Economic Update
Consensus Revenue Estimating Conference

Federal Reserve Bank of Chicago
May 17, 2016

Paul Traub
Senior Business Economist
### Main Economic Indicators

**Annual Comparison – 2009, 2015 and 2016 March YTD**

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP – Annual Growth Rate</td>
<td>-2.8%</td>
<td>2.4%</td>
<td>1.9% &lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>PCE Core Inflation Yr. / Yr.</td>
<td>1.2%</td>
<td>1.3%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Unemployment Rate – Annual Avg.</td>
<td>9.3%</td>
<td>5.3%</td>
<td>4.9%</td>
</tr>
<tr>
<td>Participation Rate</td>
<td>65.4%</td>
<td>62.6%</td>
<td>62.9%</td>
</tr>
<tr>
<td>Nonfarm Job Growth (Monthly Avg.)</td>
<td>-298,100</td>
<td>228,700</td>
<td>203,000</td>
</tr>
<tr>
<td>Initial Unemployment Claims</td>
<td>573,730</td>
<td>278,140</td>
<td>268,767</td>
</tr>
</tbody>
</table>

<sup>1</sup> Year-over-year change - Q1 ‘16 / Q1 ‘15

Source: U.S. Bureau of Economic Analysis, Census Bureau and Bureau of Labor Statistics
U.S. Real GDP

Contribution to Percent Change, Q4, 2015 - Q/Q at SAAR

Note: Private domestic investment includes: nonresidential -0.76, residential +0.49, and -0.33 inventory change. Government Consumption and Investment includes: Federal -0.11 and State and Local 0.31. Net Exports includes: Exports -0.31 and Imports -0.02.

Source: U.S. Bureau of Economic Analysis
Real Personal Consumption Expenditures

Billions of Chained $2009, Percent Change - Q/Q at SAAR

Source: U.S. Bureau of Economic Analysis
U.S. Light Vehicle Sales

S.A.A.R – Millions of Units

Source: Ward’s Automotive and BEA
Private Fixed Investment

Billions of Chained $2009, Percent Change - Q/Q at SAAR

Source: U.S. Bureau of Economic Analysis
New Orders and Industrial Production

Index – 2012 = 100

Note: New Orders Nondefense Capital Goods Excluding Aircraft.
U.S. Housing Starts

In Thousands of Units (SAAR) and Annual Average

Note: The United States averaged 1.5 million housing starts per year 1990 to 2004.

Source: U.S. Census Bureau
Government Consumption & Investment

Billions Chained $2009, Index – Q4 2007 = 100

Source: U.S. Bureau of Economic Analysis
Government Consumption & Investment

Billions of Chained $2009, Percent Change - Q/Q at SAAR

Source: U.S. Bureau of Economic Analysis
Stronger U.S. Dollar

Select Currencies Jan 3, 2014 to May 6, 2016, Index – 2014 = 100

Source: Board of Governors – Federal Reserve System
Real Imports and Exports

Billions Chained $2009, Index – 2005 = 100

Net Exports

Exports

Imports

Source: U.S. Bureau of Economic Analysis
China PMI

Manufacturing & Nonmanufacturing - SA, +50 Signifies Expansion

Source: China Federation of Logistics & Purchasing and Haver Analytics
Global Outlook

IMF Forecast for Growth (Jan ‘16 Update), % Chg. Yr./Yr.

Source: IMF - World Economic Outlook
U.S. Real GDP Blue Chip Forecast

Annual Percent Change – Chained $2009

Source: April 2015 Blue Chip Economic Indicators
U.S. Consumer
Real Disposable Personal Income & Savings Rate

Percent Change Year/Year and Percent of Personal Income

Source: U.S. Bureau of Economic Analysis
Total Consumer Credit

Revolving and Non-revolving Credit as % of DPI

Mar '16: 26.2%
19.0%

Source: Federal Reserve Bank - Board of Governors
Personal Interest Payments

As a Percent of Disposable Personal Income

Source: U.S. Bureau of Economic Analysis
Stock Market

S&P 500 and Dow Jones Indices, Index Jan, 2014 = 100

Source: St Louis Fed and S&P Dow Jones
Consumer Sentiment

University of Michigan

Index

Source: Thomson Reuters / University of Michigan
Buying Conditions for Vehicles

University of Michigan

Source: Thomson Reuters / University of Michigan
Monetary Policy
Employment & Inflation
Unemployment Rate & PCE Inflation

Percent Unemployed, PCE % Change Yr./Yr.

