2014 Economic Outlook Forum:
The Mississippi Outlook

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The Mississippi Index of Coincident Indicators reflects economic conditions existing in a given month. The index is constructed by the Federal Reserve Bank of Philadelphia and re-indexed to 2004. The Index is based on changes in nonfarm employment, the unemployment rate, average manufacturing workweek length and wage and salary disbursements.
Regional Comparison
August Coincident Index as Percentage of Pre-recession Peak

<table>
<thead>
<tr>
<th>State</th>
<th>Index Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL</td>
<td>93.7%</td>
</tr>
<tr>
<td>AR</td>
<td>99.7%</td>
</tr>
<tr>
<td>FL</td>
<td>101.3%</td>
</tr>
<tr>
<td>GA</td>
<td>101.4%</td>
</tr>
<tr>
<td>KY</td>
<td>102.1%</td>
</tr>
<tr>
<td>LA</td>
<td>100.4%</td>
</tr>
<tr>
<td>MS</td>
<td>101.4%</td>
</tr>
<tr>
<td>NC</td>
<td>103.1%</td>
</tr>
<tr>
<td>OK</td>
<td>101.1%</td>
</tr>
<tr>
<td>SC</td>
<td>105.6%</td>
</tr>
<tr>
<td>TN</td>
<td>112.7%</td>
</tr>
<tr>
<td>TX</td>
<td>107.5%</td>
</tr>
<tr>
<td>US</td>
<td>112.7%</td>
</tr>
</tbody>
</table>
Average Annual Growth in Employment

[Graph showing average annual growth in employment from 2008 to 2014 for various states, including AL, AR, FL, GA, KY, MS, NC, OK, TN, TX, and US.]
The slow growth in employment observed over the past decade is not historically typical.

* 2014-2017 is URC Forecast
Where are the Jobs?
Mississippi added an average 10,957 jobs in 2014 over 2013

- Manufacturing: 3,557 jobs
- Trade, Transportation & Utilities: 2,800 jobs
- Leisure & Hospitality: 2,300 jobs
- Education & Health Services: 1,586 jobs
- Government: 957 jobs
- Construction: 186 jobs
- Mining and logging: 157 jobs
- Financial Activities: 71 jobs
- Professional & Business Services: 43 jobs
- Information: -129 jobs
- Other Services: -571 jobs
Decline
Less than 100 Gained
Greater than 100 Gained

Jobs Gained (Lost)
By County
2013–2014*

37 Counties Lost Employment

* The average employment for the January to July period is compared for both years.
The Mississippi Index of Leading Indicators reflects economic conditions expected for the coming months. The index is constructed by the University Research Center and indexed to 2004. There are 8 components of the Index: MS Initial Unemployment Claims; MS Income Tax Withholdings; MS Value of Residential Building Permits; MS MFG Employment Intensity Index, MS Diesel Fuel Consumption Index; ISM Index of US MFG Activity; US Consumer Expectations Index and US Retail Sales.
Year-Over-Year Growth in Real Personal Income Less Transfer Payments: Mississippi
by Quarter

Gray Areas Represent National Recessions.

The series declined in 2013, dipping into negative territory in the 4th quarter. We saw modest improvement in 1st quarter of 2014.
MS Real Income Tax Withholdings
Six Month Moving Monthly Average Growth Over Prior Year

Annual Growth by Calendar Year
- 2011  0.6%
- 2012  3.1%
- 2013  1.2%
- 2014* 2.7%
* 2014 is for Jan-Aug
MS Real Retail Sales Tax
Six Month Moving Monthly Average Growth Over Prior Year

Annual Growth By Calendar Year

<table>
<thead>
<tr>
<th>Year</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>-1.7%</td>
</tr>
<tr>
<td>2012</td>
<td>1.5%</td>
</tr>
<tr>
<td>2013</td>
<td>1.8%</td>
</tr>
<tr>
<td>2014*</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

2014* Jan-Aug
MS Residential Building Permits
Three Month Moving Average Number of Units

No sustaining momentum
MS construction employment improved dramatically in 2013 but most of these gains have been lost in 2014.
MS Diesel Fuel Consumption Index

