



QUARTERLY FORECAST REPORT

1ST
QUARTER

2016

 **ITR ECONOMICS**

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Table of Contents

Definitions & Methodology.....	3
MTI Total Sales	4
Monthly Data Record	5
US Industrial Production Index	6
Nondefense Capital Goods New Orders	7

Moving Total/Moving Average

Moving totals/averages are used to smooth out the volatility inherent to monthly data at the product/company level.

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: 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 (A) removes seasonal variation in order to derive the underlying cyclical trend. It is also referred to as the annual total or 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 year-ago levels. This is the second positive phase of the business cycle.



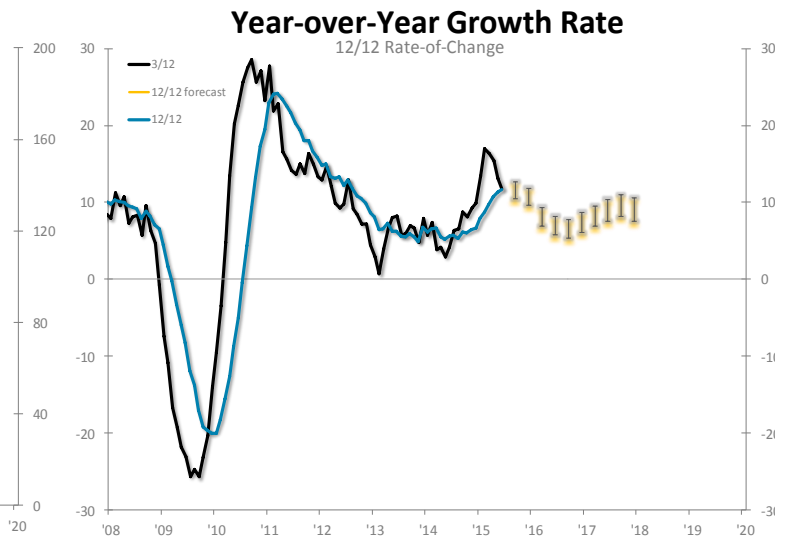
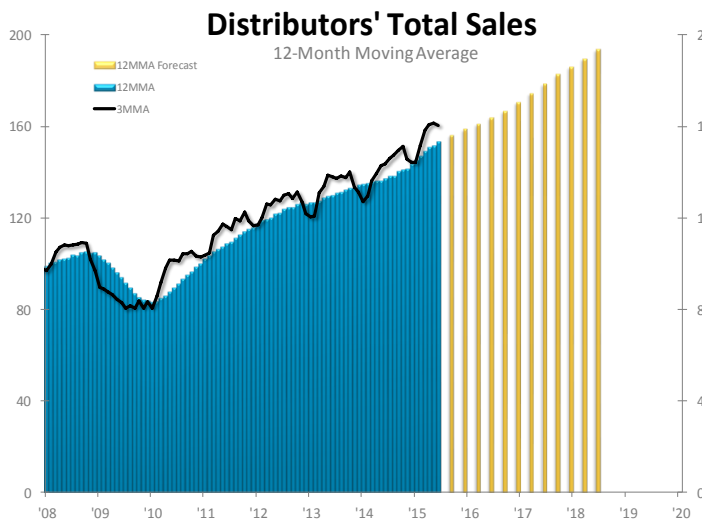
12/12 is declining but remains above 0, data trend is decelerating in its ascent or has stopped its rise, but it is still above last year. This is the first negative phase of the business cycle.



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

MTI Total Sales Forecast

Mils\$	1Q16	2Q16	3Q16	4Q16	1Q17	2Q17	3Q17	4Q17	1Q18	2Q18	3Q18	4Q18
3MMT	250,000.0	258,149.0	220,985.8	233,561.0	241,693.6	240,913.1	238,363.0	238,457.6	240,358.7	236,977.0	248,315.0	200,456.0
3/12	1.5%	1.5%	0.5%	1.5%	3.5%	7.9%	1.4%	1.6%	1.3%	0.8%	0.5%	1.0%
12MMT	685,437.0	612,458.0	695,322.0	677,821.0	634,582.0	689,753.0	700,159.0	598,970.0	684,259.0	621,527.0	645,752.0	677,146.3
12/12	1.5%	1.4%	0.1%	2.4%	2.6%	4.9%	4.7%	8.5%	6.5%	3.5%	1.5%	1.9%



2016 6.5%

2017: 8.8%

2018: 9.4%

Annual Trend: 160.6

Phase: C

Slower Growth

Year-over-Year: 5.4%

- We have downward revised the forecast based on the particularly weak quarterly trend that has developed.
- The present decline in the three-month moving average is the steepest on record, down 56.2% from the December 2014 peak.
- The current recession will persist through early 2016.
- Sales will recover in the second half of next year and grow through 2017.

