Winds of Change

Dr. Alan Beaulieu
President

Industrial Supply Association
## 2017 Forecast Results

If you heard ITR around two years ago...

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Duration</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>US GDP</td>
<td>24</td>
<td>99.7%</td>
</tr>
<tr>
<td>US Ind. Prod.</td>
<td>24</td>
<td>96.8%</td>
</tr>
<tr>
<td>Europe Ind. Prod.</td>
<td>27</td>
<td>99.9%</td>
</tr>
<tr>
<td>Canada Ind. Prod.</td>
<td>24</td>
<td>96.7%</td>
</tr>
<tr>
<td>China Ind. Prod.</td>
<td>30</td>
<td>97.8%</td>
</tr>
<tr>
<td>Retail Sales</td>
<td>25</td>
<td>98.0%</td>
</tr>
<tr>
<td>Housing</td>
<td>27</td>
<td>99.5%</td>
</tr>
<tr>
<td>Employment</td>
<td>23</td>
<td>99.5%</td>
</tr>
</tbody>
</table>

*ITR Economics provides the best economic intelligence to reduce risk and drive practical and profitable business decisions.*
US Industrial Production to Gross Domestic Product

Year-over-Year, Quarter-to-Quarter (3/12)

Sources: FRB, BEA
US Industrial Production Index

**US Industrial Production Index**

12-Month Moving Average

- **Annual Trend:** 104.4
- **Phase:** B
- **Year-over-Year:** 2.3%

**Year-over-Year Growth Rate**

12/12 Rate-of-Change

- **2018:** 2.9%
- **2019:** -1.2%
- **2020:** 2.3%

Source: FRB
US Real Gross Domestic Product

Source: BEA
Rate-of-Change & How They Work

Tools for Seeing the Future
### Data Preparation

<table>
<thead>
<tr>
<th></th>
<th>Raw</th>
<th>3MMT</th>
<th>3/12</th>
<th>12MMT</th>
<th>12/12</th>
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</thead>
<tbody>
<tr>
<td>Apr-16</td>
<td>1.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May-16</td>
<td>1.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jun-16</td>
<td>1.5</td>
<td>4.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jul-16</td>
<td>1.4</td>
<td>4.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aug-16</td>
<td>1.5</td>
<td>4.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sep-16</td>
<td>1.3</td>
<td>4.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oct-16</td>
<td>1.3</td>
<td>4.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nov-16</td>
<td>1.6</td>
<td>4.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dec-16</td>
<td>1.6</td>
<td>4.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan-17</td>
<td>1.5</td>
<td>4.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb-17</td>
<td>1.7</td>
<td>4.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mar-17</td>
<td>1.6</td>
<td>4.8</td>
<td>18.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apr-17</td>
<td>1.7</td>
<td>5.0</td>
<td>18.2</td>
<td></td>
<td></td>
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<td>1.7</td>
<td>5.0</td>
<td>18.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jun-17</td>
<td>1.7</td>
<td>5.1</td>
<td>15.9%</td>
<td>18.6</td>
<td></td>
</tr>
<tr>
<td>Jul-17</td>
<td>1.6</td>
<td>5.0</td>
<td>13.6%</td>
<td>18.8</td>
<td></td>
</tr>
<tr>
<td>Aug-17</td>
<td>1.7</td>
<td>5.0</td>
<td>13.6%</td>
<td>19.0</td>
<td>26.7%</td>
</tr>
<tr>
<td>Sep-17</td>
<td>1.5</td>
<td>4.8</td>
<td>14.3%</td>
<td>19.2</td>
<td>25.5%</td>
</tr>
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<td>14.6%</td>
<td>19.4</td>
<td>25.2%</td>
</tr>
<tr>
<td>Nov-17</td>
<td>1.9</td>
<td>4.9</td>
<td>16.7%</td>
<td>19.7</td>
<td>22.4%</td>
</tr>
<tr>
<td>Dec-17</td>
<td>1.7</td>
<td>5.1</td>
<td>13.3%</td>
<td>19.8</td>
<td>20.0%</td>
</tr>
<tr>
<td>Jan-18</td>
<td>1.7</td>
<td>5.3</td>
<td>12.8%</td>
<td>20.0</td>
<td>18.3%</td>
</tr>
<tr>
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<td>5.3</td>
<td>10.4%</td>
<td>20.2</td>
<td>15.4%</td>
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<tr>
<td>Mar-18</td>
<td>1.7</td>
<td>5.0</td>
<td>14.1%</td>
<td>20.3</td>
<td>12.7%</td>
</tr>
</tbody>
</table>

