



QUARTERLY FORECAST REPORT

**2ND
QUARTER**

2016

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 **ITR ECONOMICS**

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Moving Total/Moving Average

Moving totals/averages are used to smooth out the volatility inherent to monthly data.

Monthly Moving Total (MMT) vs Monthly Moving Average (MMA): There are times when it is desirable to calculate a monthly moving average instead of a total. Averages are used when the data can not be compounded such as an index, percent, price level, or interest rates. Totals are used for things where it makes sense to add the data together. For example, units sold, or total dollars spent.

3MMT or 3MMA: A three-month moving total (3MMT) or average (3MMA) is the total (or average) of the monthly data for the most recent three months. Three-month moving totals (3MMT) or averages (3MMA) illustrate the seasonal changes inherent to the data series.

12MMT or 12MMA: A twelve-month moving total (12MMT) or average (12MMA) is the total (or average) of the monthly data for the past 12 months. The 12MMT (or 12MMA) removes seasonal variation in order to derive the underlying cyclical trend. It is also referred to as the annual total or annual average.

Rate-of-Change

A rate-of-change figure is the ratio comparing a data series during a specified time period to the same time period one year ago. **Rates-of-change** are expressed in terms of the **annual percent change in an MMT or MMA**.

Rates-of-change reveal whether activity levels are getting progressively better or worse compared to last year. Consecutive rate-of-change illustrates and measures cyclical change and trends.

ITR Economics' three commonly used rates-of-change are the **1/12**, **3/12**, and **12/12**, which represent the year-over-year percent change of a single month, 3MMT, and 12MMT (respectively).

A rate-of-change above 0 indicates a rise in the data relative to one year prior, while a rate-of-change below 0 indicates decline (highlighted in red).

Business Cycle

The data trends and rates-of-change identify positions in the business cycle, those positions are:



12/12 is rising below 0 and the data trend is either heading toward a low or is in the early stages of recovery. This is the first positive phase of the business cycle.

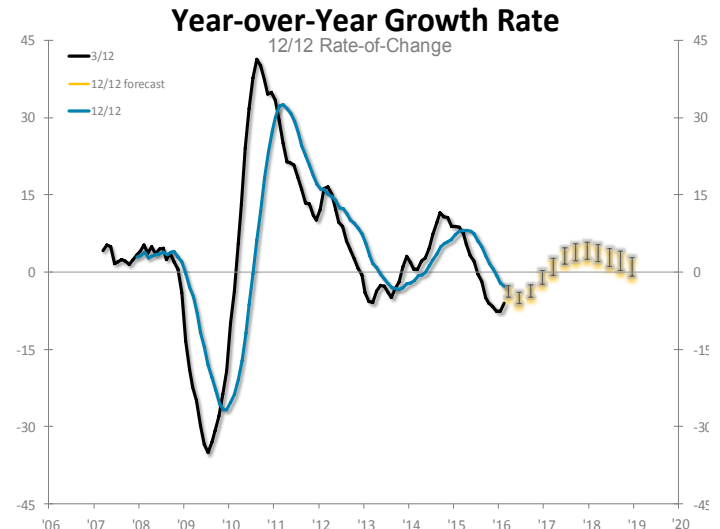
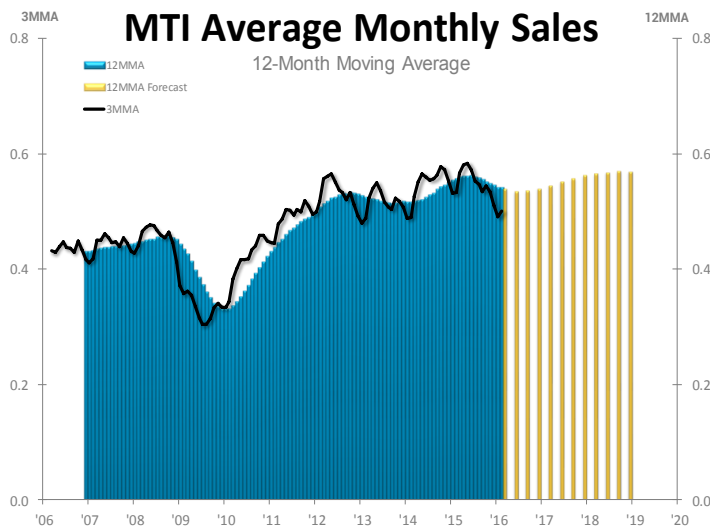
12/12 is rising above 0, data trend is accelerating in its ascent, and growth is occurring above the year-ago level. This is the second positive phase of the business cycle.

