Harvey is expected to be the second-costliest US hurricane since 1980.

Billions of 2017 dollars, adjusted for CPI inflation

Katrina (2005) 160
Harvey (2017) 80
Sandy (2012) 70
Andrew (1992) 50
Ike (2008) 40
Irma (2017) 30
Ivan (2004) 20
Wilma (2005) 20
Rita (2005) 20
Charley (2004) 20

Source: NOAA, IHS Markit (Harvey and Irma cost projection) © 2017 IHS Markit
Economic impacts of hurricanes

• Lost production due to damaged facilities, logistics constraints, shortages of raw materials, and electricity outages
• Inventory drawdowns resulting from idled productive capacity
• Lost wages and salaries of displaced workers, affecting spending
• Rising credit delinquencies associated with uninsured property losses
• Losses in population and tourism in storm-damaged areas
• Additional government and NGO spending during relief efforts
• Increased construction activity as buildings and infrastructure are repaired or replaced over several years
• Spending to replace damaged vehicles, equipment, and supplies, partly supported by insurance payouts
Natural Disasters, GDP, and the BEA

• The BEA is not able to estimate the effects of a natural disaster on GDP because the effects can occur with a lag and they cannot be separated from the regular source data.

• GDP is a measure of the Nation’s current production of goods and services, therefore it isn’t directly affected by the loss of property.

• GDP can be affected indirectly by the actions that consumers, businesses, and governments take in response to disruptions in production or to the loss of property caused by natural disasters.
  • But these effects cannot be precisely estimated.
  • Responses to the natural disaster could be spread out over time.

• Under a new methodology adopted in 2003, the value of insurance services produced for policy holders (included in GDP) is not directly affected by the payment of benefits in the wake of a disaster.
The US economy on a solid growth path

- Real GDP growth picked up from an annual rate of 1.2% in the first quarter to 3.0% in the second quarter as consumer spending accelerated.

- Hurricanes Harvey and Irma have disrupted economic activity in the third quarter, but recovery and rebuilding will boost growth in subsequent quarters.

- Consumer spending continues to drive US economic growth, supported by rising employment, real incomes, and household wealth.

- Business fixed investment will benefit from strengthening global markets and an easing of regulatory policies, although commercial building is slowing.

- Increasing demand, low inventories of homes for sale, and rising prices will encourage more homebuilding, even as interest rates rise.

- The Federal Reserve will gradually raise interest rates (taking the federal funds rate to 3% in late 2019) and reduce its asset holdings.

- The economy’s long-term potential growth rate is near 2%.
Job Openings at an all-time high

Source: Bureau of Labor Statistics
© 2017 IHS Markit
Quits back to normal

Labor market, quit rate

Source: Bureau of Labor Statistics

© 2017 IHS Markit
Steady job growth

Nonfarm payroll gains

Source: Bureau of Labor Statistics
© 2017 IHS Markit
Closing in on full-employment

Unemployment rate

Source: Bureau of Labor Statistics

© 2017 IHS Markit
Wages rising hardly more than inflation

Average hourly earnings

Source: Bureau of Labor Statistics

© 2017 IHS Markit
Prime age workers coming back finally

Labor force participation rate, ages 25-54

Source: Bureau of Labor Statistics

© 2017 IHS Markit
A 2018 pickup in real GDP growth will push the US unemployment rate down to 4%
With labor productivity rising, real GDP growth will outpace employment growth

Real GDP and payroll employment

Source: IHS Markit © 2017 IHS Markit
IHS Markit PMIs signal moderate economic growth

Markit PMI indexes

+50 indicates expansion

Source: IHS Markit

© 2017 IHS Markit
Industrial production is reviving as growth in capital spending and exports picks up

Real GDP and industrial production

Source: IHS Markit
Will the US economy ride the virtuous cycle?

