2016 Midyear Collaborative Construction Economic Forecast

August 15, 2016
2:00 – 3:00 p.m., EDT
2016 Midyear Collaborative Construction Economic Forecast

Today’s moderator:

Jeff Leieritz
Senior Media Relations Manager
Associated Builders and Contractors
Moving Ahead: Issues Affecting the Residential and Nonresidential Construction Outlook

Kermit Baker, Hon. AIA
Chief Economist
The American Institute of Architects

August 15, 2016
Topics

• Residential issues: demographic shifts and homeownership.

• Status and trends in commercial and institutional building construction, and the Architecture Billings Index.

• 2016/2017 outlook for nonresidential building spending, and comparison of current forecasts to outlook as of beginning of the year.
Construction Recovery Continues to Plod Along, Particularly for Single-Family Residential

Spending at various points in the past construction cycle ($Billions)

- **S-F construction**
  - Peak: $434
  - Trough: $105
  - Current: $229

- **MF construction**
  - Peak: $53
  - Trough: $15
  - Current: $51

- **Comm/Ind bldg. const**
  - Peak: $244
  - Trough: $128
  - Current: $224

- **Instit. bldg const**
  - Peak: $256
  - Trough: $205
  - Current: $230

Note: Current as of Jun., 2016; Source: U.S. Census Bureau Construction Spending Put-in-Place
The Millennial Generation is Moving Into Age Ranges with Higher Headship Rates

Population Growth (Millions)

Headship Rate (Percent)

Age Group

- Under 25
- 25 to 29
- 30 to 34
- 35 to 39
- 40 to 44

2005-2015
2015-2025
Headship Rate
The National Homeownership Rate Has Fallen to Its Lowest Level in a Half Century

Source: JCHS tabulations of US Census Bureau, Housing Vacancy Surveys.
Nonresidential Building Trends and Outlook
First Half 2016 Results Show Nonresidential Building Spending Starting to See Slower Growth

Billions of $, NSA, January - June totals

<table>
<thead>
<tr>
<th>Category</th>
<th>2016</th>
<th>2015</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Nonres. Bldg. Construction</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$219.1</td>
<td>$206.0</td>
<td>6.3%</td>
</tr>
<tr>
<td><strong>Commercial/Industrial</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lodging</td>
<td>12.6</td>
<td>10.0</td>
<td>26.9%</td>
</tr>
<tr>
<td>Office</td>
<td>30.4</td>
<td>25.3</td>
<td>20.1%</td>
</tr>
<tr>
<td>Commercial (retail and other)</td>
<td>34.2</td>
<td>31.2</td>
<td>9.6%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>36.0</td>
<td>36.9</td>
<td>-2.6%</td>
</tr>
<tr>
<td><strong>Institutional</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health care</td>
<td>19.6</td>
<td>19.2</td>
<td>2.2%</td>
</tr>
<tr>
<td>Educational</td>
<td>41.0</td>
<td>38.6</td>
<td>6.2%</td>
</tr>
<tr>
<td>Religious</td>
<td>1.8</td>
<td>1.6</td>
<td>10.5%</td>
</tr>
<tr>
<td>Public safety</td>
<td>3.9</td>
<td>4.1</td>
<td>-6.4%</td>
</tr>
<tr>
<td>Amusement and recreation</td>
<td>10.2</td>
<td>9.2</td>
<td>10.2%</td>
</tr>
<tr>
<td>Transportation</td>
<td>20.3</td>
<td>20.8</td>
<td>-2.1%</td>
</tr>
<tr>
<td>Communication</td>
<td>9.0</td>
<td>9.0</td>
<td>0.5%</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau, Value of Construction Put in Place
Though Remaining Volatile, Pace of Growth in Architecture Billings Seems to be Slowing

diffusion index: 50 = no change from previous month, seasonally adjusted

Source: AIA Architecture Billings Index
All Major Construction Sectors Seeing Healthy ABI Scores

