CAR’s U.S. Automotive Forecast

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Center for Automotive Research

Annual Economic Outlook Symposium
Federal Reserve Bank of Chicago
December 4, 2015
A New Peak/Plateau?
U.S. Light Vehicle Monthly Sales and SAAR

SALES
SAAR

Source: Automotive News; CAR Research

3 Mil. Higher than 2013!
U.S. Light Vehicle Sales

<table>
<thead>
<tr>
<th>Category</th>
<th>Sales 2015</th>
<th>Change 2015</th>
<th>Percentage Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>14,508,443</td>
<td>+ 794,997</td>
<td>5.8%</td>
</tr>
<tr>
<td>Passenger Cars</td>
<td>6,404,637</td>
<td>+ -101,871</td>
<td>-1.6%</td>
</tr>
<tr>
<td>Light Trucks</td>
<td>8,103,806</td>
<td>+ 896,868</td>
<td>12.4%</td>
</tr>
</tbody>
</table>

Source: Automotive News; CAR Research
Must Have a Hatch or a Bed!
Segment Breakdown - U.S. LV Sales Percent Change

- Total: 5.9%
- Small CUV: 45.7%
- Middle CUV: 13.6%
- Pickup: 10.4%
- Large CUV: 9.3%
- SUV: 7.5%
- Luxury Car: 1.7%
- Van: 0.3%
- Small Car: -0.8%
- Middle Car: -2.0%
- Large Car: -12.0%

Source: Ward’s Automotive Reports

- Middle CUV: 21.7%
- Small Car: 17.7%
- Middle Car: 17.5%
- Pickup: 14.0%
- SUV: 7.1%
- Luxury Car: 7.0%
- Van: 5.2%
- Small CUV: 4.7%
- Large CUV: 3.2%
- Large Car: 1.8%

Source: Ward’s Automotive Reports

<table>
<thead>
<tr>
<th>Segment</th>
<th>2007</th>
<th>2015 Through October</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUV</td>
<td>17.2%</td>
<td>29.6%</td>
</tr>
<tr>
<td>Small Car</td>
<td>15.8%</td>
<td>17.7%</td>
</tr>
<tr>
<td>Middle Car</td>
<td>19.7%</td>
<td>17.5%</td>
</tr>
<tr>
<td>Pickup</td>
<td>14.0%</td>
<td>16.6%</td>
</tr>
<tr>
<td>SUV</td>
<td>7.1%</td>
<td>11.9%</td>
</tr>
<tr>
<td>Luxury Car</td>
<td>7.6%</td>
<td>7.0%</td>
</tr>
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<td>Van</td>
<td>7.0%</td>
<td>5.2%</td>
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<td>4.3%</td>
<td>1.8%</td>
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Source: Ward’s Automotive Reports
CAR Forecast Notes

- **Full-time employment** is back to pre-recession level and continue to trend up.
- **Consumer credit** continue to expand at a healthy 6% annual rate. But loan lengths are approaching 70 months: Over $1Trillion in auto debt.
- Motor vehicle **price inflation** is higher than the CPI and wage inflation, but is offset by **customer incentives** (14%), **low interest rates**, **longer auto loan terms**, and **cheap gasoline**.
- US economy is relatively good. 3Q ‘15 **GDP growth** was 2.1%. Full year GDP growth is expected to be 2.4+ %. The Fed is almost certain to hike the interest rate. This could affect **cost of large auto loans** and is bad news for exporters.
- **Outside US**, Chinese economy is weakening. Japan in recession. EU is trying to keep its economy away from another recession by using negative interest rates.
- Residential construction is recovering. **New housing starts** SAAR came back to 1.2 million.
- Millennials and younger generations (under 35) finally found jobs. But **labor force participation rates** are still low.
Back to Where We Were

Source: Bureau of Labor Statistics
U.S. Principal Means of Transportation to Work 1989 & 2014

1989
- Automobile: 87%
- Public Transportation: 5%
- Walks Only: 3%
- Work At Home: 2%
- Other: 1%

2014
- Automobile: 86%
- Public Transportation: 5%
- Walks Only: 3%
- Work At Home: 4%
- Other: 2%

U.S. Department of Commerce, American Community Survey, 2014, U.S. Census Bureau
And Households Are Carrying More Debt
Household Non-Housing Debt* 1Q 2003 – 3Q 2015

- Student Loans
- Auto Loans
- Credit Card
- Other
- Total

*Excludes mortgage and home equity line of credit
Source: FRBNY Consumer Credit Panel/Equifax
A Change in Mix Drives RA Prices
NADA New Vehicle Selling Price
(Incentives now about $3,000 on average)
1978 – 2015 (As of September)

Source: NADA DATA; BLS
Gasoline Prices (Real)
Jan. ‘03 – Oct. ‘15

Price Per Gallon

Source: EIA
Vehicle Sales Still Disconnected From Macro Economy

U.S. GDP Growth Rate and Vehicle Sales Growth Rate
1956 – 2015

Source: Bureau of Economic Analysis
Better than We Were . . .

