Executive Summary: Good News

There is good news to share this month. The trend for Nondefense Capital Goods New Orders (excluding aircraft) is holding up very well and Employment rose further in September. Coupled with the improvement in the Purchasing Managers Index that we discussed earlier this month and other positive economic signals in this ITR Trends Report, there is little doubt that the economy did not enter into a recession in the third quarter and that it will not slip into a recession in the fourth quarter of this year. The most negative extant indicator contained in ITR Trends Report is the S&P 500 trend and we will address that topic toward the end of this Executive Summary.

It is true that the Nondefense Capital Goods New Orders (excluding aircraft) trend is slowing in its rate of rise. We forecasted that it would. The good news is that the cyclical deceleration process through the summer has been milder than we anticipated based on our projection put together 12 months ago. The September 2011 New Orders 12MMT is set to come in 1.2% higher than our forecast range from one year ago. The fact that the economy’s slowdown is milder than we expected it to be should bring relief to those worrying about a fourth-quarter recession.

Employment increased by 167,000 jobs in September. While that perhaps does not sound impressive, Employment normally declines in September, not rise. There is an increase in the number even after discounting for the 45,000 Verizon workers who were on strike and went back to work. The not-seasonally-adjusted unemployment rate for September fell to 8.8%. More people with jobs equals more people spending money in the future.

This brings us to the most negative indicator in our fold, the S&P 500. In our opinion, the stock market has declined so much because it was artificially extended on the upside by loose Federal Reserve policy. Once the Fed’s support was withdrawn and corporate profits were no longer rising at an increasing year-over-year pace, the market had to settle back down. This is not so much a reflection of the fundamental underpinnings of the economy, but rather an example of what happens when the Fed intervenes in markets. The Velocity of Money trend presented on page seven is also negative, but this is more easily neutralized because of the recent surge in the money supply.

The news is good. Plan for better days ahead.
## ITR Trends Report at a Glance

### FINANCIAL

**Corporate Bond Prices**  
C RISING  
Strong 3MMA rise in September

**Stock Prices**  
C DECLINING  
Trend yet to meet criteria as a bear market

**Money Supply**  
B RISING  
Record high increase in August

### CONSTRUCTION

**Housing Starts**  
A FLAT  
New Homes sold up 6.5%

**Office Buildings**  
A FLAT  
Recovery will be long and mild

**Commercial Buildings**  
A FLAT  
Near-term transition into Phase B is probable

**Water & Sewer Facilities**  
D DECLINING  
Spending at lowest level in over four years

**Educational Buildings**  
A DECLINING  
Expect overall decline through 2012

**Power Facilities**  
B RISING  
Construction 3.0% below pre-recession level

### SALES

**Retail Sales (excl Autos)**  
C RISING  
Consumer spending is cautious

**Light Vehicle Retail Sales**  
C RISING  
Sales at a 31-month high (12MMT)

**Wholesale Trade Durable Goods**  
C RISING  
Inventories rising

**Wholesale Trade Nondurable Goods**  
B RISING  
Price pressures continue to build

**Employment**  
B FLAT  
Employment is up 0.4% for the year

### NEW ORDERS

**Nondefense Capital Goods w/o Aircraft**  
C RISING  
New Orders up 13.9% from one year ago

**Metalworking Machinery New Orders**  
C RISING  
Continuing 12MMT rise through 2012

**Industrial Machinery New Orders**  
C RISING  
Annual New Orders at a three-year high

**Construction Machinery New Orders**  
C RISING  
Market's growth is globally focused

**Electrical Equipment New Orders**  
C RISING  
New Orders growth rate continues to ease

**Computers & Electronics New Orders**  
C DECLINING  
Growing popularity creates opportunity

**Defense Capital Goods New Orders**  
D DECLINING  
Decline likely to extend into at least late 2012
# ITR Trends Report at a Glance

## Indicator: Phase Data Trend Comment Page

### PRODUCTION

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<td>Heavy Duty Truck Production</td>
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<td>C</td>
<td>DECLINING</td>
<td>Mild growth in second half of 2012</td>
<td>40</td>
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</tbody>
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### PRICES