Positive forces
- ICT innovation
- Asset
- Tax and regulatory reforms

Negative forces
- Skilled labor shortages
- Rising interest rates
- Trade restrictions
US economic growth by sector

### Real GDP and its components

<table>
<thead>
<tr>
<th>Percent change</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real GDP</td>
<td>1.5</td>
<td>2.1</td>
<td>2.8</td>
<td>2.3</td>
</tr>
<tr>
<td>Consumption</td>
<td>2.7</td>
<td>2.7</td>
<td>2.8</td>
<td>2.6</td>
</tr>
<tr>
<td>Residential investment</td>
<td>5.5</td>
<td>2.3</td>
<td>5.4</td>
<td>2.8</td>
</tr>
<tr>
<td>Business fixed investment</td>
<td>-0.6</td>
<td>4.3</td>
<td>3.7</td>
<td>4.1</td>
</tr>
<tr>
<td>Federal government</td>
<td>0.0</td>
<td>0.2</td>
<td>0.3</td>
<td>-0.8</td>
</tr>
<tr>
<td>State &amp; local government</td>
<td>1.2</td>
<td>-0.3</td>
<td>0.8</td>
<td>1.3</td>
</tr>
<tr>
<td>Exports</td>
<td>-0.3</td>
<td>3.4</td>
<td>3.9</td>
<td>3.4</td>
</tr>
<tr>
<td>Imports</td>
<td>1.3</td>
<td>3.7</td>
<td>4.4</td>
<td>5.1</td>
</tr>
</tbody>
</table>

Source: IHS Markit

© 2017 IHS Markit
## US economic growth by sector

### Real GDP and its components

<table>
<thead>
<tr>
<th>Percent change, annual rate</th>
<th>17Q1</th>
<th>17Q2</th>
<th>17Q3</th>
<th>17Q4</th>
<th>18Q1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real GDP</td>
<td>1.2</td>
<td>3.0</td>
<td>2.1</td>
<td>2.7</td>
<td>3.4</td>
</tr>
<tr>
<td>Consumption</td>
<td>1.9</td>
<td>3.3</td>
<td>2.5</td>
<td>2.8</td>
<td>3.1</td>
</tr>
<tr>
<td>Residential investment</td>
<td>11.1</td>
<td>-6.5</td>
<td>0.7</td>
<td>7.0</td>
<td>8.6</td>
</tr>
<tr>
<td>Business fixed investment</td>
<td>7.1</td>
<td>6.9</td>
<td>3.0</td>
<td>4.0</td>
<td>2.5</td>
</tr>
<tr>
<td>Federal government</td>
<td>-2.4</td>
<td>1.9</td>
<td>2.6</td>
<td>0.8</td>
<td>0.0</td>
</tr>
<tr>
<td>State &amp; local government</td>
<td>0.5</td>
<td>-1.7</td>
<td>-1.5</td>
<td>1.4</td>
<td>1.9</td>
</tr>
<tr>
<td>Exports</td>
<td>7.3</td>
<td>3.7</td>
<td>4.2</td>
<td>3.1</td>
<td>4.2</td>
</tr>
<tr>
<td>Imports</td>
<td>4.3</td>
<td>1.6</td>
<td>1.5</td>
<td>4.5</td>
<td>4.9</td>
</tr>
</tbody>
</table>

Source: IHS Markit
## Other key US indicators

<table>
<thead>
<tr>
<th>Key indicators</th>
<th>Percent change</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial production</td>
<td></td>
<td>-1.2</td>
<td>1.8</td>
<td>3.0</td>
<td>2.5</td>
</tr>
<tr>
<td>Payroll employment</td>
<td></td>
<td>1.8</td>
<td>1.5</td>
<td>1.5</td>
<td>1.2</td>
</tr>
<tr>
<td>Light-vehicle sales (Million units)</td>
<td></td>
<td>17.5</td>
<td>17.0</td>
<td>17.2</td>
<td>17.0</td>
</tr>
<tr>
<td>Housing starts (Million units)</td>
<td></td>
<td>1.18</td>
<td>1.21</td>
<td>1.35</td>
<td>1.41</td>
</tr>
<tr>
<td>Consumer Price Index</td>
<td></td>
<td>1.3</td>
<td>2.0</td>
<td>1.6</td>
<td>2.3</td>
</tr>
<tr>
<td>Core CPI</td>
<td></td>
<td>2.2</td>
<td>1.8</td>
<td>1.9</td>
<td>2.0</td>
</tr>
<tr>
<td>Brent crude oil price (USD/barrel)</td>
<td></td>
<td>44</td>
<td>52</td>
<td>48</td>
<td>55</td>
</tr>
<tr>
<td>Federal funds rate (%)</td>
<td></td>
<td>0.4</td>
<td>1.0</td>
<td>1.7</td>
<td>2.6</td>
</tr>
<tr>
<td>10-year Treasury yield (%)</td>
<td></td>
<td>1.8</td>
<td>2.4</td>
<td>3.1</td>
<td>3.8</td>
</tr>
</tbody>
</table>