DOW JONES INDEX*

January 2000 – November 2015

Dec ’99 – Sep ’02: -34%

Oct ’07 – Feb ’08: -49%

Feb. ’09 – November ’15:
+152%

Source: Yahoo Finance
Consumer Confidence & Sentiment
January 2007—October 2015

Source: The Consumer Confidence Survey, conducted for the Conference Board; Federal Reserve Economic Data
UM Consumer Sentiment Index
Annual: 1978 - 2012

Light Vehicle Sales (Million)

Consumer Sentiment Index

Source: Automotive News
Not Back Yet . . .
U.S. Housing Starts and Auto Sales
Jan. 2001 –October 2015

Source: American Housing Survey for the United States, U.S. Census Bureau; BEA
Labor Force Participation Rate Is Falling Even After the Last Two Recessions

Labor Force Participation Rate 1978 – 2015

Economy Boomed. GDP grew 3.8% per year

Women’s participation in labor force

Lowest since 1978

Who is Dropping Out of Labor Force?
Change in Labor Force Participation Rate by Age Cohort Since 2000

## Location of Household by Householder’s Age

### 1989

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Center City</th>
<th>Suburbs</th>
<th>Rural</th>
</tr>
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<tbody>
<tr>
<td>Under 25</td>
<td>19%</td>
<td>36%</td>
<td>45%</td>
</tr>
<tr>
<td>25-34</td>
<td>18%</td>
<td>47%</td>
<td>35%</td>
</tr>
<tr>
<td>35-44</td>
<td>20%</td>
<td>49%</td>
<td>31%</td>
</tr>
<tr>
<td>45-54</td>
<td>21%</td>
<td>49%</td>
<td>29%</td>
</tr>
<tr>
<td>55-64</td>
<td>23%</td>
<td>46%</td>
<td>31%</td>
</tr>
<tr>
<td>65 and above</td>
<td>27%</td>
<td>42%</td>
<td>31%</td>
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</table>

### 2013

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<td>24%</td>
<td>50%</td>
<td>25%</td>
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American Are Moving Into Suburbs
U.S. Occupied Housing Units

CAR U.S. Light Vehicle Sales Forecast: 2015-2020

Source: CAR Research, November 2015
N.A./U.S. Production Forecast: 2007-2020

Production includes HD Trucks.

Source: CAR Research, November 2015
Automaker Investment Announcements, Jan 2010-May 2015

Total North America
$83.0 billion

Canada
$5.4 billion

U.S. Great Lakes
$28.2 billion

South
$12.0 billion

United States
$53.4 billion

Mexico
$24.2 billion

Note: U.S. Great Lakes includes: IL, IN, KY, MI, MO, and OH while South includes: AL, FL, GA, MS, SC, TN, and TX

Source: CAR Research, Book of Deals
Mexican Automotive Wages are One-Eighth to One-Fifth the Wages Paid to U.S. Hourly Auto & Parts Workers

Average Hourly Wages for Production and Non-Supervisory Workers in Motor Vehicle and Parts, 2007-2014

In Dollar We Trust
MX/USD
October 2000 – October 2015

8.00
10.00
12.00
14.00
16.00
18.00

Pesos/USD

23% depreciation
since 2011

Source: Federal Reserve Economic Data
Bigger Than Germany!
Mexican Capacity, Production, and 2015-2018 Production Forecast

Mexican Production Capacity

Mexican Production and Forecast

Sources: LMC Automotive
Some Mexican Advantages

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<tr>
<th>US/MEX Difference in Hourly Labor Cost on a Subcompact Car</th>
<th>$674 a car</th>
</tr>
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<tr>
<td>US/MEX FTA advantage on a Q5 Export to Europe</td>
<td>$4,500+ per vehicle</td>
</tr>
</tbody>
</table>
Imported From _____
Summary

• New US vehicle sales records set a new higher plateau.
• Have to have a hatch or bed to sell now with low fuel prices.
• Auto market having the best year in 15 years—Jobs, credits, interest rates, gasoline price, household wealth, etc. are all in favorable conditions—but for how long?
• Sales downturn is coming—but when?
• Even the US sales are held, US vehicle production will not.