Three Month Moving Monthly Average

January 1996 to January 2014

University Research Center, IHL

September 2014
## Hotel Occupancy Rates In Mississippi, Jan-Jul

<table>
<thead>
<tr>
<th>Region</th>
<th>2013</th>
<th>2014</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mississippi</td>
<td>59.9%</td>
<td>60.2%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Alabama</td>
<td>57.1%</td>
<td>59.0%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Arkansas</td>
<td>51.6%</td>
<td>53.4%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Louisiana</td>
<td>63.0%</td>
<td>65.3%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Tennessee</td>
<td>58.5%</td>
<td>61.2%</td>
<td>4.7%</td>
</tr>
<tr>
<td>United States</td>
<td>63.0%</td>
<td>65.1%</td>
<td>3.4%</td>
</tr>
</tbody>
</table>

Source: STR (Smith Travel Research, Inc.) 2014
MS Unemployment Claims

Three Month Moving Average

University Research Center, IHL
September 2014
MS Unemployment Rate
MS Manufacturing Workweek Length

Three Month Moving Average
Growth In Real MS GDP

Historical and URC Projections

MS University Research Center, IHL
Highlights

• Mississippi Is growing, but at a modest pace
  – >5% growth in GF is misleading
  – 2014 growth is below that of 2013
  – Growth in MS is below that of the US

• The sources of growth in 2014 appear more sustainable than in 2013

• Growth will strengthen with that of the Nation
US Economic Outlook

How long will the ride last?

September 2014

Douglas Handler, IHS Chief US Economist, +1 781 301 9283, doug.handler@ihs.com

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US Economic Overview
Executive Summary

- The weather and inventory induced volatility in q1 and q2 is behind us.
- Continued good economic growth to continue through at least 2015.
- Sector contributions:
  - The consumer will remain the unsung hero in the recovery.
  - Housing will continue to improve, but remain below-par due to structural and demographic issues.
  - Investment spending will also grow, but tech-spending creates tenuous revenue comparisons.
  - Most of the near-term volatility that will come from international trade, but over the long-term, the size of the trade deficit should grow only modestly.
  - Government spending contributions to growth will remain near zero with little additional federal deficit reduction efforts expected.
- Fed tightening to take place in third quarter of 2015, but the period leading up to this event will be fraught with highly speculative gloom-and-doom arguments.
- Key dependencies:
  - Improved fundamentals in labor market. Better labor supply. Improved productivity.
  - No economic shocks (e.g., fiscal policy gaffes, international crises turned hot, foreign economic growth to improve).
  - Potential rebound in the US$ orderly with reasonable import responses.
  - No irrational expectations to pending Fed policy moves in 2015.
Quarter-to-quarter volatility is clouding the big picture, but it’s still steady-as-she-goes.

Real GDP growth

Source: IHS
Q2 was a payback quarter, with rebounds in inventory growth and exports. Imports remain problematic in the short run.
Looking forward, we will still be counting on consumer spending to drive the bulk of economic growth

Contributions to real GDP growth
## US economic growth by sector

### Real GDP and its components

<table>
<thead>
<tr>
<th>Percent change</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real GDP</td>
<td>2.2</td>
<td>2.2</td>
<td>2.9</td>
<td>3.1</td>
</tr>
<tr>
<td>Consumption</td>
<td>2.4</td>
<td>2.2</td>
<td>2.7</td>
<td>3.3</td>
</tr>
<tr>
<td>Residential investment</td>
<td>11.9</td>
<td>3.7</td>
<td>14.3</td>
<td>15.2</td>
</tr>
<tr>
<td>Business fixed investment</td>
<td>3.0</td>
<td>5.9</td>
<td>5.3</td>
<td>5.7</td>
</tr>
<tr>
<td>Federal government</td>
<td>-5.7</td>
<td>-2.4</td>
<td>-0.6</td>
<td>-0.9</td>
</tr>
<tr>
<td>State &amp; local government</td>
<td>0.5</td>
<td>0.9</td>
<td>1.2</td>
<td>1.1</td>
</tr>
<tr>
<td>Exports</td>
<td>3.0</td>
<td>2.8</td>
<td>4.9</td>
<td>4.1</td>
</tr>
<tr>
<td>Imports</td>
<td>1.1</td>
<td>3.2</td>
<td>4.4</td>
<td>5.7</td>
</tr>
</tbody>
</table>
## Other key US indicators

