US Component Manufacturing at a Crossroads:

Region-Loyal Production & Global Manufacturing Deflation

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Metal & Plastic Parts & Subassemblies:
Process Variance Masks Shared Features

- **Component specialists in SICs 308, 346, 359, & 3714 have *high and rising share of value-added in key traded goods value chains*, including auto, aerospace, machinery, farm & construction equipment.**
- **This is NOT the same thing as saying that *small firms* are becoming more important. *The number of sub-500-employee manufacturing plants in the US fell in 2000 and 2001 for the first time since 1978.***
- **Process variety -- molding, stamping, machining, welding, assembly – masks commonalities:**
  - **Squeezed between often larger raw-material suppliers and final-goods producing customers**
  - **Increased competition from Mexico & offshore**
  - **Shared regional labor pools**

Component Manufacturing:
Heft & Region at a Moment of Danger

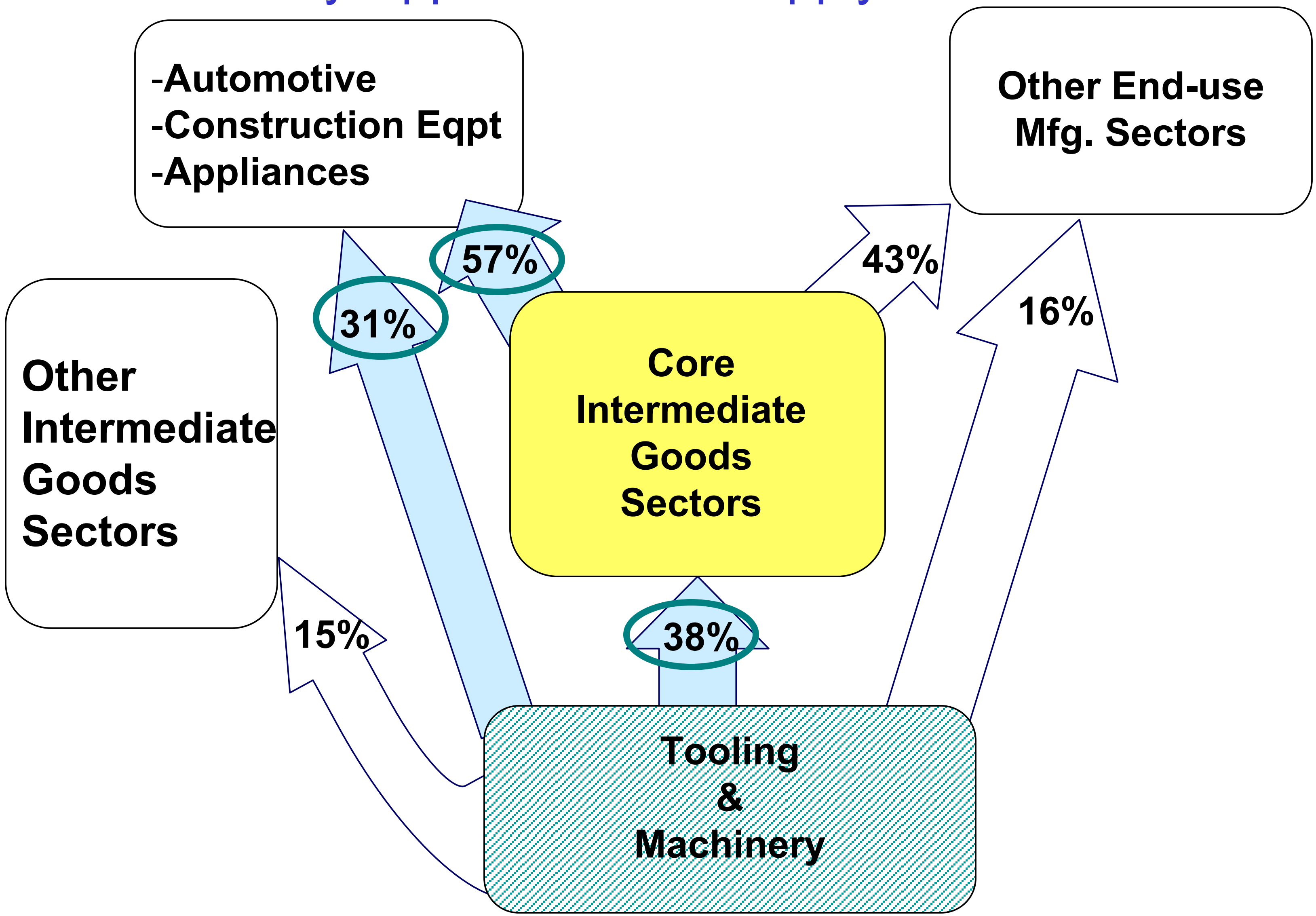
- Large:
  - 1.9 million US employees in 2000, 45% in 5 States
  - Through 2000 (but not since), growing in even old-line manufacturing states (Ohio, Michigan, New York)
  - 10.6% of manufacturing jobs, up from 8.8% in 1980
- Much more tied to region than its customers