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Phase</th>
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<tr>
<td>Short-Term Interest Rates</td>
<td>D</td>
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<td>Additional Fed intervention in September</td>
<td>12</td>
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<tr>
<td>Long-Term Bond Yields</td>
<td>A</td>
<td>DECLINING</td>
<td>Yields again fall to record lows</td>
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<td>Consumer Price Index - All Items</td>
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<td>Higher prices in food, housing and clothing</td>
<td>41</td>
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<td>Natural Gas Prices</td>
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<td>DECLINING</td>
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<tr>
<td>Crude Oil Futures</td>
<td>C</td>
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<td>43</td>
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<td>C</td>
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<td>Stubbornly high input prices provide support</td>
<td>44</td>
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</tbody>
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### FOREIGN

<table>
<thead>
<tr>
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<th>Phase</th>
<th>12MMA Data Trend</th>
<th>Comment</th>
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<tbody>
<tr>
<td>Brazil</td>
<td>C</td>
<td>RISING</td>
<td>PMI below 50.0, indicating contraction</td>
<td>45</td>
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<tr>
<td>Canada</td>
<td>C</td>
<td>RISING</td>
<td>Manufacturing employment at a 6-month high</td>
<td>46</td>
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<tr>
<td>China</td>
<td>C</td>
<td>RISING</td>
<td>Inflation at 6.2%, down from 6.5%</td>
<td>47</td>
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<tr>
<td>Europe</td>
<td>C</td>
<td>RISING</td>
<td>New Orders fall for fourth straight month</td>
<td>48</td>
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<tr>
<td>India</td>
<td>C</td>
<td>RISING</td>
<td>Industries see weakening export demand</td>
<td>49</td>
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<tr>
<td>Japan</td>
<td>D</td>
<td>DECLINING</td>
<td>12MMA rise to resume in 2012</td>
<td>50</td>
</tr>
<tr>
<td>Mexico</td>
<td>C</td>
<td>RISING</td>
<td>Weak peso driving up producer costs</td>
<td>51</td>
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<tr>
<td>Russia</td>
<td>C</td>
<td>RISING</td>
<td>Business operating conditions stagnate</td>
<td>52</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>C</td>
<td>RISING</td>
<td>Thailand hit hard over the last year</td>
<td>53</td>
</tr>
</tbody>
</table>
Summary

Both Housing and Nonresidential Construction are in Phase A, practically even with year-ago levels.

Wholesale Trade has moved back into Phase B due to accelerating trade of nondurables.

The Prices benchmark is in Phase C as metals and other commodities have relaxed from their 2011 highs. Note that lower input costs have not yet translated into lower consumer costs; the Consumer Price Index is still in Phase B.

Every Foreign country we cover is seeing slower growth. The same goes for US markets, including: Production and New Orders.

Retail Sales is also in Phase C. Recent growth has been widespread and is being led by Auto and E-Commerce.

Medical has moved from Phase B to Phase C this month as the pharmaceuticals component is showing weaker growth.

Phase A
12/12 is rising 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.

Phase B
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.

Phase C
12/12 decline is in place, 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.

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

The ITR Trends 10 compares the current cyclical status of 10 major benchmarks of macroeconomic activity as they move through this business cycle and into the next. Think of the Trends 10 as a train with 10 cars. We are looking for the first several “cars” to go through a valley and start up the next hill for the 2012-2014 cycle. Please note that not all the cars will have to follow Housing down into Phase D and then Phase A. Many are likely to pass through a low between Phase C – Phase B without going into Phases D and A. This is the essence of the soft landing we are projecting for this business cycle.
US Total Industrial Production
Federal Reserve Board, 2007 = 100, S.A.
Forecast through December 2012

US Industrial Production is rising and additional ascent is indicated.