Source: IHS Markit
## Other key US indicators

<table>
<thead>
<tr>
<th>Key indicators</th>
<th>17Q1</th>
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<th>17Q3</th>
<th>17Q4</th>
<th>18Q1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial production</td>
<td>1.6</td>
<td>5.2</td>
<td>0.7</td>
<td>2.1</td>
<td>4.4</td>
</tr>
<tr>
<td>Payroll employment</td>
<td>1.5</td>
<td>1.3</td>
<td>1.4</td>
<td>1.3</td>
<td>1.5</td>
</tr>
<tr>
<td>Light-vehicle sales (Million units)</td>
<td>17.1</td>
<td>16.8</td>
<td>16.6</td>
<td>17.4</td>
<td>17.5</td>
</tr>
<tr>
<td>Housing starts (Million units)</td>
<td>1.24</td>
<td>1.17</td>
<td>1.20</td>
<td>1.25</td>
<td>1.32</td>
</tr>
<tr>
<td>Consumer Price Index</td>
<td>3.1</td>
<td>-0.3</td>
<td>1.7</td>
<td>1.9</td>
<td>1.4</td>
</tr>
<tr>
<td>Core CPI</td>
<td>2.5</td>
<td>0.6</td>
<td>1.4</td>
<td>2.3</td>
<td>2.0</td>
</tr>
<tr>
<td>Brent crude oil price (USD/barrel)</td>
<td>55</td>
<td>51</td>
<td>51</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Federal funds rate (%)</td>
<td>0.7</td>
<td>1.0</td>
<td>1.2</td>
<td>1.3</td>
<td>1.5</td>
</tr>
<tr>
<td>10-year Treasury yield (%)</td>
<td>2.4</td>
<td>2.3</td>
<td>2.2</td>
<td>2.5</td>
<td>2.8</td>
</tr>
</tbody>
</table>

Source: IHS Markit © 2017 IHS Markit
Consumer sentiment is upbeat, supported by improving household finances

Source: University of Michigan Surveys of Consumers © 2017 IHS Markit
US small business sentiment soared after the November 2016 election and remains high

NFIB index of small business optimism

Source: National Federation of Independent Business

© 2017 IHS Markit
US stock prices have reached new highs in 2017

S&P 500 stock price index

Index, 1941-43 = 10

Source: IHS Markit
US interest rates will rise as the Federal Reserve normalizes monetary policy

**Interest rates**

- Federal funds
- 10-year Treasury
- 30-year mortgage
- BAA corporate

Source: IHS Markit

© 2017 IHS Markit
President Trump will have an opportunity to recast the Federal Reserve’s Board of Governors

<table>
<thead>
<tr>
<th>Board of Governors</th>
<th>End of term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Janet Yellen, chair</td>
<td>Chair until 3 February 2018, member to 31 January 2024</td>
</tr>
<tr>
<td>Stanley Fisher, vice chairman</td>
<td>Resigning on 13 October 2017 from a term that ends in January 2020</td>
</tr>
<tr>
<td>Lael Brainard</td>
<td>2026</td>
</tr>
<tr>
<td>Jerome Powell</td>
<td>2028</td>
</tr>
<tr>
<td>3 vacancies*</td>
<td>2018, 2022, and 2030</td>
</tr>
</tbody>
</table>

*President Trump has nominated Randal Quarles, who is awaiting Senate confirmation.