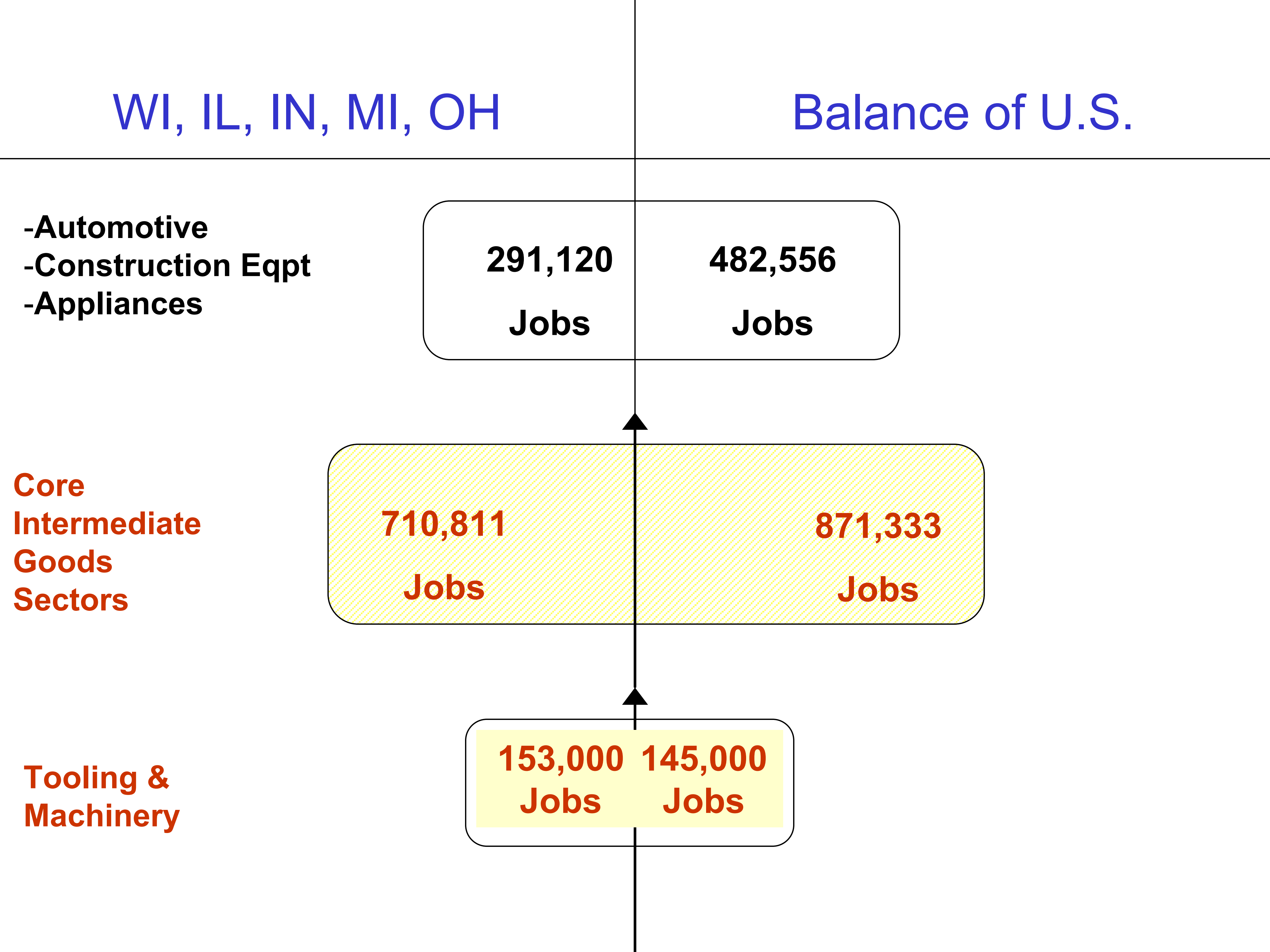
  … but moving out of cities, and toward the South
- Facing sudden, second surge in global competition