Production in August was the highest it has been in 35 months. It may not feel great because we aren’t in sharp ascent, but the recovery is plodding along one month after another. Based on the latest economic data, there aren’t any roadblocks to the ongoing recovery in the quarters ahead.

The economy is on target with our forecast trajectory. A change to the outlook is not warranted at this time. Retail Sales are rising, New Orders look good, employment is on the rise, the money supply is expanding, and taxes have not yet been pushed higher. These are the symptoms of economic expansion in 2012.

Plan on it. Budget for it. Expect marketing and sales to deliver.

<table>
<thead>
<tr>
<th>Forecast Period</th>
<th>Annual Moving Average Forecast</th>
<th>Average Result</th>
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<tbody>
<tr>
<td>Mar 2011</td>
<td>91.0 - 91.6</td>
<td>91.3</td>
</tr>
<tr>
<td>Jun 2011</td>
<td>91.2 - 92.7</td>
<td>92.1</td>
</tr>
<tr>
<td>Sep 2011</td>
<td>91.6 - 93.3</td>
<td></td>
</tr>
<tr>
<td>Dec 2011</td>
<td>92.3 - 93.9</td>
<td></td>
</tr>
<tr>
<td>Mar 2012</td>
<td>93.3 - 94.8</td>
<td></td>
</tr>
<tr>
<td>Jun 2012</td>
<td>94.3 - 96.0</td>
<td></td>
</tr>
<tr>
<td>Sep 2012</td>
<td>95.3 - 96.7</td>
<td></td>
</tr>
<tr>
<td>Dec 2012</td>
<td>96.4 - 98.0</td>
<td></td>
</tr>
</tbody>
</table>
**Metalworking Machinery New Orders**

Billions of Dollars, N.S.A.

**HIGHLIGHTS**
- A slower rate of growth into mid 2012
- Continuing 12MMT rise through 2012

**SUMMARY**

Annualized data for Metalworking Machinery New Orders is up 22.2% from the January 2010 low and rising, but the rate of growth began to slow in March (lower chart).

Metalworking Machinery is dependent on the manufacturing sector of the US and world economies. The *US Industrial Production Index* is rising, but the rate of growth has been slowing. The ISM *Purchasing Managers Index* shows that the US manufacturing base is expanding, but at a slower rate. This scenario applies to most of the global economies.

The Production Index for Metalworking Machinery has gained 26.1% since the March 2010 low, but the rate of growth slowed in June.

New Orders for most types of Machinery are exhibiting slower, but positive growth, which is translating into slower growth for their Production counterparts.

**FORECAST**

2011: 3.8%  
2012: 7.8%

**MANAGEMENT NOTE**

The outlook for increasing activity, but at a slower rate of growth, is still on target. New opportunities will be harder to find, but aggressive sales and marketing programs will help increase revenue.
HIGHLIGHTS

- Despite some people’s concerns to the contrary, the economy remains in recovery mode.

SUMMARY

US Industrial Production is in a mild rising trend that looks set to extend through the rest of this year. Leading indicators suggest that 2012 should be a year of additional recovery. Our forecast is unchanged.

In August Production increased 0.2% from last month, with the year-over-year growth rate holding steady at 3.4% for the fourth consecutive month. This is encouraging. The 1/12 isn’t dropping down toward zero and we are in a gradual glide path that bespeaks a soft landing for the economy. Consistent with this view is the ongoing rise in manufacturing capacity utilization (it is up to 75.5 for August).

We expect that there will be a period of mild acceleration in the rate of recovery in 2012 based on leading indicators (such as the ascent in the US Leading Indicator) and stimulative monetary policy, compliments of the Federal Reserve. Additionally, meaningful headway toward reducing the federal budget deficit is not probable in the near term, which means stimulative fiscal policy for 2012.

FORECAST

2011: 3.4% 
2012: 4.3%

MANAGEMENT NOTE

Data speaks louder than many of the talking heads of doom and gloom. Plan for ongoing growth in your business in 2012.
HIGHLIGHTS

- Higher prices in food, housing, and clothing
- Fed ignores mounting inflation in Operation Twist

SUMMARY

The cost of living in the US increased in August as Americans face higher prices for food, housing, and clothing. The Consumer Price Index for All Urban Areas is up 3.8% from the same month last year and is projected to continue rising over the next five quarters.