<table>
<thead>
<tr>
<th>Key indicators</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent change</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial production</td>
<td>2.9</td>
<td>4.1</td>
<td>3.6</td>
<td>3.6</td>
</tr>
<tr>
<td>Payroll employment</td>
<td>1.7</td>
<td>1.8</td>
<td>1.8</td>
<td>1.7</td>
</tr>
<tr>
<td>Light-vehicle sales (Millions)</td>
<td>15.5</td>
<td>16.4</td>
<td>16.7</td>
<td>17.0</td>
</tr>
<tr>
<td>Housing starts (Millions)</td>
<td>0.93</td>
<td>1.02</td>
<td>1.29</td>
<td>1.54</td>
</tr>
<tr>
<td>Consumer Price Index</td>
<td>1.5</td>
<td>1.9</td>
<td>1.4</td>
<td>1.6</td>
</tr>
<tr>
<td>Core CPI</td>
<td>1.8</td>
<td>1.8</td>
<td>2.0</td>
<td>1.9</td>
</tr>
<tr>
<td>Brent crude oil price ($/barrel)</td>
<td>109</td>
<td>106</td>
<td>104</td>
<td>105</td>
</tr>
<tr>
<td>Federal funds rate (%)</td>
<td>0.1</td>
<td>0.1</td>
<td>0.3</td>
<td>2.0</td>
</tr>
<tr>
<td>10-year Treasury yield (%)</td>
<td>2.4</td>
<td>2.6</td>
<td>3.2</td>
<td>3.7</td>
</tr>
</tbody>
</table>
# US industrial production growth

<table>
<thead>
<tr>
<th>Industrial production</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Percent change</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All manufacturing</td>
<td>2.9</td>
<td>3.9</td>
<td>3.9</td>
<td>3.4</td>
</tr>
<tr>
<td>Motor vehicles &amp; parts</td>
<td>7.8</td>
<td>8.0</td>
<td>4.9</td>
<td>1.6</td>
</tr>
<tr>
<td>Computers &amp; electronics</td>
<td>6.9</td>
<td>5.4</td>
<td>8.6</td>
<td>9.5</td>
</tr>
<tr>
<td>Electrical equip. &amp; appliances</td>
<td>2.9</td>
<td>3.9</td>
<td>4.8</td>
<td>5.3</td>
</tr>
<tr>
<td>Machinery</td>
<td>1.8</td>
<td>6.5</td>
<td>5.3</td>
<td>5.0</td>
</tr>
<tr>
<td>Textiles</td>
<td>-0.9</td>
<td>-1.2</td>
<td>0.1</td>
<td>-0.6</td>
</tr>
<tr>
<td>Furniture</td>
<td>3.3</td>
<td>6.9</td>
<td>5.5</td>
<td>3.3</td>
</tr>
<tr>
<td>Chemicals</td>
<td>1.3</td>
<td>1.7</td>
<td>2.9</td>
<td>3.2</td>
</tr>
</tbody>
</table>
Employment, Inflation, and Interest Rates
Is the labor market getting tight enough to drive wage pressures?

Job creation and the unemployment rate

Source: IHS

© 2014 IHS
The big question: Is the labor market loose or tight?

- Why do we need to know?
  - Will drive timing and magnitude of Fed actions.

- Is the current condition of the labor market due to either:
  - Structural issues – mismatches between labor supply and demand (TIGHT)
  - Cyclical issues – inadequate economic growth (LOOSE)

<table>
<thead>
<tr>
<th>Structural Issues</th>
<th>Cyclical Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aging labor force</td>
<td>Disillusionment with job search prospects</td>
</tr>
<tr>
<td>Skills mismatch</td>
<td>Poor job growth in manufacturing and construction sectors</td>
</tr>
<tr>
<td>Poor mobility</td>
<td>Inadequate wages</td>
</tr>
</tbody>
</table>
There’s still a cadre of workers looking to add hours.