Other Federal Open Market Committee voting members in 2017 are Reserve Bank presidents William Dudley (New York), Charles Evans (Chicago), Patrick Harker (Philadelphia), Robert Kaplan (Dallas), and Neel Kashkari (Minneapolis).
Potential real GDP growth is projected to average 2.0% from 2017 to 2027
Services and recorded the largest employment gains during the 12 months ended August 2017

<table>
<thead>
<tr>
<th>Service</th>
<th>Change in Payroll Employment, Thousands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof. &amp; business services</td>
<td>600</td>
</tr>
<tr>
<td>Health &amp; social services</td>
<td>400</td>
</tr>
<tr>
<td>Leisure &amp; hospitality</td>
<td>300</td>
</tr>
<tr>
<td>Construction</td>
<td>200</td>
</tr>
<tr>
<td>Financial services</td>
<td>150</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>100</td>
</tr>
<tr>
<td>Other services</td>
<td>75</td>
</tr>
<tr>
<td>Education</td>
<td>50</td>
</tr>
<tr>
<td>Transport &amp; warehousing</td>
<td>40</td>
</tr>
<tr>
<td>Wholesale trade</td>
<td>30</td>
</tr>
<tr>
<td>Mining &amp; logging</td>
<td>25</td>
</tr>
<tr>
<td>Local government</td>
<td>20</td>
</tr>
<tr>
<td>Federal government</td>
<td>15</td>
</tr>
<tr>
<td>Utilities</td>
<td>10</td>
</tr>
<tr>
<td>State government</td>
<td>7</td>
</tr>
<tr>
<td>Retail trade</td>
<td>5</td>
</tr>
<tr>
<td>Information</td>
<td>-5</td>
</tr>
</tbody>
</table>

Total change = 2.1 million

Source: IHS Markit

© 2017 IHS Markit
With baby boomers aging, labor-force participation and employment rates will not return to earlier peaks

![Diagram showing labor-force participation and employment rates over time.](source: IHS Markit)
Western and southern states will lead in job growth

Nonfarm employment, annual percent change, 2017-22

Percent
- 0.3 to 0.6
- 0.7 to 0.9
- 1.0 to 1.4
- 1.5 to 2.0

Source: IHS Markit

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A gradual return to normal inventory investment will boost economic growth in 2018
Industrial production is recovering as global demand strengthens and oil output rises

Industrial production and real GDP

Source: IHS Markit

© 2017 IHS Markit
# US manufacturing production growth

<table>
<thead>
<tr>
<th>Industrial production</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>All manufacturing</td>
<td>0.2</td>
<td>1.4</td>
<td>2.8</td>
<td>2.7</td>
</tr>
<tr>
<td>Motor vehicles &amp; parts</td>
<td>4.1</td>
<td>0.0</td>
<td>2.2</td>
<td>1.5</td>
</tr>
<tr>
<td>Computers &amp; electronics</td>
<td>1.4</td>
<td>3.4</td>
<td>5.1</td>
<td>4.3</td>
</tr>
<tr>
<td>Electrical equip. &amp; appliances</td>
<td>2.2</td>
<td>0.5</td>
<td>2.6</td>
<td>3.6</td>
</tr>
<tr>
<td>Machinery</td>
<td>-3.2</td>
<td>4.4</td>
<td>4.3</td>
<td>4.2</td>
</tr>
<tr>
<td>Textiles</td>
<td>2.5</td>
<td>-0.2</td>
<td>-0.5</td>
<td>-1.3</td>
</tr>
<tr>
<td>Furniture</td>
<td>-0.1</td>
<td>0.1</td>
<td>2.1</td>
<td>3.0</td>
</tr>
<tr>
<td>Chemicals</td>
<td>0.7</td>
<td>0.5</td>
<td>4.2</td>
<td>4.1</td>
</tr>
</tbody>
</table>

Source: IHS Markit
## US inflation dynamics

**Inflationary pressures**

- Skilled labor shortages
- Dollar depreciation

**Deflationary pressures**

- Excess productive capacity
- Monetary policy tightening
Core consumer price inflation is fluctuating around 2%

Source: IHS Markit
A divergence between goods and services inflation

US consumer price indexes excluding food and energy

Source: IHS Markit
Consumer price inflation will pick up in 2019–20 as labor and product markets tighten

Personal consumption deflators

Source: IHS Markit

© 2017 IHS Markit
Wages and benefits will accelerate in response to a tightening US labor market
Hourly compensation, productivity, and unit labor costs

Private nonfarm sector

Source: IHS Markit

© 2017 IHS Markit
Industrial materials prices are recovering but remain well below their previous peaks

IHS Markit Materials Price Index

Source: IHS Markit
After a mild correction, industrial materials prices will gradually rise.