Higher inflation continues to hurt consumers as price increases exceed gains in wage incomes. The Average Hourly Earnings for the Total Private Workforce has remained relatively stagnant over the past four months, and was only up 1.9% in August from last year.

The Core CPI Index, watched closely by Federal Reserve officials, increased 2.0% in August from last year. The Fed’s announcement of “Operation Twist” in early September spoke little to the issue of mounting inflation, but Ben Bernanke stated in early October that the Fed “will continue to closely monitor economic developments and is prepared to take further action as appropriate to promote a stronger economic recovery in a context of price stability.”

FORECAST

2011: 2.9%  
2012: 4.4%

MANAGEMENT NOTE

Boost prices when possible and continue to maximize efficiencies.
ITR – Four Phases of a Business Cycle

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

**Phase A:**
- Data trend is slowing in its rate of decline.
- Data trend usually reaches a low and begins to rise before the end of this phase.

**Phase B:**
- Data trend is experiencing the strongest part of the business cycle rise.

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

**Phase C:**
- Data trend becomes progressively milder in the business cycle rise.
- Data trend usually reaches a peak and begins to decline before the end of this phase.

**Phase D:**
- Data trend is experiencing the steepest part of the business cycle decline.

**Phase Management Objectives™**

**Phase Late A - Recovery:**
1. Positive leadership modeling (culture turns to behavior)
2. Establish goals: tactical goals which lead to strategic achievement
3. Develop a system for measurement and accountability re:#2
4. Align compensation plans with #2 and #3
5. Be keenly aware of the BE (Break Even) point and check it regularly
6. Judiciously expand credit
7. Check distributions systems for readiness to accommodate increased activity
8. Review and uncover competitive advantages
9. Invest in customer market research (know what they value)
10. Improve efficiencies with investment in technology and software
11. Start to phase out marginal opportunities
12. Add sales staff
13. Build inventories (consider lead time and turn rate)
14. Introduce new product lines
15. Determine capital equipment needs and place orders
16. Begin advertising and sales promotions
17. Hire "top" people
18. Implement plans for facilities expansion
19. Implement training programs

**Phase Early B - Growth:**
1. Accelerate training
2. Check the process flow for possible future bottlenecks
3. Continue to build inventory
4. Increase prices
5. Consider outside manufacturing sources if internal pressures becoming tight
6. Find the answer to “What next?”
7. Open distribution centers
8. Use improved cash flow to improve corporate governance
9. Use cash to create new competitive advantages
10. Watch your debt-to-equity ratio and ROI
11. Maintain/pursue quality: don’t let complacency set in

**Phase Late B  Early C - Prosperity:**

1. Stay in stock on A items, be careful with C items
2. Consider selling the business in a climate of maximum “goodwill”
3. Penetrate new selected accounts
4. Develop plan for lower activity in traditional, mature markets
5. Freeze all expansion plans (unless related to “what is next”)
6. Spin off undesirable operations
7. Consider taking on subcontract work if the backside of the cycle looks recessionary
8. Stay realistic – beware of linear budgets
9. Begin missionary efforts into new markets
10. Communicate competitive advantages to maintain margins

**Phase Late C - Warning:**

1. Begin work force reductions
2. Set budget reduction goals by department
3. Avoid long-term purchase commitments late in the price cycle
4. Concentrate on cash and balance sheet
5. Reduce advertising & inventories
6. De-emphasize commodity/services in anticipation of diminishing margins
7. Weed out inferior products (lose the losers)
8. Encourage distributors to decrease inventory
9. Identify and overcome any competitive disadvantages
10. Make sure you and the management team are not in denial
11. Cross train key people
12. Watch Accounts Receivable aging
13. Increase the requirements for justification of capital expenditures
14. Evaluate vendors for strength (don’t get caught honoring their warranties with no one to accept returned goods)
15. Manage the backlog through pricing and delivery, try to fill the funnel