Underutilization of Labor

U6 Unemployment Rate - SA

Includes total unemployed plus marginally attached workers plus employed part-time for economic reasons.

U.S. Nonfarm Payrolls

Monthly and Annual Average Job Change – In Thousands

Average Hourly Earnings & Hours Worked

Total Private, All Employees – % Change Y/Y and Hours, SA

Inflation Expectations

PCE Core Inflation – Yr./Yr. & Q4/Q4

Survey of Professional Forecasters – Q1 ‘16 Forecast

Source: Bureau of Economic Analysis and FRB Philadelphia Q1 ‘16 Survey
Appropriate pace of policy firming

Midpoint of target range or target level of the Fed Funds Rate

Source: Board of Governors – Federal Reserve System, December 2015
Yield Curve

10 Year – 1 Year Treasuries

Source: Board of Governors – Federal Reserve System
Michigan Economy
# Main Economic Indicators

**Annual Comparison – 2009, 2015 and 2016 March YTD**

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<th>2016</th>
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<tr>
<td>GDP – Annual Growth Rate</td>
<td>-8.2%</td>
<td>2.5% Est.</td>
<td>N/A</td>
</tr>
<tr>
<td>CPI Core Inflation Yr. / Yr.</td>
<td>1.0%</td>
<td>1.7%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Unemployment Rate – Annual Avg.</td>
<td>13.8%</td>
<td>5.4%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Participation Rate</td>
<td>63.1%</td>
<td>60.3%</td>
<td>61.2%</td>
</tr>
<tr>
<td>Nonfarm Job Growth (Monthly Avg.)</td>
<td>-18,400</td>
<td>5,900</td>
<td>10,700</td>
</tr>
<tr>
<td>Initial Unemployment Claims</td>
<td>28,000</td>
<td>8,720</td>
<td>9,250</td>
</tr>
</tbody>
</table>

1. CPI for Detroit/Ann Arbor/Flint CSA includes Macomb, Oakland, Wayne, Lapeer, Livingston, St. Clair, Monroe and Washtenaw counties.

Source: U.S. Bureau of Economic Analysis, Census Bureau and Bureau of Labor Statistics
Activity Index: Overall

**Chart:**
- **X-axis:** Years 2013 to 2016
- **Y-axis:** Index values ranging from -60.0 to 80.0

**Legend:**
- Blue line: Current
- Red line: Outlook

**Notable Points:**
- April 2016
  - Current: 24.1
  - Outlook: -4.1

**Source:** Federal Reserve Bank of Chicago
Chicago Fed Survey of Business Conditions

Activity Index: by Sector

Manufacturing Index

Nonmanufacturing Index

Apr '16 23

Apr '16 -19
Contacts expressed a renewed optimism as growth in economic activity pick up to a moderate pace in late February and March.

Growth in consumer spending maintained a steady yet modest pace. Retailers again expressed disappointment that lower gasoline prices and improvements in the labor market were not providing more of a boost to consumer spending.

Growth in business spending rose to a moderate pace in late February and March.
  - Retailers and manufacturers indicated comfortable inventory levels though the mild winter left some retailers with excess stock of winter related items.
  - Hiring picked up to a moderate pace, as did the number of contacts indicating they planned to increase workforces in the future.
  - Strong demand continued for skilled workers, particularly for professional and technical occupations, sales, and skilled manufacturing and building trades.