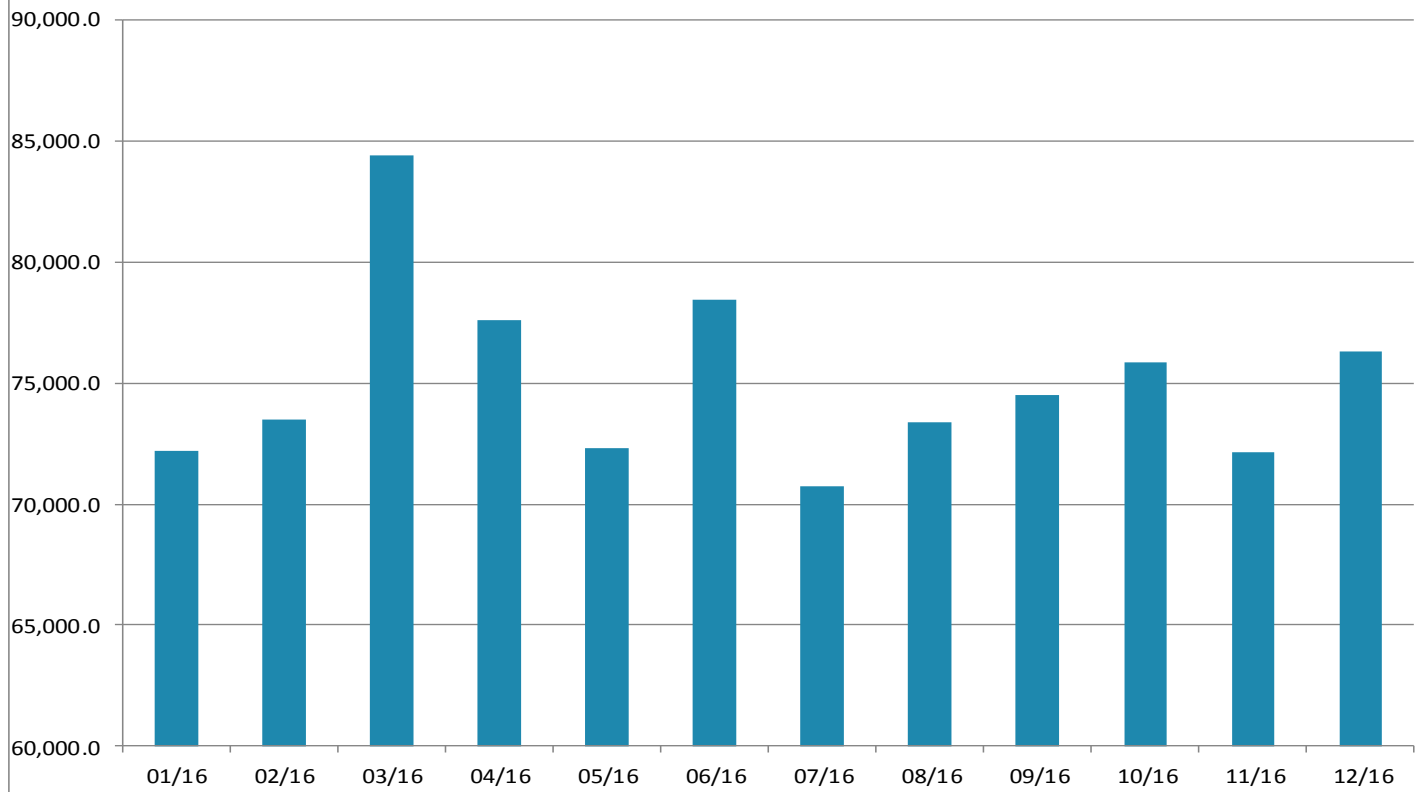
MTI Monthly Reported Data

MTI Monthly Recorded Data (rolling year)

Mils\$	01/15	02/15	03/15	04/15	05/15	06/15	07/15	08/15	09/15	10/15	11/15	12/15
Monthly	72,176.2	73,515.7	84,420.8	77,616.2	72,318.1	78,458.2	70,749.4	73,369.7	74,522.0	75,846.0	72,114.0	76,322.0
1/12	1.0%	1.0%	1.0%	1.0%	0.9%	1.0%	0.9%	0.9%	0.9%	1.5%	0.5%	0.4%
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MTI Total Sales Data

(Rolling Monthly Data)



