Thank you for viewing this month's edition of the General Air newsletter. In this issue find the always educational Tech Talk with Art Waskey, a great deal with Miller's Summer Savings, a case study from our Productivity Enhancement program and, of course, the excerpt from Eco Trend's Economic Report.

If you are currently not a subscriber of our newsletter and would like to be, please email events@generalair.com and we will add you to our mailing list!

What’s Happening
Did you know? General Air can save you money by implementing fabrication solutions that increase output and reduce labor costs. Contact our Productivity Enhancement Team at 303.892.7003 for more information.

Go to http://www.generalair.com/TechTalk.aspx to view our video on this machine!

with Art Waskey

Our Most Popular Light Industrial MIG Machine

Millermatic 211 Auto-Set

I recently looked at our welding machine sales receipts and noticed that the most popular machine was our Millermatic 211 Auto-Set with MVP. This wire welder is designed for light industrial applications including light fabrication, maintenance and repair, garage/body shop, and farm/home welding.

What I like most about this unit is how easy it is to set up. The power source comes complete with: a 6-foot power cord and MVP plugs (allows you to connect to common 120 or 230 volt power receptacles without the use of tools), 10-foot MIG gun, 10-foot ground, regulator, spool of mild steel solid wire, extra contacts tips, set-up CD, and material thickness gauge.

Additionally, the Millermatic 211 is easy to operate: you can choose the right settings automatically. When you select the wire diameter, the Auto-Set control light is activated, and all you have to do is dial in the steel thickness from 24 gauge to 3/8". Then, start welding with the exact parameters!

Another feature with this popular welder is the infinite voltage control that gives you the flexibility to manually set the machine when welding aluminum, stainless steel, or anything you want to set your own parameters on the mild steel. You’ll also like the Smooth-Start that provides a smooth, spatter-free start.

Optional accessories include: an out of the box aluminum spool gun, protective cover, and a choice of running gears. While the machine comes ready to weld with solid wire, you can also order flux cored wires.

By the way, our second fastest selling MIG welder is the Millermatic 211's little brother, the Millermatic 140 Auto-Set. This 60-pound unit is great for portable small jobs on gauge materials. There’s one more good reason to look at these welders now. During Miller’s Summer Savings, June 1 to September 30, when you buy a Millermatic 211 Auto-Set with MVP and a Spoolmate 100, you get $100 Cash Back, or buy a Millermatic 140 Auto-Set and a Spoolmate 100, and get $50 Cash Back.

Come and learn to use this very practical machine by signing up for our Saturday Basic MIG Welding class. Go to www.generalair.com; select Training for the top tab bar, and from the Welding Class section the location for the class that fits your schedule. The next Basic MIG class in Denver is September 18 or Greeley, September 12.
In the following pages we have provided you with an excerpt from the Institute for Trend Research’s economic analysis report. Their experts provide General Air with a monthly report on the current state of the economy and it is tailored to the welding and gas industry. We have hand picked the most relevant pages that sum up the whole month’s report to inform and educate you on the current state of the economy, according to the people at Trend Research. We would be happy to provide you with the entire report, if you are interested please contact us at events@generalair.com.

**Productivity Enhancement Menu:**

<table>
<thead>
<tr>
<th>Opportunity</th>
<th>Customer Interest</th>
<th>Est. Savings (Annually)</th>
<th>ROI (Months)</th>
<th>Required Investment</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Automated welding of butt seams | | $30,000 | 6 | $15,300 | - Savings based on 8 hours per day of welding @ $60 per hour labor & overhead  
- Savings reflect lower welding wire cost  
- One submerged arc welding system spec’d for investment |

**Success Story**

**Steel Fabrication 1/4” Plate**

**Challenge**
- Increase weld speed
- Eliminate back gouging

**Solution**
- Automated submerged arc welding of butt seams

**Results**
- 380% increase in weld speed - from 14 ipm to over 50 ipm
- Eliminated back gouging
- Nearly completely eliminated welding fume

**Savings**
$30,000 annually

Welding 1/4” plate with the sub-arc process at travel speeds in excess of 50 ipm.