**Phase Early D - Recession:**

1. Continue force reduction
2. Reduce advertising – be very selective
3. Continue to avoid long-term purchase commitments
4. Review all lease agreements
5. Increase the requirements for justification of capital equipment
6. Eliminate all overtime
7. Reduce overhead labor
8. Combine departments with like capabilities and reduce management
9. Select targets of opportunity where price will get the business
10. Tighten credit policies – increase scrutiny
11. Look for opportunistic purchases
12. Grab market share as your competitor dies

Phase Late D - Recession / Early A - Early Recovery

1. Prepare training programs
2. Negotiate union contracts if possible
3. Develop advertising & marketing programs
4. Enter or renegotiate long-term leases
5. Look for additional vendors
6. Capital expenditures & acquisitions considered in light of market-by-market potential
7. Make acquisitions – use pessimism to your advantage
8. People will be scared – lead with optimism and "can do" attitude

Checking Points of Cyclical Progress:

As the rate-of-change cycle moves from the beginning low point through the peak and down to the final low, it passes through several Checking Points. The progress of the rate-of-change through each checking point during the cycle helps to establish whether a cyclical trend is just beginning, is about to reverse, or is in the steepest part of the trend. A 1/12 may be substituted for a 3/12.

**Positive Checking Points**

1. 3/12 low
   - The rate-of-change is making the transition from the previous cycle's decline to rise in the current business cycle. Checking points #1 and #2 reflect this activity.
2. 3/12 passes above the 12/12
   - The onset of business cycle rise is observed.
3. 12/12 reaches a low
   - The entry of the cycle into its steepest part of the rising trend is observed
4. 3/12 crosses above 0%
5. 12/12 crosses above 0%

**Negative Checking Points**

6. 3/12 reaches a high
   - Checking points #6 and #7 indicate that the business cycle is making the transition from rise to decline.
7. 3/12 downward passes the 12/12
8. 12/12 reaches a high
   - Business cycle decline begins with checking point #8.
9. 3/12 crosses below 0%
10. 12/12 value crosses below 0%
    - The entry of the cycle into its steepest part of the decline is with checking points #9 and #10.
Definitions of the Series Included in ITR Trends Report
All data is not seasonally adjusted (NSA) unless otherwise noted (SA)

**Corporate Bond Prices**: Corporate AAA Rated Bond Yields, inverted to reflect prices. Corporate Bond Prices act as a leading indicator to general economic change.

**Stock Prices**: Standard and Poor 500 Industrials, 1941-43 = 10.

**Money Supply**: M2, comprised of currency, travelers’ checks, demand deposits, savings, MMDAs, CDs, and retail money market mutual funds. Deflated by the CPI to eliminate the effects of inflation, NSA.

**Short-term Interest Rates**: Dealer commercial paper, average 30 & 90 days.

**US Government Long-Term Bond Yields**: 10-year maturity, percent yield.

**Housing Starts**: Total number of housing units started, including farms, private and public, NSA.

**Office Buildings Construction Spending**: Private construction of all sizes of office buildings. Spending measured in billions of dollars, NSA.

**Commercial Buildings Construction Spending**: Private construction of commercial buildings, shopping centers, and warehouses. Spending measured in billions of dollars, NSA.

**Water & Sewer Facilities Construction**: Public construction spending measured in billions of dollars, NSA.

**Educational Buildings Construction Spending**: Public construction of buildings for educational purposes. Spending measured in billions of dollars, NSA.

**Power Facilities Construction Spending**: Total construction of power facilities including distribution systems. Spending measured in billions of dollars, NSA.

**Retail Sales**: Excluding automobiles and parts, trillions of 1982-84 (constant) dollars, NSA.

**US Light Vehicle Retail Sales**: Retail sales of new passenger cars & light duty trucks, includes transplants, in units.