**3/12 Rate-of-Change**

\[
\text{3/12 Rate-of-Change} = \frac{\text{March 2018 3MMT}}{\text{March 2017 3MMT}} \times 100 - 100
\]

\[
= \frac{5.3}{4.8} \times 100 - 100 = 10.4\%
\]

**12/12 Rate-of-Change**

\[
\text{12/12 Rate-of-Change} = \frac{\text{March 2018 12MMT}}{\text{March 2017 12MMT}} \times 100 - 100
\]

\[
= \frac{20.3}{18.0} \times 100 - 100 = 12.7\%
\]
US Manufacturing Production to US Industrial Production

Durable Goods Manufacturing Production Index

12/12 Rates-of-Change

Source: FRB
First in Forecasts Since 1948

US Industrial Production to
US Wholesale Trade Nondurable Goods

Sources: FRB, US Census Bureau

12/12 Rates
of
Change

7.0%

'96 '98 '00 '02 '04 '06 '08 '10 '12 '14 '16 '18 '20

US IP Wholesale

3/12 above the 12/12
Only a slower rate of $ rise in 2019

12/12 Rates-of-Change
Sources: FRB, US Census Bureau
Wholesale Trade Chemicals & Allied Products to US Industrial Production Index

Sources: Census Bureau, FRB

Tentative Dec ‘17 12/12 high $125.3 bn
Milder rate of rise in 2019

NAICS 4246, which includes 424690: Welding gases merchant wholesalers

12/12 Rates-of-Change

First in Forecasts Since 1948

ITR ECONOMICS
Tariffs and other fun things
## Ease of Doing Business

<table>
<thead>
<tr>
<th>Country</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>NZ</td>
<td>1</td>
</tr>
<tr>
<td>Singapore</td>
<td>2</td>
</tr>
<tr>
<td>Denmark</td>
<td>3</td>
</tr>
<tr>
<td>Korea</td>
<td>4</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>5</td>
</tr>
<tr>
<td>US</td>
<td>6</td>
</tr>
<tr>
<td>UK</td>
<td>8</td>
</tr>
<tr>
<td>Germany</td>
<td>21</td>
</tr>
<tr>
<td>Japan</td>
<td>35</td>
</tr>
<tr>
<td>Russia</td>
<td>36</td>
</tr>
<tr>
<td>China</td>
<td>75</td>
</tr>
<tr>
<td>India</td>
<td>100</td>
</tr>
<tr>
<td>Brazil</td>
<td>125</td>
</tr>
</tbody>
</table>

Source: The World Bank
US Raw Steel Production

Source: World Steel Association

US Steel - 12MMT

5.2% B
US Steel Mill Employment

Steel Jobs: Highest in over 25 yrs

Source: BLS
US Top Goods Export by State

Based on annual data, 2017
Source: US Census Bureau
Mexico Manufacturing Production Index

2008 = 100

Source: CEIC
Leveling the Manufacturing Field Around the Globe

Years of 15% to 20% per annum labor cost increases in China without corresponding productivity increases

Cheap and readily available energy in North America

Aggressive reengineering and automation

2004: 15 Percentage Point Advantage

The China Advantage?

2016: Only 1 Percent Point Difference
Leveling the Manufacturing Field Around the Globe

Years of 15% to 20% per annum labor cost increases in China without corresponding productivity increases

Cheap and readily available energy in North America

Moving Forward

2014: 15 Percentage Point Advantage

Robotics Protectionism Politics & Economic Stability

The China Advantage?

2016: Only 1 Percent Point Difference
$50 Billion in New Tariffs Aimed at China – Trade War?

US: Punitive for Theft of IT

China: Responds 25% tariffs

China: Soybeans, Autos, Aircraft

CHINA LOSES?

The US is China’s Biggest Customer

Exports from the US to China stand at $130.1bn, or 0.7% of US GDP.

Exports from China to the US are a record high $436.9bn, or 3.8% of China GDP.

Source: US Census Bureau
$60 Billion in New Tariffs Aimed at China – Trade War Ahead?

The US is China’s Biggest Customer

Exports from the US to China stand at $130.1bn, or 0.7% of US GDP. Exports from China to the US are a record high $436.9bn, or 12.3% of China GDP.

Slowing exports to the US will hurt their economy more than ours but it is not risk free.