**Economic Spotlight**

For more information, please call (877) 782-8434

PE Solution

General Air implemented an automation system utilizing a tractor and the submerged arc process. A 5/32” diameter solid wire was used to accommodate a travel speed of over 50 ipm.

The new welding process eliminated the need for back gouging the first weld—freeing up valuable time to help meet the delivery demands of the customer. Welding fume was virtually eliminated. And, once the procedures were set, less skilled operators were able to produce exceptional quality welds resulting in less rework than ever before.
Executive Summary: RECOVERY AND THE G20

A Sustainable Recovery

The US and global recovery is sustainable. However, it is expected to be milder than most of us would like and milder than we had anticipated 15 months ago. The revised forecast calls for a slower rate of growth in the US economy in 2011 followed by an increased level of activity in 2012. That means we are still forecasting three years of recovery (unchanged from our previous discussions); we have altered the rate of rise. This change is consistent with what you have been hearing us say at meetings around the US over the last three months and it is consistent with the rebased and revised data released by the Federal Reserve in June. The revised forecast calls for US Total Industrial Production in 2010 to come in 4.7% above 2009. A 2.4% rate of rise is expected for 2011. The Industrial Production data trend projection is presented in the chart below.

G20 Meeting in Canada

It became obvious as the meeting wore on that most of the world will not follow the US as the President and Congress pursue a policy of economic stimulation through deficit spending. As Americans there is usually something appealing about “going it alone”, but in this case that is a dangerous idea. Here’s why: Canada, Germany and others will move to austerity in order to reduce their budget deficits and reduce their national debt. For instance, Canada is on track to have an essentially balanced budget in fiscal year 2014-15 while the US is expected to run a budget deficit of approximately $1,000,000,000,000 (one trillion) that year. Over time the US national debt will continue to explode while other nations reduce their debt. Indeed, current estimates from the Office of Management and Budget suggest that our national debt will increase by $10 trillion over the next 10 years. The result will be that the US will pay huge amounts of interest each year which will require higher taxes and simultaneously make less federal money available for defense, entitlements, other essential programs, and future stimulus spending when the next recession comes. Canada, Germany and other nations will have more cash with which to fund operations on an ongoing basis while the US is paying interest on past obligations – they win.
ITR’s Eco 8

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 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 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 is in recession at levels below the year-earlier level. This is the final phase and second negative phase of the business cycle.

The Summary status of the Eco 8 improved as the Sales Benchmark and Foreign Benchmark crossed into Phase B – Growth. All of the benchmarks, except Nonresidential Construction, have made mild gains in their annual data trends thus far in 2010. The upward cyclical momentum in the benchmarks indicates improving macroeconomic conditions.

The Sales and Foreign Benchmarks passed above year-ago levels. Housing, New Orders, and Production also made gains toward Phase B of the business cycle. The fact that these benchmarks are moving closer to the growth portion of the business cycle provides strong empirical evidence that the economy is on firmer ground.

Despite the dismal performance in the stock market over the last few months, the Financial Benchmark maintains its Phase B designation. The strong performance in Corporate Bond Prices is offsetting the losses felt from the volatile stock market and the declining nature of the M2 money supply.

This economic recovery is pressing forward, but it has been mild. Mild conditions will likely persist through 2011 due to the mounting debt crises in Europe and the United States, the potential housing bubble in China, and the recent volatility in the stock market. Nonetheless, conditions are improving and we expect it to continue.
US Total Industrial Production
Federal Reserve Board, 2002 = 100, s.a.
Forecast through December 2011

The Industrial Production trend is positive and more gains are heading our way. Through March 2010 the 12MMA was 0.3% higher than the forecast we prepared in the first quarter of 2009. However, you may have noticed that this month’s chart and table look different from the last issue of EcoTrends®. The changes result from the rebasing and revising of the US Industrial Production data by the Federal Reserve. The revised data shows that the current recovery is steeper than had previously been reported.