**Wholesale Trade Durable Goods**: Merchant wholesalers to retailers, contractors, or other types of businesses of goods with an estimated useful life of three years and greater, measured in trillions of dollars, NSA.

**Wholesale Trade Nondurable Goods**: Merchant wholesalers to retailers, contractors, or other types of businesses of goods with an estimated useful life of less than three years, measured in trillions of dollars, NSA.

**Employment**: Civilian labor force, measured in millions, NSA.

**Nondefense Capital Goods New Orders w/o Aircraft**: Capital Goods New Orders exclusive of defense orders and aircraft and parts, measured in billions of dollars, NSA.

**Metalworking Machinery New Orders**: NAICS Code 3335. Metal forming and metal cutting tools; patterns; dies, tools, jigs, fixtures; rolling mill machinery; welding apparatus, measured in billions of dollars, NSA.

**Industrial Machinery New Orders**: NAICS Code 3332. Machinery used for saw mills and woodworking, plastics and rubber, paper, textiles, printing, food, and semiconductor industries, measured in billions of dollars. NSA.
**Construction Machinery New Orders**: NAICS Code 33312. Construction machinery and equipment; elevators; conveyors; moving stairways; hoists; cranes; industrial trucks. Billions of dollars, NSA.

**Electrical Equipment New Orders**: NAICS Code 33531. Power, distribution, and specialty transformers; electric motors, generators; switchgear; relays, and controls, in billions of dollars, NSA.

**Computers & Electronics New Orders**: NAICS 3341. Mainframes, personal computers, workstations, laptops, computer servers, and computer peripheral equipment. Measured in billions of dollars, NSA.

**Defense Capital Goods New Orders**: Goods New Orders contracted by the Department of Defense or by foreign governments through the DOD Foreign Military Assistance Program, billions of dollars, NSA.

**US Total Industrial Production**: Manufacturing, mining, and utility output, measured in physical units and/or inferred from data on input to the production. Index, 2007 = 100, SA.

**NA Light Vehicle Production**: Passenger car and light duty truck production (classes 1-4), including transplants. US, Canada and Mexico. Measured in millions of units.

**Mining Production (w/o oil & gas)**: NAICS 212. Includes; Metal Mining, Coal Mining, and Nonmetallic Minerals Mining. Index, 2007 = 100, NSA.

**Chemicals & Products Production**: NAICS 325. Basic chemicals, resins. Synthetic rubber & fibers, pharmaceuticals and paint. Index, 2007 = 100, NSA.

**Commercial Aircraft**: NAICS 336412,3. Civilian Aircraft Equipment Production. Index, 2007=100, NSA.

**Pharmaceutical Production**: NAICS 3245. Manufacturing drugs, medicines and related products for human and animal use. Index, 2007=100, NSA.

**Medical Equipment and Supplies Production**: NAICS 3391. Manufacturing laboratory apparatus and furniture, surgical and medical instruments, appliances and supplies, dental equipment and supplies, eyeglasses and protective wear. Index, 2007 = 100, NSA.

**Heavy Duty Truck Production**: Class 8 trucks, US, Canada and Mexico. Measured in thousands of units.

**Paper & Products Production**: NAICS 322. Manufacturers of pulp, paper and converted paper products. Index, 2007=100, NSA.

**Consumer Price Index – All items**: Urban population sample. Index 1982-84 = 100, NSA.

**Natural Gas Futures Prices**: Dollars per MMBtu. NYMEX, following month delivery.

**Crude Oil Futures Prices**: Light, sweet. Dollars per barrel. NYMEX, following month delivery.

**Steel Scrap Prices**: #1 Heavy Melting Mill, Pittsburgh, dollars per gross ton, FOB delivered, quoted last business day of each month.

**Foreign Economies**: Measures of industrial production, indexes with varying years equaling 100. Some are NSA.
**Definition of Terms**

**Moving Totals**

Moving totals are used to smooth out the volatility inherent to monthly data, particularly at the product or company level. An annual moving total goes one step further in that it also removes seasonal change from the data series under consideration. This is desirable when the objective is to discern and forecast the underlying cyclical trend for the subject data series.