IHS Materials Price Index

Source: IHS Markit

© 2017 IHS Markit
Crude oil prices will decline in 2018 before recovering

• Prices have firmed in recent weeks, with Brent trading above USD50/barrel.

• Strong seasonal demand, declining US crude oil inventories, and expectations that US supply growth will moderate have outweighed rising OPEC output.

• Hurricane Harvey briefly disrupted crude oil production along the Texas coast; chemical plants and refineries were hit harder but most are restarting.

• Although world oil demand growth will remain firm, a production surplus will reemerge through 2018. North America, Brazil, the United Kingdom, and Kazakhstan will contribute to global production growth.

• OPEC will likely continue to restrict its output next year. This decision could be made at its 30 November ministerial meeting.

• A 2018 drop in oil prices will lead to a downturn in US drilling activity.

• Price recovery is expected after 2018, when supply growth slows.
Crude oil prices will gradually recover after 2018

Price of Dated Brent crude oil

Source: IHS Markit

© 2017 IHS Markit
North American natural gas markets

• With seasonal electricity loads declining and gas production increasing, Henry Hub gas prices are currently below $3/million Btu.

• Electricity outages resulting from hurricanes Harvey and Irma have temporarily reduced gas demand. More gas is flowing into storage.

• Industrial gas demand is increasing as new capacity at ammonia, methanol, and ethylene facilities comes online.

• Exports to Mexico by pipeline and liquefied natural gas (LNG) exports will also support total gas demand growth.

• Global LNG supply will, however, increase 50% over the next three years, creating excess supply.

• The North American gas resource base is expanding and costs are declining, due to improved resource recovery and new discoveries.
US crude oil and natural gas prices

Crude oil and natural gas prices

Crude oil, WTI (Left scale)  Natural gas, Henry Hub (Right scale)

Source: IHS Energy

© 2017 IHS Markit
Retail gasoline prices have increased temporarily in the aftermath of Hurricane Harvey
US households are spending less than 4% of disposable income on energy
US oil and gas production has resumed growth

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Quadrillion Btu, annual rate</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: IHS Markit
US energy production will catch up with demand in the decade ahead

US energy supply and demand

Source: IHS Markit © 2017 IHS Markit
Labor productivity and total factor productivity growth have been exceptionally weak in recent years.
Consumer spending
Forces affecting consumer spending

Positive forces
- Employment growth
- Real wage growth
- Rising asset values
- Income tax cuts in 2018
- Expansion of e-commerce

Negative forces
- High student debt burdens
- Saving for retirement
- Asset and income inequality
The consumer market environment is favorable

<table>
<thead>
<tr>
<th>Consumer market indicators</th>
<th>Percent change</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real consumption</td>
<td>2.7</td>
<td>2.7</td>
<td>2.8</td>
<td>2.6</td>
<td></td>
</tr>
<tr>
<td>Real disposable income</td>
<td>1.4</td>
<td>1.5</td>
<td>3.5</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>Real household net worth</td>
<td>4.6</td>
<td>4.3</td>
<td>2.5</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td>Payroll employment</td>
<td>1.8</td>
<td>1.5</td>
<td>1.5</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>Real wage rate</td>
<td>1.1</td>
<td>1.0</td>
<td>1.6</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Consumption price deflator</td>
<td>1.2</td>
<td>1.6</td>
<td>1.3</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td>Light-vehicle sales (Millions)</td>
<td>17.5</td>
<td>17.0</td>
<td>17.2</td>
<td>17.0</td>
<td></td>
</tr>
<tr>
<td>Single-family home sales (Millions)</td>
<td>5.39</td>
<td>5.58</td>
<td>5.71</td>
<td>5.65</td>
<td></td>
</tr>
</tbody>
</table>

Source: IHS Markit © 2017 IHS Markit
Consumer spending will be supported by solid growth in real disposable income

