Economic Outlook and Monetary Policy

Federal Reserve Bank of Chicago
Academic Advisory Council Meeting
May 11, 2018

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Senior Vice President
Federal Reserve Bank of Chicago

The views I express here are my own and do not necessarily reflect the views of the Federal Reserve Bank of Chicago or within the Federal Reserve System.
Labor Markets

Nonfarm Payroll Employment
(change, thousands)

Monthly Change
3-month Average

Unemployment Rate
(percent)

FOMC Projections*
FOMC Long-run
Central Tendency

* Median of projections from the March 2018 SEP
Labor Force Participation Rate and Wages

Labor Force Participation Rate (percent)

<table>
<thead>
<tr>
<th>Year</th>
<th>Trend</th>
<th>Predicted Using Unemployment Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>66</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>64</td>
<td></td>
</tr>
</tbody>
</table>

Wage Growth (year over year percentage change)

<table>
<thead>
<tr>
<th>Year</th>
<th>Wage Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>1</td>
</tr>
<tr>
<td>2010</td>
<td>2</td>
</tr>
<tr>
<td>2012</td>
<td>3</td>
</tr>
<tr>
<td>2014</td>
<td>4</td>
</tr>
<tr>
<td>2016</td>
<td>3</td>
</tr>
<tr>
<td>2018</td>
<td>2</td>
</tr>
</tbody>
</table>

Average Hourly Earnings

Employment Cost Index

Trend and predicted from u gap are FRBC estimates
Consumer Spending

Real PCE
(quarterly annualized percentage change)

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real PCE (month % Δ)</td>
<td>-0.1</td>
<td>-0.2</td>
<td>0.4</td>
</tr>
</tbody>
</table>

*Annualized percentage change, January-February average from October-November average

Light Vehicle Sales and Production
(millions of autos and light trucks, SAAR)

Sales

Production

Q2-2018 Schedule
Construction

Housing Starts
(millions of units, saar)

Private and Government Construction
(billions of dollars, saar)
Investment

Private Nonresidential Fixed Investment
(contribution to percentage change in GDP)

Total
- Structures (23%)
- Equipment (45%)
- Intellectual Property (32%)

Yearly contributions:

- 2014: 0.75
- 2015: 0.50
- 2016: 0.25
- 2017: 0.00
- 2018 Q1: 0.25
## Fiscal Policy

### CBO Estimates of the Effects of Recent Fiscal Actions on the level of annual real GDP

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2027</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017 Tax Act</td>
<td>0.3</td>
<td>0.6</td>
<td>0.8</td>
<td>0.6</td>
</tr>
<tr>
<td>2018 Bipartisan Budget and Appropriations Acts</td>
<td>0.3</td>
<td>0.6</td>
<td>n.a.</td>
<td>n.a</td>
</tr>
</tbody>
</table>

Source: CBO Budget and Economic Outlook: 2018 to 2028, April 2018
FOMC Forecasts

Median forecast, March 2018 Summary of Economic Projections

<table>
<thead>
<tr>
<th>Variable</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>LR</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP(^1)</td>
<td>2.7</td>
<td>2.4</td>
<td>2.0</td>
<td>1.8</td>
</tr>
<tr>
<td>Dec. proj.</td>
<td>2.5</td>
<td>2.1</td>
<td>2.0</td>
<td>1.8</td>
</tr>
<tr>
<td>Unemployment(^2)</td>
<td>3.8</td>
<td>3.6</td>
<td>3.6</td>
<td>4.5</td>
</tr>
<tr>
<td>Dec. proj.</td>
<td>3.9</td>
<td>3.9</td>
<td>4.0</td>
<td>4.6</td>
</tr>
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</table>

Memo: April 10 Blue Chip

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<th>Variable</th>
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<th>2019</th>
<th>LR</th>
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<tr>
<td>GDP</td>
<td>2.8</td>
<td>2.6</td>
<td>2.0 (^3)</td>
</tr>
<tr>
<td>Unemployment</td>
<td>3.9</td>
<td>3.6</td>
<td>4.3 (^3)</td>
</tr>
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</table>

1. Q4-to-Q4 percent change
2. Q4 Average
3. From March 10, 2018 Blue Chip consensus
Core PCE Inflation

(12-month percentage change in core PCE)
Core PCE Inflation

(monthly and yearly percentage change in core PCE)
Inflation Expectations

Inflation Surveys
(percent)

University of Michigan Expected CPI Inflation: 5-10 years ahead

Survey of Professional Forecasters for PCE: 10 years ahead

TIPS 5-year, 5-year forward CPI Inflation Compensation
(percent)

3-May-2018
Inflation Forecast

Core PCE Inflation
(year-over-year percentage change)

<table>
<thead>
<tr>
<th></th>
<th>FOMC Projection</th>
<th>FOMC Forecast</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>2018</td>
<td>2019</td>
</tr>
<tr>
<td>Core PCE</td>
<td>1.9</td>
<td>2.1</td>
</tr>
<tr>
<td>Dec Proj</td>
<td>1.9</td>
<td>2.0</td>
</tr>
</tbody>
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FOMC projections are the median values for core PCE inflation as reported from the March 2018 release of the SEP.
Figure 3.D. Distribution of participants’ projections for core PCE inflation, 2018–20

2019

2020

Percent range

Number of participants

1.7 – 1.8
1.9 – 2.0
2.1 – 2.2
2.3 – 2.4

18
16
14
12
10
8
6
4
2

SEP Inflation Forecast Distribution
Stock Market

S&P 500

VIX

Average since 2010
Treasury Rates

10 Year Treasury
(Percent)

2015  '16  '17  '18

2-May-2018
Appropriate Pace of Policy Firming

Red dots indicate median
Market Pricing of Policy Firming

Target Rate Probabilities for Dec 2018 Fed Meeting (percent)

- 10.6% for 175-200
- 41.2% for 200-225
- 39.1% for 225-250
- 8.4% for 250-275
- 0.7% for 275-300

Probabilities derived from CME contracts as of closing, May 2, 2018
Fed Funds Futures

Market Pricing for Federal Funds Rate at Year End (percent)

Market pricing derived from OIS futures.
Real Interest Rates

Effective Real Fed Funds and Laubach-Williams Equilibrium Real Rates (percent)

Real effective Fed Funds rate is the effective federal funds rate minus four-quarter core PCE inflation. Projections are the median SEP projection for the federal funds rate minus the median SEP four-quarter core PCE inflation. Shaded bars indicate NBER date recessions. *Hypothetical path for real rate assumes a gradual uptrend to 1 percent (which is the SEP LR assumption) by end of 2020.