A moving total is simply the total of the monthly data for the stated number of months. For example, the 3 month moving total (3MMT) for November 2010 would be the total of the September 2010, October 2010, and November 2010 monthly data. When December 2010 data becomes available, you simply drop September from the calculation and add December. The December 2010 3MMT is thus comprised of the activity recorded in October, November, and December 2010. 3MMTs are used to illustrate the seasonal changes inherent to the data series. They are also used when forecasting specific product activity on a quarterly basis.

**Example: Housing Starts 3MMT**

<table>
<thead>
<tr>
<th>Month</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>September</td>
<td>.133</td>
</tr>
<tr>
<td>October</td>
<td>.140</td>
</tr>
<tr>
<td>November</td>
<td>.121</td>
</tr>
</tbody>
</table>

3MMT = .394

A 12 month moving total (12MMT) is derived by adding 12 consecutive months of activity together. The 12MMT for November 2010 is the total derived when adding the Housing Starts (or bookings or sales) figures for December 2009 through November 2010. To ease the calculation process, as each new month of data becomes available, add the newest figure and drop the previous oldest figure. In our example, the November 2010 12MMT can be quickly derived by adding the November 2010 monthly figure to the October 2010 12MMT, and then subtracting the November 2009 number from the subtotal. 12MMTs are used to define the business cycle trend inherent to the subject time series. When ITR refers to a data trend, it is referring to the 12MMT trend.

**Example: Housing Starts 12MMT**

<table>
<thead>
<tr>
<th>Month</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>November</td>
<td>.117</td>
</tr>
<tr>
<td>December</td>
<td>.101</td>
</tr>
<tr>
<td>January</td>
<td>.106</td>
</tr>
<tr>
<td>February</td>
<td>.108</td>
</tr>
<tr>
<td>March</td>
<td>.133</td>
</tr>
<tr>
<td>April</td>
<td>.151</td>
</tr>
<tr>
<td>May</td>
<td>.154</td>
</tr>
<tr>
<td>June</td>
<td>.155</td>
</tr>
<tr>
<td>July</td>
<td>.155</td>
</tr>
<tr>
<td>August</td>
<td>.141</td>
</tr>
<tr>
<td>September</td>
<td>.133</td>
</tr>
<tr>
<td>October</td>
<td>.140</td>
</tr>
<tr>
<td>November</td>
<td>.121</td>
</tr>
</tbody>
</table>

3MMT = .347

3MMT = .460

12MMT = 1.595

12MMT = 1.594

12MMT = 1.598
There are times when it is desirable to calculate a 12 month moving average (12MMA). A 12MMA is calculated in the same way as the 12MMT, with the additional step of the sum of the 12 months of activity will be divided by 12 to reflect the monthly average level of activity over the preceding year. A 12MMA will look exactly like a 12MMT when plotted on a chart. 12MMAs are used instead of 12MMTs when one of the following is being observed: an index; percentages (for interest rates or inflation); inventories.

**Rate-of-Change**

Rate-of-change comparisons are utilized for various purposes, all of which relate to the data trend. A 12/12 rate-of-change (discussed below) is more sensitive to changes in cyclical trends and can be used to anticipate trend reversals, often before the data trend even begins to show signs of weakening. An understanding of the timing relationship between a 12/12 rate-of-change and the particular data trend allows for the development of dependable timing estimates for data trend highs and lows. The rate of rise or decline in the rate-of-change is often indicative of the recovery or recession expected in the data series. In general, the rate-of-change provides a reflection of change in a data trend before the change becomes apparent in either the 3MMT or 12MMT.

**Calculating Rate-of-Change:**

A rate-of-change figure is simply the ratio of a number in a data series to a preceding number in that data series. The time interval between the numbers is fixed. One rate-of-change figure can tell you instantly whether activity is running below or above this time last year, and by how much. Consecutive rates-of-change will reveal whether activity levels are getting progressively better or worse compared to last year. It is the rate-of-change of a data series which is used to illustrate and measure cyclical change and identify trends.