Part-timers for economic reasons (000s)
Do we exclude the long-term unemployed when looking at how a tight labor market may drive wage pressures?

Number of unemployed in the labor force (000s)

Source: IHS

© 2014 IHS
Structural unemployment? Hiring and separations remain flat, while openings are back at pre-recession rates

Labor market mobility characteristics

Source: IHS
Only the services areas are materially adding jobs

Employment before and after the recession (millions)

Losses from recession: 7.4 million
Changes since recession end: 8.2 million

Change during recession *
Change since end of recession *

* = Recession period: December 2007 through June 2009
Source: IHS

© 2014 IHS
Job growth in the construction and manufacturing sectors has accelerated, but is still sub-par.

Growth over the past 12 months (000s)

- Federal Government
- Information
- Utilities
- Education
- State Government
- Other Services
- Mining
- Financial Services
- Local Government
- Wholesale
- Transportation
- Manufacturing
- Construction
- Retail
- Healthcare
- Leisure & Hospitality
- Prof. & Bus. Services

Total = 2.5 million

Source: IHS
About 3% of the working age population has dropped out of the labor force since the end of the recession.

Source: IHS
The hunt for the lost labor force begins.

Absolute labor force growth (12-month change, 000s)

Source: IHS
The declines in employment/population ratio suggest demographics playing a major role in participation rate decline.

Where did the workers go?

- Baby-boomer aging into population cohorts with lower working rates.
- Lack of middle-skills jobs
- Discouragement
- Retirements
- School enrollment

Labor force metrics

- Labor force participation rate
- Employment/population ratio (16+)
Two problems: (1) Participation rates are falling. (2) More people are moving into age cohorts with generally lower participation rates.

Working age population by age cohort (Millions)

Labor force participation rates

<table>
<thead>
<tr>
<th>Age Cohort</th>
<th>2009</th>
<th>2014 (est.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>65+</td>
<td>17%</td>
<td>18%</td>
</tr>
<tr>
<td>55-64</td>
<td>65%</td>
<td>64%</td>
</tr>
<tr>
<td>45-54</td>
<td>82%</td>
<td>80%</td>
</tr>
<tr>
<td>35-44</td>
<td>84%</td>
<td>82%</td>
</tr>
<tr>
<td>25-34</td>
<td>83%</td>
<td>81%</td>
</tr>
<tr>
<td>20-24</td>
<td>73%</td>
<td>71%</td>
</tr>
<tr>
<td>16-19</td>
<td>38%</td>
<td>34%</td>
</tr>
</tbody>
</table>

© 2014 IHS
Only the age cohorts with the lower participation rates are meaningfully growing.
No discernible inflation pressures here…

Why are wages not rising?

- **Sector mix** – a disproportional amount of jobs created in lower-paying fields
- **Experience displacement** – more experienced employees being replaced by less experienced ones
- **Skills displacement** – improved tools enabling lower paid employees to work at levels formerly held by higher paid staff
- “Pent up wage deflation” – sticky wages prevented full wage adjustments from occurring during the recession
- **Labor market slack** – many facets of the labor market still face excess supply issues
Here’s what the Fed is looking at to identify inflation.

Personal consumption deflators

Source: IHS
Wage gains surpassing inflation improve spending power

Spending power

Source: IHS

© 2014 IHS
If inflation accelerates, housing and medical care will probably be among the drivers.

Source: IHS
Why has wage growth lagged?

• Sector mix – a disproportional amount of jobs created in lower-paying fields
• Experience displacement – more experienced employees being replaced by less experienced ones
• Skills displacement – improved tools enabling lower paid employees to work at levels formerly held by higher paid staff
• “Pent up wage deflation” – sticky wages prevented full wage adjustments from occurring during the recession
Productivity must increase if compensation grows.

Economic efficiency and costs

Output / Hour = Compensation / Hour - Unit Labor Costs

Source: IHS
Monetary policy status quo maintained through mid-2015, although long-term rates will rise as expansion gathers steam.