Could U.S.-based final-goods producers substantially replace their onshore supply base with suppliers located in Mexico & offshore?

Component Manufacturing is Central:

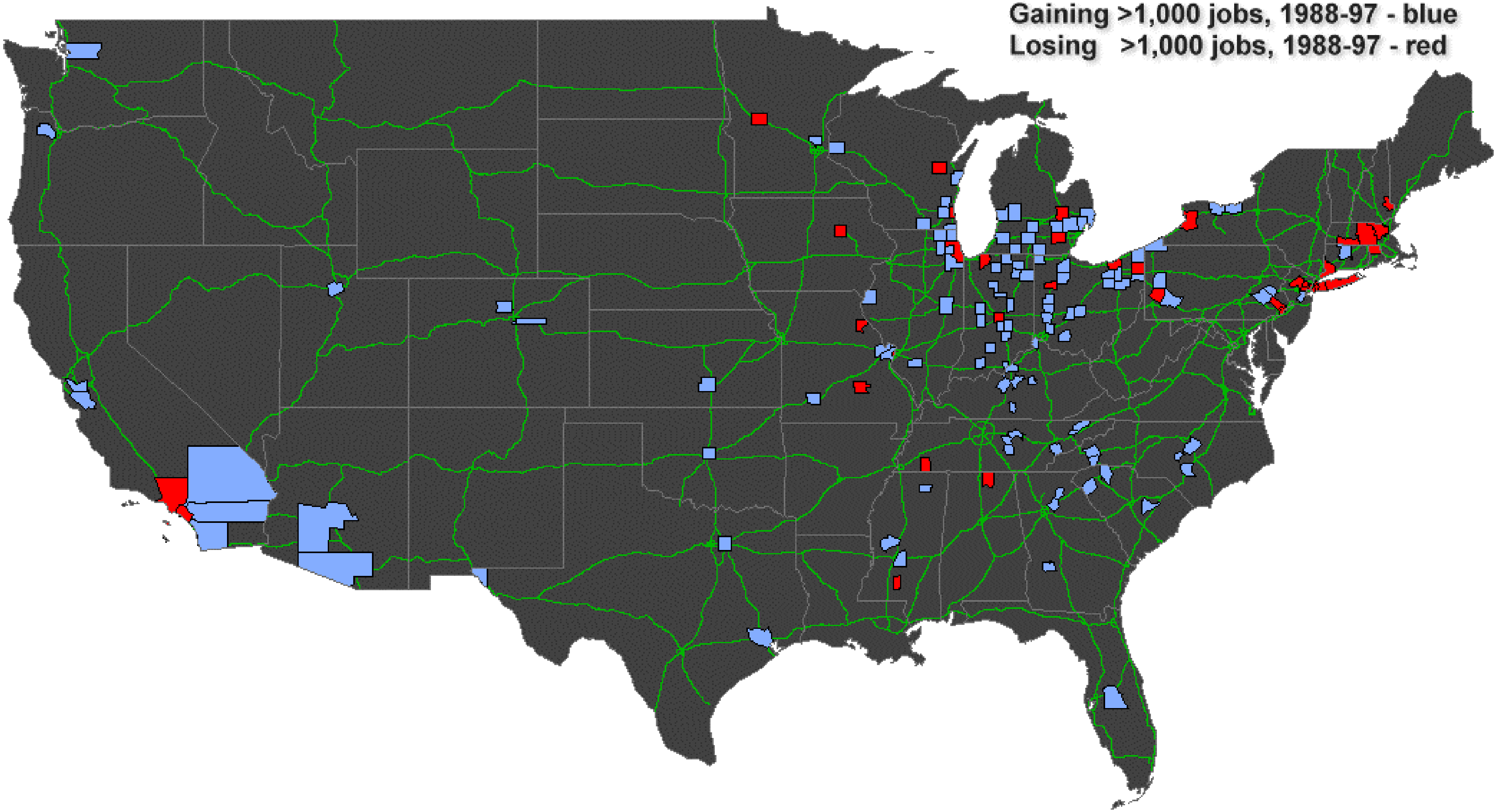
Estimated Sales - Weighted Connections Among the Sectors in Key Upper Midwest Supply Chains