Real consumer spending and disposable income

Tax cuts boost growth in 2018

Source: IHS Markit

© 2017 IHS Markit
Durable goods lead growth in real consumer spending

Real consumer spending

Source: IHS Markit © 2017 IHS Markit
Wage gains will continue to outpace inflation

Wages and prices

Source: IHS Markit

© 2017 IHS Markit

Employment Cost Index, wages & salaries
Consumption deflator

© 2017 IHS Markit
Household net worth and the personal saving rate

Household saving rate and net worth

Source: IHS Markit

© 2017 IHS Markit
The personal saving rate is below its historical average

Source: IHS Markit

© 2017 IHS Markit
Real household net worth has reached a new high

Household assets and liabilities

Source: IHS Markit
Household debt will increase at a moderate pace
Households’ financial obligations ratio will increase slightly as interest rates rise

Household financial obligations*

* Debt service, rent on primary residences, auto lease payments, property taxes, and homeowners’ insurance

Source: IHS Markit

© 2017 IHS Markit
Household financial and real estate assets are rising

Household asset holdings

Equities
Other financial assets
Nonfinancial assets (includes real estate)

Source: IHS Markit

© 2017 IHS Markit
US light-vehicle sales have reached their peak; light trucks will continue to outsell cars
Nominal consumer spending growth by category

Nominal consumer spending, percent change

Source: IHS Markit
Healthcare will account for a rising share of personal consumption

Personal consumption by category

Source: IHS Markit  © 2017 IHS Markit
Housing markets
Homebuilding continues its slow recovery

- Housing demand is supported by sustained growth in employment and real incomes. Mortgage rates are low, but will rise through 2019.
- Supply is constrained by shortages of labor and developed lots.
- As demand outpaces supply, home prices are rising.
- After hitting a 51-year low in 2016, the homeownership rate is rising in 2017, led by an upturn in homeownership among young adults.
- Lean inventories, strong demand, rising prices, and builder optimism will lead to increasing home construction.
A slow recovery in housing starts is contributing to upward pressure on home prices

Housing starts and home prices

- Housing starts (Left scale)
- FHFA house price index* (Right scale)

* Purchase-only index
Source: IHS Markit © 2017 IHS Markit
Housing affordability will deteriorate through 2020 as home prices and mortgage rates rise

Housing affordability index*

* A value of 1.00 indicates a household earning the median income can afford a median-priced single-family home

Source: IHS Markit
Household formation and rebuilding after hurricanes will support further gains in housing starts
US housing starts continue their gradual recovery

Housing starts

- Single-family
- Multifamily

Source: IHS Markit
Single-family home sales and construction are not expected to regain their 2005 peaks

Source: IHS Markit

© 2017 IHS Markit
Business investment
Forces driving business fixed investment

- Expected market growth
- Cost of capital
- Technological advances
- Efficiency gains
- Corporate profits
Corporate economic profits’ share of GDP

Source: IHS Markit

© 2017 IHS Markit
Corporate economic profits are rising again

Economic profits

Percent change

Source: IHS Markit

© 2017 IHS Markit
US corporate cash flow’s share of GDP peaked in 2010

* Excluding capital transfers
Source: IHS Markit

© 2017 IHS Markit
Core capital goods orders and shipments are recovering

Nondefense capital goods excluding aircraft

Source: IHS Markit
The upturn in real capital spending is led by structures

Real business fixed investment

Year-over-year % change

Source: IHS Markit

© 2017 IHS Markit
Real business equipment investment growth by type

<table>
<thead>
<tr>
<th>Real business equipment investment</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information technology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: IHS Markit © 2017 IHS Markit
Investment in manufacturing structures is down, while investment in mines and wells is up