The most common rate-of-change is the 12/12. As is the case for all rates-of-change, the numerator denotes the data aggregation involved; the denominator indicates the time intervals. The 12 in the numerator of the 12/12 designation specifies that a 12MMT comparison is being made. The 12 in the denominator signifies that the time interval is 12 months (for all of our work represented by this text, the time interval will be fixed at 12 months). The 12/12 rate-of-change for July 2010, expressed as a percent, would be calculated as follows:

$$\left( \frac{\text{July 2010 12MMT}}{\text{July 2009 12MMT}} \right) \times 100 - 100 = -1.7\% \quad \text{July 2010 12/12}$$

The July 2010 12MMT was 1.7% below the July 2009 12MMT. What we would next want to see is if this figure were trending upward or downward. By doing so, we could begin to give definition to change specifically relating to the *business cycle*.

Of course it is possible that when a 12/12 calculation is made the result will be positive.

$$\left( \frac{\text{November 2010 12MMT}}{\text{November 2009 12MMT}} \right) \times 100 - 100 = +1.1\% \quad \text{November 2010 12/12}$$
The 1.1% rate-of-change figure reflects the fact that activity for the 12 months ending November 2010 was 1.1% above the level of activity posted for the 12 months ending November 2009. The 12/12 is providing a snapshot of a given month. It shows where business stands today in relation to the annual total of one year ago. What becomes paramount to anticipating future change is whether this figure is moving upward (i.e. 3.0%) or downward (i.e. -1.7%).

The 12/12 is used to define business cycle change for the subject data series. ITR research has shown that business cycle change for any given data series is going to be most measurable and forecastable when using the rate-of-change for the series as opposed to the actual data. Repetitive trend characteristics (timing and dynamics) can more easily be observed, measured, and utilized for anticipating change when using the 12/12 rate-of-change.

Another rate-of-change frequently used in measuring cyclical change is the 3/12. As the numerator indicates, the figures being compared are 3MMTs. The time interval is fixed at 12 months. The 3MMT is not used to define the business cycle of the data series per se, but rather is utilized as a tool to better enable us to anticipate shifts in the business cycle trend (changes in the cyclical momentum). The 3MMT is calculated as follows:

\[
\left[ \frac{\text{January 2010} - \text{January 2009}}{\text{3MMT}_{\text{January 2010}} - \text{3MMT}_{\text{January 2009}}} \right] \times 100 - 100 = -6.1\% 
\]

Sales for the 3 months ending January 2010 were down 6.1% from the year before. Monitor to see if this figure is improving (approaching 0.0%) or decreasing (falling further below -6.1%) to gauge what the business cycle momentum is for the subject data series. The 3/12 and the 12/12 are the two most frequently used rates-of-change when analyzing company or market data.

There are times when a 1/12 rate-of-change will be employed. Dividing the most recent monthly figure by the monthly figure of one year ago derives the 1/12. The 1/12 is frequently too volatile for use at the company level. It is used primarily for aggregate, macroeconomic data series, which are not prone to significant swings from one month to the next. The 1/12 is calculated as follows:

\[
\left[ \frac{\text{February 2010} - \text{February 2009}}{\text{monthly data}_{\text{February 2010}} - \text{monthly data}_{\text{February 2009}}} \right] \times 100 - 100 = -10.0\% 
\]

Business is down 10.0% from this same time one year ago. What we need to know next is whether this figure is part of an upward trend or downward trend. We can also observe if the February 2010 1/12 rate-of-change is higher or lower than the February 2010 3/12. If it were higher and part of a sustainable trend, then we would have empirical evidence that the 3/12 trend is approaching a cyclical low. If the 3/12 is approaching a low, the 12/12 trend is also moving closer and closer to the low. In other words, we would have our first empirical indication of impending business cycle rise. All this refers to a system of Checking Points developed by ITR, which provides for the orderly observation and anticipation of relatively near-term reversals in predominant business cycle trends.