WI, IL, IN, MI, OH
Balance of U.S.
-Automotive
-Construction Eqpt
-Appliances
291,120 Jobs
482,556 Jobs
Core Intermediate Goods Sectors
710,811 Jobs
871,333 Jobs
Tooling & Machinery
153,000 Jobs
145,000 Jobs

Component Manufacturing (SIC: 3080, 3460, 3590, 3714)



Shared Intermediary Institutions

… but they are not pursuing any shared agenda

- **NIST Manufacturing Extension Partnership (MEP) Centers**
  - **OH, WI, IL, IN, MI all have large, established centers**
  - **Limited substantive communication among them**
- **Trade & Professional Associations**
  - **National Tooling and Machining Association, Society of Automotive Engineers, Society of the Plastics Industry, Precision Metalforming Association, Forging Industry Association, others**
- **Labor Unions**
  - **International Association of Machinists, United Auto Workers, United Steel Workers, Allied Industrial Workers, others**

The Price Squeeze in US Components

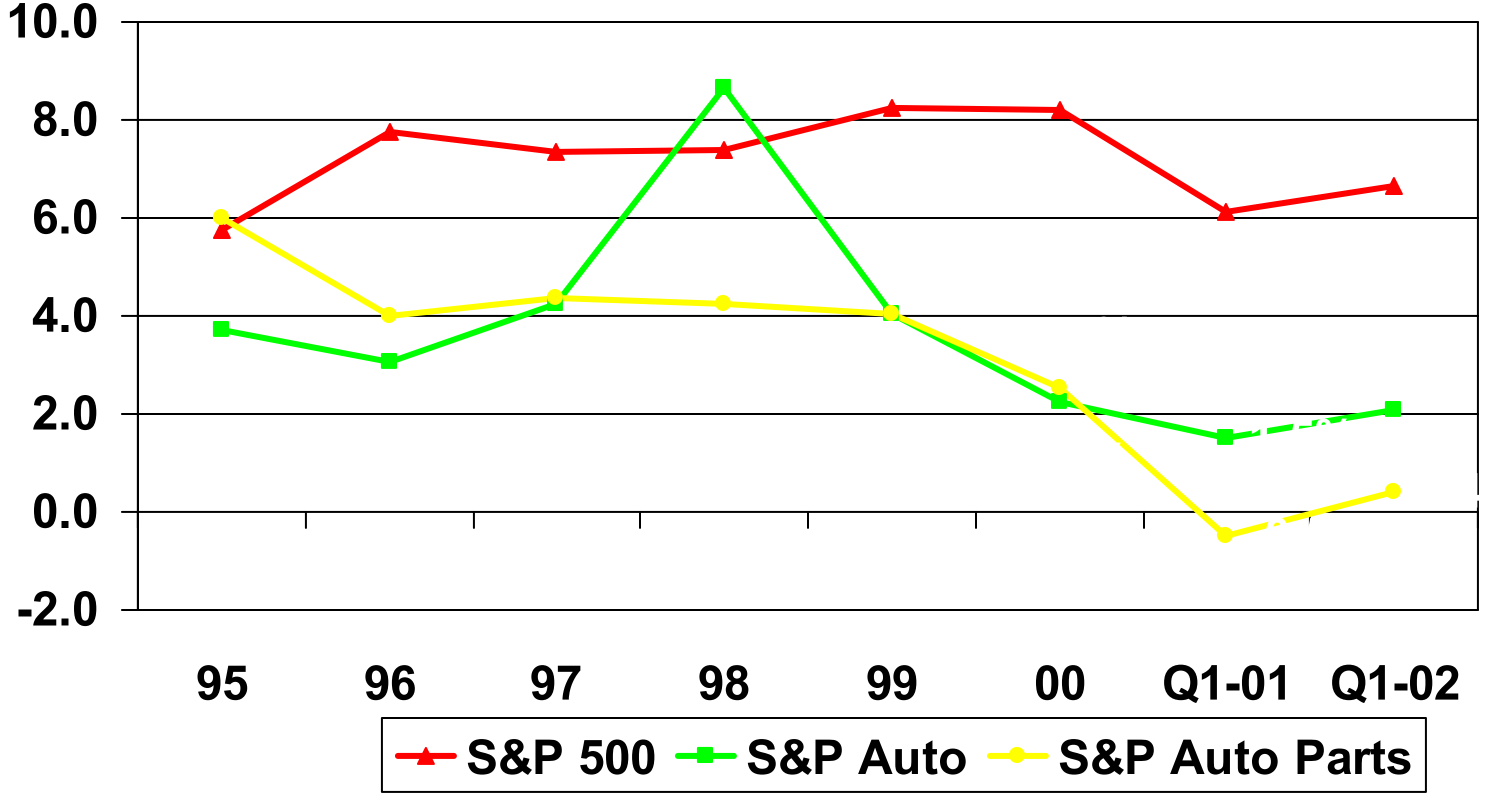
Price reductions granted, 12 Months Ended 3/31/02

• Able to raise prices	2%
• No givebacks	14%
• A little, but < 2.5%	25%
• Some: 2.5-4.99%	42%
• Significantly: 5-9.99%	16%
• A lot: 10% or more	2%