12/12 is declining but remains above 0, data trend is decelerating in its ascent or has stopped its rise, but it is still above last year. This is the first negative phase of the business cycle.

12/12 is below 0, data trend is at levels below the year-ago level. This is the final phase and second negative phase of the business cycle.

MTI Average Monthly Sales Forecast

Mils\$	1Q16	2Q16	3Q16	4Q16	1Q17	2Q17	3Q17	4Q17	1Q18	2Q18	3Q18	4Q18
3MMA	543.1	554.3	539.1	526.7	564.1	581.2	558.9	551.1	574.0	591.4	565.8	548.9
3/12	-4.2%	-3.1%	0.9%	3.2%	3.9%	4.8%	3.7%	4.6%	1.7%	1.8%	1.2%	-0.4%
12MMA	540.1	535.7	536.8	540.8	546.1	552.8	557.7	563.8	566.3	568.8	570.6	570.0
12/12	-3.7%	-5.0%	-3.6%	-1.0%	1.1%	3.2%	3.9%	4.3%	3.7%	2.9%	2.3%	1.1%



2016: -1.0%

2017: 4.3% **Annual Trend: \$541.5 thousand**

2018: 1.1%

Phase: D

Recession

Year-over-Year: -2.8%

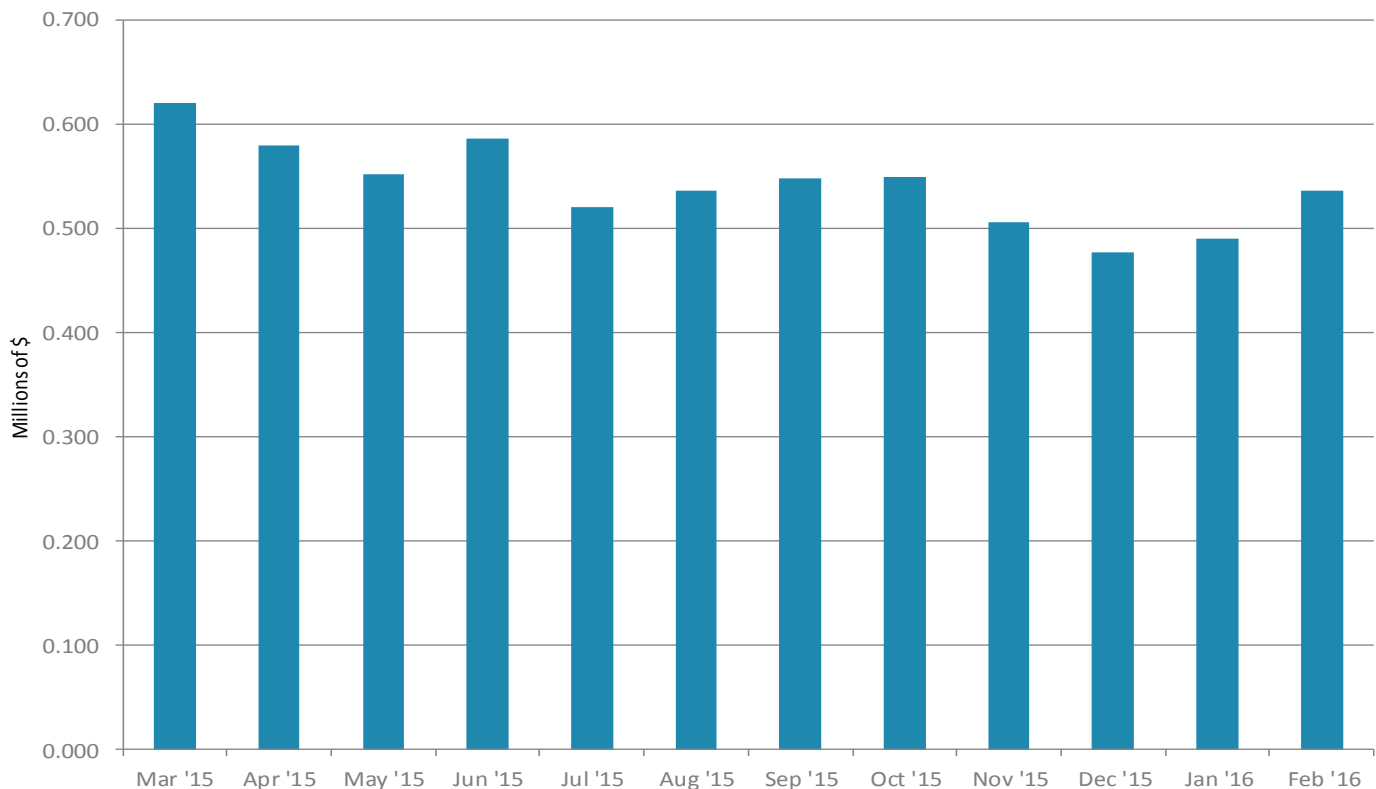
- The data analyzed in this report has been changed from MTI Total Sales to MTI Average Monthly Sales in order to account for the fluctuation in the number of companies reporting data every month.
- MTI Average Monthly Sales for the 12 months through February totaled \$541.5 thousand, a 2.8% contraction on a year-over-year basis.
- Falling metal prices were responsible for much of the decline in MTI Average Monthly Sales over the course of 2015. However, prices have been rising since mid-December, which bodes well for improving Average Monthly Sales in the second half of 2016 and throughout 2017.