<table>
<thead>
<tr>
<th>Industry Exports</th>
<th>US $ bn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerospace</td>
<td>$ 16.3</td>
</tr>
<tr>
<td>Soybeans</td>
<td>$ 12.4</td>
</tr>
<tr>
<td>Motor Vehicles</td>
<td>$ 10.0</td>
</tr>
<tr>
<td>Semiconductors</td>
<td>$ 6.9</td>
</tr>
<tr>
<td>Oil &amp; Gas</td>
<td>$ 6.9</td>
</tr>
<tr>
<td>Waste &amp; Scrap</td>
<td>$ 5.6</td>
</tr>
<tr>
<td>Ctrl Instruments</td>
<td>$ 5.6</td>
</tr>
<tr>
<td>Synthetic Rubbers</td>
<td>$ 3.9</td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td>$ 3.4</td>
</tr>
<tr>
<td>Ind’l Machines</td>
<td>$ 3.3</td>
</tr>
</tbody>
</table>

Source: US Census Bureau
First in Forecasts Since 1948

Source: Census Bureau

Net Migration Between States, July 2016-July 2017

Net loss: -157,992
Net gain: +202,510

Does not include immigration into the US
State Population Growth Rates

Source: Census Bureau

Percent Change from Population Estimates 2010 to 2017
US Federal Government Current Tax Receipts to Consumption Expenditures to Current Transfer Payments to Federal Government Interest Payments

Billions of Dollars

Source: BEA

Interest Payments

Current Tax Receipts
Consumption Expenditures
Current Transfer Payments

First in Forecasts Since 1948

ITR Economics

Billions of Dollars

Source: BEA
First in Forecasts Since 1948

US Tax Rates and Real GDP Growth

Sources: Tax Foundation, BEA,
Will the tax reform generate additional cash? 35%, 21%, and 18.4%
Businesses in America already cash rich
Immediate expensing? A Help. Inducement to invest more than they need and/or can implement?
Pulling in from the future?
8 yrs to pay the tax on repatriated funds. No big influx of cash to the Treasury. Apple $4.5b/year.
On business investment, roughly two-thirds of respondents to our national survey...indicated that the reform wouldn't affect their capital expenditures at all. Just **15 percent** said they would increase their capital spending by **10 percent** or more, and those responses came mostly from smaller firms.

~ Raphael Bostic  
Atlanta Federal Reserve Chair  
Rotary Club of Atlanta  
January 8, 2018
ISA and Related Industry Trends
## North America Light Vehicle Production

<table>
<thead>
<tr>
<th></th>
<th>12/12</th>
<th>Phase</th>
<th>Annual Trend (mu)</th>
<th>Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>-8.3%</td>
<td>A</td>
<td>10.87</td>
<td>Down</td>
</tr>
<tr>
<td>Canada</td>
<td>-7.4%</td>
<td>A</td>
<td>2.15</td>
<td>Down</td>
</tr>
<tr>
<td>Mexico</td>
<td>12.6%</td>
<td>C</td>
<td>3.95</td>
<td>Up</td>
</tr>
</tbody>
</table>
US Industrial Machinery Production Index

Source: FRB

First in Forecasts Since 1948
Shifting cyclical momentum
US Chemicals & Products Production Index

Chemical Activity Barometer is rising
Capacity Utilization Rate 73.93%, equaling the 10-yr average

Highest 12MMA in 4 yrs
2019 - 0.5%

2012 = 100

% Change
Basic 0.8% B
Synthetic 0.9% B
Industrial Gas 2.8% B
Organic 3.3% B
Agriculture 19.2% C
Inorganic -6.6% A

3MMA
12MMA
US Civilian Aircraft Equipment Production Index

2012 = 100

Source: FRB

First in Forecasts Since 1948

Sep ‘18 12MMA low
2019 7.6%

-4.9%
-8.5%
114.5

2012 = 100
Source: FRB
U.S. Oil & Gas Extraction Production Index

Projecting a June ‘18 12/12 high
Record high output
Dec ‘18 4.4%   Dec ‘19 1.6%

As seen in

2012 = 100

Source: FRB
US Private Nonresidential Construction

Milder-than-normal seasonal decline
Mild rise in 12MMT to Dec ‘19 high
2019  5.5%

Source: Census Bureau
First in Forecasts Since 1948

US Private Nonresidential Construction to ITR Leading Indicator

Sources: US Census Bureau, ITR Economics

ITRLI Leads by 20

Construction Forecast

Indicator Forecast

Rates-of-Change

First in Forecasts Since 1948

Sources: US Census Bureau, ITR Economics
General Economic Trends
Global Economy is Set to Slow Down
Global Leading Indicators

EZ Comp PMI
EU Manufacturing PMI
JP Morgan Global MFG PMI

Source: Markit Economics
US Industrial Production Index to Leading Indicators

Sources: FRB, OECD, ISM, Yahoo Finance, BEA, IHS Markit
Early Indication of Slower Growth Ahead

Reported in ITR Trends Report – ITR Advisor

Tentative Jan ‘18 high

Sources: FRB, ITR Economics
Downward pressure Ahead on Copper Prices

Sources: Wall Street Journal, ITR Economics
A Positive Risk to the Forecast
US Total Industry Capacity Utilization Rate