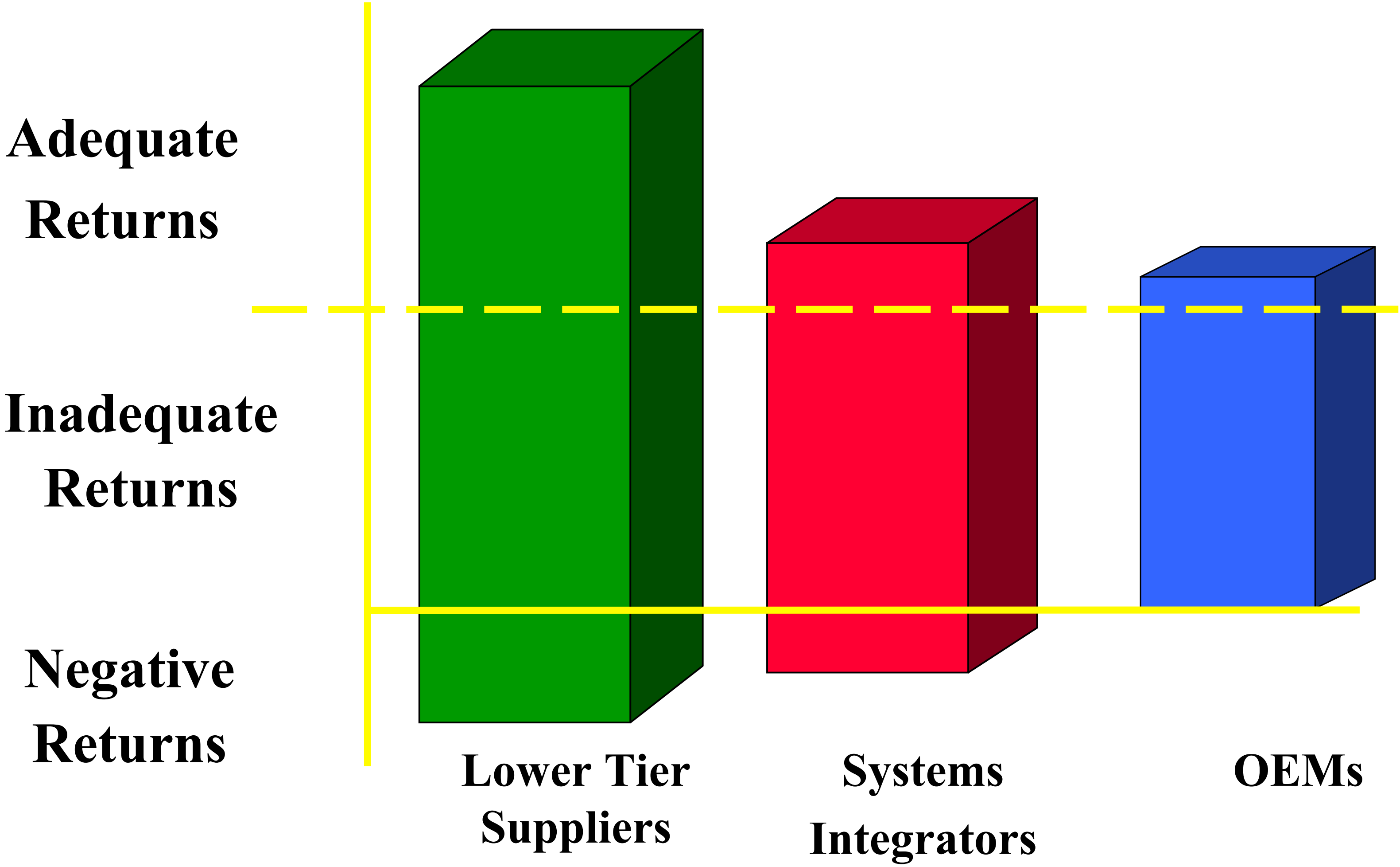
Median Annualized Giveback = 3.7%

Profitless Auto Parts in Boom Sales Years

Simple Average After-Tax Margin at S&P Auto Parts Companies



Structure of Financial Returns by Tier, U.S. Automotive 2001



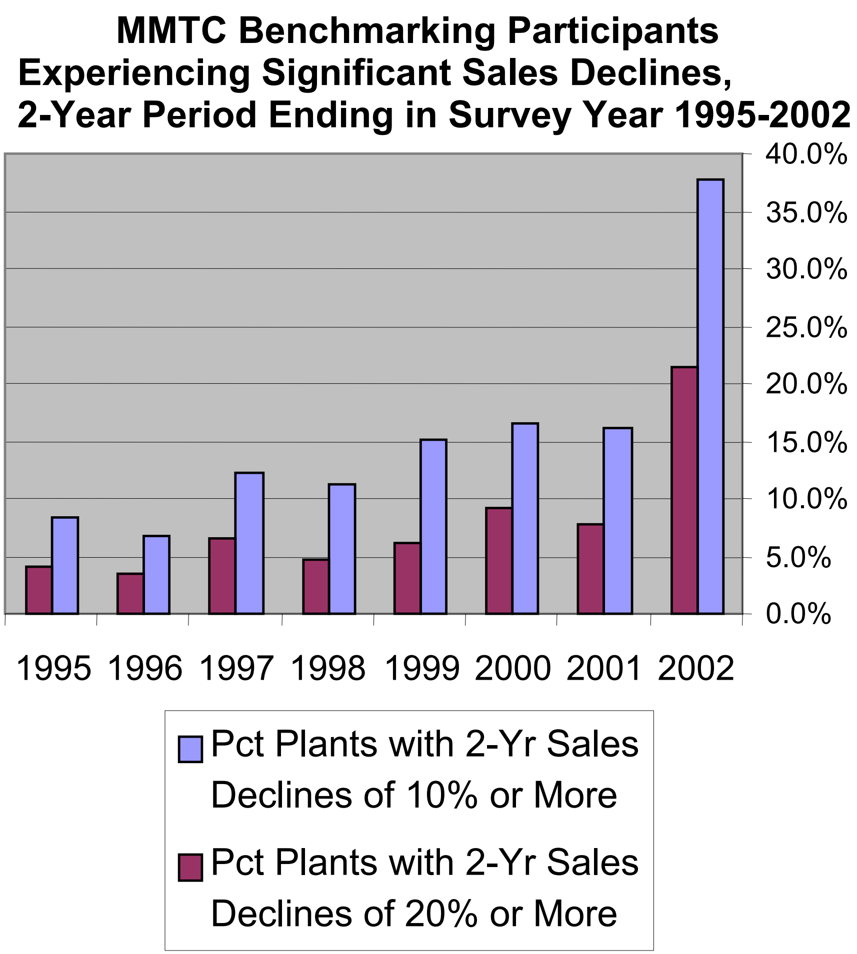
Q: What's different about the 10% of component-makers that perform best?

A: They design products as well as making components.