Source: IHS Markit  © 2017 IHS Markit
US oil drilling follows crude oil prices

Weekly oil rig count and West Texas Intermediate crude oil price

US real construction growth by sector

<table>
<thead>
<tr>
<th>Percent change</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total construction</td>
<td>1.1</td>
<td>3.5</td>
<td>3.7</td>
<td>3.5</td>
</tr>
<tr>
<td>Residential</td>
<td>5.5</td>
<td>2.2</td>
<td>5.4</td>
<td>2.8</td>
</tr>
<tr>
<td>Commercial</td>
<td>18.8</td>
<td>7.1</td>
<td>4.2</td>
<td>5.5</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>-6.4</td>
<td>-10.0</td>
<td>-0.1</td>
<td>11.3</td>
</tr>
<tr>
<td>Mines &amp; wells</td>
<td>-43.2</td>
<td>51.6</td>
<td>-1.8</td>
<td>5.5</td>
</tr>
<tr>
<td>Healthcare</td>
<td>-3.9</td>
<td>-3.1</td>
<td>5.3</td>
<td>7.6</td>
</tr>
<tr>
<td>Public utilities</td>
<td>2.8</td>
<td>-5.6</td>
<td>-1.8</td>
<td>-1.5</td>
</tr>
<tr>
<td>Highways &amp; streets</td>
<td>0.3</td>
<td>-5.9</td>
<td>3.4</td>
<td>5.3</td>
</tr>
<tr>
<td>Public education</td>
<td>2.9</td>
<td>-3.1</td>
<td>0.0</td>
<td>6.7</td>
</tr>
</tbody>
</table>

Source: IHS Markit

© 2017 IHS Markit
Business fixed investment’s share of GDP remains below historical peaks

Source: IHS Markit © 2017 IHS Markit
Fiscal policy
US policy assumptions in the September forecast

- A reduction in the statutory corporate income tax rate from 35% to 25%, partially offset by fewer tax breaks, starting in January 2018
  - No border adjustments
  - No expensing of capital expenditures
- Repatriation of $800 billion of foreign profits at a reduced tax rate of 10% in 2018
- Personal income tax reforms that lower the average effective federal tax rate from 20.7% to 20.0% in January 2018
- Additional public infrastructure investments totaling $250 billion over 2019–28
- No major changes in healthcare or international trade policies
- Federal Reserve (Fed) policy rate increases of 75 basis points in 2017, 2018, and 2019, bringing the rate to a long-term equilibrium of 3%
- The Fed begins to reduce its asset holdings later this year
US federal budget deficits will increase after fiscal 2018
Federal expenditures will continue to exceed revenues

Federal revenues and expenditures*

* Fiscal years, unified budget
Source: IHS Markit © 2017 IHS Markit
Federal spending will keep rising as transfer payments and interest payments surge
Government spending on Social Security and healthcare will increase as the population ages

Source: IHS Markit
The effective federal personal income tax rate will decrease in 2018

Source: IHS Markit

© 2017 IHS Markit
Federal government debt remains high relative to GDP

Publically held federal debt

Source: IHS Markit

© 2017 IHS Markit
Forces driving state government revenues

State revenue drivers

<table>
<thead>
<tr>
<th>Nonfarm employment</th>
<th>Wages per worker</th>
<th>Wage income</th>
<th>Personal income</th>
<th>Retail sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>% change, calendar years</td>
<td>2016</td>
<td>2017</td>
<td>2018</td>
<td>2019</td>
</tr>
</tbody>
</table>

Source: IHS Markit
Foreign trade
Destinations of US exports of goods, 2016

<table>
<thead>
<tr>
<th>Region</th>
<th>Percent of Total Goods Exports</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>7.7%</td>
</tr>
<tr>
<td>Japan</td>
<td>4.2%</td>
</tr>
<tr>
<td>ASEAN</td>
<td>5.0%</td>
</tr>
<tr>
<td>Pacific Rim</td>
<td>24.9%</td>
</tr>
<tr>
<td>Canada</td>
<td>18.3%</td>
</tr>
<tr>
<td>Mexico</td>
<td>15.9%</td>
</tr>
<tr>
<td>South &amp; Central America</td>
<td>9.4%</td>
</tr>
<tr>
<td>Europe</td>
<td>21.9%</td>
</tr>
<tr>
<td>All other</td>
<td>9.6%</td>
</tr>
</tbody>
</table>

Source: IHS Markit
Sources of US imports of goods, 2016

Percent of total goods imports, customs basis

- Pacific Rim: 37.0%
- Europe: 22.1%
- Mexico: 13.4%
- South & Central America: 4.9%
- Canada: 12.7%
- All other: 9.9%
- China: 21.5%
- Japan: 5.9%
- ASEAN: 6.8%

Source: US Census Bureau, IHS Markit © 2017 IHS Markit
Real US exports and imports are rising

US exports and imports

Source: IHS Markit © 2017 IHS Markit
Global economic growth will strengthen

• Global growth will pick up from 2.5% in 2016 to 3.1% in 2017 and 3.2% in 2018, led by the United States and emerging markets.