**Interest rate outlook (percent)**

- Fed funds rate
- 10-year treasury

Source: IHS

© 2014 IHS
Investment spending will continue to grow, but much more on the “real” side than nominal spending.
Corporate profit margins remain near all-time highs, despite weather-driven drop in 2014Q1.

NIPA corporate profits are pre-tax and include capital consumption adjustment and inventory valuation adjustment.

Source: IHS

© 2014 IHS
The consumer, consumer markets and the emergence of payroll cycle economics
Consumer spending: Positives beginning to outweigh the negatives.

<table>
<thead>
<tr>
<th>Negative Forces</th>
<th>Positive Forces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slow wage growth</td>
<td>Pent-up demand for durable goods (autos)</td>
</tr>
<tr>
<td>Debt burdens still high</td>
<td>Jobs growth picking up</td>
</tr>
<tr>
<td>Student loan debt on the rise</td>
<td>House prices rising</td>
</tr>
<tr>
<td>Low fertility rates and population growth rates</td>
<td>Debt burdens lower</td>
</tr>
<tr>
<td>Real median household income flat, income inequality up</td>
<td>Household asset values surpassed pre-crisis levels (for some)</td>
</tr>
<tr>
<td>Poverty rates elevated</td>
<td>E-commerce retail sales gaining share of retail trade</td>
</tr>
<tr>
<td>Food prices creeping up</td>
<td>Back-to-school retail sales looking solid but not as strong as last year</td>
</tr>
</tbody>
</table>
Household median and mean incomes have been stagnant for more than a decade.

Source: US Census: Income, Poverty and Health Insurance Coverage in the United States  © 2014 IHS
Income inequalities among ethnicities is expected to widen.

**Median household income, real 2009 US$ measure**

Source: IHS
We give the back-to-school season this year a B+.
The holiday season in 2014 is expected to outpace the last two years.

Not seasonally adjusted retail sales November – December, percent change y/y

Source: IHS
Resilient consumer spending is the unsung hero in the current economic environment.
While nondurables and services have remained steady, durables have slowly been contributing more to GDP
US light-vehicle sales hold at near pre-recession sales rates.

Light-vehicle sales

Source: IHS
Healthcare will take a rising share of personal consumption expenditures in the decade ahead

Personal consumption by category (nominal)

Source: IHS
Housing and Construction
The housing recovery should be here, but…

<table>
<thead>
<tr>
<th>Pluses</th>
<th>Minuses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reasonable mortgage rates</td>
<td>Adverse household formation among under-35 and 35-44 y.o. households.</td>
</tr>
<tr>
<td>Decent job creation</td>
<td>Greater perceived risk of holding real estate</td>
</tr>
<tr>
<td>Consumer deleveraging helps affordability</td>
<td>Higher input prices for builders squeezing margins</td>
</tr>
<tr>
<td>Recent history of price appreciation</td>
<td>Shortage of buildable lots</td>
</tr>
<tr>
<td>Rental markets tight, helping spur multi-family starts</td>
<td>Very stringent lending standards for builders and buyers</td>
</tr>
<tr>
<td></td>
<td>Job mobility stuck at recession levels</td>
</tr>
<tr>
<td></td>
<td>Significant student loan burden</td>
</tr>
<tr>
<td></td>
<td>Lack of distressed properties for sale, especially impacting investor demand</td>
</tr>
<tr>
<td></td>
<td>Household formation may have slowed</td>
</tr>
</tbody>
</table>
Single-family housing indicators: Also improving, but slowly

**Existing Home Sales***

- 2007: 5.5
- 2008: 3.5
- 2009: 2.5
- 2010: 1.5
- 2011: 1.0
- 2012: 0.5
- 2013: 0.25
- 2014: 1.0

**New Home Sales***

- 2007: 1.0
- 2008: 0.8
- 2009: 0.6
- 2010: 0.4
- 2011: 0.2
- 2012: 0.0
- 2013: 0.2
- 2014: 1.0

**Housing Permits***

- 2007: 1.25
- 2008: 0.25
- 2009: 0.5
- 2010: 0.75
- 2011: 1.0
- 2012: 1.25
- 2013: 1.0
- 2014: 0.75

**Housing Starts***

- 2007: 1.25
- 2008: 0.25
- 2009: 0.5
- 2010: 0.75
- 2011: 1.0
- 2012: 1.25
- 2013: 1.0
- 2014: 0.75

*Millions, SA
Source: IHS

© 2014 IHS
Overall mortgage debt has come down, but financial obligations* will increase as interest rates increase.