Billings scores since 2012; index: 50 = no change from previous month

Source: AIA Architecture Billings Index
Commercial Gains Projected to Moderate as Growth Swings Over to Institutional Categories

billions $ of construction spending on nonresidential buildings

<table>
<thead>
<tr>
<th>Category</th>
<th>2015 Spending Level</th>
<th>2016 % Change</th>
<th>2017 % Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Nonres.</td>
<td>$386</td>
<td>5.8%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Tot. Comm.</td>
<td>$145</td>
<td>11.7%</td>
<td>6.5%</td>
</tr>
<tr>
<td>Office</td>
<td>$56</td>
<td>14.7%</td>
<td>7.5%</td>
</tr>
<tr>
<td>Retail</td>
<td>$67</td>
<td>7.4%</td>
<td>5.2%</td>
</tr>
<tr>
<td>Tot. Instit.</td>
<td>$158</td>
<td>4.5%</td>
<td>5.8%</td>
</tr>
<tr>
<td>Health</td>
<td>$40</td>
<td>2.3%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Education</td>
<td>$85</td>
<td>6.5%</td>
<td>6.3%</td>
</tr>
</tbody>
</table>

Source: AIA Consensus Construction Forecast Panel, June, 2016
Economic Forecast
And Outlook

August 15, 2016

Robert Dietz, Ph.D.
NAHB Chief Economist
US Payroll Employment
Total jobs slightly below trend

National Association of Home Builders
Household Formations
Average yearly growth of household formations has doubled

Average: 1.4 million (12% renters)

Average: 0.5 million (130% renters)

Average: 1.0 million (109% renters)
Low Housing Inventory
Existing home inventory flat

Thousands, NSA

New Home Sales: Single-Family Houses for Sale
Number of single-family homes available for sale

National Association of Home Builders
Constraints on Building Growth

The Three L’s
Labor
Unfilled construction jobs rising

Job openings rate - Construction
12-month moving average

National Association of Home Builders
Lots

Housing Starts (Area) and Low/Very Low Lot Supply (bars)
Median Lot Value and Size
Lot size declining --- lot value increasing

Square Feet

Median Lot Value (Single-Family Starts)

Median Lot Size
(For Sale: Single-Family Detached)

8,589

Lending - AD&C Access

Source: Senior Loan Officer Opinion Survey (SLOOS), The Federal Reserve Board.
Forecasts
Residential Remodeling

Billions 2009 USD, SAAR

<table>
<thead>
<tr>
<th>Year</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>2.3%</td>
</tr>
<tr>
<td>2017</td>
<td>0.5%</td>
</tr>
<tr>
<td>2018</td>
<td>1.3%</td>
</tr>
</tbody>
</table>

Adjusted Actual

National Association of Home Builders
Multifamily Housing Starts

Leveling off

Thousands of units, SAAR

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
<th>“Normal”</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995-2003</td>
<td>331,000</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>308,000</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>355,000</td>
<td>15%</td>
</tr>
<tr>
<td>2015</td>
<td>395,000</td>
<td>12%</td>
</tr>
<tr>
<td>2016</td>
<td>386,000</td>
<td>-2%</td>
</tr>
<tr>
<td>2017</td>
<td>392,000</td>
<td>2%</td>
</tr>
<tr>
<td>2018</td>
<td>372,000</td>
<td>-5%</td>
</tr>
</tbody>
</table>

Avg=344,000

Trough to Current:
4th Q 09 = 82,000
2nd Q 16 = 397,000
+340%

2016Q2: 120% of “Normal”
2018Q4: 110% of “Normal”
NAHB/Wells Fargo Housing Market Index

The song remains the same

Index

Thousands, SAAR

NAHB/Wells Fargo Housing Market Index

The song remains the same

Single-Family Starts

HMI

National Association of Home Builders
Single-Family Starts
Growing pains

Thousands of units, SAAR

<table>
<thead>
<tr>
<th>Year</th>
<th>Units</th>
<th>&quot;Normal&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-2003</td>
<td>1,343,000</td>
<td>Normal</td>
</tr>
<tr>
<td>2013</td>
<td>620,000</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>647,000</td>
<td>4%</td>
</tr>
<tr>
<td>2015</td>
<td>713,000</td>
<td>10%</td>
</tr>
<tr>
<td>2016</td>
<td>793,000</td>
<td>11%</td>
</tr>
<tr>
<td>2017</td>
<td>888,000</td>
<td>12%</td>
</tr>
<tr>
<td>2018</td>
<td>992,000</td>
<td>12%</td>
</tr>
</tbody>
</table>