Source: FRB
US Purchasing Managers Index says Downward Pressure Ahead

Sources: WSJ, Institute for Supply Management
US Domestic Corporate Profits are a Problem for Stocks

Sources: Wall Street Journal; Bureau of Economic Analysis

12/12 Rates

Profits

Prices

16.8%

-0.1%
Cyclically Adjusted Price Earnings (CAPE) Ratio
January 1900 – December 2017

KEY:
Purple Line: CAPE Ratio
Green Line: Median
Yellow Line: 90th Percentile
Red Line: 95th Percentile

Invest Above 95P - Red Line
5 Year Annualized Return:
Average = 2.59%
Median = 1.53%

Invest Above 90P - Yellow Line
5 Year Annualized Return:
Average = 3.31%
Median = 2.21%

Invest Below Median - Green Line
5 Year Annualized Return:
Average = 12.31%
Median = 12.38%

Invest Below 90P - Yellow Line
5 Year Annualized Return:
Average = 10.92%
Median = 11.28%

Source: Robert Shiller – Yale University
Analysis prepared by: Baird Family Wealth Group 1/4/18

First in Forecasts Since 1948
US Nondefense Capital Goods New Orders w/o Aircraft

A positive impact from the tax law will show up here

12MMT rise to Sep ‘18
2019 - 3.2%

$781.1

Source: Census Bureau
US Nondefense Capital Goods New Orders (excl. Aircraft) to US Machinery Manufacturing Capacity Utilization

New Orders vs Utilization Rate

Sources: Census Bureau, FRB
US Copper Futures Prices are Signaling Downward Pressure on B2B Activity

Sources: WSJ, Census Bureau
Wholesale Trade of Nondurable Goods are also Signaling Downward Pressure on B2B Activity

Wholesale

New Orders

2019  3.5%

12/12 Rates-of-Change
US Single Unit Housing Series – Good News for Now

- Projected Sep ‘18 12MMT high
  2018 4.1%

Source: Census Bureau
US Housing Starts to National Association of Home Builders Housing Market Index

Housing Starts

- 12/12

Housing Market Index - 3/12

8 month lead time

Rates-of-Change

Sources: Census Bureau, NAHB
US Total Retail Sales – Consumers are Doing Well!

12MMT rise through 2019
2018  4.0%

Source: Census Bureau
Wholesale Trade of Nondurable Goods to US Consumer Nondurable Goods New Orders

12/12 Rates of Change

Nov '17 high

Wholesale

New Orders

'05  '06  '07  '08  '09  '10  '11  '12  '13  '14  '15  '16  '17  '18  '19

0  10  20  30

-10  -20  -30
First in Forecasts Since 1948

ITR US Retail Sales Leading Indicator Signaling a Slowing in Retail Sales Rate of Rise

Sources: Census Bureau and ITR Economics

Retail Sales = 12/12, ITR Retail Sales = Monthly

Sources: Census Bureau and ITR Economics
Personal Savings are Signaling a Slowing in US Total Retail Sales

Sources: Census Bureau, BEA

Sales - 12/12
Sales Forecast - 12/12
Index - 12MMA

12/12 Rates-of-Change

Sources: Census Bureau, BEA
I Can’t Adult Today.
Please Don’t Make Me Adult.
US Consumer Price Index to US Producer Price Index

Source: BLS

First in Forecasts Since 1948

1/12 Rate of Change

'00   '02   '04   '06   '08   '10   '12   '14   '16   '18   '20   '22   '24

Consumer Price

Producer Price

3.0%

2.4%
Copper Future Prices – The Cyclical Momentum is Shifting

Source: Wall Street Journal

Dollars per Pound

First in Forecasts Since 1948

ITR Economics

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0

0 '00 '02 '04 '06 '08 '10 '12 '14 '16 '18 '20 '22 '24

-280 -210 -140 -70 0 70 140 210 280

-280 -210 -140 -70 0 70 140 210 280

$3.0 24.7% 15.3%

MMA

R-O-C

12MMA

3MMA

3/12 12/12

'00 '02 '04 '06 '08 '10 '12 '14 '16 '18 '20 '22 '24

Dollars per Pound

Source: Wall Street Journal
Yield on 10 Year Treasury Note

Source: FRB
FOMC Member Interest Rate Projections

December 2017

Fed Open Market Committee

March 2018

Source: FRB
It is not enough to do your best; you must know what to do, and then do your best.

W. Edwards Deming
3 Month Complimentary Subscription

Email updates@itreconomics.com with the subject line

ISA – ALAN IS COOL!