MTI Reported Monthly Average Sales Data (Rolling Year)

Mils\$	Mar '15	Apr '15	May '15	Jun '15	Jul '15	Aug '15	Sep '15	Oct '15	Nov '15	Dec '15	Jan '16	Feb '16
Monthly	0.621	0.579	0.552	0.586	0.520	0.536	0.548	0.549	0.506	0.477	0.490	0.536
1/12	7.3%	2.3%	-0.1%	4.1%	-5.4%	-4.0%	-5.5%	-8.3%	-6.2%	-8.3%	-8.4%	-1.6%
3MMA	0.567	0.582	0.584	0.572	0.553	0.547	0.535	0.544	0.534	0.511	0.491	0.501
3/12	7.6%	5.4%	3.2%	2.1%	-0.5%	-1.8%	-5.0%	-6.0%	-6.7%	-7.6%	-7.6%	-6.1%
12MMA	0.561	0.562	0.562	0.564	0.561	0.559	0.557	0.552	0.550	0.546	0.542	0.542
12/12	8.1%	8.0%	7.9%	7.4%	6.0%	5.0%	3.2%	1.7%	0.6%	-0.8%	-2.2%	-2.8%

MTI Monthly Reported Data

(Rolling Monthly Average Sales Data)

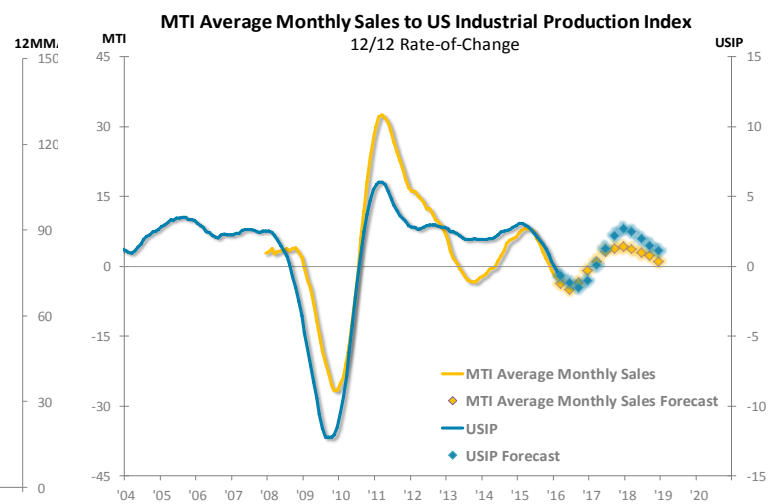
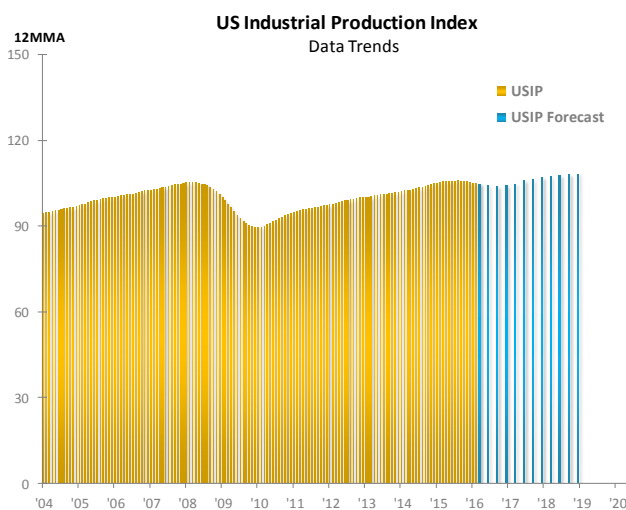


