITEMS | 7.4% | 7.0% | 3.0% | 3.3% | 6.4% | 6.4% | 5.8% | 4.6% | 5.5% |
| OTHER ITEMS | | | | | | | | | |
| NET PROFIT MARGIN | 7.1% | 6.7% | 3.0% | 3.2% | 6.2% | 6.1% | 5.5% | 4.4% | 5.3% |

 PROFIT

 LOSS