ITR’s general outlook is not changed in that we are looking for ongoing recovery through 2011. A double-dip recession is still not part of our 2010-2011 outlook.

Our forecast calls for Industrial Production in 2010 to come in 4.2% to 5.3% higher than in 2009. By way of comparison, the lower side of the range is about twice our high side estimate stemming from our February 2009 forecast. We are projecting that recovery will continue in 2011, with the year coming in 1.5% to 2.7% higher than 2010. The percent growth reflects the deceleration in the rate of ascent that we are seeing in the rates-of-change of numerous leading indicators. The average of the forecast range for 2011, at 2.1%, is slightly lower than the 2.8% forecast average that we had previously been projecting.

<table>
<thead>
<tr>
<th>Forecast Period</th>
<th>12/12 Forecast</th>
<th>12MMA Forecast</th>
<th>12MMA Result</th>
<th>%Deviation From Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jun 2010</td>
<td>- 1.3 to - 0.5</td>
<td>89.5</td>
<td>90.2</td>
<td></td>
</tr>
<tr>
<td>Sep 2010</td>
<td>2.3 to 3.3</td>
<td>90.6</td>
<td>91.5</td>
<td></td>
</tr>
<tr>
<td>Dec 2010</td>
<td>4.2 to 5.3</td>
<td>91.4</td>
<td>92.4</td>
<td></td>
</tr>
<tr>
<td>Mar 2011</td>
<td>3.9 to 5.3</td>
<td>91.7</td>
<td>93.0</td>
<td></td>
</tr>
<tr>
<td>Jun 2011</td>
<td>2.1 to 3.8</td>
<td>91.7</td>
<td>93.3</td>
<td></td>
</tr>
<tr>
<td>Sep 2011</td>
<td>1.5 to 2.7</td>
<td>92.4</td>
<td>93.5</td>
<td></td>
</tr>
<tr>
<td>Dec 2011</td>
<td>1.5 to 2.7</td>
<td>93.3</td>
<td>94.4</td>
<td></td>
</tr>
</tbody>
</table>
HIGHLIGHTS:
New Orders gain momentum heading into 2H10 ■ 12MMT to rise ~11.6% in 2010; 8.8% in 2011

INDICATIONS:
The recovery is in full swing in the metalworking machinery industry. The data trends are all on the rise, and quarterly Orders have improved significantly from the same time last year.

Annual New Orders are 17.3% below the same period last year, but are moving back toward their year-earlier levels. The 12MMT has risen 5.1% from its late 2009 low. We expect this positive trend to continue at least through 2011.

The 12/12 rate-of-change is rising. The 3/12 rate-of-change moved lower in May and will likely continue to fall in the near term. However, the trend is mild so far, and reflects the slower rate of recovery we anticipate in 2011. Despite the slowdown next year, we expect market conditions to improve over the next two years.

FORECAST NOTE:
Plan on a good second half of 2010. New Orders will rise about 11.6% for all of 2010. Gains will slow modestly in 2011, with the year coming in 8.8% above 2010.

MANAGEMENT NOTE:
There will be increasing demand for quality American-made products as the economy improves. Operating in a niche market may increase your sales opportunities.