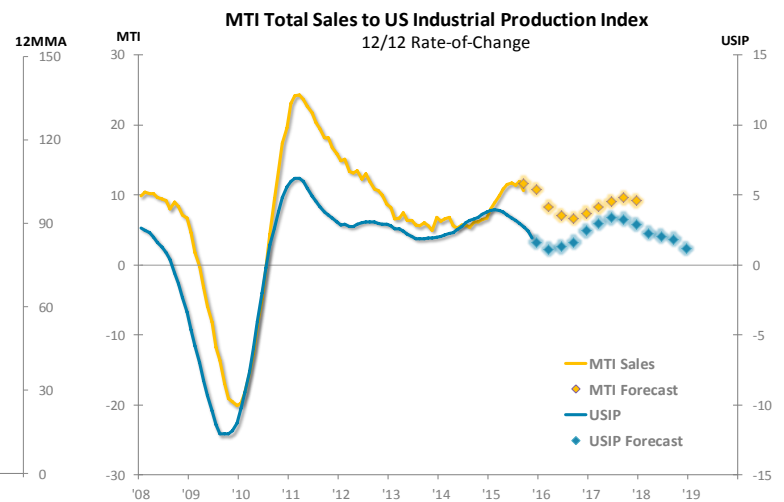
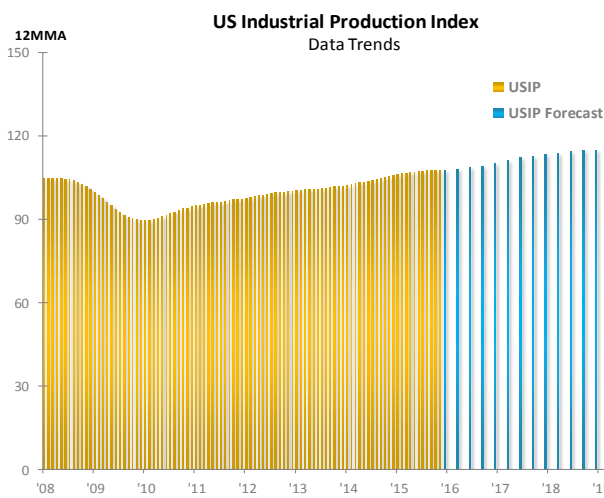
US Industrial Production Index

Annual Trend: 154.9

Phase: C

Slower
Growth

Year-over-Year: 10.6%



US Industrial Production Index Forecast



2016: 6.5%

2017: 8.8%

2018: 9.4%

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- Sales will recover in the second half of next year and grow through 2017.
- Implement immediate cost cutting measures and shore up your cash position for the next two to three quarters.

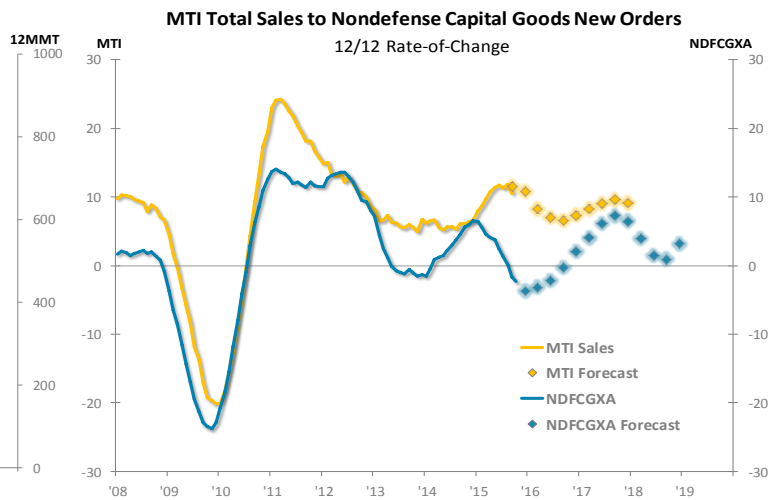
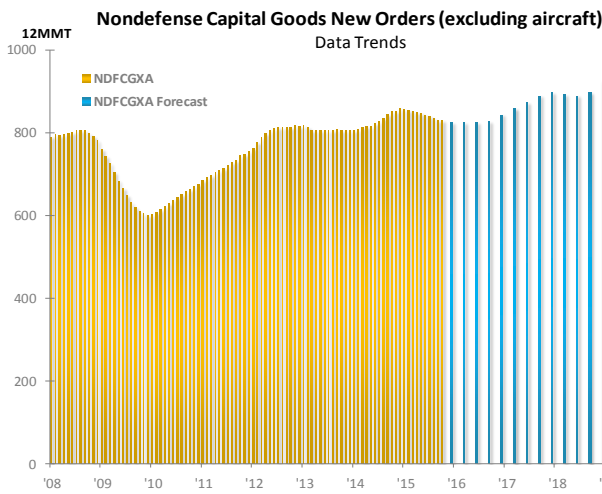
Nondefense Capital Goods New Orders (excluding aircraft)

Annual Trend: 154.9

Phase: C

Slower
Growth

Year-over-Year: 10.6%



Nondefense Capital Goods New Orders Forecast



2016: 6.5%

2017: 8.8%

2018: 9.4%

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