Construction and real estate activity increased slightly over the reporting period. Residential construction increased for new single-family markets and in urban areas.
• Manufacturing production rose at a modest rate in most industries and activity remained strong in the automotive and aerospace industries. Soft demand for agricultural and mining machinery continued to hurt the heavy machine industry. However, manufacturers primarily serving the oil and gas industry reported adjusting their product offerings toward other industries.

• Overall, financial conditions improved some over the reporting period. Equity markets regained much of their losses and volatility subsided. Business loan demand improved marginally and loan pricing remains competitive. Commercial real estate loan demand remains strong. Credit card utilization increased though balances remained steady. Residential real estate demand declined some while auto loan volumes continued to grow.

• In the agricultural sector, spring arrived early allowing field work to begin. Corn, soybean, and wheat prices moved up, and rents and fertilizer prices moved down. Cattle prices edged higher, while hog and dairy prices were somewhat lower. Dairy prices dropped and some operations that had not made forward contracts at higher prices now face losses.
Midwest Economic Index

Michigan’s Contribution to the MEI

Source: Federal Reserve Bank of Chicago
Relative Midwest Economic Index

Michigan’s Contribution to the Relative MEI

Index

2015 0.12
2016 0.28
Mar ‘16 0.30

Source: Federal Reserve Bank of Chicago
ISM Purchasing Managers Index

Composite and Manufacturing, SA - Greater than 50 = Expansion

Source: Institute for Supply Management, Haver Analytics and FRED

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Federal Reserve Bank of Chicago
Michigan Housing Starts

In Thousands of Units

Source: U.S. Census Bureau
Michigan Nonfarm Payrolls

Monthly Average Job Change In Thousands

<table>
<thead>
<tr>
<th>Year</th>
<th>Job Change in Thousands</th>
</tr>
</thead>
<tbody>
<tr>
<td>'07</td>
<td>-4.9</td>
</tr>
<tr>
<td>'08</td>
<td>-8.8</td>
</tr>
<tr>
<td>'09</td>
<td>-24.3</td>
</tr>
<tr>
<td>'10</td>
<td>-0.6</td>
</tr>
<tr>
<td>'11</td>
<td>7.4</td>
</tr>
<tr>
<td>'12</td>
<td>6.8</td>
</tr>
<tr>
<td>'13</td>
<td>6.3</td>
</tr>
<tr>
<td>'14</td>
<td>6.0</td>
</tr>
<tr>
<td>'15</td>
<td>5.1</td>
</tr>
<tr>
<td>'16 Mar YTD</td>
<td>10.7</td>
</tr>
</tbody>
</table>

Unemployment & Participation Rates

Percent of Labor Force - SA

Unemployment Rates

- Michigan: Blue line
- U.S.: Red line

Mar '16

5.0%

4.8%

Participation Rates

- Michigan: Blue line
- U.S.: Red line

Mar '16

63.0%

61.5%

Source: U.S. Department of Labor: Bureau of Labor Statistics and Haver Analytics
Average Hourly Earnings & Hours Worked

Michigan Nonfarm - Total Private, % Chg. Y/Y & Hours, SA

Michigan Real Personal Income

In Billions of $2009 and % Change Year/Year

Source: Bureau of Economic Analysis and Haver Analytics
Michigan Employment & Auto Sales

Thousands of Employees and Sales – 1990 to 2015

Source: Bureau of Labor Statistics and Ward's Automotive
Michigan Automotive Industry

Production, Employment, and Vehicles/Employee - Index 2007 = 100

Source: Author’s calculations using data from Bureau of Labor and Ward’s Automotive.
Average Financing at Finance Companies

New Car Loan Parameters – Index 2008 = 100, NSA

Source: Author’s calculations using Federal Reserve Board of Governors data

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Federal Reserve Bank of Chicago
U.S. Light Vehicle Sales

Thousands of Units – Calendar Year

Thousands

Source: Ward’s Automotive and BEA and Blue Chip Consensus Forecast.
Thank You!