Trough to Current:
Mar 09 = 353,000
Jun 16 = 778,000
+120%

80% fall

2016Q2: 57% of "Normal"
2018Q4: 77% of "Normal"
Home Size Market Shift

Size of New Single-Family Homes

- SF Starts: Median Floor Area
- SF Starts: Average Floor Area
- SF Starts: Median 1 Year MA
- SF Starts: Average 1 Year MA

National Association of Home Builders
Architecture Billings Index
January 2008 through June 2016

June 2016: 52.6

Source: The American Institute of Architects
ABC’s National Construction Backlog Indicator (CBI) Average
2009Q1 through 2016Q1

Source: ABC
Nonresidential Construction Put-in-Place
December 2006 through June 2016

Source: U.S. Census Bureau
National Nonresidential Construction Spending by Subsector


Source: U.S. Census Bureau
Offshore Investment Sales Volumes Reach New Heights in 2015

Foreign Investment Increases 153.4 Percent in 2015 to $71.7b

Source: Jones Lang LaSalle; Real Capital Analytics

Note: Among transactions larger than $5.0 million
National Construction Employment
Monthly Net Change
July 2000 through July 2016

July 2016: +14K
# State-by-state Growth in Construction Jobs

*June 2015 v. June 2016*

<table>
<thead>
<tr>
<th>STATE</th>
<th>Year-over-year Ch. (‘000)</th>
<th>STATE</th>
<th>Year-over-year Ch. (‘000)</th>
<th>STATE</th>
<th>Year-over-year Ch. (‘000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIFORNIA</td>
<td>32.3</td>
<td>OREGON</td>
<td>6.1</td>
<td>DELAWARE*</td>
<td>0.7</td>
</tr>
<tr>
<td>FLORIDA</td>
<td>25.5</td>
<td>NEVADA</td>
<td>6.0</td>
<td>NEW MEXICO</td>
<td>0.5</td>
</tr>
<tr>
<td>COLORADO</td>
<td>13.2</td>
<td>UTAH</td>
<td>5.6</td>
<td>CONNECTICUT</td>
<td>0.4</td>
</tr>
<tr>
<td>WASHINGTON</td>
<td>12.5</td>
<td>HAWAII*</td>
<td>5.5</td>
<td>VERMONT</td>
<td>0.4</td>
</tr>
<tr>
<td>GEORGIA</td>
<td>12.2</td>
<td>ILLINOIS</td>
<td>3.8</td>
<td>NEBRASKA*</td>
<td>0.2</td>
</tr>
<tr>
<td>IOWA</td>
<td>12.2</td>
<td>TENNESSEE*</td>
<td>3.8</td>
<td>PENNSYLVANIA</td>
<td>-0.1</td>
</tr>
<tr>
<td>MASSACHUSETTS</td>
<td>11.2</td>
<td>MINNESOTA</td>
<td>3.5</td>
<td>RHODE ISLAND</td>
<td>-0.1</td>
</tr>
<tr>
<td>ARIZONA</td>
<td>11.0</td>
<td>MISSOURI</td>
<td>3.0</td>
<td>DISTRICT OF COLUMBIA*</td>
<td>-0.1</td>
</tr>
<tr>
<td>OHIO</td>
<td>9.9</td>
<td>LOUISIANA</td>
<td>2.9</td>
<td>ARKANSAS</td>
<td>-0.3</td>
</tr>
<tr>
<td>NEW YORK</td>
<td>8.6</td>
<td>MICHIGAN</td>
<td>2.4</td>
<td>ALASKA</td>
<td>-0.6</td>
</tr>
<tr>
<td>MARYLAND*</td>
<td>8.1</td>
<td>IDAHO</td>
<td>2.3</td>
<td>MONTANA</td>
<td>-1.1</td>
</tr>
<tr>
<td>NORTH CAROLINA</td>
<td>7.3</td>
<td>TEXAS</td>
<td>2.3</td>
<td>WYOMING</td>
<td>-1.5</td>
</tr>
<tr>
<td>WISCONSIN</td>
<td>7.1</td>
<td>VIRGINIA</td>
<td>1.4</td>
<td>MAINE</td>
<td>-1.7</td>
</tr>
<tr>
<td>OKLAHOMA</td>
<td>6.9</td>
<td>SOUTH DAKOTA*</td>
<td>1.2</td>
<td>WEST VIRGINIA</td>
<td>-1.8</td>
</tr>
<tr>
<td>NEW JERSEY</td>
<td>6.8</td>
<td>MISSISSIPPI</td>
<td>1.1</td>
<td>ALABAMA</td>
<td>-2.1</td>
</tr>
<tr>
<td>INDIANA</td>
<td>6.7</td>
<td>NEW HAMPSHIRE</td>
<td>1.1</td>
<td>KANSAS</td>
<td>-3.7</td>
</tr>
<tr>
<td>SOUTH CAROLINA</td>
<td>6.7</td>
<td>KENTUCKY</td>
<td>0.8</td>
<td>NORTH DAKOTA</td>
<td>-4.3</td>
</tr>
</tbody>
</table>