• Eurozone growth will be steady, but UK growth is expected to slow through 2018 as Brexit-related uncertainty delays investment.

• After a good start to 2017, China’s economic growth will slow because of persistent imbalances in credit, housing, and industrial markets.

• The Asia-Pacific region will make the strongest contribution to global in the decade ahead, despite slightly slower growth in China.

• Risks abound, including potential trade wars, financial-market turbulence, China’s rising debt, conflicts in the Middle East and Africa, and Eurozone banking problems.
Asia-Pacific (excluding Japan) will achieve the fastest growth in real GDP

Source: IHS Markit

© 2017 IHS Markit
The US surplus in services trade partially offsets the deficit in merchandise trade

US net exports, NIPA

Source: IHS Markit

© 2017 IHS Markit
The US current account will remain in deficit

Current-account balance

Source: IHS Markit

© 2017 IHS Markit
The dollar’s real exchange value will depreciate against major currencies in the medium term.

![Real trade-weighted dollar index graph](image)

Index, 2009 = 1.0

Major trading partners

Other important trading partners

Source: IHS Markit

© 2017 IHS Markit
The dollar’s real exchange value will depreciate in the medium term

Real trade-weighted dollar index

Source: IHS Markit
Risks to the US forecast

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Characteristics</th>
</tr>
</thead>
</table>
| Crisis of confidence damages economic growth       | • Congress fails to enact tax reforms or new infrastructure spending. Policy uncertainty undermines confidence, leading to a stock market correction.  
• Consumers and businesses delay spending.         
• US economic growth slows through late 2018.       |
| Lower taxes and fewer regulations                   | • A rollback of regulations and lower corporate taxes result in higher capital spending and productivity growth.  
• Consumer and housing markets benefit from higher incomes, milder inflation, and lower interest rates.  
• Stronger global economic growth helps exports.    |
| Baseline forecast                                   | • The Fed gradually raises interest rates through 2019.  
• Personal and corporate income tax rates are cut in 2018.  
• Consumer spending, homebuilding, and business fixed investment post moderate growth.  
• Global economic growth picks up in 2017–18.       |
## Real GDP growth in alternative scenarios

### Real GDP

<table>
<thead>
<tr>
<th>Year</th>
<th>Baseline (60%)</th>
<th>Pessimistic (25%)</th>
<th>Optimistic (15%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td></td>
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<tr>
<td>2013</td>
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<td>2018</td>
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<tr>
<td>2019</td>
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</tbody>
</table>

Source: IHS Markit

© 2017 IHS Markit
Real consumer spending growth in alternative scenarios

Real consumer spending

Source: IHS Markit

© 2017 IHS Markit
Light-vehicle sales in alternative scenarios

Light-vehicle sales

Mill. of units, annual rate


Baseline (60%)  Pessimistic (25%)  Optimistic (15%)

Source: IHS Markit

© 2017 IHS Markit
Housing starts in alternative scenarios

![Housing starts graph]

- **Baseline (60%)**
- **Pessimistic (25%)**
- **Optimistic (15%)**

Mill. of units, annual rate

Source: IHS Markit
Bottom line for the US economy

• Real GDP growth is projected to pick up from 1.5% in 2016 to 2.1% in 2017 and 2.7% in 2018, before settling back to 2.3% in 2019.

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

• Business fixed investment will benefit from stronger growth in global markets, along with an improving tax and regulatory environment.

• Due to supply constraints, the recovery in residential construction will remain on a slow track.

• Wage and benefit costs will accelerate as labor markets tighten.

• The Fed will gradually raise the federal funds rate to an equilibrium level of 3% by the end of 2019.