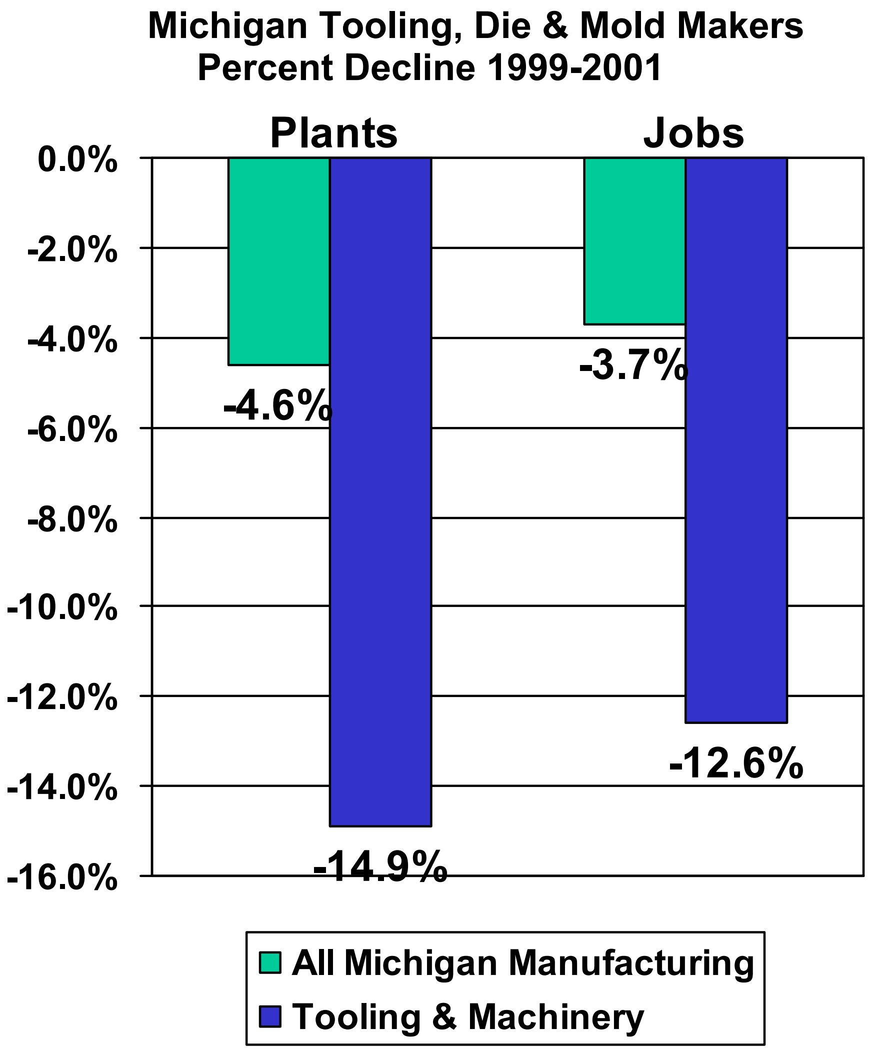
	Mean top 10%	Mean bottom 50%	Top 10% as a % of bottom 50%
Value-Added per Full-Time Employee	131180	46940	279%
Gross Margin	42	17	247%
Average Hourly Shop Wage	13.83	9.37	148%
Benefits as a Percent of Labor Costs	16.8	10.9	154%
Performance-Based Pct Payroll	5.6	2.7	207%
Pct Sales to Final Consumers	15.8	2.9	545%
Pct Sales from Make-to-Stock Work	12.0	3.8	316%
Pct Sales to Aircraft/Aerospace Industry	8.7	2.2	364%
Pct Sales from Unique, Proprietary Prdts	47.8	18.9	253%
Pct Gauges Electronic & Linked Collector	25.0	8.4	298%
Keyboards/Keypads per Employee	0.63	0.22	286%
Pct Suppliers Exchg'd EDI Transact Sets	11.0	4.2	262%
Replacement Value of Equipment per FTE	77200	36100	214%
Pct Employees Using Computers	87	34	256%
Pct of Shop Floor Workers in Teams	33	18	183%
Employee Turnover Rate	11.1	69.4	16%

