The US Economic Outlook
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The US economy on a 2% growth path

• A more balanced US expansion is emerging in late 2016.
• Consumer spending is decelerating as growth in employment, real incomes, and household net worth moderates.
• Rising domestic demand, a recovery in commodity prices, and low financing costs will support an uneven recovery in capital spending.
• The inventory correction will continue into 2017, restraining near-term growth in industrial production.
• Net exports will be a drag on economic growth through 2019, as a strong dollar impairs US competitiveness.
• The Federal Reserve will cautiously raise interest rates as labor markets tighten and core inflation approaches the 2% target.
Real GDP growth will pick up, but job growth will slow.

Real GDP and payroll employment

Source: IHS

© 2016 IHS
Services recorded the largest employment increases during the 12 months ended September 2016

<table>
<thead>
<tr>
<th>Change in payroll employment, thousands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof. &amp; business services</td>
</tr>
<tr>
<td>Health &amp; social services</td>
</tr>
<tr>
<td>Leisure &amp; hospitality</td>
</tr>
<tr>
<td>Retail trade</td>
</tr>
<tr>
<td>Construction</td>
</tr>
<tr>
<td>Financial services</td>
</tr>
<tr>
<td>Local government</td>
</tr>
<tr>
<td>Other services</td>
</tr>
<tr>
<td>Education</td>
</tr>
<tr>
<td>Wholesale trade</td>
</tr>
<tr>
<td>Federal government</td>
</tr>
<tr>
<td>Transport &amp; warehousing</td>
</tr>
<tr>
<td>Information</td>
</tr>
<tr>
<td>Utilities</td>
</tr>
<tr>
<td>State government</td>
</tr>
<tr>
<td>Manufacturing</td>
</tr>
<tr>
<td>Mining &amp; logging</td>
</tr>
</tbody>
</table>

Total change = 2.45 million

Source: IHS

© 2016 IHS
Markit PMI indexes signal modest US growth

Markit US PMI indexes

Source: IHS Markit

© 2016 IHS
After excess accumulation from mid-2013 through 2015, an inventory correction is under way.
An inventory correction is holding back near-term industrial production growth

### Industrial production and real GDP

- **2012**
  - Industrial production: -2%
  - Manufacturing production: -2.5%
  - Real GDP: 1%

- **2013**
  - Industrial production: -1.5%
  - Manufacturing production: -1.8%
  - Real GDP: 2%

- **2014**
  - Industrial production: -1%
  - Manufacturing production: -1.5%
  - Real GDP: 2.5%

- **2015**
  - Industrial production: 0%
  - Manufacturing production: 0.5%
  - Real GDP: 3%

- **2016**
  - Industrial production: 1%
  - Manufacturing production: 1.5%
  - Real GDP: 3.5%

- **2017**
  - Industrial production: 2%
  - Manufacturing production: 2%
  - Real GDP: 4%

- **2018**
  - Industrial production: 2.5%
  - Manufacturing production: 3%
  - Real GDP: 4.5%

**Source:** IHS
Industrial materials prices are beginning to recover

IHS Materials Price Index

Source: IHS
US crude oil and natural gas prices on different paths

US energy prices

Source: IHS Energy

© 2016 IHS
Consumer price inflation will pick up in response to a recovery in commodity prices

Personal consumption deflators

Source: IHS

© 2016 IHS
Wages and benefits will accelerate as the US labor market tightens

Employment cost indexes

- Total compensation
- Wages & salaries
- Benefits

Source: IHS
Interest rates will gradually rise as the Federal Reserve normalizes monetary policy

![Interest rates graph](image-url)
Forces affecting consumer spending

Positive forces
• Employment growth
• Mild inflation
• Rising disposable income
• Rising asset values
• Low interest rates

Negative forces
• Sluggish wage gains
• High student debt burdens
• Precautionary saving
Real household net worth has reached a new high
Durable goods lead growth in real consumer spending