*Construction, Mining, and Logging are included in one industry.*

Source: U.S. Bureau of Labor Statistics
Inputs to Construction PPI


Jul-01
Nov-01
Mar-02
Jul-02
Nov-02
Mar-03
Jul-03
Nov-03
Mar-04
Jul-04
Nov-04
Mar-05
Jul-05
Nov-05
Mar-06
Jul-06
Nov-06
Mar-07
Jul-07
Nov-07
Mar-08
Jul-08
Nov-08
Mar-09
Jul-09
Nov-09
Mar-10
Jul-10
Nov-10
Mar-11
Jul-11
Nov-11
Mar-12
Jul-12
Nov-12
Mar-13
Jul-13
Nov-13
Mar-14
Jul-14
Nov-14
Mar-15
Jul-15
Nov-15
Mar-16
Jul-16

July 2015 v. July 2016:
-2.3%

Source: U.S. Bureau of Labor Statistics
Construction Materials PPI
12-month % Change as of July 2016

- Crude Petroleum: -14.4%
- Prepared Asphalt and Tar Roofing & Siding Products: -14.4%
- Fabricated Structural Metal Products: -6.2%
- Nonferrous Wire and Cable: -6.2%
- Steel Mill Products: -2.1%
- Natural Gas: -1.0%
- Iron and Steel: -0.9%
- Plumbing Fixtures and Fittings: -0.1%
- Concrete Products: 3.0%
- Softwood Lumber: 3.0%
- Concrete Products: 3.7%
- Prepared Asphalt and Tar Roofing & Siding Products: 0.6%
- Fabricated Structural Metal Products: 0.3%
- Steel Mill Products: 0.3%
- Natural Gas: 0.6%
- Iron and Steel: 0.6%
- Plumbing Fixtures and Fittings: 3.0%
- Concrete Products: 3.7%

Source: U.S. Bureau of Labor Statistics
Things about which to be Nervous

- Regulators;
- Negative interest rates and other forms of monetary stimulus;
- Stretched asset values in the U.S., perhaps leading to excess investment in certain categories and creating negative wealth effect scenarios;
- Housing activity may be peaking & auto sales may be peaking;
- Consumer delinquencies;
- The usual black swan candidates; &
- Uncertainty surrounding the 2016 election cycle.
Nonresidential Spending Forecast

<table>
<thead>
<tr>
<th>Billions of $</th>
<th>2015 Actual</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial</td>
<td>$144.5</td>
<td>$156.9</td>
<td>$161.9</td>
</tr>
<tr>
<td></td>
<td>8.5%</td>
<td>3.2%</td>
<td></td>
</tr>
<tr>
<td>Industrial</td>
<td>$83.4</td>
<td>$80.2</td>
<td>$85.0</td>
</tr>
<tr>
<td></td>
<td>-3.9%</td>
<td>6.0%</td>
<td></td>
</tr>
<tr>
<td>Institutional</td>
<td>$157.9</td>
<td>$160.2</td>
<td>$164.2</td>
</tr>
<tr>
<td></td>
<td>1.5%</td>
<td>2.5%</td>
<td></td>
</tr>
<tr>
<td>Nonresidential Building</td>
<td>$385.8</td>
<td>$397.2</td>
<td>$411.1</td>
</tr>
<tr>
<td></td>
<td>3.0%</td>
<td>3.5%</td>
<td></td>
</tr>
</tbody>
</table>
Questions and Answers

Kermit Baker
Chief Economist, American Institute of Architects

Robert Dietz
Chief Economist, National Association of Home Builders

Anirban Basu
Chief Economist, Associated Builders and Contractors