US Industrial Production Index

Annual Trend: 104.7

Phase: D
Recession

Year-over-Year: -0.8%



US Industrial Production Index Forecast



2016: -1.0%

2017: 2.7%

2018: 1.1%

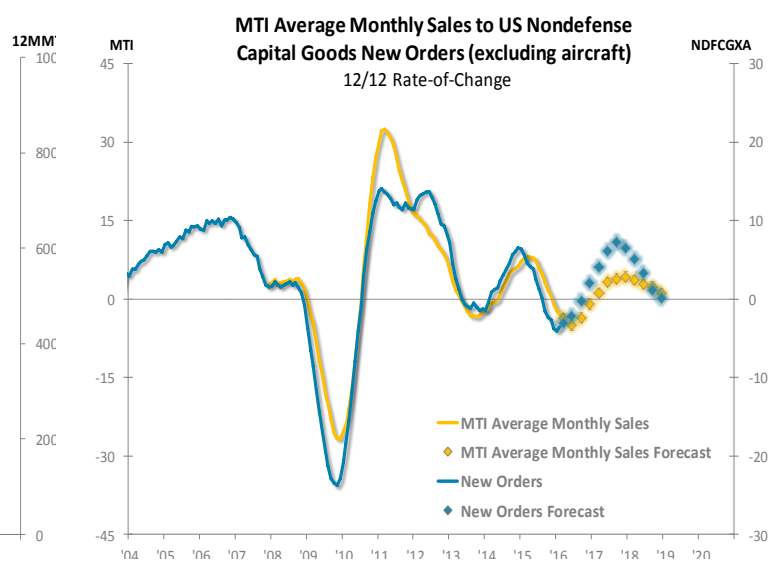
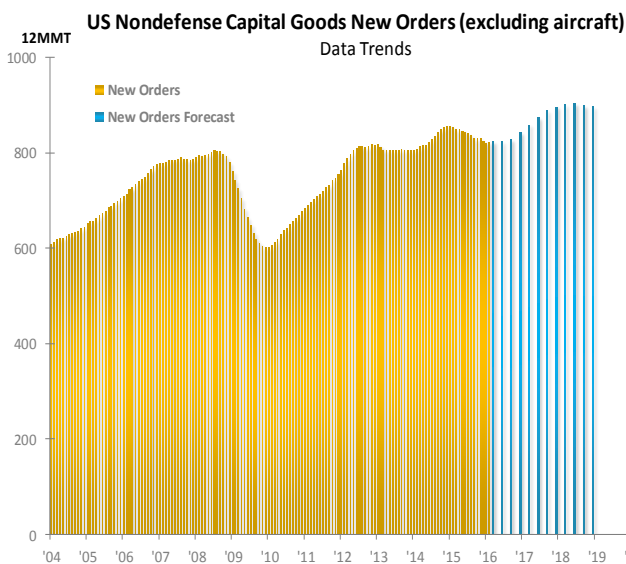
- US Industrial Production data was revised by the Federal Reserve Board in April. For the 12 months through March, average Industrial Production is down 0.8% on a year-over-year basis.
- Low commodity prices are depressing annual Mining Production, which is down 6.5% compared to the previous year. Do not expect a recovery in this component until prices stabilize and demand improves.
- US Manufacturing is up 0.7% for the 12 months through March (12-month moving average basis). The rate of growth is slowing in the face of falling exports, which are down 7.6% over the same time period.
- Expect a weaker dollar and recovering business-to-business activity to drive a recovery in Industrial Production starting in late 2016.

US Nondefense Capital Goods New Orders (excluding aircraft)

Annual Trend: \$822.1 billion

Phase: A
Recovery

Year-over-Year: -3.6%



US Nondefense Capital Goods New Orders Forecast



2016: 2.1%

2017: 6.5%

2018: 0.1%

- The US Nondefense Capital Goods New Orders 12MMT ticked up to \$822.1 billion in February, a 3.6% decline from the previous year.
- New Orders, a benchmark for business-to-business activity in the US, has transitioned to Phase A, Recovery, since the last report.
- Recovery in business-to-business activity is being driven by Machinery New Orders and growth in sectors benefitting from strong consumer demand, such as housing and automotive production.
- Although commodity prices have recovered from the lows reached in late 2015, they are still weak by historic standards. Improvement in commodity prices over the course of 2016 will enable New Orders to expand by 2.1% this year, with growth persisting through 2018.

The logo consists of a square divided into four quadrants by a white diagonal line from the bottom-left to the top-right. The top-left and bottom-right quadrants are dark blue, while the top-right and bottom-left quadrants are light blue.

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