<table>
<thead>
<tr>
<th>Date</th>
<th>Actual</th>
<th>1/12</th>
<th>3MMT</th>
<th>3/12</th>
<th>12MMT</th>
<th>12/12</th>
</tr>
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<tbody>
<tr>
<td>DEC 09</td>
<td>1.720</td>
<td>0.2</td>
<td>4.839</td>
<td>-16.8</td>
<td>18.330</td>
<td>-36.7</td>
</tr>
<tr>
<td>JAN 10</td>
<td>1.576</td>
<td>1.5</td>
<td>4.726</td>
<td>-7.2</td>
<td>18.354</td>
<td>-34.2</td>
</tr>
<tr>
<td>FEB 10</td>
<td>1.606</td>
<td>10.3</td>
<td>4.902</td>
<td>3.7</td>
<td>18.504</td>
<td>-31.1</td>
</tr>
<tr>
<td>MAR 10</td>
<td>1.886</td>
<td>18.0</td>
<td>5.068</td>
<td>10.0</td>
<td>18.792</td>
<td>-27.4</td>
</tr>
<tr>
<td>APR 10</td>
<td>1.742</td>
<td>28.9</td>
<td>5.234</td>
<td>18.8</td>
<td>19.183</td>
<td>-21.2</td>
</tr>
<tr>
<td>MAY 10</td>
<td>1.605</td>
<td>4.8</td>
<td>5.233</td>
<td>16.8</td>
<td>19.256</td>
<td>-17.3</td>
</tr>
</tbody>
</table>
EcoTrends® ♦ July 2010 Issue ♦ ITR

US Total Industrial Production
Index, 2007 = 100 S.A.

HIGHLIGHTS:
Better-than-normal increase in Production during May ■ Activity up 8.0% from last year

INDICATIONS:

US Industrial Production is in a bona fide recovery trend with more gains probable. May came in quite strong with the monthly Index up 8.0% from one year ago. Rate-of-change activity is all positive.

FORECAST NOTE:

The Federal Reserve rebased and revised the Industrial Production data and released the data in late June. The changes were favorable in that the new data shows the current recovery trend to be stronger than previously reported. We have adjusted our forecast accordingly.

The forecast calls for Industrial Production in 2010 to come in 4.2% to 5.3% higher than in 2009. This is stronger than previously projected but consistent with the revised data.

Unchanged from the previous forecast, we are calling for additional rise in 2011. The forecast average is for a 2.1% increase over 2010. We had previously projected a 2.8% year-over-year gain.

MANAGEMENT NOTE:

It is hard to find the courage to act on the rising trend when others seem to be pounding away daily on fears. If you see that your business is picking up, believe your eyes and financial statements and make your opportunities going forward.

<table>
<thead>
<tr>
<th>Date</th>
<th>Actual</th>
<th>1/12</th>
<th>3MMA</th>
<th>3/12</th>
<th>12MMA</th>
<th>12/12</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEC 09</td>
<td>89.6</td>
<td>-1.6</td>
<td>89.1</td>
<td>-3.8</td>
<td>87.7</td>
<td>-9.3</td>
</tr>
<tr>
<td>JAN 10</td>
<td>90.5</td>
<td>1.5</td>
<td>89.7</td>
<td>-1.4</td>
<td>87.8</td>
<td>-8.3</td>
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<td>5.9</td>
<td>89.3</td>
<td>-2.6</td>
</tr>
</tbody>
</table>
HIGHLIGHTS
Inflation rate slips slightly ■ 2010 inflation expected to remain subdued

INDICATIONS:

The inflation rate slipped to 2.0% this month (1/12 rate-of-change measure). The 12/12 rate-of-change ascended further in Phase B. The Producer Price Index crossed into Phase B this month.

Recent trends in fiscal policy and the outcome of the G20 meeting have some interesting implications for inflation trends. The prospect of continued record deficit spending in the U.S. while the rest of the developed world moves toward greater fiscal restraint raises the possibility that global flight to safety and thus willingness to hold U.S. Treasuries and other dollar denominated assets may ease. It could also stoke investor expectations that the debt will eventually be monetized. Depending on the strength of the trend, this could have a profound impact on the value of the dollar.

FORECAST NOTE:

Current inflation data are well within our forecast expectations, but the near-term trends indicate that inflation for the year will be slightly more subdued than expected. Look for the CPI for the year as a whole to come in 2.8 to 3.0% above 2009.