Real consumer spending

Percent change

Source: IHS

© 2016 IHS
US light-vehicle sales are near their peak

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Cars</th>
<th>Light trucks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>13.5</td>
<td>10.2</td>
<td>6.3</td>
</tr>
<tr>
<td>1985</td>
<td>14.0</td>
<td>10.5</td>
<td>5.5</td>
</tr>
<tr>
<td>1990</td>
<td>15.0</td>
<td>11.0</td>
<td>5.0</td>
</tr>
<tr>
<td>1995</td>
<td>16.0</td>
<td>11.5</td>
<td>5.5</td>
</tr>
<tr>
<td>2000</td>
<td>17.5</td>
<td>12.0</td>
<td>6.5</td>
</tr>
<tr>
<td>2005</td>
<td>17.0</td>
<td>11.5</td>
<td>6.5</td>
</tr>
<tr>
<td>2010</td>
<td>16.0</td>
<td>11.0</td>
<td>6.0</td>
</tr>
<tr>
<td>2015</td>
<td>15.0</td>
<td>10.5</td>
<td>5.5</td>
</tr>
<tr>
<td>2020</td>
<td>14.5</td>
<td>10.0</td>
<td>5.5</td>
</tr>
</tbody>
</table>

Source: IHS

© 2016 IHS
Housing markets will continue to recover

- Housing demand is supported by low mortgage rates and sustained growth in employment and real incomes.
- Supply is constrained by shortages of labor and developed lots.
- As demand outpaces supply, home prices and rents are rising.
- With new households choosing to rent rather than own, the US homeownership rate has fallen to a 51-year low.
- Lean inventories of unsold homes, low rental vacancy rates, and rising prices will encourage builders to step up construction activity.
A protracted recovery in US housing starts since the financial crisis

Housing starts

<table>
<thead>
<tr>
<th>Years</th>
<th>Single-family</th>
<th>Multifamily</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>0.8</td>
<td>0.4</td>
</tr>
<tr>
<td>1985</td>
<td>0.9</td>
<td>0.4</td>
</tr>
<tr>
<td>1990</td>
<td>1.1</td>
<td>0.3</td>
</tr>
<tr>
<td>1995</td>
<td>1.2</td>
<td>0.2</td>
</tr>
<tr>
<td>2000</td>
<td>1.3</td>
<td>0.1</td>
</tr>
<tr>
<td>2005</td>
<td>1.4</td>
<td>0.1</td>
</tr>
<tr>
<td>2010</td>
<td>1.5</td>
<td>0.1</td>
</tr>
<tr>
<td>2015</td>
<td>1.6</td>
<td>0.1</td>
</tr>
<tr>
<td>2020</td>
<td>1.7</td>
<td>0.1</td>
</tr>
<tr>
<td>2025</td>
<td>1.8</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Source: IHS

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An upturn in energy-related investment will contribute to stronger growth in capital spending.
Growth in real business equipment investment will be led by information technology

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>2</td>
<td>-3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Information technology</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Industrial equipment</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Transportation equipment</td>
<td>8</td>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Other equipment</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

Source: IHS © 2016 IHS
Investment in manufacturing structures will retreat, while investment in mines and wells will rebound.
Investment in commercial structures is recovering from its 2008-10 collapse

Real fixed investment

Source: IHS
US real import growth is outpacing real export growth, as a strong dollar has hurt global competitiveness.

Source: IHS
The dollar’s real exchange value will strengthen further against European currencies in 2017.
Emerging markets will lead a pickup in global growth

Real GDP

Source: IHS

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Real GDP growth in key advanced economies

Real GDP

Percent change


%United States  Eurozone  United Kingdom  Japan

Source: IHS

© 2016 IHS
Real GDP growth in key emerging markets: Recessions in Russia and Brazil are abating

Source: IHS
Forces driving state government revenues

State revenue drivers

Percent change, calendar years

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonfarm employment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wages per worker</td>
<td></td>
<td></td>
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<tr>
<td>Wage income</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal income</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retail sales</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Before-tax profits</td>
<td></td>
<td></td>
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Source: IHS

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Bottom line for the US economy

- After slowing from 2.6% in 2015 to 1.4% this year, real GDP growth is projected to pick up to 2.2% in both 2017 and 2018.

- Consumer spending will be supported by solid gains in employment, real disposable income, and household net worth.

- Real business fixed investment will recover, led by gains in information technology and commercial structures.

- Foreign trade will remain a drag on real GDP growth, due to a strong dollar and weak expansions in major export markets.

- Core consumer price inflation will average close to 2%.

- The Federal Reserve will gradually raise the federal funds rate to an equilibrium level of 2.75% by the end of 2019.