Share of disposable income (%)

Outstanding Nonmortgage Consumer Debt

Outstanding Mortgage Debt

Monthly Financial Obligations*

Interest payments, rent, auto lease payments, homeowners' insurance and property tax

Source: IHS
The rebound in home sales has been solid, but pre-recession levels will not be re-attained.
Housing picks up, but not back to last decade’s peaks; share of multi-family increases.
Over the past ten years, 4% of all households have sold their homes without buying anew

Homeownership rates

Source: IHS
Homeownership rates are dropping for all age cohorts except maybe 65+
Homeownership has dropped precipitously among the 35-44 and less than 35 age cohorts.
Homeownership has dropped precipitously among the 35-44 and less than 35 age cohorts

Change in the number of households or homeowners, 2003-2013

<table>
<thead>
<tr>
<th>Age Cohort</th>
<th>Households</th>
<th>Homeowners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 35 years</td>
<td>-2.7</td>
<td>-3.4</td>
</tr>
<tr>
<td>35 to 44 years</td>
<td>1.4</td>
<td>-1.3</td>
</tr>
<tr>
<td>45 to 54 years</td>
<td>-0.4</td>
<td>-3.8</td>
</tr>
<tr>
<td>55 to 64 years</td>
<td>6.5</td>
<td>5.3</td>
</tr>
<tr>
<td>65 years and over</td>
<td>3.8</td>
<td>3.9</td>
</tr>
</tbody>
</table>

Total: 11.2 million households, 2.6 million homeowners

Source: IHS
We expect the decline in rental vacancy rates to spur building activity

Source: IHS
# US construction growth by sector

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent change, 2009 dollars</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total construction</td>
<td>5.7</td>
<td>5.4</td>
<td>8.1</td>
<td>11.3</td>
</tr>
<tr>
<td>Residential</td>
<td>12.0</td>
<td>3.7</td>
<td>14.4</td>
<td>15.3</td>
</tr>
<tr>
<td>Commercial</td>
<td>8.0</td>
<td>10.1</td>
<td>10.4</td>
<td>23.2</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>-1.3</td>
<td>7.5</td>
<td>7.0</td>
<td>2.3</td>
</tr>
<tr>
<td>Mines &amp; wells</td>
<td>0.5</td>
<td>7.0</td>
<td>-0.3</td>
<td>-2.3</td>
</tr>
<tr>
<td>Healthcare</td>
<td>-9.0</td>
<td>-6.1</td>
<td>10.0</td>
<td>18.5</td>
</tr>
<tr>
<td>Public utilities</td>
<td>-7.0</td>
<td>13.6</td>
<td>-11.5</td>
<td>-3.4</td>
</tr>
<tr>
<td>Highways &amp; streets</td>
<td>-1.8</td>
<td>2.4</td>
<td>2.9</td>
<td>0.9</td>
</tr>
<tr>
<td>Public education</td>
<td>-11.4</td>
<td>0.6</td>
<td>5.0</td>
<td>2.4</td>
</tr>
</tbody>
</table>
Building construction will pick up

Real net stock of nonresidential buildings

Billions of USD

Source: IHS
Monetary Policy and Interest Rates
Recent Developments

- Interest rate hikes – conversation shifts from the “if” to the “when” and “how.”
- Growing disagreement about labor market slack and inflation risks.
- Are financial stability concerns much of a consideration?
- Monetary policy is data-dependent, but only within limits.
- Labor-market weakness: cyclical vs. structural factors.
  - Implications of secular stagnation for future monetary policy
  - Long-standing issues in labor market
  - “Pent-up wage deflation” as explanation for soft wage growth.
- 2% inflation – target or ceiling?
- Fed’s Jackson Hole conference – Hawkish overtones