2001: A Watershed for US Component Manufacturing?

- **Fully 37.8% of MMTC Benchmarking participants had sales decrease by at least 10% during the 2 years from 1999-2001.**
- **In the three previous years, only about 15% of participants reported 2-year sales declines of 10% or more.**
- ***In 1999-2001, 21.5% had sales down by more than 20%!* That's three times as many as we're used to seeing.**



As in 1st Surge in U.S. Deindustrialization (79-82), Tooling & Machinery Especially Hard-Hit



Key Developments:

- **China has integrated backward from molded products to molds**
- **Mexico has started to deindustrialize to Asia**
- **U.S. producers are moving metal removal to China to focus on design & tryout**

Despite Sales Slide, US Mfg Productivity is Way *Up* … but the Secret May Lie Partly in the Formula.

Q. What Happens When US Manufacturers Buy Cheaper Inputs Offshore?

$$\frac{\text{VA}}{\text{FTE}} = \frac{\text{Sales} - \text{Outside Purchases}}{\text{Employees} \times \text{Hours} / 2080}$$

A. When purchased input costs go down,
the NUMERATOR grows, making the RATIO rise.

Looking Past Recent Trends

- Movement toward some component-makers assuming a larger, and perhaps more lucrative, role in engineering and production persists despite everything.
- End of overvalued US dollar (1979-86) led to a manufacturing comeback in 1987-98, though most work lost never returned. *What's the outlook for 2003-2010?*
- Companies can change.
- Intermediary organizations can shape the ways in which companies and policy change.

Next: Survey & Intermediary Road-Show

- Fall 2002: Survey of 400 US Component Firms
  - Relationships with Customers: Higher-Value Role vs. Commodification
  - Relationships with Region: Local Networking vs. Following Globalizing Customers
  - Relationships with Intermediaries
- Winter 2002-Summer 2003: AMP on the Road
  - Testing the Findings with Associations, Unions, & MEPs
  - Exploring the Implications for Unified Response