MANAGEMENT NOTE:

Keep an eye on interest rates. If a significant inflationary trend develops due to the fiscal imbalances outlined above, an early indicator will be a major rise in the risk premium on formerly safe assets.
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
2. 3/12 passes above the 12/12
3. 12/12 reaches a low
4. 3/12 crosses above 0%
5. 12/12 crosses above 0%

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.

The onset of business cycle rise is observed.

The entry of the cycle into its steepest part of the rising trend is observed.

**Negative Checking Points**

6. 3/12 reaches a high
7. 3/12 downward passes the 12/12
8. 12/12 reaches a high
9. 3/12 crosses below 0%
10. 12/12 value crosses below 0%

Checking points #6 and #7 indicate that the business cycle is making the transition from rise to decline.

Business cycle decline begins with checking point #8.

The entry of the cycle into its steepest part of the decline is with checking points #9 and #10.
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 2009 would be the total of the September 2009, October 2009, and November 2009 monthly data. When December 2009 data becomes available, you simply drop September from the calculation and add December. The December 2009 3MMT is thus comprised of the activity recorded in October, November, and December 2009. 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>Year</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>September</td>
<td>2009</td>
<td>.133</td>
</tr>
<tr>
<td>October</td>
<td>2009</td>
<td>.140</td>
</tr>
<tr>
<td>November</td>
<td>2009</td>
<td>.121</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3MMT = .394</td>
</tr>
</tbody>
</table>

A 12 month moving total (12MMT) is derived by adding 12 consecutive months of activity together. The 12MMT for November 2009 is the total derived when adding the Housing Starts (or bookings or sales) figures for December 2008 through November 2009. 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 2009 12MMT can be quickly derived by adding the November 2009 monthly figure to the October 2009 12MMT, and then subtracting the November 2008 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>Year</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>November</td>
<td>2008</td>
<td>.117</td>
</tr>
<tr>
<td>December</td>
<td>2008</td>
<td>.101</td>
</tr>
<tr>
<td>January</td>
<td>2009</td>
<td>.106</td>
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<td>February</td>
<td>2009</td>
<td>.108</td>
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<tr>
<td>March</td>
<td>2009</td>
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<tr>
<td>April</td>
<td>2009</td>
<td>.151</td>
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<tr>
<td>May</td>
<td>2009</td>
<td>.154</td>
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<tr>
<td>June</td>
<td>2009</td>
<td>.155</td>
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<tr>
<td>July</td>
<td>2009</td>
<td>.155</td>
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<tr>
<td>August</td>
<td>2009</td>
<td>.141</td>
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<tr>
<td>September</td>
<td>2009</td>
<td>.133</td>
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<tr>
<td>November</td>
<td>2009</td>
<td>.121</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3MMT = .394 12MMT = 1.598</td>
</tr>
</tbody>
</table>
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 2009, expressed as a percent, would be calculated as follows:

\[
\left( \frac{July\ 2009\ 12MMT}{July\ 2008\ 12MMT} \right) \times 100 - 100 = -1.7\% \quad July\ 2009\ 12/12
\]

The July 2009 12MMT was 1.7% below the July 2008 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.

\[
\left( \frac{November\ 2009\ 12MMT}{November\ 2008\ 12MMT} \right) \times 100 - 100 = +1.1\% \quad November\ 2009\ 12/12
\]
The 1.1% rate-of-change figure reflects the fact that activity for the 12 months ending November 2009 was 1.1% above the level of activity posted for the 12 months ending November 2008. 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:

\[
\left(\frac{\text{January 2009}}{\text{January 2008}}\right) \times 100 - 100 = -6.1\% \quad \text{January 2009} 3/12
\]

Sales for the 3 months ending January 2009 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:

\[
\left(\frac{\text{February 2009}}{\text{February 2008}}\right) \times 100 - 100 = -10.0\% \quad \text{February 2009} 1/12
\]

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 2009 1/12 rate-of-change is higher or lower than the February 2009 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.