Fed will raise interest rate in 2015 come rain or come shine
Monetary Policy Tightening – The “When” six-month window – late-2015Q1 to late-2015Q3

<table>
<thead>
<tr>
<th>Target fed funds rate at year-end (June projections)</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>Longer run</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 —</td>
<td></td>
<td></td>
<td></td>
<td>— 4</td>
</tr>
<tr>
<td>3 —</td>
<td></td>
<td></td>
<td></td>
<td>— 3</td>
</tr>
<tr>
<td>2 —</td>
<td></td>
<td></td>
<td></td>
<td>— 2</td>
</tr>
<tr>
<td>1 —</td>
<td></td>
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</tr>
<tr>
<td>0 —</td>
<td></td>
<td></td>
<td></td>
<td>— 0</td>
</tr>
</tbody>
</table>

Each shaded circle indicates the value (rounded to nearest ¼ percentage point) of an individual participant’s judgment of the appropriate level of the target federal funds rate at the end of the specified calendar year and over the longer run.
Monetary Policy Tightening – The “How”
Fed will tighten with a “big” balance sheet

Fed assets

Source: IHS
Monetary Policy Tightening – The “How” (cont.)

• Fed has never managed short-term interest rates with such abundant liquidity in the financial system.

• Fed loses control over fed funds rate (FFR) with abundant bank reserves.

• But draining reserves quickly introduces financial market risks.

• Solution: raise interest rate on bank reserves (IOR) - currently 0.25 bps
  • FFR trades close to IOR.
  • No bank will lend at rate below what it can earn risk-free from Fed.

• IOR has been “porous” floor for FFR thanks to GSEs.
  • Solution: interest rate on overnight reverse repurchase (repo) agreements to serve supporting role.

Bottom Line:
• Fed has the tools to tighten monetary policy without shrinking its balance sheet.
• FFR will remain operational target, but IOR will be the tool.
The secret isn’t out yet in Washington: The federal budget deficit is unproblematic

Federal budget balance sheet

- Cessation of stimulus
- Repeal of Bush tax cuts
- Spending sequester cuts

Source: IHS
International Economic Growth and US Trade
Asia-Pacific leads regions in real GDP growth

Real GDP growth

Source: IHS
Foreign trade has not grown as a share of GDP since the end of the recession

Merchandise exports as a share of nominal GDP
Imports will supply only 12% of US energy requirements by 2024, down from 21% in 2014

US Energy Trade Balance

Source: IHS
Several key US industries will be impacted if a steep economic downturn occurs in Europe.

<table>
<thead>
<tr>
<th>Key merchandise exports to Europe ($bn)</th>
<th>2010</th>
<th>2013</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aircraft and parts (civilian)</td>
<td>24.9</td>
<td>32.8</td>
<td>31.7</td>
</tr>
<tr>
<td>Pharmaceutical preparations</td>
<td>23.0</td>
<td>22.9</td>
<td>-0.5</td>
</tr>
<tr>
<td>Medicinal equipment</td>
<td>10.0</td>
<td>10.0</td>
<td>0.8</td>
</tr>
<tr>
<td>Passenger cars</td>
<td>6.6</td>
<td>9.9</td>
<td>50.4</td>
</tr>
<tr>
<td>Fuel oil</td>
<td>2.4</td>
<td>9.4</td>
<td>290.6</td>
</tr>
<tr>
<td>Chemicals - organic</td>
<td>8.5</td>
<td>7.8</td>
<td>-8.3</td>
</tr>
<tr>
<td>Industrial machines</td>
<td>5.8</td>
<td>6.4</td>
<td>11.5</td>
</tr>
<tr>
<td>Chemicals - other</td>
<td>5.7</td>
<td>6.0</td>
<td>5.8</td>
</tr>
<tr>
<td>Apparel, household goods – non-textile</td>
<td>5.1</td>
<td>5.9</td>
<td>15.2</td>
</tr>
</tbody>
</table>
Stronger interest rates and relative economic growth point to an increase in the dollar.

**Major trading partner exchange rate (inflation adjusted, 2009=1.0)**
Current account deficit steadies around 2.4% of GDP

Source: IHS