Perspectives on the Auto Industry

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“We have plenty of customers – what we don’t have is financing available to meet their needs”  
*Mike Jackson, The Economist, Oct. 04*

“One of Big 3 may not survive”  
*Daniel Howes, Detroit News, Oct. 14*

“GM loses $2.5 billion in 3rd quarter; cash reserves getting critically low”  
*Detroit News, Nov. 7*

“Bailout now or collapse”  
*Automotive News, Nov. 10*
Challenging times - Recap

- After 2 rounds of hearings and no agreement in the Senate, Bush administration approves $17.4bn in federal aid for GM and Chrysler on December 17.

- Subsequently GMAC receives $6bn and Chrysler Financial $1.5bn in TARP funding

- “Car parts sector looks for $10bn federal bail-out”

  Financial Times, Jan. 26, 2009
Perspectives on the auto industry

Outline:

- The cycle is back
- Legacy of structural changes
- Looking ahead
The cycle is back!

Light Weight Vehicle Sales {Autos+Light Trucks}

SAAR, Mil. Units

Source: Bureau of Economic Analysis/Haver Analytics

Down 18% in ‘08
Consumer confidence and sales heading south

Light Weight Vehicle Sales {Autos+Light Trucks}
SAAR, Mil.Units

Consumer Confidence
SA, 1985=100

Sources: BEA/H, CNFBOARD /Haver
Deep Production cutbacks idle plants
Perspectives on the auto industry

- The cycle is back
- Legacy of structural changes
- Looking ahead
Industry was changing well before downturn

Industry employment down by 26% between 2000 and ’07

Source: Bureau of Labor Statistics /Haver Analytics
Drivers of structural change

- Internationalization of sales and production (of vehicles and parts)
- Greater role of supply base
- Changing industry geography
Herbie led the way

- VW was dominant import brand in U.S. market during the 60s and early 70s.
- Asia has been primary source of imports since mid-70s.

Import share of sales by decade

<table>
<thead>
<tr>
<th>Decade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960s</td>
<td>8 %</td>
</tr>
<tr>
<td>1970s</td>
<td>17 %</td>
</tr>
<tr>
<td>1980s</td>
<td>25 %</td>
</tr>
<tr>
<td>1990s</td>
<td>16 %</td>
</tr>
<tr>
<td>2000s</td>
<td>20 %</td>
</tr>
</tbody>
</table>
From 4 to 13 carmakers in 30 years

Foreign carmakers, by first year of producing in U.S.

<table>
<thead>
<tr>
<th>Carmaker</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>VW (1)</td>
<td>1978</td>
</tr>
<tr>
<td>Honda</td>
<td>1982</td>
</tr>
<tr>
<td>Nissan</td>
<td>1983</td>
</tr>
<tr>
<td>Toyota</td>
<td>1984</td>
</tr>
<tr>
<td>Mitsubishi</td>
<td>1987</td>
</tr>
<tr>
<td>Subaru</td>
<td>1989</td>
</tr>
<tr>
<td>BMW</td>
<td>1994</td>
</tr>
<tr>
<td>Mercedes</td>
<td>1997</td>
</tr>
<tr>
<td>Hyundai</td>
<td>2005</td>
</tr>
<tr>
<td>Kia</td>
<td>2009</td>
</tr>
</tbody>
</table>

(1) Closed in 1989, new plant to open in 2010
Market share shift accelerates in mid-90s

Note: 1960-1979 share of car sales, 1980-2007 share of light vehicle sales
Now there are (the Big) Six

Six leading carmakers in U.S. light vehicle market, 2008

<table>
<thead>
<tr>
<th>Company</th>
<th>Market share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GM</td>
<td>22.4</td>
</tr>
<tr>
<td>Toyota</td>
<td>16.9</td>
</tr>
<tr>
<td>Ford</td>
<td>14.8</td>
</tr>
<tr>
<td>Chrysler</td>
<td>11.0</td>
</tr>
<tr>
<td>Honda</td>
<td>10.8</td>
</tr>
<tr>
<td>Nissan</td>
<td>7.3</td>
</tr>
</tbody>
</table>
N.A. supplier base more international

Largest 150 motor vehicle parts suppliers to North America by nationality

<table>
<thead>
<tr>
<th></th>
<th>1994</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>108</td>
<td>59</td>
</tr>
<tr>
<td>Europe</td>
<td>20</td>
<td>39</td>
</tr>
<tr>
<td>Asia</td>
<td>14</td>
<td>41</td>
</tr>
<tr>
<td>other</td>
<td>8</td>
<td>11</td>
</tr>
</tbody>
</table>
Today’s Supply chains are truly global

US motor vehicle parts imports (%)
Different parts from different sources

US motor vehicle parts imports ($)

- Powertrain
- Electrical
- Chassis
- Body
- Interior
- Other

- Mexico
- Canada
- Japan
- Rest of World
Enhanced role for supply base

Nearly 80% of industry jobs

70% of a car’s value added
Everything you always wanted to know about the motor vehicle parts industry (but were afraid to ask)

WHO REALLY MADE YOUR CAR?
Restructuring and Geographic Change in the Auto Industry

Thomas Klier and James Rubenstein

www.upjohninst.org
Geography of the auto industry

Thomas Klier, Federal Reserve Bank of Chicago; Source: Maptitude, ELM, Company websites
Assembly line density in 1980

Thomas Klier, FRB Chicago
Assembly line density in 1990

Thomas Klier, FRB Chicago
Assembly line density in 2008+

Thomas Klier, FRB Chicago
Domestic carmakers retreat to Midwest

1980

2008+

Thomas Klier, FRB Chicago
Detroit 3 will be more concentrated

Michigan’s share of U.S. assembly plants

Chart reflects announced plant closures and openings as of December 2008
Parts: suppliers cluster in auto alley
A north-south auto corridor emerges

Before 1980

Since 1980

Thomas Klier, FRB Chicago
Foreign parts plants gravitate south

Since 1980

Thomas Klier, Federal Reserve Bank of Chicago
Auto supplier networks are regional

Toyota, Kentucky, supplier network
The supply base links all carmakers

- On average a supplier plant ships to four different customers.
- Only 12% of North American supplier plants supply exclusively to foreign headquartered carmakers producing in North America.
- Supplier networks are linked across carmakers:

<table>
<thead>
<tr>
<th>Suppliers to D3</th>
<th>Also supplying to:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>D3</td>
</tr>
<tr>
<td>Suppliers to D3</td>
<td>100%</td>
</tr>
</tbody>
</table>
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- The cycle is back
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Bailout timeline

- Car Czar to be appointed by Obama administration.

- February 17: Carmakers present business models to show financial viability. GM to receive additional $4bn contingent on congressional approval.

- March 31: Carmakers need to reach agreements with workforce, creditors, dealers, and other stakeholders to meet terms of business models.
Stricter Fuel efficiency regulations ahead

CAFÉ standards

- Red: Passenger Cars
- Blue: Light Trucks
- Dashed: New Standards (Combined)
Gasoline peaked in July. What’s next?

U.S. Retail Gasoline Price: Regular Grade
Avg, Cents/Gallon

Source: Department of Energy / Haver Analytics
What product mix will sell?

Sales of Prius and Tundra vs the price of gasoline
Summary – tough times for auto

- The business cycle is back – with a vengeance.

- Currently all major auto markets are slowing down, challenging both OEMs as well as parts suppliers.

- Domestic carmakers fighting for survival. Possibility of domino-effects working through supply base.

- Auto industry turmoil has regional implications.